



Republic of Yemen

الجمهورية اليمنية

**Ministry of Higher Education &
Scientific Research**

وزارة التعليم العالي و البحث العلمي

Lebanese International University

الجامعة اللبنانية الدولية

**School of Pharmacy & Biomedical
Science**

كلية الصيدلة والعلوم الطبية

وثيقة مواصفات برنامج بكالوريوس الصيدلة السريرية

Bachelor of Clinical Pharmacy - Program Specifications Document

2019

Program Identification and General Information معلومات عامة عن البرنامج		
صيدلة سريرية	اسم البرنامج: Scientific name of the program	1
بكالوريوس	الدرجة العلمية التي يمنحها البرنامج (الشهادة) Award granted on completion of the program	2
173	إجمالي الساعات المعتمدة لمنح المؤهل (الدرجة العلمية) Total credit hours required to award the degree	3
الجامعة اللبنانية الدولية	الجهة المسؤولة عن منح الدرجة العلمية (الجامعة) The body responsible for granting the degree	4
كلية الصيدلة والعلوم الطبية	اسم الكلية التي ينتمي إليها البرنامج: The faculty to which the program belongs	5
الصيدلة السريرية	اسم القسم الذي ينتمي إليه البرنامج: The body responsible for the program	6
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حسب أنظمة وزارة التعليم العالي والبحث العلمي اليمنية As per the Yemeni Ministry of Higher Education and Scientific Research	المعدل المطلوب للالتحاق بالبرنامج: Grade entry requirements	
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رؤية الجامعة ورسالتها وأهدافها: University Vision, Mission and Aims
رؤية الجامعة: University Vision
الاسهام الايجابي في المجتمع من خلال الابداع في التعليم. Making a positive social contribution through creative education and innovation.
رسالة الجامعة: University Mission
خدمة المجتمع من خلال تمكين الطلبة والمتخرجين من تطبيق المعرفة في كل مرحلة من حياتهم المهنية. وتوفير الفرص لتحسين المهارات والخبرات التي تطابق معايير الجامعة في التميز لبناء الأمة. To serve society through empowering students and alumni to apply knowledge and awareness in every step of their profession by providing unique opportunities to enhance skills and experience that meet the LIU excellent standards to build the nation.
أهداف الجامعة: Aims of the University

1. تمكين الطلاب من تطوير الوعي والمعرفة والتشارك الثقافي والاستدامة البيئية.
2. تطوير والاحتفاظ بالكادر الأكاديمي والإداري المؤهل والمتنوع.
3. مراجعة المناهج الدراسية بشكل مستمر وتطويرها لتحقيق نتائج التعلم المرجوة.
4. الاهتمام بالتفاعل بين التدريس والبحث العلمي
5. ادماج التقنية الحديثة لتحقيق التعلم الفعال.
6. الاهتمام بمشاركة خريجي الجامعة وتمكينهم للاسهام الفعال في سوق العمل.
7. التزام الجامعة بتقديم الدعم المستمر والتواصل مع الطلاب لتحقيق قيم الجامعة.
8. نشر المعرفة والمهارات متعددة المجالات والقيم الضرورية للتنافس في مجتمع المعرفة.
9. بناء السلوك لدى الطلاب حتى يكونوا مواطنين يتحملون المسؤولية ويهتمون بالتعلم مدى الحياة.
10. توسيع الخبرات التعليمية المتنوعة والمهارات في البيئة الجامعية.

To meet our Excellence Standards “an acronym that stands for”:

E Empower students to develop awareness and engagement in cultural and environmental sustainability.

X Expand, develop, retain, and promote an excellent and diverse faculty.

C Continually review curricula for innovative outcomes.

E Enable dynamic interplay of teaching and research.

L Learn how to leverage and apply innovative technologies, tools and methods to enable active learning.

L Level up alumni engagement that stimulates and empower LIU’s graduates to foster a significant difference in the job market.

E Endeavor to align LIU’s values and commitments to student support and communication.

N Nurture knowledge, multidisciplinary skills and values necessary to compete in a knowledge-based society.

C Construct LIU’s students’ behavior to be responsible citizens and life-long self-actuated learners.

E Expand diverse learning experiences and skills in the university environment.

University’s Values: قيم الجامعة ?

التميز Excellence

الأمانة Integrity

الشراكة Collaboration

جودة الخدمة Serving with Quality

الإبداع والابتكار Innovation and creativity

المسؤولية الإجتماعية Social Responsibility

رؤية الكلية ورسالتها وأهدافها: Faculty Vision, Mission and Aims

رؤية الكلية: Faculty Vision

To be a nationally leading, globally recognized figure in modernizing and advancing the education of pharmaceutical, biomedical, and nutritional sciences. تحقيق ريادة محلية واعتراف عالمي في تحديث وتطوير تعليم العلوم الصيدلانية وعلوم الطب المخبري وعلوم التغذية.

رسالة الكلية: Faculty Mission

To prepare distinguished clinical professionals in pharmacy, biomedical, and nutrition and dietetics for successful careers in healthcare through knowledge-based, practice-oriented, research-directing academic programs that are nationally valued and internationally accredited.

إعداد وإنتاج مهنيين سريريين متميزين في الصيدلة والطب المخبري والتغذية والحميات، تنجح في تبوء مكانتها في مجال الرعاية الصحية، من خلال توفير برامج أكاديمية قيمة محليا، ومعترف بها دوليا، ومبنية على المعرفة العلمية، وموجهة نحو الممارسة العملية مهنيا وبحثيا.

أهداف الكلية: Aims of the Faculty

1. Generating professionals able to work collaboratively within the healthcare team with self-confidence and respect.
2. Adopting and adapting state-of-the art advancements to the school's academic programs.
3. Promoting development and growth of the faculty, its departments and staff, and its students and alumni.
4. Supporting collaborations for multidisciplinary research, affiliations with various healthcare specialties, and initiatives for community-based health services.

أهداف الكلية:

- إنتاج مهنيين قادرين على العمل التعاوني ضمن فريق الرعاية الصحية بشكل قائم على الثقة بالنفس والإحترام.
- التطلع الدائم لمواكبة المستجدات واعتمادها كأسس تطوير وتحسين برامج الكلية الأكاديمية.
- تشجيع ودعم تنمية وتطوير الكلية وأقسامها وكوادرها وموظفيها وطلابها وخريجياتها.
- دعم وتشجيع التعاون البحثي متنوع الاتجاهات والمسارات، ومع مختلف تخصصات الرعاية الصحية ومبادرات الخدمات الصحية المجتمعية.

رؤية ورسالة القسم وأهدافه: Clinical Pharmacy Department, Vision, Mission and aims
رؤية القسم: Vision of Clinical Pharmacy Department
Becoming the national reference and the hub for the paradigm shift of pharmacy education.
رسالة القسم: Mission of Clinical Pharmacy Department
Offering knowledge-based, skill-developing clinical programs that train students in pharmaceutical care practice and research professionally and ethically.
أهداف القسم: Objectives of Clinical Pharmacy Department
<ol style="list-style-type: none">1. Preparing students to work as a member of the patient's healthcare team.2. Promoting excellence in pharmacy teaching, training, research, and care provision.3. Guiding students in professionalism, career development, and life-long learning.4. Fostering extended learning opportunities through post-graduate programs.
رسالة البرنامج وأهدافه: Program Mission and Aims
رسالة البرنامج: Program Mission
Generating quality clinical pharmacists with added value potential to the healthcare team and patient.
أهداف البرنامج: Program Aims
<ol style="list-style-type: none">1. Providing students with principles and fundamentals of the science and the practice of clinical pharmacy.2. Guiding and helping students acquiring and improving skills necessary for practice.3. Exposing students to practice environments in the real world.4. Growing students' leadership capabilities and collaborative work.
معايير البرنامج ومرجعياته: Program Standards & Benchmarks
المعايير الأكاديمية للمحتوى العلمي للبرنامج Academic Standards:
<ol style="list-style-type: none">1. Accreditation Council for Pharmacy Education (ACPE)2. NARS3. Benchmarking Programs
ملحق (1) المعايير الأكاديمية للمحتوى
مرجعيات البرنامج: Benchmarks

1. University of Santo Tomas
2. Beirut Arab University
3. Al Ain University
4. The University of Sydney
5. National University of Singapore

مخرجات التعلم المقصودة للبرنامج: Intended Learning Outcomes (ILOs)

أولاً: مجال المعرفة والفهم: Knowledge and Understanding (A)

بعد الانتهاء من البرنامج بنجاح سوف يكون المتخرج قادراً على ان :

Upon successful completion of the Bachelor of Clinical Pharmacy Program, the graduate will be able to:

A1.	Review the knowledge facts and principles of both basic and medical sciences.
A2.	Identify the role of each of the pharmaceutical sciences in the development and use of pharmaceutical products.
A3.	Discuss disease pathophysiology and the patient's clinical presentation.
A4.	Relate the biologic effects of medicinal substances to their physicochemical properties and their interactions with the living systems.
A5.	principles of ethics of both practice and scientific research.

ثانياً: مجال المهارات الذهنية: Intellectual Skills (B)

عند الانتهاء من البرنامج بنجاح سوف يكون المتخرج قادراً على

Upon successful completion of the Bachelor of Clinical Pharmacy Program, the graduate will be able to:

B1.	Conceptualize pharmaceutical care as the standard framework of clinical pharmacy services in various healthcare settings.
B2.	Integrate patient's demographic, social, and health data to discover drug-related problems.
B3.	Compare alternative therapeutic plans for each drug-related problem based on evidence of effectiveness, safety, and cost.
B4.	Create a patient-specific pharmaceutical care plan to achieve a definite outcome for each drug-related problem.

B5. Propose research ideas based on practice gaps and improvement opportunities.

ثالثا: مجال المهارات العملية والمهنية: (C) Professional and Practical Skills

بعد الانتهاء من البرنامج بنجاح سوف يكون المتخرج قادرا على ان :

Upon successful completion of the Bachelor of Clinical Pharmacy Program, the graduate will be able to:

C1.	Provide pharmaceutical care professionally in various pharmacy practice setting.
C2.	Communicate effectively with patients and other health care professionals.
C3.	Contribute in developing, implementing and monitoring pharmaceutical care plans.
C4.	Counsel patients on the purpose and expectations of drug therapy.
C5.	Document pharmaceutical care steps in a patient's medical record.
C6.	Respond to drug information requests in a systematic manner.

رابعا: مجال المهارات العامة: (D) General Skills

بعد الانتهاء من البرنامج بنجاح سوف يكون المتخرج قادرا على ان :

Upon successful completion of the Bachelor of Clinical Pharmacy Program, the graduate will be able to:

D1.	Advocate leadership by initiating and advocating change to develop new opportunities in response to problems they identify.
D2.	Develop presentation, promotion, marketing, business administration, as well as numeric and computation skills.
D3.	Capability of time management, critical thinking, problem solving, decision-making, and team-work capabilities.
D4.	Communicate clearly by verbal and written means.

استراتيجيات التعليم والتعلم وأساليب التقييم:

Teaching and Learning Strategies (استراتيجيات التعليم والتعلم)

Tools
Lecture
Lab work
Homework
Homework
Assignments
Problem -based learning
Hospital & community pharmacy training
Dispensing lab
Written exam
Discussion
Case study
Presentation
Hands-on
Lab work report
Seminar
Seniors Project
Senior project report

Program Intended Outcomes مخرجات تعلم البرنامج	Teaching and Learning Strategies	Assessment Tools
A.	Upon successful completion of the Bachelor of Clinical Pharmacy Program, the graduate will be able to:	

Knowledge and Understanding	A1.	Review the knowledge facts and principles of both basic and medical sciences.	Lecture, lab work, assignment, homework	Written exam, report, hands-on, presentation, case study
	A2.	Identify the role of each of the pharmaceutical sciences in the development and use of pharmaceutical products.		
	A3.	Discuss disease pathophysiology and patient's clinical presentation.		
	A4.	Relate the biologic effects of medicinal substances to their physicochemical properties and their interactions with the living systems.		
	A5.	Recall the ethics and methods of scientific research.		
B. Cognitive/ Intellectual Skills	Upon successful completion of the Bachelor of Clinical Pharmacy Program, the graduate will be able to:			
	B1.	Conceptualize pharmaceutical care as the standard framework of clinical pharmacy services in various healthcare settings.	Assignment, Problem - based learning	Discussion, case study, Written exam
	B2.	Integrate patient's demographic, social, and health data to discover drug-related problems.		
	B3.	Compare alternative therapeutic plans for each drug-related problem based on evidence of effectiveness, safety, and cost.		
	B4.	Create a patient-specific pharmaceutical care plan to achieve definite outcome for each drug-related problem.		
	B5.	Propose research ideas based on practice gaps and improvement opportunities.		

C. Practical and Professional Skills	Upon successful completion of the Bachelor of Clinical Pharmacy Program, the graduate will be able to:		
	C1.	Provide pharmaceutical care professionally in various pharmacy practice setting.	Hospital training, Community pharmacy training, Drug Factory visits, Dispensing lab,
	C2.	Communicate effectively with patients and other health care professionals.	Journal club, Seminar, Seniors project
	C3.	Contribute in developing, implementing and monitoring pharmaceutical care plan.	
	C4.	Counsel patient on the purpose and expectations of drug therapy.	
	C5.	Document pharmaceutical care steps in patient medical record.	
	C6.	Respond to drug information requests in systematic manners.	
D. General and Transfer able Skills	Upon successful completion of the Bachelor of Clinical Pharmacy Program, the graduate will be able to:		
	D1.	Advocate leadership by initiating and advocating change to develop new opportunities in response to problems they identify.	Hospital training, community pharmacy training, visits, dispensing lab,
	D2.	Develop presentation, promotion, marketing, business administration, numeric and computation skills.	journal club, seminar seniors project
	D3.	Capability of time management, critical thinking, problem solving, decision-making and team-working.	
	D4.	Communicate clearly by verbal and written means.	

Program Structure هيكل البرنامج			
الوزن النسبي %	الساعات المعتمدة Credit Hours	المتطلبات Requirements	
%15	27	إجبارية	متطلبات جامعة University Requirements
%20	35	إجبارية	متطلبات كلية Faculty Requirements
%61	105*	إجبارية	متطلبات برنامج Program Requirements
%4	6	اختيارية	
%100	173	إجمالي الساعات المعتمدة Total of Credit Hours	

*Including 12 credit hours of hospital training, which translates to 600 working hours: Saturday to Wednesday from 8:00 to 13:00 for 24 weeks. Clinical Training Plan.

*Including 3 credit hours of community pharmacy training, which translates to 250 working hours: Saturday to Wednesday from 8:00 to 13:00 for 10 weeks.

توزيع المقررات على متطلبات البرنامج							
1. متطلبات جامعة University Requirements							
اسم المقرر Course Title	رمز المقرر Code/ NO.	الساعات المعتمدة Credit Hours				رموز المتطلبات القبليّة Pre- Requisites Code	
		نظرية Th.	عملي Lab.	تطبيق Pr.	اجمالي س. م Total Credit Hours		
1	Arabic Language and Literature	ARAB200	3			3	
2	Basic Computing Skills	CSCI100	3			3	
3	Introduction to Arab Islamic Civilization	CULT200	3			3	
4	English Composition & Rhetoric	ENGL150	3			3	
5	Advanced English Composition & Rhetoric	ENGL200	3			3	ENGL150
6	Technical writing	ENGL250	3			3	ENGL200

7	English Communication Skills	ENGL350	3			3	ENGL200
8	Human Rights – Global Perspective	HUMN210	3			3	
9	Statistics for Health Sciences	MATH245	3			3	
Total of Credit Hours إجمالي الساعات المعتمدة			27			27	

2 متطلبات كلية Faculty Requirements							
اسم المقرر Course Title	رمز المقرر Code/ NO.	الساعات المعتمدة Credit Hours				رموز المتطلبات القبليّة Pre-Requisites Code	
		نظرية Th.	تمارين Tut.	عملية Pr.	اجمالي س.م Total Credit Hours		
1 Medical Biochemistry	BIOC310	4			4	BIOL200 CHEM250 CHEM300	
2 General Biology I	BIOL200	3			3		
3 General Biology I Lab	BIOL200L			1	1		
4 Human Physiology & Anatomy	BIOL360	4			4	BIOL200	
5 Human Physiology & Anatomy Lab	BIOL360L			1	1	BIOL200	
6 Microbiology	BIOL385	3			3	BIOL200 ENGL200	
7 Microbiology Lab	BIOL385L			1	1	ENGL200 BIOL200	
8 Pathophysiology	BMED445	4			4	BIOL360 ENGL200	
9 General Chemistry	CHEM200	3			3		
10 General Chemistry Lab	CHEM200L			1	1		
11 Quantitative Analysis	CHEM205	2			2	CHEM200	

12	Quantitative Analysis Lab	CHEM205L			1	1	
13	Organic Chemistry I	CHEM250	3			3	CHEM200 ENGL150
14	Organic Chemistry II	CHEM300	3			3	ENGL150 CHEM250
15	Organic Chemistry Lab	CHEM300L			1	1	CHEM250 ENGL150
إجمالي الساعات المعتمدة Total Credit Hours			29	6		35	

3. متطلبات برنامج Program Requirements

3:1- متطلبات برنامج إجبارية Compulsory Courses

اسم المقرر Course Title	رمز المقرر Code/ NO.	الساعات المعتمدة Credit Hours				رموز المتطلبات القبليّة Pre-Requisites Code
		نظرية Th.	تمارين Tut.	عملية Pr.	اجمالي س.م Total Credit Hours	
1 Introduction to Drug Information	PHAR200	2			2	ENGL200
2 Pharmacy Practice, History & Ethics	PHAR250	3			3	ENGL200 PHAR200
3 Pharmaceutical Calculations	PHAR300	2			2	ENGL200 PHAR200
4 Medical Chemistry I	PHAR400	3			3	CHEM300
5 Pharmaceutical Analysis & Biotechnology	PHAR405	2			2	CHEM300
6 Pharmaceutical Analysis & Biotechnology Lab	PHAR405L			1	1	CHEM300
7 Drug Dosage Forms I	PHAR410	3			3	PHAR300
8 Physical Pharmacy	PHAR420	3			3	ENGL350 PHAR250 PHAR300
9 Pharmacognosy & Herbal Medicine	PHAR425	3			3	PHAR410
10 Medicinal Chemistry II	PHAR450	3			3	PHAR400
11 Physical Assessment in Pharmacy Practice	PHAR455	2		1	3	PHAR300 PHAR250 ENGL350
12 Pharmacy Management & Drug Marketing	PHAR460	3			3	PHAR300 PHAR455

13	Interpretations of Lab Data	PHAR465	3			3	BMED445
14	Drug Dosage Form II	PHAR470	3			3	PHAR410
15	Drug Dosage Form II Lab	PHAR470L			1	1	
16	Pharmacy Practice Experience I (PPEI)	PHAR480			6	6	PHAR455 PHAR300 PHAR250
17	Pharmacology I	PHAR505	3			3	PHAR400 PHAR450
18	Biopharmaceutics & Pharmacokinetics	PHAR510	4			4	PHAR410
20	Therapeutics I (Neurology/Psychiatry)	PHAR515	3			3	PHAR505
21	Therapeutics II (Pulmonary/Rheumatology)	PHAR520	3			3	PHAR505
22	Pharmacology II	PHAR555	3			3	PHAR505
23	Pharmacogenomics	PHAR560	3			3	PHAR505 PHAR555
24	Therapeutics III	PHAR565	3			3	PHAR555
25	Therapeutics IV	PHAR570	3			3	PHAR555
26	Pharmacology III	PHAR575	3			3	PHAR555
27	Pharmacy Practice Experience II (PPE II)	PHAR580			6	6	PHAR575
28	Pharmacy Seminar	PHAR585	1			1	PHAR575
29	Clinical Immunology	PHAR590	2			2	
30	Non Prescription Drugs	PHAR606	3			3	
31	Toxicology	PHAR610	3			3	PHAR575
32	Therapeutics V	PHAR615	3			3	PHAR575
33	Therapeutics VI	PHAR620	3			3	PHAR575
34	Pharmacoeconomics	PHAR625	3			3	PHAR575
35	Therapeutics VII	PHAR630	3			3	PHAR575
36	Clinical Pharmacy	PHAR640	3			3	PHAR480
37	Pharmacy Dispensing Lab	PHAR650			2	2	PHAR630
38	Pharmacy Law	PHAR656	1			1	
Total Credit Hours			88		17	105	

اسم المقرر Course Title	رمز المقرر Code/ NO.	الساعات المعتمدة Credit Hours				رموز المتطلبات القبليّة Pre-Requisites Code
		نظرية Th.	تمارين Tut.	عملية Pr.	اجمالي س. م Total Credit Hours	
Community pharmacy	PHAR500			3	3	
Senior project	PHAR550	3			3	
Total Credit Hours إجمالي الساعات المعتمدة		3		3	6	

الخطة الدراسية للبرنامج Study Plan

Study of Plan The Bachelor of Clinical Pharmacy (PHAR)

First Year

Fall Semester

Code	Title	Credits	Prerequisites	Corequisites
CHEM200	General Chemistry	3		CHEM200L
CHEM200L	General Chemistry Lab	1		CHEM200
BIOL200L	General Biology I Lab	1		BIOL200
BIOL200	General Biology I	3		BIOL200L
ENGL150	English Composition & Rhetoric	3	ELC103	
Total		11		

Spring Semester

Code	Title	Credits	Prerequisites	Corequisites
ENGL200	Advanced English Composition & Rhetoric	3	ENGL150	
CHEM250	Organic Chemistry I	3	ENGL150 - CHEM200	
CHEM205	Quantitative Analysis	2	CHEM200	CHEM205L - CHEM250
CHEM205L	Quantitative Analysis Lab	1		CHEM205
BIOL360	Human Physiology & Anatomy	4	BIOL200	BIOL360L
BIOL360L	Human Physiology & Anatomy Lab	1	BIOL200	BIOL360
Total		14		

Summer Semester

Code	Title	Credits	Prerequisites	Corequisites
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CHEM300L	Organic Chemistry Lab	1	ENGL150 - CHEM250	CHEM300
CHEM300	Organic Chemistry II	3	ENGL150 - CHEM250	CHEM300L
BIOL385	Microbiology	3	ENGL200 - BIOL200	BIOL385L
CSCI100	Basic Computing Skills	3	ELC103	ENGL150
PHAR200	Introduction to Drug Information	2	ENGL200	
BIOL385L	Microbiology Lab	1	ENGL200 - BIOL200	BIOL385
Total		13		

Second Year

Fall Semester

Code	Title	Credits	Prerequisites	Corequisites
BMED445	Pathophysiology	4	ENGL200 - BIOL360	
PHAR400	Medical Chemistry I	3	CHEM300	
PHAR250	Pharmacy Practice, History & Ethics	3	PHAR200 - ENGL200	PHAR300
PHAR300	Pharmaceutical Calculations	2	ENGL200 - PHAR200	PHAR250
Total		12		

Spring Semester

Code	Title	Credits	Prerequisites	Corequisites
PHAR450	Medicinal Chemistry II	3	PHAR400	
PHAR405L	Pharmaceutical Analysis & Biotechnology Lab	1	CHEM300	PHAR405
PHAR420	Physical Pharmacy	3	PHAR300 - PHAR250 - ENGL350	
PHAR405	Pharmaceutical Analysis & Biotechnology	2	CHEM300	PHAR405L
BIOC310	Medical Biochemistry	4	CHEM300 - CHEM250 - BIOL200	
Total		13		

Summer Semester

Code	Title	Credits	Prerequisites	Corequisites
PHAR465	Interpretations of Lab Data	3	BMED445	
PHAR410	Drug Dosage Forms I	3	PHAR300	
PHAR505	Pharmacology I	3	PHAR400 - PHAR450	

PHAR455	Physical Assessment in Pharmacy Practice	3	PHAR300 - PHAR250 - ENGL350	
Total		12		
Third Year				
Fall Semester				
Code	Title	Credits	Prerequisites	Corequisites
PHAR470L	Drug Dosage Form II Lab	1		PHAR470
PHAR555	Pharmacology II	3	PHAR505	
PHAR425	Pharmacognosy & Herbal Medicine	3	PHAR410	
PHAR470	Drug Dosage Form II	3	PHAR410	PHAR470L
Total		10		
Spring Semester				
Code	Title	Credits	Prerequisites	Corequisites
PHAR575	Pharmacology III	3	PHAR555	
MATH245	Statistics for Health Sciences	3		PHAR300
PHAR460	Pharmacy Management & Drug Marketing	3	PHAR455 - PHAR300	
PHAR590	Clinical Immunology	2		PHAR575
PHAR510	Biopharmaceutics & Pharmacokinetics	4	PHAR410	
Total		15		
Summer Semester				
Code	Title	Credits	Prerequisites	Corequisites
PHAR520	Therapeutics II (Pulmonary/Rheumatology)	3	PHAR505	PHAR555
PHAR515	Therapeutics I (Neurology/Psychiatry)	3	PHAR505	PHAR555
PHAR560	Pharmacogenomics	3	PHAR555 - PHAR505	
PHAR610	Toxicology	3	PHAR575	
Total		12		

Fourth Year				
Fall Semester				
Code	Title	Credits	Prerequisites	Corequisites
PHAR570	Therapeutics IV	3	PHAR555	PHAR575
PHAR565	Therapeutics III	3	PHAR555	PHAR575
ENGL250	Technical writing	3	ENGL200	
PHAR615	Therapeutics V	3	PHAR575	
Total		12		
Spring Semester				
Code	Title	Credits	Prerequisites	Corequisites
PHAR620	Therapeutics VI	3	PHAR575	
PHAR640	Clinical Pharmacy	3	PHAR480	PHAR580
PHAR630	Therapeutics VII	3	PHAR575	
Total		9		
Summer Semester				
Code	Title	Credits	Prerequisites	Corequisites
PHAR650	Pharmacy Dispensing Lab	2	PHAR630	PHAR480 - PHAR606
CULT200	Introduction to Arab - Islamic Civilization	3		
PHAR480	Pharmacy Practice Experience I (PPEI)	6	PHAR250 - PHAR300 - PHAR455	PHAR650 - PHAR606
Total		11		
Fifth Year				
Fall Semester				
Code	Title	Credits	Prerequisites	Corequisites
PHAR656	Pharmacy Law	1		PHAR580
PHAR606	Non Prescription Drugs	3		PHAR650 - PHAR480
ARAB200	Arabic Language and Literature	3		
PHAR625	Pharmacoeconomics	3	PHAR575	PHAR580
Total		10		
Spring Semester				

Code	Title	Credits	Prerequisites	Corequisites
HUMN210	Human Rights Global Perspective	3		
ENGL350	English Communication Skills	3	ENGL200	
PHAR500	Pharmacy Elective I	3	PHAR575	
PHAR585	Pharmacy Seminar	1	PHAR575	
Total		10		
Summer Semester				
Code	Title	Credits	Prerequisites	Corequisites
PHAR580	Pharmacy Practice Experience II (PPE II)	6	PHAR575	PHAR640
PHAR550	Pharmacy Elective II	3	PHAR575	
Total		9		

متطلبات القبول في البرنامج :Admission Requirements

يشترط لقبول التحاق الطالب في البرنامج ما يلي:

1. شهادة الثانوية العامة الاصل وطبق الاصل
2. صورة الجواز او البطاقة الشخصية
3. خمس ه صور 4 * 6
4. خريجي المحافظات الجنوبية اصل الثانوية العامة معتمدة من وزارة التربية
5. والتعليم) الكنترول (+ شهادة تاسع - اول ثانوي - ثاني ثانوي .
6. خريجي العام الدراسي 2021 - 2022 م المطلوب بيان مؤقت من الكنترول .
7. خريجي الشهادات الصادرة من خارج اليمن اصل الشهادة معادلة من وزارة التربية والتعليم (الكنترول)
8. اجتياز اختبار القبول المحدد قبل الجامعة
9. اجتياز اختبار اللغة الانجليزية المحدد من قبل الجامعة
10. صورة الاقامة للطالب الغير يمني (مجددة لنفس العام)

الامكانات المطلوبة لتنفيذ البرنامج

مصادر التعليم والتعلم المتعلقة بالبرنامج:

- The library
- Electronic library
<https://www.liu-elibrary.com/>

المعامل والتجهيزات والادوات والمواد التعليمية

- Laboratories (pharmacy, chemistry & Microbiology)
- virtual pharmacy
- Dispensing lab
- Buildings (Classroom, Data show)
- Hospitals and pharmacies (training)

تقويم البرنامج وتحسينه Program evaluation and improvement

العينة Sample	طريقة التقويم Assessment method	الفئة المستهدفة Targeted
جميع طلبة السنة النهائية	استبيان للطلبة السنة النهائية	طلاب ما قبل السنة النهائية
- جميع الخريجين	استقصاء سنوي	خريجي البرنامج
جميع طلاب التدريب في المستشفيات والصيدليات	استقصاء سنوي	الطلاب في مراحل التدريب السريري المستشفيات والصيدليات
عينة من الاستبيان	استبيان	جهات التوظيف

مصفوفة تسكين مخرجات التعلم للبرنامج في مقررات دراسية (خارطة المنهاج)
) Matrix of mapping program P- ILO's with courses

المستوى Year	الفصل Term	اسم المقرر Course Name	رمز المقرر Course Code	مخرجات التعلم Program Intended Learning Outcomes (PILOs)																					
				A. Knowledge and understanding المعرفة والفهم						B. Intellectual Skills المهارات الذهنية						C. Practical & Professional Skills المهارات العملية						D. Transferrable Skills المهارات القابلة للتحويل			
				A1	A2	A3	A4	A5	A6	B1	B2	B3	B4	B5	B6	C1	C2	C3	C4	C5	C6	D1	D2	D3	
		Medical Biochemistry	BIOC310	√																			√		
		General Biology I	BIOL200	√																					
		General Biology I Lab	BIOL200L	√																				√	√
		Human Physiology & Anatomy	BIOL360	√																				√	
		Human Physiology & Anatomy Lab	BIOL360L	√																				√	√
		Microbiology	BIOL385	√		√																			
		Microbiology Lab	BIOL385L	√		√																			
		Pathophysiology	BMED445	√		√																		√	
		General Chemistry	CHEM200	√																				√	
		General Chemistry Lab	CHEM200L	√																				√	√
		Quantitative Analysis	CHEM205	√																					
		Quantitative Analysis Lab	CHEM205L	√																					√
		Organic Chemistry I	CHEM250	√																				√	
		Organic Chemistry II	CHEM300	√																				√	
		Organic Chemistry Lab	CHEM300L	√																				√	√
		Introduction to Drug Information	PHAR200	√	√								√											√	
		Pharmacy Practice, History & Ethics	PHAR250		√			√									√								
		Pharmaceutical Calculations	PHAR300	√																				√	
		Medical Chemistry I	PHAR400		√		√					√												√	√
		Pharmaceutical Analysis & Biotechnology	PHAR405		√																			√	
		Pharmaceutical Analysis & Biotechnology Lab	PHAR405L		√																			√	
		Drug Dosage Forms I	PHAR410		√																				
		Physical Pharmacy	PHAR420		√		√																		
		Pharmacognosy & Herbal Medicine	PHAR425		√		√					√													
		Medicinal Chemistry II	PHAR450		√		√					√												√	√

Year المستوى	Term الفصل	Course Name اسم المقرر	Course Code رمز المقرر	Program Intended Learning Outcomes (PILOs) مخرجات التعلم																				
				A. Knowledge and understanding المعرفة والفهم						B. Intellectual Skills المهارات الذهنية						C. Practical & Professional Skills المهارات العملية						D. Trans... تقالية		
				A1	A2	A3	A4	A5	A6	B1	B2	B3	B4	B5	B6	C1	C2	C3	C4	C5	C6	D1	D2	D3
		Physical Assessment in Pharmacy Practice	PHAR455	√		√	√					√					√	√						
		Pharmacy Management & Drug Marketing	PHAR460																		√	√		
		Interpretations of Lab Data	PHAR465	√		√	√					√						√						
		Drug Dosage Form II	PHAR470		√																			
		Drug Dosage Form II Lab	PHAR470L		√																			
		Pharmacy Practice Experience I (PPEI)	PHAR480			√	√					√	√	√	√		√	√	√	√	√	√		√
		Pharmacology I	PHAR505		√		√						√											
		Biopharmaceutics & Pharmacokinetics	PHAR510		√		√						√					√					√	
		Therapeutics I (Neurology/Psychiatry)	PHAR515		√	√	√					√	√	√	√			√	√					
		Therapeutics II (Pulmonary/Rheumatology)	PHAR520		√	√	√					√	√	√	√			√	√					
		Pharmacology II	PHAR555		√		√							√										
		Pharmacogenomics	PHAR560	√	√		√						√	√								√		
		Therapeutics III	PHAR565		√	√	√					√	√	√	√			√	√					
		Therapeutics IV	PHAR570		√	√	√					√	√	√	√			√	√					
		Pharmacology III	PHAR575		√		√							√										
		Pharmacy Practice Experience II (PPEII)	PHAR580			√	√					√	√	√	√		√	√	√	√	√	√		√
		Pharmacy Seminar	PHAR585			√	√	√				√		√		√	√			√	√	√	√	√
		Clinical Immunology	PHAR590	√		√							√	√										√
		Non Prescription Drugs	PHAR606		√	√	√					√	√	√	√			√	√					√
		Toxicology	PHAR610			√	√							√	√									
		Therapeutics V	PHAR615		√	√	√					√	√	√	√			√	√					
		Therapeutics VI	PHAR620		√	√	√					√	√	√	√			√	√					
		Pharmacoeconomics	PHAR625	√	√									√				√						√
		Therapeutics VII	PHAR630		√	√	√					√	√	√	√			√	√					
		Clinical Pharmacy	PHAR640		√		√					√	√	√	√	√		√	√					√
		Pharmacy Dispensing Lab	PHAR650		√	√	√					√	√	√	√		√	√	√	√	√	√		√
		Pharmacy Law	PHAR656					√									√						√	

The School of Pharmacy & Biomedical science
Major: Clinical Pharmacy

Course Description

Core Requirements			
Code	Title	Credit	Course Description
BIOC310	Medical Biochemistry	4	Medical Biochemistry is designed to present the basics of biochemistry, thus including a study of structure of amino acids, carbohydrates, lipids, proteins, vitamins, and nucleic acids, in addition to their metabolism, it also imparts knowledge about the catalytic role of enzymes, their structure, kinetic and mechanism of action, bioenergetics, membranes and signaling systems, integration and regulation of the major metabolic pathways, nitrogen metabolism, myoglobin, hemoglobin, and hemostasis, with emphasis on the biochemical basis of human disease
BIOL200	General Biology I	3	This course aims to provide students with basic information of living system organizations, energy transfer and continuity of life. The topics include: biological history; structure and functions of cells and cellular organelles; transport across cell membrane; cell division; general biochemistry; and DNA structure. This course has both a lecture and laboratory component.
BIOL200L	General Biology I Lab	3	This lab course introduces principles of microscopy with emphasis on viewing different animal tissues and cells, in addition to experimentation related to the concepts discussed in BIOL 200.
BIOL360	Human Physiology & Anatomy	4	The course examines the basic concepts of structure and function of the human body. Processes of cardiovascular, respiratory, nervous, digestive and reproductive body systems will be surveyed. Organ systems will be discussed using models and other lab materials. Human Anatomy & Physiology, therefore, covers the structure and functioning of the human body. The course begins with an introduction to the human body and the key chemistry concepts needed to understand its processes. Each of the nine systems of the body is covered in detail. One major dissection is done at the beginning of the year to familiarize students with the internal structure of mammals. Other laboratory experiences are provided related to the body system being studied.
BIOL360L	Human Physiology & Anatomy Lab	1	In this lab students learn how to use anatomical terminology and body position. Also they study the appendicular and axial skeleton, and joints. In addition, students perform dissection of the heart, brain, kidneys... and of whole animal. Also students study reflexes and muscle twitching in frog. The primary objective of this lab is to help Biology and Pharmacy students master the basic concepts of Human Anatomy. The different lab sessions avoid rote memorization and help maintain a high level of interest in understanding the fundamentals of human anatomy by using charts, models, dissection as well as laboratory reports.
BIOL385	Microbiology	3	In this course you will be introduced to the world of microbiology in terms of classification, identification, pathogenic effects, and beneficial effects as applications in food industry and to principles of culturing, isolation, enumeration and identification of different microbes. Also, you will have the chance to discover examples of different groups and species of microorganisms that have direct impact on human health.

BIOL385L	Microbiology Lab	3	In this lab students learn how you use microbial culture, staining techniques, disinfection, and sterilization. Isolation of a culture of some normal flora and a survey of parasites are included. Use various metabolic reactions in the identification and classification of organisms. This Microbiology laboratory is a two hour a week laboratory course with experiments.
BMED445	Pathophysiology	3	This course studies the mechanisms, etiologies, risk factors and complications of diseases processes. It emphasizes on the clinical signs and symptoms, history, prognosis and epidemiology of diseases. Study of pathological imbalances including cellular adaptation and injury, fluid compartment exchanges with edema and dehydration, electrolyte functions, control and imbalances, acidosis and alkalosis, nervous system injuries and responses, sensory imbalances, skeletal system injury and repair, soft tissue injury and repair, and muscle injury and dysfunction.
CHEM200	General Chemistry	3	This course covers the basic principles of Chemistry. An in-depth study of electronic structure chemical of atom, periodicity, chemical bonding and molecular structure. Chemical equilibrium will focus mostly on acid base, redox reactions and other complex ionic equilibria followed by many solution reactions such as precipitation of buffers. The final part of this course describes the basic principles of thermodynamics of various states of matter, electrochemistry, and the kinetic aspects of chemical reactions.
CHEM200 L	General Chemistry Lab	3	The laboratory work involves hands-on experience with chemical systems. Experiments include basic calorimetry, a limited qualitative and quantitative analysis scheme, properties of gases, acid-base and redox titrations.
CHEM205	Quantitative Analysis	2	This course covers methods associated with quantitative analytical techniques. It emphasizes the quantitative determination of substances using spectroscopic analysis, analytical separations, chromatography, and electrochemical methods: potentiometric, voltammetry, and coulometer. Laboratory stresses use of methods and instrumental techniques for quantitative chemical analysis
CHEM205 L	Quantitative Analysis Lab	1	This Lab course covers methods associated with quantitative analytical techniques. It emphasizes the quantitative determination of substances using spectroscopic analysis, analytical separations, chromatography, and electrochemical methods: potentiometric, voltammetry, and coulometry. Laboratory stresses use of methods and instrumental techniques for quantitative chemical analysis.
CHEM250	Organic Chemistry I	3	This course will focus on laying the fundamental principles of Organic chemistry. We will analyze in depth the theory of chemical bonding, molecular structure and physicochemical properties in organic chemistry. We will cover also the acidity and basicity, inductive effect, stereochemistry and nucleophilic substitution (SN1, SN2, E1 and E2) concepts and applications. These principles will be applied to the chemistry of alkanes, alkyl halides, alcohols, ethers and alkenes in the first semester of organic chemistry.
CHEM300	Organic Chemistry II	3	This course will continue the study of the fundamental principles of Organic chemistry started in CHEM 250. We will analyze in depth the theory of chemical bonding, molecular structure and physicochemical properties of aromatics and their reactions such as aromaticity and electrophilic aromatic substitution. The chemistry and properties of other functional groups such aldehydes, ketones, carboxylic acids and

			amines and their derivatives. The final part of this course will focus on spectroscopy and structure of organic compounds
CHEM300L	Organic Chemistry Lab	1	Is a laboratory course to teach the students several common organic chemistry techniques. Emphasis is placed on experimental precision and accurate results as well as safe laboratory procedures. This laboratory course is for students with good aptitude for synthesis in organic chemistry and who want to learn the preparation, isolation, and identification of organic compounds. Students will have also the opportunity to explore interesting areas of organic chemistry and work more independently on the laboratory.
Major Requirements			
Code	Title	Credit	Course Description
PHAR200	Introduction to Drug Information	2	This course introduces students to basic principles of drug information including, medical terminologies, and drug monograph. In addition, students will learn how to identify the different parts for the (SOAP note). The course also provides students with the knowledge to write drug consults and drug utilization review. The course will help students to recognize the different literature resources available, different types of a study design and apply basic biostatistics calculations.
PHAR250	Pharmacy Practice, History & Ethics	3	This 3 - credit course emphasizes upon the historical background and major milestones in the evolution of pharmacy from apothecaries to clinical pharmacy. The first part for this course deals with pharmacy history present and future. The second part deals with pharmacy practice including major medical terms and abbreviations, function for international pharmaceutical organizations and overview about drug classes and dosage forms. The last part deals with ethical principles governing patient–pharmacist relationship.
PHAR300	Pharmaceutical Calculations	2	This course provides the pharmacy student with the knowledge and skills needed to mix medications to obtain concentration/dose, to convert measurements from the metric system to the apothecary system and vice versa, to calculate doses needed for pediatrics or adults, to mathematically adjust medication doses in case of renal or hepatic compromise, and to interpret correctly standard abbreviations and symbols used in prescriptions and medication orders
PHAR400	Medical Chemistry I	3	This course will introduce the principles of medicinal chemistry which deals with the physicochemical properties of drugs that affect their therapeutic applications. Discussion will include the chemical stability, dosage form, synthesis and biotransformation pathways, absorption and structure-activity relationship (SAR) of pharmaceutical agents. During this course, factors like the chemical, stereochemical and physical properties of certain classes of drugs will be emphasized. The drug classes will include the following: drugs affecting cholinergic, adrenergic, and serotonergic neurotransmissions, general and local anesthetics.
PHAR405	Pharmaceutical Analysis & Biotechnology	2	The course introduces the fundamental principles of modern instrumental methods used in pharmaceutical analysis, including the theoretical background and calculations needed, with their applications for identifying, separating and quantifying drugs. Instrumentation discussed within this course fall into: Spectroscopic

			methods (UV-Visible, IR and Atomic Absorption), chromatographic methods (TLC, HPLC and GC), and electroanalytical methods.
PHAR405 L	Pharmaceutical Analysis & Biotechnology Lab	1	The course provides the students with practical experience of the instrumental methods used in pharmaceutical analysis; including UV-visible spectrophotometry, chromatographic methods (column, TLC and HPLC), polarimetric assays, conductometric titrations and enzymatic methods. The course also presents the underlying principles guiding the instrument operation, instrument components, and the nature of the data generated by the instrument for each method discussed. Moreover, the course covers the basic principles in data analysis, error analysis and calibration.
PHAR410	Drug Dosage Forms I	3	This course introduces the students to the different types and preparation of pharmaceutical dosage forms encountered in pharmacy practice. Solid dosage forms, semisolid dosage forms, and transdermal drug delivery systems will be covered in this course. This course relates the basic scientific background to pharmaceutical practice regarding the dosage forms preparation and quality control.
PHAR420	Physical Pharmacy	3	This course helps in understanding the fundamental physicochemical principles relating to the design of pharmaceutical dosage forms by focusing on solubility, dissolution, distribution, diffusion principles, liquids, colloids, and thermodynamics
PHAR425	Pharmacognosy & Herbal Medicine	3	The course introduces students to natural products and other bioactive molecules from nature, their origin, identification, development, and usage. Furthermore, it identifies the chemical structure, classes and structure-- - activity relationships of natural products. Moreover the course identifies the importance of natural products as major ingredients used within drug manufacturing.
PHAR450	Medicinal Chemistry II	3	This course helps the students to explore the principal classes of prescription drugs including neurologic, anesthetic, analgesic, anti-inflammatory, anti-bacterial, and cardiovascular agents. It will also familiarize the students with the indications of neurologic, anesthetic, analgesic, anti-inflammatory, anti-bacterial, and cardiovascular agents, along with their related pharmacokinetics, pharmacodynamics and pharmacological profile.
PHAR455	Physical Assessment in Pharmacy Practice	3	This course introduces the student to the physical examination process. The student will assist in assessing vital signs and other common physical exams done in inpatient and outpatient settings in order to maximize patients' medical therapies. The course will include laboratory session where students practice use of basic medical devices and vital signs measurement assessment.
PHAR460	Pharmacy Management & Drug Marketing	3	This course emphasizes on effective pharmacy management and marketing strategies. Management and marketing theories are explained thoroughly and their application in the market place. Social, governmental laws and economical differences between cultures have impact on marketing and management theories and their implementations.
PHAR465	Interpretations of Lab Data	3	The course stresses on common laboratory data used to diagnose diseases or to monitor drug therapy effectiveness and toxicity. Students will learn the biochemical significance of each clinical test in relation to diseases and drug treatment.
PHAR470	Drug Dosage Form II	3	This course is the second part of the dosage forms courses which serve to introduce the students to the different types and preparation of pharmaceutical dosage forms encountered in pharmacy practice. Suppositories, liquids, disperse systems, pulmonary delivery systems,

			and sterile dosage forms will be covered in this course. This course relates the basic scientific background to pharmaceutical practice regarding the dosage forms preparation and quality control.
PHAR470 L	Drug Dosage Form II Lab	1	This one-credit course is the practical part of the two series of dosage form courses (PHAR410, PHAR470) that deal with different formulations and drug delivery systems focusing on the rational and the significance of each dosage form. The course will help the students to acquire the skills in preparing different dosage forms in the lab based on guidelines and pharmacopeias.
PHAR480	Pharmacy Practice Experience I (PPEI)	3	This course is part of a series of practice experience courses which introduces students to the philosophy and practice of pharmaceutical care, including patient counseling, monitoring plans, and patient outcomes, with emphasis on the role of the pharmacist as the primary manager of patient drug therapies. Students are also required to spend one month training in the Drug Information Center to practice their role as drug information provider for the public and other healthcare professionals
PHAR500	Community Pharmacy	3	This course aim provides skills in a community pharmacy setting and is designed for the pharmacy student to actively participate in a supervised program of pharmacy practice. Students gain experience by applying their didactic learning in the pharmaceutical sciences in resolving problems that arise during the delivering pharmaceutical services for outpatients. This practice experience emphasizes on the managerial tasks of the pharmacist ranging from medication selection and order, proper handling and dispensing of controlled substances, appropriate filling and maintaining patient profiles, and patient
PHAR505	Pharmacology I	3	This course introduces the underlying principles of pharmacology and provides an overview of the physiological, biochemical, and anatomical foundations for the interaction of drugs and chemicals with biological systems. The course includes a systematic study of the effects of drugs on different organ systems and disease processes, the mechanisms by which drugs produce their therapeutic and toxic effects, and the factors influencing their absorption, distribution and biological actions.
PHAR510	Biopharmaceutics & Pharmacokinetics	3	This course introduces the students to the concepts of biopharmaceutics, and pharmacokinetics. The processes of absorption, distribution, metabolism, and excretion of drugs are discussed with the purpose of improving the evaluation of drug delivery systems and the therapeutic management of patients. The relationship among physiology, pharmacokinetics and pharmacodynamics is explored to help understand clinical variability to drug response. The student will be able to understand the concepts, origins, calculations, applications and limitations of kinetic concepts.
PHAR515	Therapeutics I (Neurology/Psychiatry)	3	This course is the first of a series of 7 courses of therapeutics that focus of identifies the pathophysiology, etiology, risk factors and signs and symptoms of most common neurologic and psychiatric disorders. It provides the nonpharmacologic and pharmacologic treatment options according to evidence-based guidelines. It introduces the students to the application of pharmacologic and pharmacokinetic parameters, and description of factors that would guide the selection of the best treatment options. It also familiarizes the students with how to evaluate the treatment therapy for psychiatric and neurologic diseases through highlighting on the monitoring parameters and

			important medications' adverse effects. The student will apply problem-solving strategies to patient-oriented cases and will develop patient treatment plan.
PHAR520	Therapeutics II (Pulmonary/Rheumatology)	3	This course identifies the pathophysiology, etiology, risk factors and signs and symptoms of most common Pulmonary/Rheumatology Disease. It provides the non-pharmacologic and pharmacologic treatment options according to evidence-based guidelines. It introduces the students to the application of pharmacologic and pharmacokinetic parameters, and description of factors that would guide the selection of the best treatment options. It also familiarizes the students with how to evaluate the treatment therapy for Pulmonary/Rheumatology Diseases through highlighting on the monitoring parameters and important medications adverse effects. The student will apply problem-solving strategies to patient-oriented cases and will develop patient treatment plan.
PHAR550	Senior Project	3	The senior project is a core component of the curriculum, and must be performed to fulfil the graduation requirements. In this project, a group of 3-5 students, with the help of a supervisor, develop an idea of clinical research as well as a data collection form. Then, students collect, analyze, and summarize the project data. After supervisor approval, the students write a draft of their work and submit it for discussion in the school. The final copy of the research is produced after applying the recommended corrections.
PHAR555	Pharmacology II	3	This course introduces the underlying principles of pharmacology and provides an overview of the physiological, biochemical, and anatomical foundations for the interaction of drugs and chemicals with biological systems. The course includes a systematic study of the effects of drugs on different organ systems and disease processes, the mechanisms by which drugs produce their therapeutic and toxic effects, and the factors influencing their absorption, distribution and biological actions.
PHAR560	Pharmacogenomics	3	This course is intended to provide 4th year pharmacy students , after a general background in Genetics, Cell and Molecular Biology, the general principles of pharmacogenomics of drug metabolism and its potential applications to tailor drug therapy, as well as the applications to patients care in few therapeutic areas.
PHAR565	Therapeutics III	3	This course is the third of a series of 7 courses of therapeutics that focus on diseases of various organ systems divided into modules. Within each module drug treatment of selected diseases is reviewed. An emphasis is placed on assessment, indications for drug therapy, selection of rational and safe drug therapy, identification of alternatives to drug therapy and patient monitoring. The student will apply problem-solving strategies to patient cases and develop patient care plans.
PHAR570	Therapeutics IV	3	This course identifies the pathophysiology, etiology, risk factors and signs and symptoms of most common endocrinologic and women's health related disorders. It provides STUDENT the non-pharmacologic and pharmacologic treatment options according to evidence-based guidelines. It introduces the students to the application of pharmacologic and pharmacokinetic parameters, and description of factors that would guide the selection of the best treatment options. It also familiarizes the students with how to evaluate the treatment therapy for endocrinologic and women's health related disorders through highlighting on the monitoring parameters and important

			medications adverse effects. The student will apply problem-solving strategies to patient-oriented cases and will develop patient treatment plan.
PHAR575	Pharmacology III	3	This course introduces the underlying principles of pharmacology and provides an overview of the physiological, biochemical, and anatomical foundations for the interaction of drugs and chemicals with biological systems. The course includes a systematic study of the effects of drugs on different organ systems and disease processes, the mechanisms by which drugs produce their therapeutic and toxic effects, and the factors influencing their absorption, distribution and biological actions
PHAR580	Pharmacy Practice Experience II (PPE II)	3	This course is part of a series of practice experience courses which introduces students to the philosophy and practice of pharmaceutical care, including patient counseling, monitoring plans, and patient outcomes, with emphasis on the role of the pharmacist as the primary manager of patient drug therapies. Students are also required to spend one month training in the Drug Information Center to practice their role as drug information provider for the public and other healthcare professionals
PHAR585	Pharmacy Seminar	3	This course involves meticulous selection of up-dated research and review articles that are pertinent to pharmacotherapeutics course topics that students are concurrently taking. Students are responsible for evaluating and critiquing original publications and review articles focusing on the weaknesses and strengths of the article and appropriately extrapolating the results to the proper patient population by evaluating the internal and the external validity of the article reviewed.
PHAR590	Clinical Immunology	3	The course aims to make students familiar with immune system structure, functions and immune system related diseases. The course contents include: types of immunity, immune cells and organs, humoral and cell-mediated immunity, hypersensitivity, autoimmune diseases, tumor immunology, transplantation immunology, and immunodeficiency disorders. The course will focus on the development of immune system and how it attacks pathogens but does not attack human cells as well as on human diseases which resulted either from abnormal immune responses such as hypersensitivity and autoimmunity or deficient immune responses as in immunodeficiency diseases.
PHAR606	Non Prescription Drugs	3	The purpose of this course is to teach the students a consistent and systematic approach used to meet the drug-related needs for patients with self-care concern and to promote the value of their guidance in selecting and monitoring treatment with nonprescription drug. This course focuses on increasing a patient awareness of the importance of consulting a pharmacist, not only when considering a drug for the first time but also when making subsequent purchases. Emphasis is placed on product selection, herbal medicines, vitamins, dietary supplements and appropriate patient consultation for each. Medical supplies and equipment's pertaining to pharmacy practice are also discussed.
PHAR610	Toxicology	3	This course presents the basic principles of toxicology including areas of toxicology, factors affecting toxicity in humans and disposition of toxins in human body. The course also provides students with knowledge about diagnostic measures and clinical management (i.e. stabilization of vital function and specific antidotal measures) of

			poisonings. Poisoning with common groups of chemicals (pesticides, metals, solvents and common drugs) will be presented including mechanism of toxicity, sources of exposure, major clinical manifestation and methods of treatment.
PHAR615	Therapeutics V	3	This course identifies the pathophysiology, etiology, risk factors and signs and symptoms of Infectious Diseases. It provides the non-pharmacologic and pharmacologic treatment options according to evidence-based guidelines. It introduces the students to the application of pharmacologic and pharmacokinetic parameters, and description of factors that would guide the selection of the best antimicrobial treatment options. It also familiarizes the students with how to evaluate the treatment therapy for Infectious Diseases. through highlighting on the monitoring parameters and important medications adverse effects. The student will apply problem-solving strategies to patient-oriented cases and will develop patient treatment plan.
PHAR620	Therapeutics VI	3	This course is the sixth of a series of 7 courses of therapeutics that focus in pathophysiology of the most common cancer diseases, risk factors, prevention, and treatment approaches based on updated guidelines. An emphasis is placed on assessment, indications for drug therapy, selection of rational and safe Chemotherapy, identification of alternatives to drug therapy and patient monitoring. The student will apply problem-solving strategies to patient cases and develop patient care plans.
PHAR625	Pharmacoeconomics	3	This course introduces basic concepts in accounting useful to pharmacy practice as well as basic micro and macro-economic theories. Topics will focus on supply and demand analysis, inflation, balance sheets, income statement and other concepts necessary to achieve optimal financial management and meet national drug policies. This course teaches the students to evaluate health economic and clinical outcome researches and to apply pharmacoeconomic analysis in clinical practice.
PHAR630	Therapeutics VII	3	This course identifies the pathophysiology, etiology, risk factors and signs and symptoms of selected diseases. It provides the non-pharmacologic and pharmacologic treatment options according to evidence-based guidelines. It introduces the students to the application of pharmacologic and pharmacokinetic parameters, and description of factors that would guide the selection of the best treatment options. It also familiarizes the students with how to evaluate the treatment therapy for selected diseases through highlighting on the monitoring parameters and important medications adverse effects. The student will apply problem-solving strategies to patient-oriented cases and will develop patient treatment plan.
PHAR640	Clinical Pharmacy	3	The aims of this course are to demonstrate, through learning environment, how to assess individual patient and population drug-related needs and develop a plan to meet those needs. The student will successfully perform a comprehensive patient assessment while being patient-centered and empathetic by identifying drug therapy problems and evaluating drugs for indication, effectiveness, safety, and convenience. The student will be able to develop individualized and clinically appropriate care plans for a patient and appropriately educate patients on their drug therapy and assess for patient understanding through effective communication

PHAR650	Pharmacy Dispensing Lab	2	This course focuses on the clinical aspect of pharmacy as well as its practices. Each student will be working individually from his pharmacy station in the dispensing lab. Some students will be placed in pharmacy settings created at the University while others will play the role of patients. Dispensing practices, counseling and checking for drug interactions and other pharmacy practices will be applied in this course so that the student will be evaluated for clinical and practical skills upon graduation. A counseling session will take place at the end of each laboratory session.
PHAR656	Pharmacy Law	1	This class provides an introduction to the scope and authority of programs, which relate to the legal and ethical practice of pharmacy. The focus is on a conceptual understanding of regulatory agencies and how pharmacy practically and ethically interacts with them.
General Education Requirements			
Code	Title	Credit	Course Description
ARAB200	Arabic Language and Literature	3	This course is a comprehensive review of Arabic Grammar, Syntax, major literature and poetry styles, formal and business letters.
COMM105	Essentials of Mass Communications	3	The course is designed to improve the communication skills of the student. Topics covered are: group communication, organizational communication, cross culture and leadership communication and communication ethics. this course enhances the public speaking and presentation skills
CSCI100	Basic Computing Skills	3	Learn basic computer skills with topics including hardware, application and system software. The course aims at making students competent in computer-related skills. It is supposed to develop basic computer knowledge by providing an overview of the computer hardware and basic components of the computer such as inputs, outputs and storages as well as the differences between the operating systems and application programs. There is an interest in this course in making the students competent in Internet and its uses too. This course also provides a practice on common software applications such as MS-Word, MS-PowerPoint and internet/E-mail technology using MS-Outlook.
CSCI200	Introduction to Computers	3	Learn advanced computer concepts with topics including digital security, networking, communications, operating systems, database management, programming languages, information systems development and career opportunities in computer field and computer trends. This course also provides a hands-on practice on common software applications such as, spreadsheet applications (MS-Excel), Database applications (MS-Access) and simple view of programming language.
CULT150	National Culture	3	This course discusses several topics such as citizenship, Islam, Yemen before Islam, Yemen during Islam, challenges facing Yemen, and unity.
CULT200	Introduction to Arab - Islamic Civilization	3	The aim and purpose of this course is to investigate Arab-Islamic civilization by focusing on two major aspects, namely the intellectual and cultural aspects by calling attention to the achievements and contributions made by the Arabs and Islam to the civilization of East and West.
ENGL150	English Composition & Rhetoric	3	ENGL150 is mainly about how to write paragraphs. In addition to capitalization rules, punctuation rules and subject-verb agreements, students in this course learn how to write different kinds of sentences

			correctly. They learn three types of sentences: simple sentences, compound sentences and complex sentences. Then they learn how sentences are combined to make paragraphs. They effectively practice writing topic sentences, supporting sentences and concluding sentences. Students, on the other hand, become aware of avoiding grave sentence errors such as fragments, run-ons and comma splices. ENGL150 is the major base for all writing courses needed for a university student. The writing courses which come after ENGL150 at the LIU are ENGL200, ENGL250 and ENGL350 and for all of them, it is crucial to know how to structure a complete sentence correctly.
ENGL200	Advanced English Composition & Rhetoric	3	ENGL200 is mainly about how to write essays. It comes directly after ENGL150 English Composition & Rhetoric which teaches students how to write paragraphs. Generally speaking, students who know how to write paragraphs well find this course a piece of cake, for an essay is a combination of paragraphs. As students in ENGL150 know what constitutes a paragraph, in ENGL200 they learn what constitutes an essay. They learn how to write different kinds of essays by practicing writing essays on a weekly basis. After students write essays in class, the teacher corrects those essays and gives them back to the students to re-write them without any errors. This way, students are going to improve their writing greatly. As ENGL150 is a prerequisite for ENGL200, ENGL200 is an inevitable requirement for ENGL250 Technical Writing and ENGL350 English Communication Skills. In other words, ENGL150, ENGL200 and ENGL250/ENGL350 have to be learned respectively.
ENGL207	English Reading skill	3	ENGL207 Basic Reading Skills is intended for students who need improvement in basic reading skills. It aims to help students develop basic reading skills, such as previewing and making predictions, scanning, skimming, making inferences, building powerful vocabulary and finding main ideas. Students are supposed to learn five units. Each unit is accompanied by vocabulary and comprehension exercises for consolidating the skills and for testing comprehension. The last part of the textbook includes three units and each unit has passages followed by practical multiple-choice questions. To make students enjoy reading, this course attempts to familiarize students with some basic speaking skills related to the reading topics.
ENGL250	Technical writing	3	This intermediate writing course is designed to teach students the academic skills needed to succeed in college and university content courses. It basically focuses on how to use the APA (American Psychological Association) and MLA (Modern Language Association) writing styles to do research. Students will have opportunities to effectively use these two international writing styles in paraphrasing paragraphs and summarizing articles in forms of paragraphs. Further, this course clarifies how to take short and long quotations according to the APA and MLA rules. Using the MLA and APA rules, students learn how to write in-text citations, bibliographies, works-cited and references All the LIU students, especially those who are interested in doing research papers, take this practical writing course to know how to paraphrase, summarize and quote something without committing plagiarism.
ENGL350	English Communication Skills	3	ENGL350 is a writing-speaking course which has two different complementary categories. The first category is the written skills based on particular writing techniques and the language structure.

			<p>Students learn the writing processes at work. They learn how to write memos, faxes, emails, business letters, business proposals, effective short reports, resumes and job application letters. The second category is the oral category which is based upon listening and speaking skills. The course requires planning, organizing, illustrating and delivering individual and team presentations of different types and purposes using the relevant terminologies and proper visual aids. The presentations necessitate pre-prepared written documentations. The oral presentations focus on three different issues: speaking with confidence, analyzing the audience, and organizing a speech. The assessments should meet the requirements of the course and the students have to reach an acceptable spoken-written level to pass the course.</p>
HUMN210	Human Rights – Global Perspective	3	<p>This course will consider the development of human rights through the exploration of the problems of achieving human rights in developing societies. The course will focus its discussion on problems that occur in developing societies, diverse in their structures, resources, history, and aspirations. The courses aim will be to acquire insights and understanding of social, economic, cultural, legal, and political processes by which development and human rights advance or retract in various societies.</p>
POLS440	The Arab Israeli Conflict	3	<p>This course explores the causes, development, and implications of the Arab-Israeli conflict from its inception in the late 19th century until the present day.</p>



**Course Specification of
 General Biology**

I. Course Identification and General Information:						
1	Course Title:	General Biology				
2	Course Code & Number:	BIOL200				
3	Credit hours:	C.H			TOTAL	
		Theory	Seminars, exercises	Practical		Field training
		3		-		
4	Study level/ semester at which this course is offered:	First Year				
5	Pre –requisite (if any):	ENGL 100; BIOL 100; BIOL 150.				
6	Co –requisite (if any):	BIOL 200L; ENGL 150				
8	Program (s) in which the course is offered:	Bachelor degree of clinical Pharmacy				
9	Language of teaching the course:	English				
10	Location of teaching the course:	LIU Sana'a				
11	Prepared by:	Dr. Nawal Ahmed Mohammad Al-Henhena				
12	Reviewed by:	Dr. Arwa Mohammed Othman				
13	Date of approval:					
II. Course Description:						
This course aim to provide students with basic information of living system organizations, energy transfer and continuity of life. The topics include: biological history; structure and functions of cells and cellular organelles; transport across cell membrane; cell division; general biochemistry; and DNA structure. This course has both a lecture and laboratory component.						

III. Course Intended Learning Outcomes (CILOs):	
(A) Knowledge and Understanding:	
Alignment of CILOs (Course Intended Learning Outcomes) to PILOs (Program Intended Learning Outcomes)	
Knowledge and Understanding PILOs	Knowledge and Understanding CILOs
After completing this program, graduates would be able to:	After completing this course, students would be able to:
A1. Review the knowledge facts and principles of both basic and medical sciences.	a1. Identify the cell compartments and their functions and energy flow a2. Illustrate the organic composition of cell and Macromolecules structure and function a3. Explain the transport system a4. Describe the principles of DNA structure, functions, protein synthesis, cell cycle and cell division a5. Identify the main aspects of genetics and Mendelian law of hereditary.
(B) Intellectual Skills:	
Alignment of CILOs (Course Intended Learning Outcomes) to PILOs (Program Intended Learning Outcomes)	
Intellectual Skills PILOs	Intellectual Skills CILOs
After completing this program, graduates would be able to:	After completing this course, students would be able to:
Not applicable	
(C) Professional and Practical Skills	
Alignment of CILOs (Course Intended Learning Outcomes) to PILOs (Program Intended Learning Outcomes)	
Professional and Practical Skills PILOs	Professional and Practical Skills CILOs
After completing this program, graduates would be able to:	After completing this course, students would be able to:
Not applicable	
(D) Transferable (General) Skills:	
Alignment of CILOs (Course Intended Learning Outcomes) to PILOs (Program Intended Learning Outcomes)	
Transferable (General) Skills PILOs	Transferable (General) Skills CILOs
After completing this program, graduates would be able to:	After completing this course, students would be able to:

Not applicable	

IV. Alignment of CILOs to Teaching and Assessment Strategies		
(A) Alignment Course Intended Learning Outcomes of Knowledge and Understanding to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
a1. Describe the main characteristics of life and organic compositions of living organisms.	<ul style="list-style-type: none"> - Lectures - Discussion - Presentations - Brain storming - Explaining using figures, Data show, Videos 	<ul style="list-style-type: none"> - Quizzes - Test - Midterm exam - Final exam - Team-work assignment
a2. Identify the Chemistry of Macromolecules and cell compartments and their functions	<ul style="list-style-type: none"> - Lectures - Discussion - Presentations - Brain storming - Explaining using figures, Data show, Videos 	<ul style="list-style-type: none"> - Quizzes - Test - Midterm exam - Final exam - Team-work assignment
a3. Recognize the cell membrane structure, cellular compartments, and transport system.	<ul style="list-style-type: none"> - Lectures - Discussion - Presentations - Brain storming - Explaining using figures, Data show, Videos 	<ul style="list-style-type: none"> - Quizzes - Test - Midterm exam - Final exam - Team-work assignment
a4. Explain the Biological work, Energy, energy law and transfer, ATP, energy and metabolism, and enzymes.	<ul style="list-style-type: none"> - Lectures - Discussion - Presentations - Brain storming - Explaining using figures, Data show, Videos 	<ul style="list-style-type: none"> - Quizzes - Test - Midterm exam - Final exam - Team-work assignment
a5. Identify the basics of cell molecular structure, DNA, Chromosomes, central dogma, principles of hereditary and Mendelian Genetics.	<ul style="list-style-type: none"> - Lectures - Discussion - Presentations - Brain storming - Explaining using figures, Data show, Videos 	<ul style="list-style-type: none"> - Quizzes - Test - Midterm exam - Final exam - Team-work assignment

(B) Alignment Course Intended Learning Outcomes of Intellectual Skills to Teaching Strategies and Assessment Strategies:

Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
Not applicable	-	-
	-	-
	-	-

(C) Alignment Course Intended Learning Outcomes of Professional and Practical Skills to Teaching Strategies and Assessment Strategies:

Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
Not applicable	-	-
	-	-
	-	-

(D) Alignment Course Intended Learning Outcomes of Transferable Skills to Teaching Strategies and Assessment Strategies:

Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
Not applicable	-	-
	-	-
	-	-

V. Course Content:

A – Theoretical Aspect:

Order	Units/Topics List	Learning Outcomes	Sub Topics List	Number of Weeks	Contact hours
1	Introduction A review of Life	a1	- Characteristics of life and biological organizations -The basic unifying concept of biology and energy of life.	1	3
2	The Chemistry of Life: Organic Compounds	a1	- Organic atoms and molecules - Identify biological molecules	1	3
3	Chemistry of Biomolecules	a2	- Carbohydrates	1/2	1.5
4	Chemistry of Biomolecules	a2	- Lipids	1	3
5	Chemistry of Biomolecules	a2	- Proteins	1	3
6	Chemistry of Biomolecules	a2	- Nucleic acids	1/2	1.5

7	Organization of the Cell	a2	- Cell compartments (cytoplasm, organelles) structures and functions	1	3
8	Organization of the Cell	a3	- Cell membrane and cytoskeleton	1	3
9	Transport system across cell membrane	a3	- active transport - Passive transport - mediate transport	1	3
10	Bioenergetics	a4	- energy transfer - energy coupling - metabolism and energy - how ATP is made up	1	3
11	Chromosomes, Mitosis and Meiosis	a5	- Eukaryotic chromosomes - Cell cycle and mitosis - Meiosis and reproduction	2	3
12	The Basic Principles of Heredity	a5	- Mendelian principles of hereditary.	1/2	1.5
13	DNA: The Carrier of Genetic Information	a5	- DNA as hereditary material - Basic structure of DNA - Principles of central dogma (Replication, transcription and translation)	1	3
14	Basic structure of animal body	a5	- tissue system - organs and organ system	1/2	1.5
	Final Exam	a1,a2,a3,a4,a5	Comprehensive	13-14	
Number of Weeks /and Units Per Semester				14	36

B - Practical Aspect: (if any)

Order	Tasks/ Experiments	Number of Weeks	contact hours	Learning Outcomes
1				
Number of Weeks /and Units Per Semester				

VI. Teaching strategies of the course:

1. Lectures
2. Discussion
3. Presentations
4. Brain storming

5. Explaining using figures, Data show, Videos

VII. Assignments:

No	Assignments	Aligned CILOs (symbols)	Week Due	Mark
1				

VIII. Schedule of Assessment Tasks for Students During the Semester:

No.	Assessment Method	Week Due	Mark	Proportion of Final Assessment	Aligned Course Learning Outcomes
1	Test I	3-4	10	10%	a1,a2
2	Midterm	7-8	20	20 %	a3,a4
3	Test II	10	10	10 %	a5
4	Case Presentation	12	10	10 %	
5	Attendance	All	10	10 %	
	Final Exam	13-14	40	40 %	a1,a2,a3,a4,a5

IX. Learning Resources:

Author, (Year), Book Title, Edition, Publisher, Country of publishing

1- Required Textbook(s) (maximum two).

1. Biology; 9th Edition – Eldra Solomon, Linda Berg and Diana W. Martin. Brookscole, Thompson Learning, USA
2. Biology; 7th Edition (2006) – Neil A. Campbell and Jane B. Reece. Benjamin Cummings, Pearson Education, USA (www.aw-bc.com).

2- Essential References.

2. Biology; 7th Edition (2006) – Neil A. Campbell and Jane B. Reece. Benjamin Cummings, Pearson Education, USA (www.aw-bc.com).

3- Electronic Materials and Web Sites etc.

(www.brookscole.com).

X. Course Policies:

- | | |
|----------|--|
| 1 | <p>Class Attendance:</p> <ol style="list-style-type: none"> 1. Attendance in all classes is required. There are no exceptions to this policy. 2. Roll will be called in the very beginning of each class. If you arrive after roll has been called, you may be marked as absent. 3. In any regular semester or summer term, students may miss no more than the equivalent of one third of class sessions scheduled. Students who exceed the above limits are automatically given an (AW) grade in the course by the UMS, and consequently not be allowed to attend class any longer. |
|----------|--|

2	<p>Tardy:</p> <ol style="list-style-type: none"> 1. All students are expected to conduct themselves in a professional manner. Unprofessional behavior such as, but not limited to, repeated disruption of class (including habitually walking in after class has started), sleeping in class, doing other course work in class, reading a newspaper in class, a ringing cell phone, frequent side conversations with other students and/or rudeness toward any person will be considered a serious violation of this standard and will lower your grade accordingly. Please be sure to turn off your cell phone before the start of class. 2. Attention to detail entails being prepared for class. This would include, but is not limited to; having a pencil/pen, note pad, calculator; reading and following the course syllabus, etc. All students are expected to conduct themselves in a professional manner. Unprofessional behavior such as, but not limited to, repeated disruption of class (including habitually walking in after class has started), sleeping in class, doing other course work in class, reading a newspaper in class, a ringing cell phone, frequent side conversations with other students and/or rudeness toward any person will be considered a serious violation of this standard and will lower your grade accordingly. Please be sure to turn off your cell phone before the start of class. 3. Attention to detail entails being prepared for class. This would include, but is not limited to; having a pencil/pen, note pad, calculator; reading and following the course syllabus, etc.
3	<p>Exam Attendance/Punctuality: As per university council decision, a student is eligible for a Quizzes, Midterm or Final examination make-up if and only if he/she had the following incidents:</p> <ol style="list-style-type: none"> 1. Sickness; proved by hospitalization report; that is; a discharge summary is necessary. 2. Death in the family proved by a death certificate or equivalent and personal identification. 3. Accidents proved by an expert report. 4. Military/Official engagement.
4	<p>Assignments & Projects: Homework should be clearly presented i.e.:</p> <ol style="list-style-type: none"> 1. It should be written on A4 paper. 2. It should include a title page (Course Name, Semester, Date, Name...). 3. Your instructor will ask you to submit your homework online or as a hard copy. In the latter case, it should be stapled together.
5	<p>Cheating:</p> <ul style="list-style-type: none"> • Cheating is strictly prohibited behavior. • University regulations will be pursued and enforced on any cheating student.
6	<p>Plagiarism:</p> <ul style="list-style-type: none"> • Plagiarism is defined as “copying or stealing someone else’s words or ideas and claiming or presenting them as if they were your own.” • University regulations will be pursued and enforced on any plagiarism attempt.
7	<p>Other policies: Please refer to the university policy.</p>

**Course Specification
 Of General Biology**

I. - Information about Faculty Member Responsible for the Course:							
Name of Faculty Member	Dr. Nawal Ahmed Mohammad Al-Henhena	Office Hours					
Location & Telephone No.	776195316	SAT	SUN	MON	TUE	WED	THU
E-mail	nawalahmed811@gmail.com	√				√	
II. Course Identification and General Information:							
1	Course Title:	General Biology					
2	Course Number & Code:	BIOL200					
3	Credit hours:	C.H				Total	
		Theory	Seminars, exercises.	Practical	Field training		
		3					3
4	Study level/year at which this course is offered:	First Year					
5	Pre –requisite (if any):	ENGL 100; BIOL 100; BIOL 150.					
6	Co –requisite (if any):	BIOL 200L; ENGL 150					
7	Program (s) in which the course is offered	Bachelor degree of clinical Pharmacy					
8	Language of teaching the course:	English					
9	System of study:	Credits Hours System					
10	Mode of delivery:	Lectures					
11	Location of teaching the course:	LIU Sana'a					

III. Course Description:	
This course aim to provide students with basic information of living system organizations, energy transfer and continuity of life. The topics include: biological history; structure and functions of cells and cellular organelles; transport across cell membrane; cell division; general biochemistry; and DNA structure. This course has both a lecture and laboratory component.	

IV. Intended learning outcomes (ILOs) of the course:**Upon successful completion of the course, students would be able to:**

1. Describe the main characteristics of life and organic compositions of living organisms.
2. Identify the Chemistry of Macromolecules and cell compartments and their functions
3. Recognize the cell membrane structure, cellular compartments, and transport system.
4. Explain the Biological work, Energy, energy law and transfer, ATP, energy and metabolism, and enzymes.
5. Identify the basics of cell molecular structure, DNA, Chromosomes, central dogma, principles of hereditary and Mendelian Genetics.

V. Course Content:**Distribution of Semester Weekly Plan Of course Topics/Items and Activities.****A – Theoretical Aspect:**

Order	Topics List	Week Due	Contact Hours
1	Introduction <ul style="list-style-type: none"> • A review of Life • Characteristics of life and biological organizations • The basic unifying concept of biology and energy of life. 	1	3
2	The Chemistry of Life: Organic Compounds <ul style="list-style-type: none"> • Organic atoms and molecules • Identify biological molecules 	1	3
3	Chemistry of Biomolecules - Carbohydrates	1/2	1.5
4	Chemistry of Biomolecules Lipids	1	3
5	Chemistry of Biomolecules Proteins	1	3
6	Chemistry of Biomolecules Nucleic acids	1/2	1.5
7	Organization of the Cell - Cell compartments (cytoplasm, organelles) structures and functions	1	3
8	Organization of the Cell <ul style="list-style-type: none"> • Cell membrane and cytoskeleton 	1	3
9	Transport system across cell membrane <ul style="list-style-type: none"> • active transport • Passive transport • mediate transport 	1	3
10	Bioenergetics <ul style="list-style-type: none"> • energy transfer 	1	3

	<ul style="list-style-type: none"> energy coupling metabolism and energy how ATP is made up 		
11	Chromosomes, Mitosis and Meiosis <ul style="list-style-type: none"> Eukaryotic chromosomes Cell cycle and mitosis Meiosis and reproduction 	2	3
12	The Basic Principles of Heredity Mendelian principles of hereditary.	1/2	1.5
13	DNA: The Carrier of Genetic Information <ul style="list-style-type: none"> DNA as hereditary material Basic structure of DNA Principles of central dogma (Replication, transcription and translation) 	1	3
14	Basic structure of animal body <ul style="list-style-type: none"> tissue system organs and organ system 	1/2	1.5
	Final Exam	13-14	
Number of Weeks /and Units Per Semester		14	36
B – Practical Aspect: (if any)			
Order	Topics List	Week Due	Contact Hours
1			
Number of Weeks /and Units Per Semester			
VI. Teaching strategies of the course:			
1. Lectures 2. Discussion 3. Presentations 4. Brain storming 5. Explaining using figures, Data show, Videos			
VII. Assignments:			
No	Assignments	Week Due	Mark
1			

VIII. Schedule of Assessment Tasks for Students During the Semester:				
Assessment	Type of Assessment Tasks	Week Due	Mark	Proportion of Final Assessment
1	Test I	3-4	10	10%
2	Midterm	7-8	20	20 %
3	Test II	10	10	10 %
4	Case Presentation	12	10	10 %
5	Attendance	All	10	10 %
6	Final Exam	13-14	40	40 %

IX. Learning Resources:	
Author, (Year), Book Title, Edition, Publisher, Country of publishing	
1- Required Textbook(s) (maximum two).	
<ol style="list-style-type: none"> 1. Biology; 9th Edition – Eldra Solomon, Linda Berg and Diana W. Martin. Brookscole, Thompson Learning, USA 2. Biology; 7th Edition (2006) – Neil A. Campbell and Jane B. Reece. Benjamin Cummings, Pearson Education, USA (www.aw-bc.com). 	
2- Essential References.	
Biology; 7th Edition (2006) – Neil A. Campbell and Jane B. Reece. Benjamin Cummings, Pearson Education, USA (www.aw-bc.com).	
3- Electronic Materials and Web Sites <i>etc.</i>	
www.brookscole.com .	

X. Course Policies:	
Unless otherwise stated, the normal course administration policies and rules of the School of Business apply.	
1	Class Attendance: <ol style="list-style-type: none"> 1. Attendance in all classes is required. There are no exceptions to this policy. 2. Roll will be called in the very beginning of each class. If you arrive after roll has been called, you may be marked as absent. 3. In any regular semester or summer term, students may miss no more than the equivalent of one third of class sessions scheduled. Students who exceed the above limits are automatically given an (AW) grade in the course by the UMS, and consequently not be allowed to attend class any longer.
2	Tardy: <ol style="list-style-type: none"> 1. All students are expected to conduct themselves in a professional manner. Unprofessional behavior such as, but not limited to, repeated disruption of class (including habitually walking in after class has started), sleeping in class, doing other course work in class, reading a newspaper in class, a ringing cell phone, frequent side conversations with other

	<p>students and/or rudeness toward any person will be considered a serious violation of this standard and will lower your grade accordingly. Please be sure to turn off your cell phone before the start of class.</p> <p>2. Attention to detail entails being prepared for class. This would include, but is not limited to; having a pencil/pen, note pad, calculator; reading and following the course syllabus, etc. All students are expected to conduct themselves in a professional manner. Unprofessional behavior such as, but not limited to, repeated disruption of class (including habitually walking in after class has started), sleeping in class, doing other course work in class, reading a newspaper in class, a ringing cell phone, frequent side conversations with other students and/or rudeness toward any person will be considered a serious violation of this standard and will lower your grade accordingly. Please be sure to turn off your cell phone before the start of class.</p> <p>3. Attention to detail entails being prepared for class. This would include, but is not limited to; having a pencil/pen, note pad, calculator; reading and following the course syllabus, etc.</p>
3	<p>Exam Attendance/Punctuality: As per university council decision, a student is eligible for a Quizzes, Midterm or Final examination make-up if and only if he/she had the following incidents:</p> <ol style="list-style-type: none"> 1. Sickness; proved by hospitalization report; that is; a discharge summary is necessary. 2. Death in the family proved by a death certificate or equivalent and personal identification. 3. Accidents proved by an expert report. 4. Military/Official engagement.
4	<p>Assignments & Projects: Homework should be clearly presented i.e.:</p> <ol style="list-style-type: none"> 1. It should be written on A4 paper. 2. It should include a title page (Course Name, Semester, Date, Name...). 3. Your instructor will ask you to submit your homework online or as a hard copy. In the latter case, it should be stapled together.
5	<p>Cheating:</p> <ul style="list-style-type: none"> • Cheating is strictly prohibited behavior. • University regulations will be pursued and enforced on any cheating student.
6	<p>Plagiarism:</p> <ul style="list-style-type: none"> • Plagiarism is defined as “copying or stealing someone else’s words or ideas and claiming or presenting them as if they were your own.” • University regulations will be pursued and enforced on any plagiarism attempt.
7	<p>Other policies: Please refer to the university policy.</p>

Lebanese International University
The School of Pharmacy and Medical Sciences
Department: CLINICAL PHARMACY
Title of the Program: Bachelor of Clinical Pharmacy



Course Specification of
PHAR-BIOL385-Microbiology

I. Course Identification and General Information:						
1	Course Title:	Microbiology				
2	Course Code & Number:	BIOL385				
3	Credit hours:	C.H				TOTAL
		Theory	Seminars, exercises	Practical	Field training	
		3	-	1	-	
4	Study level/ semester at which this course is offered:	Summer/Second				
5	Pre –requisite (if any):	BIOL200				
6	Co –requisite (if any):	BIOL385 L				
8	Program (s) in which the course is offered:	Bachelor of clinical pharmacy				
9	Language of teaching the course:	English				
10	Location of teaching the course:	LIU Sana'a				
11	Prepared by:	Dr. Ahlam Abdulwahab S. Saeed				
12	Reviewed by:	Dr.Arwa Athman				
13	Date of approval:					
II. Course Description:						
<p>Microbiology course involves lectures as well as practical sessions in Microbiology laboratory. This course will give students an overview of Bacteria, Fungi, Parasites, Viruses and infection as well as laboratory skills in preparing and using microbial cultures. The course demonstrates history, classification, identification, structure, growth, metabolism, medical, importance of prokaryotic microorganisms, eukaryotic microorganisms, and viruses. Through this course the students will be able to gain knowledge about major species of pathogenic microbes, their diseases and controlling disease spread.</p>						

III. Course Intended Learning Outcomes (CILOs):	
(A) Knowledge and Understanding:	
Alignment of CILOs (Course Intended Learning Outcomes) to PILOs (Program Intended Learning Outcomes)	
Knowledge and Understanding PILOs	Knowledge and Understanding CILOs
After completing this program, graduates would be able to:	After completing this course, students would be able to:
A1. Review the knowledge facts and principles of both basic and medical sciences.	a1. Characterize microbial morphology, structure and classification of different microorganisms. a2- Define the basic aspects of microbiology; learn types of bacteriological culture media (preparation, sterilization techniques etc.) a3- Identify and discuss the importance of microorganisms and their roles in underlying basis of diseases in humans and animals
A3. Discuss disease pathophysiology and patient's clinical presentation.	a4. Identify the natural habitat, source of infection and mode of transmission of the different species of pathogens and their treatments.
(B) Intellectual Skills:	
Alignment of CILOs (Course Intended Learning Outcomes) to PILOs (Program Intended Learning Outcomes)	
Intellectual Skills PILOs	Intellectual Skills CILOs
After completing this program, graduates would be able to:	After completing this course, students would be able to:
(C) Professional and Practical Skills	
Alignment of CILOs (Course Intended Learning Outcomes) to PILOs (Program Intended Learning Outcomes)	
Professional and Practical Skills PILOs	Professional and Practical Skills CILOs
After completing this program, graduates would be able to:	After completing this course, students would be able to:

(D) Transferable (General) Skills:	
Alignment of CILOs (Course Intended Learning Outcomes) to PILOs (Program Intended Learning Outcomes)	
Transferable (General) Skills PILOs	Transferable (General) Skills CILOs
After completing this program, graduates would be able to:	After completing this course, students would be able to:
D2. Develop presentation, promotion, marketing, business administration, numeric and computation skills.	d1. Perform internet and other searches to develop information technology skills and inspect how to retrieve information from a variety of sources.

IV. Alignment of CILOs to Teaching and Assessment Strategies

(A) Alignment Course Intended Learning Outcomes of Knowledge and Understanding to Teaching Strategies and Assessment Strategies:

Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
a1. Characterize microbial morphology, structure and classification of different microorganisms (bacteria, fungi, parasites, viruses etc.)	- Lectures	- [x]Assignments, Quizzes', homework - [x]Midterm and final exams
a2. Identify the natural habitat, source of infection and mode of transmission of the different species of pathogens and their treatments. (differentiate in biochemical characteristics between microbes)	- Lectures	- [x]Assignments, Quizzes', homework - [x]Midterm and final exams

(B) Alignment Course Intended Learning Outcomes of Intellectual Skills to Teaching Strategies and Assessment Strategies:

Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
	-	
	-	-

(C) Alignment Course Intended Learning Outcomes of Professional and Practical Skills to Teaching Strategies and Assessment Strategies:

Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
	-	-
	-	-
	-	-

(D) Alignment Course Intended Learning Outcomes of Transferable Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
d1. Perform internet and other searches to develop information technology skills and inspect how to retrieve information from a variety of sources.	- Assignments	- Presentations
	-	-
	-	-

V. Course Content:					
A – Theoretical Aspect:					
Order	Units/Topics List	Learning Outcomes	Sub Topics List	Number of Weeks	Contact hours
1	The microbial world	a1	<ul style="list-style-type: none"> - Microbes in our lives - Naming and classifying microorganisms - Modern developments in microbiology - Microbes and human welfare - Microbes and human disease 	1 st	3
2	Prokaryotic and eukaryotic cells	a1	<ul style="list-style-type: none"> - Prokaryotic cell (size shape, structure) - Eukaryotic cell (flagella, cilia, cell wall and glycocalyx) 	2 nd	3
3	Normal Microbiota	a1, a3, a4	<ul style="list-style-type: none"> - Microorganisms in the atmosphere - Microorganisms of Soil - Microorganisms of water - Microorganisms of Plants - Microorganisms of animal origin 	3 rd	3
4	Microbial growth	a1, a2, a4,b1,b2	<ul style="list-style-type: none"> - Requirements for growth - Culture media - Obtaining pure cultures - Preserving bacterial cultures - Growth of bacterial cultures 	4 th	3
5	Control of microbial growth	a1, a2, a4,b1,b2,d1,	<ul style="list-style-type: none"> - Terminology of microbial control - Rate of microbial death 	5 th	3

			<ul style="list-style-type: none"> - Actions of microbial control agents - Physical methods of microbial control - Chemical methods of microbial control - Microbial characteristics and microbial control 		
6	Classification of microorganisms	a1, a4,b1,b2,d1,	<ul style="list-style-type: none"> - Classification of organisms - Methods of classifying and identifying microorganisms 	6 th	1.5
7	Midterm Examination		-	6 th	1.5
8	Microbial mechanisms of pathogenicity	a1, a3, a4,b1,b2,d1,d2	<ul style="list-style-type: none"> - How microorganisms enter the host - How bacterial pathogens enter host defenses - How bacterial pathogens damage host cells - Portals of exit 	7 th	1.5
9	Bacterial Agents	a1, a3, a4,b1,b2,d1,	<ul style="list-style-type: none"> - <i>Staphylococci</i> - <i>Streptococci</i> 	7 th	1.5
			<ul style="list-style-type: none"> - <i>Corynebacteria</i> - <i>Bacillus anthracis; cereus</i> - <i>Enterobacteriaceae</i> 	8 th	3
			<ul style="list-style-type: none"> - <i>Clostridia (tetani, botulinum, perfringens)</i> - <i>Neisseria (gonorrhoeae, meningitides)</i> 	9 th	3
			<ul style="list-style-type: none"> - <i>Escherichia coli</i> - <i>Salmonella</i> - <i>Vibrio cholera</i> - <i>Helicobacter pylori</i> - <i>Mycoplasma pneumonia</i> 	10 th	3
10	Antimicrobial drugs	a1, a3,b1,b2,d1,	<ul style="list-style-type: none"> - Features - Mechanisms of action - Resistance 	11 th	3
11	Viruses	a1, a3, a4,b1,b2,d1	<ul style="list-style-type: none"> - Characteristics of viruses - Structure, Taxonomy - Types of DNA and RNA viruses - Life cycles processes - Uses of viruses 	12 th	1.5

12	Fungi	a1, a3, a4,b1,b2,d1,	<ul style="list-style-type: none"> - Overview - Characteristics - Cutaneous; subcutaneous, systemic and opportunistic mycoses - Introduction to protozoa 	12 th	1.5
	Protozoa				
13	Final examination		<ul style="list-style-type: none"> - Overview - Characteristics 	13-14	
Number of Weeks /and Units Per Semester				14	36
B - Practical Aspect: (if any)					
Order	Tasks/ Experiments	Number of Weeks	contact hours	Learning Outcomes	
1					
Number of Weeks /and Units Per Semester					

VI. Teaching strategies of the course:				
Lectures, Presentations POWER POINT				
VII. Assignments:				
No	Assignments	Aligned CILOs (symbols)	Week Due	Mark
1	What are major differences between Archaeobacteria and Eubacteria	a1	2 nd	1.5
2	Give examples of microbiota and explain the mechanisms of opportunistic microbiota.	a1, d1,a4	4 th	1.5
3	- Why <i>Heliobacter pylori</i> in Yemen can not be treated easily	a3, a4, b4, d1, d2	10 th	2

VIII. Schedule of Assessment Tasks for Students During the Semester:					
No.	Assessment Method	Week Due	Mark	Proportion of Final Assessment	Aligned Course Learning Outcomes
1	Daily quizzes throughout the semester	2 nd to 11 th	5 each	5%	a1, d2
2	Test 1	3 rd	20	10%	a1
3	Midterm	6-7 th	20	20%	a1,

4	Assignments	3 rd to 11 th	5 each	5%	b1, d1, a4
5	Project	10 th	10	10%	a1, a4,
6	Attendance	2 nd -12 th	10	10%	
7	Final	14 th	40	40%	a1, a2, a3, a4, b1, b2,

IX. Learning Resources:	
Author, (Year), Book Title, Edition, Publisher, Country of publishing	
1- Required Textbook(s) (maximum two).	
<ol style="list-style-type: none"> 1. Tortora, G., B. Funke, and C. Case. 2004. Microbiology: an Introduction. Pearson Benjamin Cummings. San Fransisco, USA 2. Strohl, William, R. Harriet, and B. Fisser. 2001. Microbiology. Lippincott Williams & Wilkins. Philadelphia, USA 	
2- Essential References.	
Microbiology booklet provided by the instructor.	
3- Electronic Materials and Web Sites etc.	
Pubmed.ncbi.nlm.nih.gov https://www.textbookofbacteriology.net/ sciencedirect.com springer.com asm.org	
X. Course Policies:	
1	Class Attendance: <ol style="list-style-type: none"> 1. Attendance in all classes is required. There are no exceptions to this policy. 2. Roll will be called in the very beginning of each class. If you arrive after roll has been called, you may be marked as absent. 3. In any regular semester or summer term, students may miss no more than the equivalent of one third of class sessions scheduled. Students who exceed the above limits are automatically given an (AW) grade in the course by the UMS, and consequently not be allowed to attend class any longer.
2	Tardy: <ol style="list-style-type: none"> 1. All students are expected to conduct themselves in a professional manner. Unprofessional behavior such as, but not limited to, repeated disruption of class (including habitually walking in after class has started), sleeping in class, doing other course work in class, reading a newspaper in class, a ringing cell phone, frequent side conversations with other students and/or rudeness toward any person will be considered a serious violation of this standard and will lower your grade accordingly. Please be sure to turn off your cell phone before the start of class. 2. Attention to detail entails being prepared for class. This would include, but is not limited to; having a pencil/pen, note pad, calculator; reading and following the course

	<p>syllabus, etc. All students are expected to conduct themselves in a professional manner. Unprofessional behavior such as, but not limited to, repeated disruption of class (including habitually walking in after class has started), sleeping in class, doing other course work in class, reading a newspaper in class, a ringing cell phone, frequent side conversations with other students and/or rudeness toward any person will be considered a serious violation of this standard and will lower your grade accordingly. Please be sure to turn off your cell phone before the start of class.</p> <p>3. Attention to detail entails being prepared for class. This would include, but is not limited to; having a pencil/pen, note pad, calculator; reading and following the course syllabus, etc.</p>
3	<p>Exam Attendance/Punctuality: As per university council decision, a student is eligible for a Quizzes, Midterm or Final examination make-up if and only if he/she had the following incidents:</p> <ol style="list-style-type: none"> 1. Sickness; proved by hospitalization report; that is; a discharge summary is necessary. 2. Death in the family proved by a death certificate or equivalent and personal identification. 3. Accidents proved by an expert report. 4. Military/Official engagement.
4	<p>Assignments & Projects: Homework should be clearly presented i.e.:</p> <ol style="list-style-type: none"> 1. It should be written on A4 paper. 2. It should include a title page (Course Name, Semester, Date, Name...). 3. Your instructor will ask you to submit your homework online or as a hard copy. In the latter case, it should be stapled together.
5	<p>Cheating:</p> <ul style="list-style-type: none"> • Cheating is strictly prohibited behavior. • University regulations will be pursued and enforced on any cheating student.
6	<p>Plagiarism:</p> <ul style="list-style-type: none"> • Plagiarism is defined as “copying or stealing someone else’s words or ideas and claiming or presenting them as if they were your own.” • University regulations will be pursued and enforced on any plagiarism attempt.
7	<p>Other policies: Please refer to the university policy.</p>

Course Specification of Microbiology

I. - Information about Faculty Member Responsible for the Course:							
Name of Faculty Member	Dr. Ahlam A. Saeed	Office Hours					
Location & Telephone No.	Sana'a/ 775477543	SAT	SUN	MON	TUE	WED	THU
E-mail	ahlams@gmail.com						
II. Course Identification and General Information:							
1	Course Title:	Microbiology					
2	Course Number & Code:	BIOL385					
3	Credit hours:	C.H				Total	
		Theory	Seminars, exercises.	Practical	Field training		
		3					3
4	Study level/year at which this course is offered:	First Year summer term					
5	Pre –requisite (if any):	BIOL200					
6	Co –requisite (if any):						
7	Program (s) in which the course is offered	Bachelor of clinical pharmacy					
8	Language of teaching the course:	English					
9	System of study:	Credits Hours System					
10	Mode of delivery:	Lectures					
11	Location of teaching the course:	LIU Sana'a					
III. Course Description:							
<p>Microbiology course involves lectures as well as practical sessions in Microbiology laboratory. This course will give students an overview of Bacteria, Fungi, Parasites, Viruses and infection as well as laboratory skills in preparing and using microbial cultures. The course demonstrates history, classification, identification, structure, growth, metabolism, medical, importance of prokaryotic microorganisms, eukaryotic microorganisms, and viruses. Through this course the students will be able to gain knowledge about major species of pathogenic microbes, their diseases and controlling disease spread.</p>							

IV. Intended learning outcomes (ILOs) of the course:			
Upon successful completion of the course, students would be able to:			
<ol style="list-style-type: none"> 1. Characterize microbial morphology, structure and classification of different microorganisms. 2. Identify the natural habitat, source of infection and mode of transmission of the different species of pathogens and their treatments. 3. Solve problems associated with different infections such as microbial resistance to antimicrobial agents, reach a final diagnosis of a certain pathological condition caused by an infectious organism. 4. Apply the microbiological information in prevention and control of the patient's infectious disease and the resistance to the antimicrobial agents. 5. Perform internet and other searches to develop information technology skills and inspect how to retrieve information from a variety of sources. 			
V. Course Content:			
Distribution of Semester Weekly Plan Of course Topics/Items and Activities.			
A – Theoretical Aspect:			
Order	Topics List	Week Due	Contact Hours
1	The microbial world	1 st and 2 nd	4
2	Prokaryotic and eukaryotic cells	2 nd	2
3	Normal Microbiota	3 rd	3
4	Microbial growth	4 th	3
5	Control of microbial growth	5 th	6
6	Classification of microorganisms	6 th	1.5
7	Midterm Examination	6 th	1.5
8	Microbial mechanisms of pathogenicity	7 th	1.5
9	Bacterial Agents	7 th To 10 th	9
10	Antimicrobial drugs	11 th	1.5
11	Viruses	11 th	1.5
12	Fungi	12 th	1.5
13	Protozoa	12 th	1.5
14	Final examination	13-14	
Number of Weeks /and Units Per Semester		14	36
B – Practical Aspect: (if any)			
Order	Topics List	Week Due	Contact Hours

1				
Number of Weeks /and Units Per Semester				
VI. Teaching strategies of the course:				
- Lectures, individual and group discussions, presentations.				
VII. Assignments:				
No	Assignments	Week Due	Mark	
1	Although pathogenic microbes are less than 1% but diseases are all over the continent, why?	2 nd	5	
2	Give examples of microbiota and explain the mechanisms of opportunistic microbiota.	4 th	5	
3	Why <i>Helicobacter pylori</i> in Yemen can not be treated easily	10 th	5	
VIII. Schedule of Assessment Tasks for Students During the Semester:				
Assessment	Type of Assessment Tasks	Week Due	Mark	Proportion of Final Assessment
1	Daily quizzes throughout the semester	2 nd to 11 th	5 each	5%
2	Test 1	3 rd	20	10%
3	Midterm	6-7 th	20	20%
4	Assignments	3 rd to 11 th	5 each	5%
5	Test 2	10 th	10	10%
6	Attendance	2 nd -13 th	10	10%
7	Final	14 th	40	40%
IX. Learning Resources:				
Author, (Year), Book Title, Edition, Publisher, Country of publishing				
1- Required Textbook(s) (maximum two).				
<ol style="list-style-type: none"> 1. Tortora, G., B. Funke, and C. Case. 2004. <i>Microbiology: an Introduction</i>. Pearson Benjamin Cummings. San Fransisco, USA 2. Strohl, William, R. Harriet, and B. Fisser. 2001. <i>Microbiology</i>. Lippincott Williams & Wilkins. Philadelphia, USA 				
2- Essential References.				
Microbiology booklet provided by the instructor.				
3- Electronic Materials and Web Sites etc.				
pubmed.ncbi.nlm.nih.gov sciencedirect.com https://www.textbookofbacteriology.net/ springer.com asm.org				

X. Course Policies:	
Unless otherwise stated, the normal course administration policies and rules of the School of Business apply.	
1	<p>Class Attendance:</p> <ol style="list-style-type: none"> Attendance in all classes is required. There are no exceptions to this policy. Roll will be called in the very beginning of each class. If you arrive after roll has been called, you may be marked as absent. In any regular semester or summer term, students may miss no more than the equivalent of one third of class sessions scheduled. Students who exceed the above limits are automatically given an (AW) grade in the course by the UMS, and consequently not be allowed to attend class any longer.
2	<p>Tardy:</p> <ol style="list-style-type: none"> All students are expected to conduct themselves in a professional manner. Unprofessional behavior such as, but not limited to, repeated disruption of class (including habitually walking in after class has started), sleeping in class, doing other course work in class, reading a newspaper in class, a ringing cell phone, frequent side conversations with other students and/or rudeness toward any person will be considered a serious violation of this standard and will lower your grade accordingly. Please be sure to turn off your cell phone before the start of class. Attention to detail entails being prepared for class. This would include, but is not limited to; having a pencil/pen, note pad, calculator; reading and following the course syllabus, etc. All students are expected to conduct themselves in a professional manner. Unprofessional behavior such as, but not limited to, repeated disruption of class (including habitually walking in after class has started), sleeping in class, doing other course work in class, reading a newspaper in class, a ringing cell phone, frequent side conversations with other students and/or rudeness toward any person will be considered a serious violation of this standard and will lower your grade accordingly. Please be sure to turn off your cell phone before the start of class. Attention to detail entails being prepared for class. This would include, but is not limited to; having a pencil/pen, note pad, calculator; reading and following the course syllabus, etc.
3	<p>Exam Attendance/Punctuality:</p> <p>As per university council decision, a student is eligible for a Quizzes, Midterm or Final examination make-up if and only if he/she had the following incidents:</p> <ol style="list-style-type: none"> Sickness; proved by hospitalization report; that is; a discharge summary is necessary. Death in the family proved by a death certificate or equivalent and personal identification. Accidents proved by an expert report. Military/Official engagement.
4	<p>Assignments & Projects:</p> <p>Homework should be clearly presented i.e.:</p> <ol style="list-style-type: none"> It should be written on A4 paper. It should include a title page (Course Name, Semester, Date, Name...). Your instructor will ask you to submit your homework online or as a hard copy. In the latter case, it should be stapled together.

5	Cheating: <ul style="list-style-type: none">• Cheating is strictly prohibited behavior.• University regulations will be pursued and enforced on any cheating student.
6	Plagiarism: <ul style="list-style-type: none">• Plagiarism is defined as “copying or stealing someone else’s words or ideas and claiming or presenting them as if they were your own.”• University regulations will be pursued and enforced on any plagiarism attempt.
7	Other policies: Please refer to the university policy.

Course Specification
of PHAR-BIOL385L-Microbiology lab

I. Course Identification and General Information:						
1	Course Title:	Microbiology Lab				
2	Course Code & Number:	BIOL385 L				
3	Credit hours:	C.H			TOTAL	
		Theory	Seminars, exercises	Practical		Field training
			-	1		
4	Study level/ semester at which this course is offered:	First Years Summer term				
5	Pre –requisite (if any):	BIOL200				
6	Co –requisite (if any):	BIOL385				
8	Program (s) in which the course is offered:	Bachelor of clinical pharmacy				
9	Language of teaching the course:	English				
10	Location of teaching the course:	LIU Sana'a				
11	Prepared by:	Dr. Ahlam Abdulwahab S. Saeed				
12	Reviewed by:	Dr.Arwa Athman				
13	Date of approval:					
II. Course Description:						
<p> This course is designed to provide the student with an introduction to the principles and techniques of microbiology. Attention will be given to microbial structure, growth, physiology and the reaction of microorganisms to their physical and chemical environments. The microbiology lab will focus on the identification processes of microorganisms and learning laboratory techniques such as isolation, staining techniques, disinfection, sterilization and susceptibility testing of clinically significant microbe. </p>						

III. Course Intended Learning Outcomes (CILOs):	
(A) Knowledge and Understanding:	
Alignment of CILOs (Course Intended Learning Outcomes) to PILOs (Program Intended Learning Outcomes)	
Knowledge and Understanding PILOs	Knowledge and Understanding CILOs
After completing this program, graduates would be able to:	After completing this course, students would be able to:
A1. Review the knowledge facts and principles of both basic and medical sciences.	a1. Characterize microbial morphologies by performing isolation, staining, culturing, and biochemical identification techniques of different microorganisms.
A3. Discuss disease pathophysiology and patient's clinical presentation.	a2. Isolate microbes from different natural habitats, and describe mode of transmission of pathogens.

(B) Intellectual Skills:	
Alignment of CILOs (Course Intended Learning Outcomes) to PILOs (Program Intended Learning Outcomes)	
Intellectual Skills PILOs	Intellectual Skills CILOs
After completing this program, graduates would be able to:	After completing this course, students would be able to:
B1. Conceptualize pharmaceutical care as the standard framework of clinical pharmacy services in various healthcare settings.	b1. Safely, examine different slides and cultures of known pathogens and experiment microbial resistance to antimicrobial agents.

(C) Professional and Practical Skills	
Alignment of CILOs (Course Intended Learning Outcomes) to PILOs (Program Intended Learning Outcomes)	
Professional and Practical Skills PILOs	Professional and Practical Skills CILOs
After completing this program, graduates would be able to:	After completing this course, students would be able to:

(D) Transferable (General) Skills:	
Alignment of CILOs (Course Intended Learning Outcomes) to PILOs (Program Intended Learning Outcomes)	
Transferable (General) Skills PILOs	Transferable (General) Skills CILOs
After completing this program, graduates would be able to:	After completing this course, students would be able to:
D2. Develop presentation, promotion, marketing, business administration, numeric and computation skills.	d1. Perform internet and other searches to develop information technology skills and inspect how to retrieve information from a variety of sources.
D4. Communicate clearly by verbal and written means.	d2. Work in team and review results of experiments then present appropriate reports.

IV. Alignment of CILOs to Teaching and Assessment Strategies		
(A) Alignment Course Intended Learning Outcomes of Knowledge and Understanding to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
a1. Characterize microbial morphologies by performing isolation, staining, culturing, and biochemical identification techniques of different microorganisms.	- Lectures - Practical classes - Lab Work	- [x] Assignments, Quizzes', homework - Reports - [x] Midterm and final exams
a2. Isolate microbes from different natural habitats, and describe mode of transmission of pathogens.	- Lectures - Practical classes - Lab Work	- [x] Assignments, Quizzes', homework - Reports - [x] Midterm and final exams

(B) Alignment Course Intended Learning Outcomes of Intellectual Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
b1. Safely, examine different slides and cultures of known pathogens and experiment microbial resistance to antimicrobial agents.	- Lectures - Practical classes - Lab Work	- Assignments, Homework, - Quizzes' Reports - Midterm and final exams

(C) Alignment Course Intended Learning Outcomes of Professional and Practical Skills to Teaching Strategies and Assessment Strategies:

Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
	-	-
	-	-
	-	-

(D) Alignment Course Intended Learning Outcomes of Transferable Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
d1. Perform internet and other searches to develop information technology skills and inspect how to retrieve information from a variety of sources.	- Assignments	- Presentations, Reports
d2. Work in team and review results of experiments then present appropriate reports.	- Group discussions	- Presentations, Reports
	-	-

V. Course Content:					
A – Theoretical Aspect:					
Order	Units/Topics List	Learning Outcomes	Sub Topics List	Number of Weeks	Contact hours
1	Introduction to Micro Lab/Laboratory safety, use of microscope	a1, a2, b1, d1	-	1 st	2
2	Preparation of culture media for bacterial growth and Aseptic transfer techniques	a1, a2,b1, d1,d2	-	2 nd	2
3	Simple bacterial stain	a1, a2,b1, d1	-	3 rd	2
4	Differential and special stain	a1, a2,b1, d1	-	4 th	2
5	Isolation of bacteria from normal flora and from a mixed culture/ streaking techniques	a1, a2,b1, d1,d2	-	5 th	2
6	MIDTERM		-	6 th	2
7	Bacterial Count	a1, a2,b1, d1,d2	-	7 th	2
8	Use of disinfectants and antiseptics to control microorganisms	a1, a2,b1, d1,d2	-	8 th	2
9	Antimicrobial susceptibility testing	a1, a2,b1, d1,d2	-	9 th	2
10	Biochemical test I	a1, a2,b1, d1,d2	-	10 th	2
11	Biochemical test II	a1, a2,b1, d1,d2	-	11 th	2
12	Identification and quantification of microbial numbers in a water sample	a1, a2,b1, d1,d2	-	12 th	2

13	Identification of microorganisms by enzyme-linked immunosorbent assay (ELISA)	a1, a2,b1, d1,d2	-	13 th	2
14	FINAL		-	14 th	
Number of Weeks /and Units Per Semester				14	24
B - Practical Aspect: (if any)					
Order	Tasks/ Experiments	Number of Weeks	contact hours	Learning Outcomes	
1					
Number of Weeks /and Units Per Semester					
VI. Teaching strategies of the course:					
Lectures, Presentations, group discussion, Practical classes.					
VII. Assignments:					
No	Assignments	Aligned CILOs (symbols)	Week Due	Mark	
1					
2					
VIII. Schedule of Assessment Tasks for Students During the Semester:					
No.	Assessment Method	Week Due	Mark	Proportion of Final Assessment	Aligned Course Learning Outcomes
1	Quizzes and reports	2 nd to 11 th	5 each	20%	a1, d2
2	Midterm	6 th	20	20%	a1,
4	Unknown identification	3 rd to 11 th	10	10%	a1,b1
6	Evaluation	2 nd -13 th	15	15%	
7	Final	14 th	35	35%	a1, a2, b1, b2,
IX. Learning Resources:					
Author, (Year), Book Title, Edition, Publisher, Country of publishing					
1- Required Textbook(s) (maximum two).					
<ol style="list-style-type: none"> Pollack, R. A., L. Findlay, W. Mondschein and R. Modesto. 2002. Laboratory Exercises in Microbiology. John Wiley and Sons, Inc. USA. Tortora, G., B. Funke, and C. Case. 2004. Microbiology: an Introduction. Pearson Benjamin Cummings. San Fransisco, USA 					
2- Essential References.					

I. Pollack, R. A., L. Findlay, W. Mondschein and R. Modesto. 2002. Laboratory Exercises in Microbiology. John Wiley and Sons, Inc. USA.	
3- Electronic Materials and Web Sites etc.	
<ol style="list-style-type: none"> 1. pubmed.ncbi.nlm.nih.gov 2. sciencedirect.com 3. springer.com 4. asm.org 	
X. Course Policies:	
1	Class Attendance: <ol style="list-style-type: none"> 1. Attendance in all classes is required. There are no exceptions to this policy. 2. Roll will be called in the very beginning of each class. If you arrive after roll has been called, you may be marked as absent. 3. In any regular semester or summer term, students may miss no more than the equivalent of one third of class sessions scheduled. Students who exceed the above limits are automatically given an (AW) grade in the course by the UMS, and consequently not be allowed to attend class any longer.
2	Tardy: <ol style="list-style-type: none"> 1. All students are expected to conduct themselves in a professional manner. Unprofessional behavior such as, but not limited to, repeated disruption of class (including habitually walking in after class has started), sleeping in class, doing other course work in class, reading a newspaper in class, a ringing cell phone, frequent side conversations with other students and/or rudeness toward any person will be considered a serious violation of this standard and will lower your grade accordingly. Please be sure to turn off your cell phone before the start of class. 2. Attention to detail entails being prepared for class. This would include, but is not limited to; having a pencil/pen, note pad, calculator; reading and following the course syllabus, etc. All students are expected to conduct themselves in a professional manner. Unprofessional behavior such as, but not limited to, repeated disruption of class (including habitually walking in after class has started), sleeping in class, doing other course work in class, reading a newspaper in class, a ringing cell phone, frequent side conversations with other students and/or rudeness toward any person will be considered a serious violation of this standard and will lower your grade accordingly. Please be sure to turn off your cell phone before the start of class. 3. Attention to detail entails being prepared for class. This would include, but is not limited to; having a pencil/pen, note pad, calculator; reading and following the course syllabus, etc.
3	Exam Attendance/Punctuality: As per university council decision, a student is eligible for a Quizzes, Midterm or Final examination make-up if and only if he/she had the following incidents: <ol style="list-style-type: none"> 1. Sickness; proved by hospitalization report; that is; a discharge summary is necessary. 2. Death in the family proved by a death certificate or equivalent and personal identification. 3. Accidents proved by an expert report. 4. Military/Official engagement.
4	Assignments & Projects: Homework should be clearly presented i.e.: <ol style="list-style-type: none"> 1. It should be written on A4 paper. 2. It should include a title page (Course Name, Semester, Date, Name...).

	3. Your instructor will ask you to submit your homework online or as a hard copy. In the latter case, it should be stapled together.
5	Cheating: <ul style="list-style-type: none">• Cheating is strictly prohibited behavior.• University regulations will be pursued and enforced on any cheating student.
6	Plagiarism: <ul style="list-style-type: none">• Plagiarism is defined as “copying or stealing someone else’s words or ideas and claiming or presenting them as if they were your own.”• University regulations will be pursued and enforced on any plagiarism attempt.
7	Other policies: Please refer to the university policy.

Course Specification of Microbiology lab

I. - Information about Faculty Member Responsible for the Course:							
Name of Faculty Member	Dr. Ahlam A. Saeed	Office Hours					
Location & Telephone No.	Sana'a/ 775477543	SAT	SUN	MON	TUE	WED	THU
E-mail	ahlams@gmail.com						
II. Course Identification and General Information:							
1	Course Title:	Microbiology lab					
2	Course Number & Code:	BIOL385 L					
3	Credit hours:	C.H				Total	
		Theory	Seminars, exercises.	Practical	Field training		
		1					1
4	Study level/year at which this course is offered:	First Years/summer semester					
5	Pre –requisite (if any):	BIOL200					
6	Co –requisite (if any):	BIOL385					
7	Program (s) in which the course is offered	Bachelor of clinical pharmacy					
8	Language of teaching the course:	English					
9	System of study:	Credits Hours System					
10	Mode of delivery:	Lectures /Practical classes					
11	Location of teaching the course:	LIU Sana'a					

III. Course Description:	
<p>This course is designed to provide the student with an introduction to the principles and techniques of microbiology. Attention will be given to microbial structure, growth, physiology and the reaction of microorganisms to their physical and chemical environments. The microbiology lab will focus on the identification processes of microorganisms and learning laboratory techniques such as isolation, staining techniques, disinfection, sterilization and susceptibility testing of clinically significant microbe.</p>	

IV. Intended learning outcomes (ILOs) of the course:**Upon successful completion of the course, students would be able to:**

1. Characterize microbial morphologies by performing isolation, staining, culturing, and biochemical identification techniques of different microorganisms.
2. Isolate microbes from different natural habitats, and describe mode of transmission of pathogens.
3. Safely, examine different slides and cultures of known pathogens and experiment microbial resistance to antimicrobial agents.
4. Perform internet and other searches to develop information technology skills and inspect how to retrieve information from a variety of sources.
5. Work in team and review results of experiments then present appropriate reports.

V. Course Content:**Distribution of Semester Weekly Plan Of course Topics/Items and Activities.****A – Theoretical Aspect:**

Order	Topics List	Week Due	Contact Hours
1	Introduction to Micro Lab/Laboratory safety, use of microscope	1 st	2
2	Preparation of culture media for bacterial growth and Aseptic transfer techniques	2 nd	2
3	Simple bacterial stain	3 rd	2
4	Differential and special stain	4 th	2
5	Isolation of bacteria from normal flora and from a mixed culture/ streaking techniques	5 th	2
6	MIDTERM	6 th	2
7	Bacterial Count	7 th	2
8	Use of disinfectants and antiseptics to control microorganisms	8 th	2
9	Antimicrobial susceptibility testing	9 th	2
10	Biochemical test I	10 th	2
11	Biochemical test II	11 th	2
12	Identification and quantification of microbial numbers in a water sample	12 th	2
13	Identification of microorganisms by enzyme-linked immunosorbent assay (ELISA)	13 th	2
14	FINAL	13-14	
Number of Weeks /and Units Per Semester		14	24

B – Practical Aspect: (if any)				
Order	Topics List	Week Due	Contact Hours	
1				
Number of Weeks /and Units Per Semester				
VI. Teaching strategies of the course:				
<ul style="list-style-type: none"> - Lectures, lab work group discussions, presentations. - Demonstration 				
VII. Assignments:				
No	Assignments	Week Due	Mark	
1				
2				
3				
VIII. Schedule of Assessment Tasks for Students During the Semester:				
Assessment	Type of Assessment Tasks	Week Due	Mark	Proportion of Final Assessment
1	Daily quizzes throughout the semester	2 nd to 11 th	5 each	5%
2	Test 1	3 rd	20	10%
3	Midterm	6 th	20	20%
4	Assignments	3 rd to 11 th	5 each	5%
5	Test 2	10 th	10	10%
6	Attendance	2 nd -13 th	10	10%
7	Final	14 th	40	40%
IX. Learning Resources:				
Author, (Year), Book Title, Edition, Publisher, Country of publishing				
1- Required Textbook(s) (maximum two).				
<ol style="list-style-type: none"> 1. Tortora, G., B. Funke, and C. Case. 2004. Microbiology: an Introduction. Pearson Benjamin Cummings. San Fransisco, USA 2. Strohl, William, R. Harriet, and B. Fisser. 2001. Microbiology. Lippincott Williams & Wilkins. Philadelphia, USA 				
2- Essential References.				

I. Pollack, R. A., L. Findlay, W. Mondschein and R. Modesto. 2002. Laboratory Exercises in Microbiology. John Wiley and Sons, Inc. USA.	
3- Electronic Materials and Web Sites etc.	
<ol style="list-style-type: none"> 1. pubmed.ncbi.nlm.nih.gov 2. sciencedirect.com 3. springer.com 4. asm.org 	
X. Course Policies:	
Unless otherwise stated, the normal course administration policies and rules of the School of Business apply.	
1	Class Attendance: <ol style="list-style-type: none"> 1. Attendance in all classes is required. There are no exceptions to this policy. 2. Roll will be called in the very beginning of each class. If you arrive after roll has been called, you may be marked as absent. 3. In any regular semester or summer term, students may miss no more than the equivalent of one third of class sessions scheduled. Students who exceed the above limits are automatically given an (AW) grade in the course by the UMS, and consequently not be allowed to attend class any longer.
2	Tardy: <ol style="list-style-type: none"> 1. All students are expected to conduct themselves in a professional manner. Unprofessional behavior such as, but not limited to, repeated disruption of class (including habitually walking in after class has started), sleeping in class, doing other course work in class, reading a newspaper in class, a ringing cell phone, frequent side conversations with other students and/or rudeness toward any person will be considered a serious violation of this standard and will lower your grade accordingly. Please be sure to turn off your cell phone before the start of class. 2. Attention to detail entails being prepared for class. This would include, but is not limited to; having a pencil/pen, note pad, calculator; reading and following the course syllabus, etc. All students are expected to conduct themselves in a professional manner. Unprofessional behavior such as, but not limited to, repeated disruption of class (including habitually walking in after class has started), sleeping in class, doing other course work in class, reading a newspaper in class, a ringing cell phone, frequent side conversations with other students and/or rudeness toward any person will be considered a serious violation of this standard and will lower your grade accordingly. Please be sure to turn off your cell phone before the start of class. 3. Attention to detail entails being prepared for class. This would include, but is not limited to; having a pencil/pen, note pad, calculator; reading and following the course syllabus, etc.
3	Exam Attendance/Punctuality: As per university council decision, a student is eligible for a Quizzes, Midterm or Final examination make-up if and only if he/she had the following incidents: <ol style="list-style-type: none"> 1. Sickness; proved by hospitalization report; that is; a discharge summary is necessary. 2. Death in the family proved by a death certificate or equivalent and personal identification. 3. Accidents proved by an expert report.

	4. Military/Official engagement.
4	<p>Assignments & Projects: Homework should be clearly presented i.e.:</p> <ol style="list-style-type: none"> 1. It should be written on A4 paper. 2. It should include a title page (Course Name, Semester, Date, Name...). 3. Your instructor will ask you to submit your homework online or as a hard copy. In the latter case, it should be stapled together.
5	<p>Cheating:</p> <ul style="list-style-type: none"> • Cheating is strictly prohibited behavior. • University regulations will be pursued and enforced on any cheating student.
6	<p>Plagiarism:</p> <ul style="list-style-type: none"> • Plagiarism is defined as “copying or stealing someone else’s words or ideas and claiming or presenting them as if they were your own.” • University regulations will be pursued and enforced on any plagiarism attempt.
7	<p>Other policies: Please refer to the university policy.</p>

Lebanese International University
 The School of Pharmacy and Medical Sciences
 Department: CLINICAL PHARMACY
 Title of the Program: Bachelor of Clinical Pharmacy



Course Specification of
 BMED 445 Pathophysiology

I. Course Identification and General Information:						
1	Course Title:	Pathophysiology				
2	Course Code & Number:	BMED445				
3	Credit hours:	C.H			TOTAL	
		Theory	Seminars, exercises	Practical		Field training
		4				
4	Study level/ semester at which this course is offered:	Second Year				
5	Pre –requisite (if any):	ENGL200 - BIOL360				
6	Co –requisite (if any):					
8	Program (s) in which the course is offered:	Bachelor of clinical pharmacy				
9	Language of teaching the course:	English				
10	Location of teaching the course:	LIU Sana'a				
11	Prepared by:	Dr. Waddah Q Saleh				
12	Reviewed by:	Dr. Abdallah.dahbaly				
13	Date of approval:					

II. Course Description:	
<p>This course studies the mechanisms, etiologies, risk factors and complications of diseases processes. It emphasizes on the clinical signs and symptoms, history, prognosis and epidemiology of diseases. Study of pathological imbalances including cellular adaptation and injury, fluid compartment exchanges with edema and dehydration, electrolyte functions, control and imbalances, acidosis and alkalosis, nervous system injuries and responses, sensory imbalances, skeletal system injury and repair, soft tissue injury and repair, and muscle injury and dysfunction.</p>	

III. Course Intended Learning Outcomes (CILOs):

(A) Knowledge and Understanding:

Alignment of CILOs (Course Intended Learning Outcomes) to PILOs (Program Intended Learning Outcomes)

Knowledge and Understanding PILOs	Knowledge and Understanding CILOs
After completing this program, graduates would be able to:	After completing this course, students would be able to:
A1. Review the knowledge facts and principles of both basic and medical sciences.	a1- Identifying definition, etiology of cell injury, inflammation, allergy and autoimmune diseases, neoplasms, infectious diseases & DM, nutritional & environmental diseases, circulatory disorders, cardiovascular, respiratory, GIT, urinary and other systems. a2-Discussing pathogenesis, classification/outcome of cell injury, inflammation, allergy and autoimmune diseases, neoplasms, infectious diseases & DM, nutritional & environmental diseases, circulatory disorders, cardiovascular, respiratory, GIT, urinary and other systems.
A3 .Discuss disease pathophysiology and patient’s clinical presentation.	a3-Explaining manifestations of allergy and autoimmune diseases, neoplasms, infectious diseases & DM, nutritional & environmental diseases, circulatory disorders, cardiovascular, respiratory, GIT, urinary and other systems. a4-Establishing diagnosis allergy and autoimmune diseases, neoplasms, infectious diseases & DM, nutritional & environmental diseases, circulatory disorders, cardiovascular, respiratory, GIT, urinary and other systems.

(B) Intellectual Skills:

Alignment of CILOs (Course Intended Learning Outcomes) to PILOs (Program Intended Learning Outcomes)

Intellectual Skills PILOs	Intellectual Skills CILOs
After completing this program, graduates would be able to:	After completing this course, students would be able to:

(C) Professional and Practical Skills

Alignment of CILOs (Course Intended Learning Outcomes) to PILOs (Program Intended Learning Outcomes)	
Professional and Practical Skills PILOs	Professional and Practical Skills CILOs
After completing this program, graduates would be able to:	After completing this course, students would be able to:
(D) Transferable (General) Skills:	
Alignment of CILOs (Course Intended Learning Outcomes) to PILOs (Program Intended Learning Outcomes)	
Transferable (General) Skills PILOs	Transferable (General) Skills CILOs
After completing this program, graduates would be able to:	After completing this course, students would be able to:
D2.Develop presentation, promotion, marketing, business administration, numeric and computation skills.	d1-Searching about most important disease new updates
D4.Communicate clearly by verbal and written means.	d2- Communicate professionally with other health term members

IV. Alignment of CILOs to Teaching and Assessment Strategies		
(A) Alignment Course Intended Learning Outcomes of Knowledge and Understanding to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
A1. Review the knowledge facts and principles of both basic and medical sciences.	- Lectures, Reading a textbook, Searching web sites - Group discussion, Seminars, Activities.	- Written Tests
A3 .Discuss disease pathophysiology and patient's clinical presentation.	- Lectures, reading a textbook, Searching web sites - Group discussion.	- Written Exam - Assignment - Presentation

(B) Alignment Course Intended Learning Outcomes of Intellectual Skills to Teaching Strategies and Assessment Strategies:

Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
	-	-
	-	-
	-	-

(C) Alignment Course Intended Learning Outcomes of Professional and Practical Skills to Teaching Strategies and Assessment Strategies:

Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
	-	-
	-	-
	-	-

(D) Alignment Course Intended Learning Outcomes of Transferable Skills to Teaching Strategies and Assessment Strategies:

Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
D2.Develop presentation, promotion, marketing, business administration, numeric and computation skills.	- Seminars, Discussion, Activities.	- Presentation
D4.Communicate clearly by verbal and written means.	- Seminars, Discussion, Activities.	- Presentation

V. Course Content:

A – Theoretical Aspect:

Order	Units/Topics List	Learning Outcomes	Sub Topics List	Number of Weeks	Contact hours
1	Introduction, general concepts and cellular injury and death	a1, a3, d2, d4	- Definitions, etiology, pathogenesis, injury, adaptation, cell death, cell ageing	1	4
2	Inflammation and tissue repair	a1, a3, d2, d4	- Definition, etiology, pathogenesis,	2	4

			classification, signs, systemic manifestations, principles of treatment		
3	Immunopathology (allergies and autoimmune diseases)	a1, a3, d2, d4	- Definition, classification, pathogenesis, SLE and rheumatoid arthritis	3	4
4	Neoplasia	a1, a3, d2, d4	- Definition, etiology, pathogenesis, classification, signs, systemic manifestations, epidemiology, principles of diagnosis and treatment	4	4
5	Infectious diseases & pathology of fever	a1, a3, d2, d4	- Definition, etiology, pathogenesis, classification, signs, systemic manifestations, epidemiology, principles of diagnosis and treatment	5	4
6	Environmental & nutritional diseases	a1, a3, d2, d4	- Drug abuse, nutritional, vitamins and minerals deficiencies and social diseases	6	4
7	Pathology of circulation & general pathology of DM	a1, a3, d2, d4	- Edema, thrombosis, embolism, hemorrhage, infarction and shock - Definition, etiology, pathogenesis, classification, systemic manifestations, principles of treatment	7	4
8	Pathology of the vascular system	a1, a3, d2, d4	- Atherosclerosis, hypertension, vasculitis, DVT, varicose veins	8	4
9	Pathology of the heart	a1, a3, d2, d4	- Congenital heart diseases, Ischemic heart diseases, Rheumatic heart diseases, heart failure, cardiomyopathy	9	4
10	Pathology of the respiratory system	a1, a3, d2, d4	- Restrictive and obstructive lung diseases, upper respiratory tract infections, pneumonia, TB, cancer	10	4

11	Pathology of the Digestive system	a1, a3, d2, d4	- Pathology of esophagus, stomach, intestine and liver	11	4
12	Pathology of the Urinary system and other systems	a1, a3, d2, d4	- Glomerulonephritis, UTI, Urolithiasis, pathology of blood, nervous, genital, endocrine, and musculoskeletal system	12	4
13	Review, activities and seminars	a1, a3, d2, d4	- Review of any unclear topic	12	
14	Activities, seminars and exams		- Activities, seminars and exams	13-14	
Number of Weeks /and Units Per Semester				14	48
B - Practical Aspect: (if any)					
Order	Tasks/ Experiments	Number of Weeks	contact hours	Learning Outcomes	
1					
Number of Weeks /and Units Per Semester					

VI. Teaching strategies of the course:

- Lectures, reading a textbook, Searching web sites
- Group discussion,
- Seminars

VII. Assignments:

No	Assignments	Aligned CILOs (symbols)	Week Due	Mark
1	Chemical mediators and their role in inflammation	a1, a3	2	5
2	Regime for TB treatment in Yemen	d2, d4	10	5

VIII. Schedule of Assessment Tasks for Students During the Semester:

No.	Assessment Method	Week Due	Mark	Proportion of Final Assessment	Aligned Course Learning Outcomes
1	Test 1	3-4	10	10%	a1, a3
2	Midterm exam (MCQs test)	7-8	20	20%	a1, a3
3	Test 2	10	10	10 %	a1, a3
3	Final exam (essay, MCQs and true & false)	13-14	40	40%	a1, a3,a2
4	Seminars, Presentation and activities	12	10	10%	d2, d4
5	Assignments	2 & 10	10	10%	d2, d4

IX. Learning Resources:	
Author, (Year), Book Title, Edition, Publisher, Country of publishing	
1- Required Textbook(s) (maximum two).	
1. <i>Kumar, V., Abbas, A. K., Aster, J. C., & Perkins, J. A. (2018). Robbins basic pathology (Tenth edition.). Philadelphia: Elsevier.</i>	
2- Essential References.	
Pathologic Basis of Disease: ROBBINS, sixth edition ISBN	
3- Electronic Materials and Web Sites etc.	
1. https://webpath.med.utah.edu/	

X. Course Policies:	
1	Class Attendance: <ol style="list-style-type: none"> Attendance in all classes is required. There are no exceptions to this policy. Roll will be called in the very beginning of each class. If you arrive after roll has been called, you may be marked as absent. In any regular semester or summer term, students may miss no more than the equivalent of one third of class sessions scheduled. Students who exceed the above limits are automatically given an (AW) grade in the course by the UMS, and consequently not be allowed to attend class any longer.
2	Tardy: <ol style="list-style-type: none"> All students are expected to conduct themselves in a professional manner. Unprofessional behavior such as, but not limited to, repeated disruption of class (including habitually walking in after class has started), sleeping in class, doing other course work in class, reading a newspaper in class, a ringing cell phone, frequent side conversations with other students and/or rudeness toward any person will be considered a serious violation of this standard and will lower your grade accordingly. Please be sure to turn off your cell phone before the start of class. Attention to detail entails being prepared for class. This would include, but is not limited to; having a pencil/pen, note pad, calculator; reading and following the course syllabus, etc. All students are expected to conduct themselves in a professional manner. Unprofessional behavior such as, but not limited to, repeated disruption of class (including habitually walking in after class has started), sleeping in class, doing other course work in class, reading a newspaper in class, a ringing cell phone, frequent side conversations with other students and/or rudeness toward any person will be considered a serious violation of this standard and will lower your grade accordingly. Please be sure to turn off your cell phone before the start of class. Attention to detail entails being prepared for class. This would include, but is not limited to; having a pencil/pen, note pad, calculator; reading and following the course syllabus, etc.
3	Exam Attendance/Punctuality:

	<p>As per university council decision, a student is eligible for a Quizzes, Midterm or Final examination make-up if and only if he/she had the following incidents:</p> <ol style="list-style-type: none"> 1. Sickness; proved by hospitalization report; that is; a discharge summary is necessary. 2. Death in the family proved by a death certificate or equivalent and personal identification. 3. Accidents proved by an expert report. 4. Military/Official engagement.
4	<p>Assignments & Projects: Homework should be clearly presented i.e.:</p> <ol style="list-style-type: none"> 1. It should be written on A4 paper. 2. It should include a title page (Course Name, Semester, Date, Name...). 3. Your instructor will ask you to submit your homework online or as a hard copy. In the latter case, it should be stapled together.
5	<p>Cheating:</p> <ul style="list-style-type: none"> • Cheating is strictly prohibited behavior. • University regulations will be pursued and enforced on any cheating student.
6	<p>Plagiarism:</p> <ul style="list-style-type: none"> • Plagiarism is defined as “copying or stealing someone else’s words or ideas and claiming or presenting them as if they were your own.” • University regulations will be pursued and enforced on any plagiarism attempt.
7	<p>Other policies: Please refer to the university policy.</p>

Course Specification of
 Pathophysiology

I. - Information about Faculty Member Responsible for the Course:						
Name of Faculty Member	Dr.WADDAH QASSEM M. SALEH	Office Hours				
Location & Telephone No.	771177604	SAT	SUN	MON	TUE	WED THU
E-mail	wadkal78@gmail.com			Yes	Yes	

II. Course Identification and General Information:						
1	Course Title:	Pathophysiology				
2	Course Number & Code:	BMED445				
3	Credit hours:	C.H				
		Theory	Seminars, exercises.	Practical	Field training	Total
		48	8			48
4	Study level/year at which this course is offered:	Spring/Second				
5	Pre –requisite (if any):	ENGL200-BIOL360				
6	Co –requisite (if any):					
7	Program (s) in which the course is offered	Bachelor of clinical Pharmacy				
8	Language of teaching the course:	English				
9	System of study:	Credits Hours System				
10	Mode of delivery:	Lectures				
11	Location of teaching the course:	LIU Sana'a				

III. Course Description:

This course studies the mechanisms, etiologies, risk factors and complications of diseases processes. It emphasizes on the clinical signs and symptoms, history, prognosis and epidemiology of diseases. Study of pathological imbalances including cellular adaptation and injury, fluid compartment exchanges with edema and dehydration, electrolyte functions, control and imbalances, acidosis and alkalosis, nervous system injuries and responses, sensory imbalances, skeletal system injury and repair, soft tissue injury and repair, and muscle injury and dysfunction.

IV. Intended learning outcomes (ILOs) of the course:**Upon successful completion of the course, students would be able to:**

1. Identifying definition, etiology of cell injury, inflammation, allergy and autoimmune diseases, neoplasms, infectious diseases & DM, nutritional & environmental diseases, circulatory disorders, cardiovascular, respiratory, GIT, urinary and other systems.
2. Discussing pathogenesis, classification/outcome of cell injury, inflammation, allergy and autoimmune diseases, neoplasms, infectious diseases & DM, nutritional & environmental diseases, circulatory disorders, cardiovascular, respiratory, GIT, urinary and other systems.
3. Explaining manifestations of allergy and autoimmune diseases, neoplasms, infectious diseases & DM, nutritional & environmental diseases, circulatory disorders, cardiovascular, respiratory, GIT, urinary and other systems.
4. Establishing diagnosis allergy and autoimmune diseases, neoplasms, infectious diseases & DM, nutritional & environmental diseases, circulatory disorders, cardiovascular, respiratory, GIT, urinary and other systems.
5. Searching about most important disease new updates
6. Communicate professionally with other health term members ates

V. Course Content:**Distribution of Semester Weekly Plan Of course Topics/Items and Activities.****A – Theoretical Aspect:**

Order	Topics List	Week Due	Contact Hours
1	Introduction, general concepts and cellular injury and death	1	4
2	Inflammation and tissue repair	2	4
3	Immunopathology (allergies and autoimmune diseases)	3	4
4	Neoplasia	4	4
5	Infectious diseases & pathology of fever	5	4
6	Environmental & nutritional diseases	6	4
7	Pathology of circulation & general pathology of DM	7	4
8	Pathology of the vascular system	8	4
9	Pathology of the heart	9	4
10	Pathology of the respiratory system	10	4
11	Pathology of the Digestive system	11	4
12	Pathology of the Urinary system and other systems	12	4

13	Review, activities and seminars	12		
14	Final exams	13-14		
Number of Weeks /and Units Per Semester		14	48	
VI. Teaching strategies of the course:				
- Lectures, reading a textbook, Searching web sites - Group discussion.				
VII. Assignments:				
No	Assignments	Week Due	Mark	
1	Chemical mediators and their role in inflammation	2	5	
2	Regime for TB treatment in Yemen	10	5	
VIII. Schedule of Assessment Tasks for Students During the Semester:				
Assessment	Type of Assessment Tasks	Week Due	Mark	Proportion of Final Assessment
1	Test 1	3	10	20%
2	Midterm exam (MCQs test)	6	20	20%
3	Test 2	10	10	10 %
3	Final exam (essay, MCQs and true & false)	14	40	40%
4	Seminars and activities	13	10	10%
5	Assignments	2 & 10	10	10%
IX. Learning Resources:				
Author, (Year), Book Title, Edition, Publisher, Country of publishing				
1- Required Textbook(s) (maximum two).				
1. <i>Kumar, V., Abbas, A. K., Aster, J. C., & Perkins, J. A. (2018). Robbins basic pathology (Tenth edition.). Philadelphia: Elsevier.</i>				
2- Essential References.				
Pathologic Basis of Disease: ROBBINS, sixth edition ISBN				
3- Electronic Materials and Web Sites etc.				
https://webpath.med.utah.edu/				
X. Course Policies:				
Unless otherwise stated, the normal course administration policies and rules of the School of Business apply.				
1	Class Attendance:			
	1. Attendance in all classes is required. There are no exceptions to this policy.			

	<ol style="list-style-type: none"> 2. Roll will be called in the very beginning of each class. If you arrive after roll has been called, you may be marked as absent. 3. In any regular semester or summer term, students may miss no more than the equivalent of one third of class sessions scheduled. Students who exceed the above limits are automatically given an (AW) grade in the course by the UMS, and consequently not be allowed to attend class any longer.
2	<p>Tardy:</p> <ol style="list-style-type: none"> 1. All students are expected to conduct themselves in a professional manner. Unprofessional behavior such as, but not limited to, repeated disruption of class (including habitually walking in after class has started), sleeping in class, doing other course work in class, reading a newspaper in class, a ringing cell phone, frequent side conversations with other students and/or rudeness toward any person will be considered a serious violation of this standard and will lower your grade accordingly. Please be sure to turn off your cell phone before the start of class. 2. Attention to detail entails being prepared for class. This would include, but is not limited to; having a pencil/pen, note pad, calculator; reading and following the course syllabus, etc. All students are expected to conduct themselves in a professional manner. Unprofessional behavior such as, but not limited to, repeated disruption of class (including habitually walking in after class has started), sleeping in class, doing other course work in class, reading a newspaper in class, a ringing cell phone, frequent side conversations with other students and/or rudeness toward any person will be considered a serious violation of this standard and will lower your grade accordingly. Please be sure to turn off your cell phone before the start of class. 3. Attention to detail entails being prepared for class. This would include, but is not limited to; having a pencil/pen, note pad, calculator; reading and following the course syllabus, etc.
3	<p>Exam Attendance/Punctuality: As per university council decision, a student is eligible for a Quizzes, Midterm or Final examination make-up if and only if he/she had the following incidents:</p> <ol style="list-style-type: none"> 1. Sickness; proved by hospitalization report; that is; a discharge summary is necessary. 2. Death in the family proved by a death certificate or equivalent and personal identification. 3. Accidents proved by an expert report. 4. Military/Official engagement.
4	<p>Assignments & Projects: Homework should be clearly presented i.e.:</p> <ol style="list-style-type: none"> 1. It should be written on A4 paper. 2. It should include a title page (Course Name, Semester, Date, Name...). 3. Your instructor will ask you to submit your homework online or as a hard copy. In the latter case, it should be stapled together.
5	<p>Cheating:</p> <ul style="list-style-type: none"> • Cheating is strictly prohibited behavior. • University regulations will be pursued and enforced on any cheating student.
6	<p>Plagiarism:</p> <ul style="list-style-type: none"> • Plagiarism is defined as “copying or stealing someone else’s words or ideas and claiming or presenting them as if they were your own.”

	<ul style="list-style-type: none">• University regulations will be pursued and enforced on any plagiarism attempt.
7	Other policies: Please refer to the university policy.

Lebanese International University
 The School of Pharmacy and Medical Sciences
 Department: CLINICAL PHARMACY
 Title of the Program: Bachelor of Clinical Pharmacy
 Course Specification of
 PHAR-CHEM205-Quantitative Analysis



I. Course Identification and General Information:						
1	Course Title:	Quantitative Analysis				
2	Course Code & Number:	CHEM205				
3	Credit hours:	C.H				TOTAL
		Theory	Seminars, exercises	Practical	Field training	
		2	-	-	-	
4	Study level/ semester at which this course is offered:	First Years				
5	Pre –requisite (if any):	CHEM200				
6	Co –requisite (if any):	CHEM205L - CHEM250				
8	Program (s) in which the course is offered:	Bachelor of clinical Pharmacy				
9	Language of teaching the course:	English				
10	Location of teaching the course:	LIU Sana'a				
11	Prepared by:	Associate Prof. Abdulmajed Alsaifi				
12	Reviewed by:	Dr. Wafa al-Madhaji				
13	Date of approval:					
II. Course Description:						
The course is devoted to the exploration of principles of qualitative and quantitative analysis, methods expressing of the concentrations, principles of volumetric analysis, acid-base equilibria in aqueous, acid-base titration, complexometric titrations, redox – titration and their applications in both solutions. Practical applications accompany the topics of this course.						
III. Course Intended Learning Outcomes (CILOs):						
(A) Knowledge and Understanding:						
Alignment of CILOs (Course Intended Learning Outcomes) to PILOs (Program Intended Learning Outcomes)						
Knowledge and Understanding PILOs			Knowledge and Understanding CILOs			
After completing this program, graduates would be able to:			After completing this course, students would be able to:			
A1. Review the knowledge facts and principles of both basic and medical sciences.			a1. Knowing the classical methods of analysis (titrimetry), types of reaction in titrimetry, types of solutions, methods for			

	expressing the concentration and explain the application of these principles in the pharmaceutical analysis of drug substances.
	<p>a2. Identify the principles of basic and pharmaceutical analytical chemistry such as fundamentals of analytical chemistry, ionization theory, concepts of acids and bases, buffer action. Also, identify acid-base, complexometric, and redox titrations in aqueous solution.</p> <p>a3. Explain the concepts of titration, dilution, behavior of indicators, difference between types of salts, and the suitable method for analysis of drug substances.</p> <p>a4. Comparing between the different types of solution, electrolyte and nonelectrolyte, acid and base, classical methods of titrimetry, different types of titration indicators, the relationship between different expressing the concentrations.</p> <p>a5. Calculate the pH of strong and weak acids, strong and weak bases, different salts. Also, calculation the concentration by using different expressing, and concentration of volumetric titration by using molarity and normality</p>

(B) Intellectual Skills:	
Alignment of CILOs (Course Intended Learning Outcomes) to PILOs (Program Intended Learning Outcomes)	
Intellectual Skills PILOs	Intellectual Skills CILOs
After completing this program, graduates would be able to:	After completing this course, students would be able to:

(C) Professional and Practical Skills	
Alignment of CILOs (Course Intended Learning Outcomes) to PILOs (Program Intended Learning Outcomes)	
Professional and Practical Skills PILOs	Professional and Practical Skills CILOs
After completing this program, graduates would be able to:	After completing this course, students would be able to:

(D) Transferable (General) Skills:	
Alignment of CILOs (Course Intended Learning Outcomes) to PILOs (Program Intended Learning Outcomes)	
Transferable (General) Skills PILOs	Transferable (General) Skills CILOs
After completing this program, graduates would be able to:	After completing this course, students would be able to:

IV. Alignment of CILOs to Teaching and Assessment Strategies		
(A) Alignment Course Intended Learning Outcomes of Knowledge and Understanding to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
<p>a1. Knowing the classical methods of analysis (titrimetry), types of reaction in titrimetry, types of solutions, methods for expressing the concentration and explain the application of these principles in the pharmaceutical analysis of drug substances.</p> <p>a2. Identify the principles of basic and pharmaceutical analytical chemistry such as fundamentals of analytical chemistry, ionization theory, concepts of acids and bases, buffer action. Also, identify acid-base, complexometric, and redox titrations in aqueous solution.</p> <p>a3. Explain the concepts of titration, dilution, behavior of indicators, difference between types of salts, and the suitable method for analysis of drug substances.</p> <p>a4. Comparing between the different types of solution, electrolyte and nonelectrolyte, acid and base, classical methods of titrimetry, different types of titration indicators, the relationship between different expressing the concentrations.</p> <p>a5. Calculate the pH of strong and weak acids, strong and weak bases, different salts. Also, calculation the concentration by</p>	<p>Lectures method, group discussion and tutorial</p>	<p>Oral Exam, homework, report, Quizzes, Short answers and Written exam</p>

using different expressing, and concentration of volumetric titration by using molarity and normality		

(B) Alignment Course Intended Learning Outcomes of Intellectual Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies

(C) Alignment Course Intended Learning Outcomes of Professional and Practical Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
	-	-

(D) Alignment Course Intended Learning Outcomes of Transferable Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies

V. Course Content:					
A – Theoretical Aspect:					
Order	Quantitative analysis	Learning Outcomes	Sub Topics List	Number of Weeks	Contact hours
1	Quantitative analysis	a1, a2,	Quantitative analysis: <ul style="list-style-type: none"> introduction; qualitative and quantitative analysis, role of analytical chemistry in pharmacy and medicine. Basic Terms of titration (Titration, titrant and titrand, analyte, and titration Error. Requirements of Volumetric (Titrimetric) Titration 	1	6

			<ul style="list-style-type: none"> • Classification of volumetric (Titrimetric) methods: <ul style="list-style-type: none"> ➤ Acid-Base titration (neutralization) ➤ Reduction-oxidation titration ➤ Precipitation titration ➤ Complexometric titration. • Some Definitions: <ul style="list-style-type: none"> ➤ Equivalence point and End point ➤ Indicator, and requirements of indicators • Standard Solution: <ul style="list-style-type: none"> ➤ Properties of primary standard substance ➤ Preparation of Standard solutions <p>- Examples on the standard solutions</p>		
2	Solutions and Methods for expressing the concentration	a1, a2, a3, a4, a5	<p>Solutions and Methods for expressing the concentration</p> <ul style="list-style-type: none"> • Solution and Definitions • Dilute solution, Concentrated solution, Unsaturated solution, Saturated solution, and Supersaturated solution. • Electrolytes and Nonelectrolytes • Classification of Electrolytes. • Strong • Weak • Methods for Expressing the Concentration: <ul style="list-style-type: none"> ➤ Concentration ➤ Strength of a Solution (S) ➤ Percent by Mass (w/w) or (g/g) ➤ Percent by Mass per Volume (w/v) ➤ Percent by Volume (v/v) ➤ Mole Fraction (X) ➤ Molality (m) ➤ Parts per Million (ppm) ➤ Molarity (M) ➤ Normality (N) ➤ Equivalent weight (Eq.wt) for acids and bases, redox reaction, and salts 	3	6

			<ul style="list-style-type: none"> • Relation between Different expressing the concentrations <ul style="list-style-type: none"> ➤ Relationship between Percent by Mass (w/w) and Molarity ➤ Relation between Percent by Mass (w/w) and Normality ➤ Relationship between Normality and Molarity ➤ Relation between Percent by Mass (w/w) and Percent by Mass per Volume (w/v) ➤ Relation between (ppm) and Molarity • Dilution and Concentration by using different methods • Concentration of the Ions - Applications involving molarity, normality and weight percent calculations. 		
3	Mid-term Exam	a1, a2, a3,a4,a5	Exam	1	
4	Acid – Base Equilibrium	a1, a2, a3,a4,a5	Acid – Base Equilibrium <ul style="list-style-type: none"> • Definitions of Acids and Bases <ul style="list-style-type: none"> ➤ Acids and Bases Arrhenius Definitions ➤ Lewis Definitions ➤ Lowry – Bronsted Definitions • Conjugate Acids and Bases • Relationship Between Strengths in Conjugate Acid/Base Pairs • Ion Product of Water, K_w and calculate $[H^+]$ and $[OH^-]$. • The pH Scale and calculate pH and pOH. • Strong and Weak Acids and Bases • k_a, k_b, and their Relation to K_w • Types of Acids: monoprotic, diprotic, and triprotic • Strength of Acids and Bases • Buffer Solutions: <ul style="list-style-type: none"> ➤ Definition of buffer solution. 	2	4

			<ul style="list-style-type: none"> ➤ Preparation of Buffer Solutions ➤ How Buffer Solutions Resist Changing in pH ➤ Calculation of pH Values of Buffer Mixtures • pH of Salts <ul style="list-style-type: none"> ➤ Salts derived from a strong acid and a strong base ➤ Salts derived from a strong acid and a weak base ➤ Salts derived from a strong base and a weak acid - Salts derived from a weak acid and a weak base 		
5	Neutralization Reactions (Acid – Base Titration)	a1, a2, a3,a4,a5	Neutralization Reactions (Acid – Base Titration) <ul style="list-style-type: none"> • Neutralization reactions • acid-base titrations • titration curve • factors affecting. - Calculation involving applications 	1	2
6	Precipitation titrations	a1, a2, a3,a4,a5	<ul style="list-style-type: none"> - Solubility product constant, -Principle of precipitation reaction, - Factors affecting solubility of precipitates, -Types of argentimetric titration and end point detection in Mohr's, Volhard's, Fajan's methods. - Pharmaceutical applications 	1	2
7	Complexometric titrations	a1, a2, a3,a4,a5	Complexometric titrations: <ul style="list-style-type: none"> • Complex-formation titration • Classification of chelating agents • Factors affecting the stability of complex ions. • EDTA titrations and Applications of EDTA. Cyanometric titrations. - Pharmaceutical applications 	1	2
8	Redox titration	a1, a2, a3,a4,a5	Redox titration: <ul style="list-style-type: none"> • Equivalency in Redox titrations • Nernst equation • Redox indicators • Standard oxidation potential • Redox titration curves 	1	2

			<ul style="list-style-type: none"> • Permanganate titrations • Potassium dichromate as oxidizing agent • Cerimetric titration Iodine- iodide system -Pharmaceutical applications		
9	Final Exam	a1, a2, a3,a4,a5	exam	1	2
Number of Weeks /and Units Per Semester				14	24
B - Practical Aspect: (if any)					
Order	Tasks/ Experiments	Number of Weeks	contact hours	Learning Outcomes	
1	<ul style="list-style-type: none"> • Introduction to how to use the tools of analytical work. Handling of Analytical balance and calibration of fractional weights. 	2	2	a1,a2	
2	Preparation and Standardization of 0.1 N Sodium Hydroxide Solution.	3	2	a1, a2, a3,a4,a5	
3	Preparation and Standardization of 0.1 N Hydrochloric Acid Solution.	4	2	a1, a2, a3,a4,a5	
4	standardization of acetic acid with 0.1 N Sodium Hydroxide Solution.	5	2	a1, a2, a3,a4,a5	
5	Assay of Sodium carbonate I.P. and assay of Sodium bicarbonate I.P.	6	2	a1, a2, a3,a4,a5	
6	Mid practical exam	7	2	a1, a2, a3,a4,a5	
7	Preparation of buffer solution	8	2	a1, a2, a3,a4,a5	
8	Experiment on choice of indicator	9	2	a1, a2, a3,a4,a5	
9	Analysis of commercial antacid tablets	10	2	a1, a2, a3,a4,a5	
10	Determination of hardness of water (Ca ²⁺ and Mg ²⁺).	11	2	a1, a2, a3,a4,a5	
11	Standardization of N/10 KMnO ₄ solution.	12	2	a1, a2, a3,a4,a5	
12	Final exam practical	13	2	a1, a2, a3,a4,a5	
Number of Weeks /and Units Per Semester			14		
VI. Teaching strategies of the course:					
- Lectures method, Discussions, Small group discussions - Tutorials and Practice session.					

VII. Assignments:				
No	Assignments	Aligned CILOs (symbols)	Week Due	Mark
1	Assignment 1	a1, a2, a3,a4,a5	ALL	10 %
2	Assignment 2	a1, a2, a3,a4,a5	3	10 %
3	Assignment 2	a1, a2, a3,a4,a5	10	10 %

VIII. Schedule of Assessment Tasks for Students During the Semester:					
No.	Assessment Method	Week Due	Mark	Proportion of Final Assessment	Aligned Course Learning Outcomes
1	Assignments	2-6-11	20	20 %	a1, a2, a3,a4,a5
2	Mid exam	7	20	20 %	a1, a2, a3,a4,a5
3	Test II	10	10	10%	
	Attendance	10	10	10%	
3	Final Exam (theoretical)	13-14	40	40 %	a1, a2, a3,a4,a5
4	Total		100	100%	

IX. Learning Resources:	
Author, (Year), Book Title, Edition, Publisher, Country of publishing	
1- Required Textbook(s) (maximum two).	
1- Douglas A. Skoog, Donald M. West, F. James Holler and Stanley R. Crouch. 2004. Fundamentals of Analytical Chemistry, 8 th edition, Thomson Brooks/Cole, Belmont, USA. 2- G H Jeffery, J Bassatt, J Mendham, R C Denny, 1979. Vogel's Textbook of qualitative chemical analysis, 5 th edition, Longman group UK Limited, London, England. 3- F.W. Fifield and D. Kealey, 2000, "Principles and Practice of Analytical Chemistry" 5 th Edition, Blackwell Science, London.	
2- Essential References.	
1- DEAN'S, 2004. Analytical Chemistry Handbook, 2 nd edition, McGraw-Hill Handbooks, New York USA.	

- 2- Gary, D.C, 1986., Analytical Chemistry, 4th ed. John Wiley and Sons, New York.
- 3- Somenath Mitra, 2003. Sample Preparation Techniques in Analytical Chemistry, A John Wiley & Sons, Inc., Publication, Canada.
- 4- K. Danzer, 2007. Analytical Chemistry Theoretical and Metrological Fundamentals, Springer-Verlag Berlin Heidelberg.
- 5- Lectures Notes and Practical Manual.

3- Electronic Materials and Web Sites *etc.*

1. the Analyst;
2. J. Pharm. & Biomed. Anal.
3. J. Assoc. off Anal. Chem.
4. The Analytical Abstracts database (<http://www.rsc.org/CFAA/AASearchPage.cfm>)
5. The Analytical Forum on ChemWeb (<http://analytical.chemweb.com/search/search.exe>)

X. Course Policies:

1	<p>Class Attendance:</p> <ol style="list-style-type: none"> 1. Attendance in all classes is required. There are no exceptions to this policy. 2. Roll will be called in the very beginning of each class. If you arrive after roll has been called, you may be marked as absent. 3. In any regular semester or summer term, students may miss no more than the equivalent of one third of class sessions scheduled. Students who exceed the above limits are automatically given an (AW) grade in the course by the UMS, and consequently not be allowed to attend class any longer.
2	<p>Tardy:</p> <ol style="list-style-type: none"> 1. All students are expected to conduct themselves in a professional manner. Unprofessional behavior such as, but not limited to, repeated disruption of class (including habitually walking in after class has started), sleeping in class, doing other course work in class, reading a newspaper in class, a ringing cell phone, frequent side conversations with other students and/or rudeness toward any person will be considered a serious violation of this standard and will lower your grade accordingly. Please be sure to turn off your cell phone before the start of class. 2. Attention to detail entails being prepared for class. This would include, but is not limited to; having a pencil/pen, note pad, calculator; reading and following the course syllabus, etc. All students are expected to conduct themselves in a professional manner. Unprofessional behavior such as, but not limited to, repeated disruption of class (including habitually walking in after class has started), sleeping in class, doing other course work in class, reading a newspaper in class, a ringing cell phone, frequent side conversations with other students and/or rudeness toward any person will be considered a serious violation of this standard and will lower your grade accordingly. Please be sure to turn off your cell phone before the start of class.

	<p>3. Attention to detail entails being prepared for class. This would include, but is not limited to; having a pencil/pen, note pad, calculator; reading and following the course syllabus, etc.</p>
3	<p>Exam Attendance/Punctuality: As per university council decision, a student is eligible for a Quizzes, Midterm or Final examination make-up if and only if he/she had the following incidents:</p> <ol style="list-style-type: none"> 1. Sickness; proved by hospitalization report; that is; a discharge summary is necessary. 2. Death in the family proved by a death certificate or equivalent and personal identification. 3. Accidents proved by an expert report. 4. Military/Official engagement.
4	<p>Assignments & Projects: Homework should be clearly presented i.e.:</p> <ol style="list-style-type: none"> 1. It should be written on A4 paper. 2. It should include a title page (Course Name, Semester, Date, Name...). 3. Your instructor will ask you to submit your homework online or as a hard copy. In the latter case, it should be stapled together.
5	<p>Cheating:</p> <ul style="list-style-type: none"> • Cheating is strictly prohibited behavior. • University regulations will be pursued and enforced on any cheating student.
6	<p>Plagiarism:</p> <ul style="list-style-type: none"> • Plagiarism is defined as “copying or stealing someone else’s words or ideas and claiming or presenting them as if they were your own.” • University regulations will be pursued and enforced on any plagiarism attempt.
7	<p>Other policies: Please refer to the university policy.</p>

**Course Specification
 Of PHAR- CHEM205-Quantitative Analysis**

I. - Information about Faculty Member Responsible for the Course:							
Name of Faculty Member	Associate Prof. Abdulmajed Alsaifi	Office Hours					
Location & Telephone No.	711134976	SAT	SUN	MON	TUE	WED	THU
E-mail			√				

II. Course Identification and General Information:						
1	Course Title:	Quantitative Analysis				
2	Course Number & Code:	CHEM205				
3	Credit hours:	C.H				Total
		Theory	Seminars, exercises.	Practical	Field training	
		2	-	-	-	
4	Study level/year at which this course is offered:	First Year				
5	Pre –requisite (if any):	CHEM205				
6	Co –requisite (if any):	CHEM200				
7	Program (s) in which the course is offered	CHEM205L - CHEM250				
8	Language of teaching the course:	English				
9	System of study:	Credits Hours System				
10	Mode of delivery:	Lectures				
11	Location of teaching the course:	LIU Sana'a				

III. Course Description:	
The course is devoted to the exploration of principles of qualitative and quantitative analysis, methods expressing of the concentrations, principles of volumetric analysis, acid-base equilibria in aqueous, acid-base titration, complexometric titrations, redox – titration and their applications in both solutions. Practical applications accompany the topics of this course.	

IV. Intended learning outcomes (ILOs) of the course:

Upon successful completion of the course, students would be able to:

1. Knowing the classical methods of analysis (titrimetry), types of reaction in titrimetry, types of solutions, methods for expressing the concentration and explain the application of these principles in the pharmaceutical analysis of drug substances.
2. Identify the principles of basic and pharmaceutical analytical chemistry such as fundamentals of analytical chemistry,
3. ionization theory, concepts of acids and bases, buffer action. Also, identify acid-base, complexometric, and redox titrations
4. in aqueous solution.
5. Explain the concepts of titration, dilution, behavior of indicators, difference between types of salts, and the suitable method for analysis of drug substances.
6. Comparing between the different types of solution, electrolyte and nonelectrolyte, acid and base, classical methods of titrimetry, different types of titration indicators, the relationship between different expressing the concentrations.
7. Calculate the pH of strong and weak acids, strong and weak bases, different salts. Also, calculation the concentration by using different expressing, and concentration of volumetric titration by using molarity and normality

V. Course Content:

Distribution of Semester Weekly Plan Of course Topics/Items and Activities.

A – Theoretical Aspect:

Order	Topics List	Week Due	Contact Hours
1	Quantitative analysis: <ul style="list-style-type: none">• introduction; qualitative and quantitative analysis, role of analytical chemistry in pharmacy and medicine.• Basic Terms of titration (Titration, titrant and titrand, analyte, and titration Error.• Requirements of Volumetric (Titrimetric) Titration• Classification of volumetric (Titrimetric) methods:<ul style="list-style-type: none">➤ Acid-Base titration (neutralization)➤ Reduction-oxidation titration➤ Precipitation titration➤ Complexometric titration.	1	2
2	<ul style="list-style-type: none">• Some Definitions:<ul style="list-style-type: none">➤ Equivalence point and End point➤ Indicator, and requirements of indicators• Standard Solution:<ul style="list-style-type: none">➤ Properties of primary standard substance➤ Preparation of Standard solutions Examples on the standard solutions	1	2
3	Solutions and Methods for expressing the concentration <ul style="list-style-type: none">• Solution and Definitions• Dilute solution, Concentrated solution, Unsaturated solution, Saturated solution, and Supersaturated solution.• Electrolytes and Nonelectrolytes• Classification of Electrolytes.• Strong	2	2

	<ul style="list-style-type: none"> • Weak 		
4	<ul style="list-style-type: none"> • Methods for Expressing the Concentration: <ul style="list-style-type: none"> ➢ Concentration ➢ Strength of a Solution (S) ➢ Percent by Mass (w/w) or (g/g) ➢ Percent by Mass per Volume (w/v) ➢ Percent by Volume (v/v) ➢ Mole Fraction (X) ➢ Molality (m) ➢ Parts per Million (ppm) ➢ Molarity (M) ➢ Normality (N) ➢ Equivalent weight (Eq.wt) for acids and bases, redox reaction, and salts 	1	2
5	<ul style="list-style-type: none"> • Relation between Different expressing the concentrations <ul style="list-style-type: none"> ➢ Relationship between Percent by Mass (w/w) and Molarity ➢ Relation between Percent by Mass (w/w) and Normality ➢ Relationship between Normality and Molarity ➢ Relation between Percent by Mass (w/w) and Percent by Mass per Volume (w/v) ➢ Relation between (ppm) and Molarity • Dilution and Concentration by using different methods • Concentration of the Ions <p>Applications involving molarity, normality and weight percent calculations.</p>	1	2
6	Mid Exam	1	2
4	<p>Acid – Base Equilibrium</p> <ul style="list-style-type: none"> • Definitions of Acids and Bases <ul style="list-style-type: none"> ➢ Acids and Bases Arrhenius Definitions ➢ Lewis Definitions ➢ Lowry – Bronsted Definitions • Conjugate Acids and Bases • Relationship Between Strengths in Conjugate Acid/Base Pairs • Ion Product of Water, K_w and calculate $[H^+]$ and $[OH^-]$. • The pH Scale and calculate pH and pOH. • Strong and Weak Acids and Bases • K_a, K_b, and their Relation to K_w • Types of Acids: <ul style="list-style-type: none"> monoprotic, diprotic, and triprotic 	2	2
	<ul style="list-style-type: none"> • Strength of Acids and Bases • Buffer Solutions: <ul style="list-style-type: none"> ➢ Definition of buffer solution. ➢ Preparation of Buffer Solutions ➢ How Buffer Solutions Resist Changing in pH ➢ Calculation of pH Values of Buffer Mixtures • pH of Salts <ul style="list-style-type: none"> ➢ Salts derived from a strong acid and a strong base ➢ Salts derived from a strong acid and a weak base ➢ Salts derived from a strong base and a weak acid 	1	2
5	<p>Neutralization Reactions (Acid – Base Titration)</p> <ul style="list-style-type: none"> • Neutralization reactions • acid-base titrations • titration curve • factors affecting. <p>Calculation involving applications</p>	1	2

6	- Solubility product constant, -Principle of precipitation reaction, - Factors affecting solubility of precipitates, Volhard Titration a. Principles of precipitation titration b. Comparison between the different types of precipitation methods c. Calculations and procedures	1	2
7	EDTA Titrations a. Applications of complexometry b. Chelation effect and therapy c. Types of EDTA titrations d. Applied exercises	1	2
8	Redox titration: • Equivalency in Redox titrations Electrochemistry and Redox Titrations a. How to balance a Redox reaction b. Applications of redox titrations • Permanganate titrations • Potassium dichromate as oxidizing agent c. Electrochemical cell construction d. Definition of Electrode potential and cell potential	1	2
14	Final Exam		
Number of Weeks /and Units Per Semester		16	24
B – Practical Aspect: (if any)			
Order	Topics List	Week Due	Contact Hours
1	Introduction to how to use the tools of analytical work. Handling of Analytical balance and calibration of fractional weights.	2	2
2	Preparation and Standardization of 0.1 N Sodium Hydroxide Solution.	3	2
3	Preparation and Standardization of 0.1 N Hydrochloric Acid Solution.	4	2
4	standardization of acetic acid with 0.1 N Sodium Hydroxide Solution.	5	2
5	Assay of Sodium carbonate I.P. and assay of Sodium bicarbonate I.P.	6	2
6	Mid practical exam	7	2
7	Preparation of buffer solution	8	2
8	Experiment on choice of indicator	9	2
9	Analysis of commercial antacid tablets	10	2
10	Determination of hardness of water (Ca ²⁺ and Mg ²⁺).	11	2

11	Standardization of N/10 KMnO ₄ solution.	12	2	
12	Final exam practical	13-14		
Number of Weeks /and Units Per Semester		16	24	
VI. Teaching strategies of the course:				
- Lectures method, Discussions, Small group discussions, Tutorials and Practice session.				
VII. Assignments:				
No	Assignments	Week Due	Mark	
1	Assignment 1	2	5	
2	Assignment 2	6	5	
3	Assignment 2	11	10	
4				
VIII. Schedule of Assessment Tasks for Students During the Semester:				
Assessment	Type of Assessment Tasks	Week Due	Mark	Proportion of Final Assessment
1	Assignments	2-6-11	20	20 %
2	Mid exam	7	20	20 %
3	Test II	10	10	10%
4	Attendance	10	10	10%
5	Final Exam (theoretical)	16	40	40 %
6	Total		100	100%
IX. Learning Resources:				
Author, (Year), Book Title, Edition, Publisher, Country of publishing				
1- Required Textbook(s) (maximum two).				
1- Douglas A. Skoog, Donald M. West, F. James Holler and Stanley R. Crouch. 2004. Fundamentals of Analytical Chemistry, 8 th edition, Thomson Brooks/Cole, Belmont, USA. 2- G H Jeffery, J Bassatt, J Mendham, R C Denny, 1979. Vogel's Textbook of qualitative chemical analysis, 5 th edition, Longman group UK Limited, London, England. 3- F.W. Fifeild and D. Kealey, 2000, "Principles and Practice of Analytical Chemistry" 5 th Edition, Blackwell Science, London.				
2- Essential References.				
1- DEAN'S, 2004. Analytical Chemistry Handbook, 2 nd edition, McGraw-Hill Handbooks, New York, USA 2- Gary, D.C, 1986., Analytical Chemistry, 4th ed. John Wiley and Sons, New York.				

- 3- Somenath Mitra, 2003. Sample Preparation Techniques in Analytical Chemistry, A John Wiley & Sons, Inc., Publication, Canada.
- 4- K. Danzer, 2007. Analytical Chemistry Theoretical and Metrological Fundamentals, Springer-Verlag Berlin Heidelberg.
- 5- Lectures Notes and Practical Manual.

3- Electronic Materials and Web Sites *etc.*

1. the Analyst;
2. J. Pharm. & Biomed. Anal.
3. J. Assoc. off Anal. Chem.
4. The Analytical Abstracts database (<http://www.rsc.org/CFAA/AAsearchPage.cfm>)
5. The Analytical Forum on ChemWeb (<http://analytical.chemweb.com/search/search.exe>)

X. Course Policies:

Unless otherwise stated, the normal course administration policies and rules of the School of Business apply.

1 Class Attendance:

1. Attendance in all classes is required. There are no exceptions to this policy.
2. Roll will be called in the very beginning of each class. If you arrive after roll has been called, you may be marked as absent.
3. In any regular semester or summer term, students may miss no more than the equivalent of one third of class sessions scheduled. Students who exceed the above limits are automatically given an (AW) grade in the course by the UMS, and consequently not be allowed to attend class any longer.

2 Tardy:

1. All students are expected to conduct themselves in a professional manner. Unprofessional behavior such as, but not limited to, repeated disruption of class (including habitually walking in after class has started), sleeping in class, doing other course work in class, reading a newspaper in class, a ringing cell phone, frequent side conversations with other students and/or rudeness toward any person will be considered a serious violation of this standard and will lower your grade accordingly. Please be sure to turn off your cell phone before the start of class.
2. Attention to detail entails being prepared for class. This would include, but is not limited to; having a pencil/pen, note pad, calculator; reading and following the course syllabus, etc. All students are expected to conduct themselves in a professional manner. Unprofessional behavior such as, but not limited to, repeated disruption of class (including habitually walking in after class has started), sleeping in class, doing other course work in class, reading a newspaper in class, a ringing cell phone, frequent side conversations with other students and/or rudeness toward any person will be considered a serious violation of this standard and will lower your grade accordingly. Please be sure to turn off your cell phone before the start of class.
3. Attention to detail entails being prepared for class. This would include, but is not limited to; having a pencil/pen, note pad, calculator; reading and following the course syllabus, etc.

3 Exam Attendance/Punctuality:

As per university council decision, a student is eligible for a Quizzes, Midterm or Final examination

	<p>make-up if and only if he/she had the following incidents:</p> <ol style="list-style-type: none"> 1. Sickness; proved by hospitalization report; that is; a discharge summary is necessary. 2. Death in the family proved by a death certificate or equivalent and personal identification. 3. Accidents proved by an expert report. 4. Military/Official engagement.
4	<p>Assignments & Projects:</p> <p>Homework should be clearly presented i.e.:</p> <ol style="list-style-type: none"> 1. It should be written on A4 paper. 2. It should include a title page (Course Name, Semester, Date, Name...). 3. Your instructor will ask you to submit your homework online or as a hard copy. In the latter case, it should be stapled together.
5	<p>Cheating:</p> <ul style="list-style-type: none"> • Cheating is strictly prohibited behavior. • University regulations will be pursued and enforced on any cheating student.
6	<p>Plagiarism:</p> <ul style="list-style-type: none"> • Plagiarism is defined as “copying or stealing someone else’s words or ideas and claiming or presenting them as if they were your own.” • University regulations will be pursued and enforced on any plagiarism attempt.
7	<p>Other policies:</p> <p>Please refer to the university policy.</p>

Course Specification of
 CHEM250-Organic Chemistry I

I. Course Identification and General Information:						
1	Course Title:	Organic Chemistry I				
2	Course Code & Number:	CHEM250				
3	Credit hours:	C.H			TOTAL	
		Theory	Seminars, exercises	Practical		Field training
		3				3
4	Study level/ semester at which this course is offered:	First Year, SUMMER				
5	Pre –requisite (if any):	CHEM200 ENGL150				
6	Co –requisite (if any):					
8	Program (s) in which the course is offered:	Bachelor of Clinical Pharmacy				
9	Language of teaching the course:	English				
10	Location of teaching the course:	LIU Sana'a				
11	Prepared by:	Dr. Wafa M. Al Madhaji				
12	Reviewed by:	Dr.Afrah Ali Mohammed				
13	Date of approval:					
II. Course Description:						
<p>This course will focus on laying the fundamental principles of Organic chemistry. We will analyze in depth the theory of chemical bonding, molecular structure and physicochemical properties in organic chemistry. We will cover also the acidity and basicity, inductive effect, stereochemistry and nucleophilic substitution (SN1,SN2, E1 and E2) concepts and applications. These principles will be applied to the chemistry of alkanes, alkyl halides, alcohols, ethers and alkenes in the first semester of organic chemistry.</p>						
III. Course Intended Learning Outcomes (CILOs):						
(A) Knowledge and Understanding:						
Alignment of CILOs (Course Intended Learning Outcomes) to PILOs (Program Intended Learning Outcomes)						
Knowledge and Understanding PILOs		Knowledge and Understanding CILOs				
After completing this program, graduates would be able to:		After completing this course, students would be able to:				
A1. Review the knowledge facts and principles of both basic and medical sciences.		a1. Review the basic fundamental concepts, the properties and mechanism of chemical				

	<p>interaction and reactivity of various organic molecules</p> <p>a2- Explain in depth the theory of chemical bonding, molecular structure and physicochemical properties of aromatics and their reactions such as aromaticity and electrophilic aromatic substitution.</p> <p>a3. discuss the discipline wherein structure/properties relationship is essential and where organic chemicals are the building blocks of drugs, fine chemicals, cosmetics and petrochemicals.</p>

(B) Intellectual Skills:	
Alignment of CILOs (Course Intended Learning Outcomes) to PILOs (Program Intended Learning Outcomes)	
Intellectual Skills PILOs	Intellectual Skills CILOs
After completing this program, graduates would be able to:	After completing this course, students would be able to:

(C) Professional and Practical Skills	
Alignment of CILOs (Course Intended Learning Outcomes) to PILOs (Program Intended Learning Outcomes)	
Professional and Practical Skills PILOs	Professional and Practical Skills CILOs
After completing this program, graduates would be able to:	After completing this course, students would be able to:
(D) Transferable (General) Skills:	
Alignment of CILOs (Course Intended Learning Outcomes) to PILOs (Program Intended Learning Outcomes)	
Transferable (General) Skills PILOs	Transferable (General) Skills CILOs
After completing this program, graduates would be able to:	After completing this course, students would be able to:

IV. Alignment of CILOs to Teaching and Assessment Strategies		
(A) Alignment Course Intended Learning Outcomes of Knowledge and Understanding to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
a1. Review the basic fundamental concepts, the properties and mechanism of chemical interaction and reactivity of various organic molecules	Lecture Group discussion Brainstorming method -	- Quizzes, Presentation and Written exam
a2- Explain in depth the theory of chemical bonding, molecular structure and physicochemical properties of aromatics and their reactions such as aromaticity and electrophilic aromatic substitution.	Lecture Group discussion Brainstorming method	- Quizzes, Presentation and Written exam
a3. discuss the discipline wherein structure/properties relationship is essential and where organic chemicals are the building blocks of drugs, fine chemicals, cosmetics and petrochemicals.	Lecture Group discussion Brainstorming method	- Quizzes, Presentation and Written exam
(B) Alignment Course Intended Learning Outcomes of Intellectual Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
	-	-
	-	-
	-	-
(C) Alignment Course Intended Learning Outcomes of Professional and Practical Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
	-	-
	-	-
	-	-
(D) Alignment Course Intended Learning Outcomes of Transferable Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
	-	-
	-	-
	-	-

V. Course Content:					
A – Theoretical Aspect:					
Order	Units/Topics List	Learning Outcomes	Sub Topics List	Number of Weeks	Contact hours
1	Lewis structure, binding	a1,a2	- draw Lewis structure - bonding, hybridization, - bond dissociation energy and polarity of organic molecules.	W1	3
2	Chemical properties and electronic effect	a1,a2,b1	- Acidity and basicity, inductive effect, Intermediates in organic chemistry and the theory of resonance	W2	3
3	Stereochemistry	a1,a2	- : geometrical and optical Isomerism. specific rotation and enantiomerism, R & S configuration and optical purity. One and multi chiral centers.	W3	3
4	Stereochemistry II	a1,a2	- Effect of chemical reaction on chirality nearby the chiral center - conformational isomers	W4	3
5	Alkane preparation	a1,a2,b1	- structure and reactivity, alkanes and cycloalkanes and isomers, ring structure and strain theory	W5	3
6	Alkane reaction	a1,a2,b1	- Free radical halogenations and autoxidation mechanism and stereochemistry. Relative stability of free radicals.	W6	3
7	Alkene	a1,a2,b1	Alkenes structure and properties. Synthesis via elimination	W7	3

			reactions. The E2 and E1 mechanisms		
8	Alkene reaction I	a1,a2,b1	Alkenes addition reactions mechanisms and stereochemistry of addition: Hydrogenation, hydration. Addition of hydrogen halide (Markovnikove & Anti), halogenation,.	W8	3
9	Alkene reaction II	a1,a2,b1	- Hydroboration and oxidation. Ozonolysis and oxidation with permanganate. Free radical Polymerization and diels-Alder reactions. Stabilization by resonance of allyl radical and carbocation intermediate	W9	3
10	Alkyl halide	a1,a2,b1	- Alkyl halides, structure and reactivity: Nucleophilic substitution and duality of mechanism, SN1 vs. SN2..	W10	3
11	Alkyl halide reaction	a1,a2,b1	- Nucleophilicity, steric hindrance, leaving groups ,solvent and temperature effect on mechanism	W11	3
12	Alcohols	a1,a2,b1	- Alcohols and ethers. Structure, preparations and chemistry: dehydration, halogenations, oxidation and cleavage.	W12	1.5
13	Ether.	a1,a2,b1	- Epoxides synthesis and ring opening reactions	W12	1.5
14	Final exam		-	13-14	
Number of Weeks /and Units Per Semester				14	36
B - Practical Aspect: (if any)					

Order	Tasks/ Experiments	Number of Weeks	contact hours	Learning Outcomes
1				
Number of Weeks /and Units Per Semester				
VI. Teaching strategies of the course:				
<ul style="list-style-type: none"> - Cooperative education - Group discussion - Problems solving - Brainstorming method - Interactive lectures 				

VII. Assignments:				
No	Assignments	Aligned CILOs (symbols)	Week Due	Mark
1	Assignment about the one group of stereochemistry	a1	W3	5
2	Research assignments about alkane	a1	W6	5
3	Assignments about alkyl halide	a1	W14	5

VIII. Schedule of Assessment Tasks for Students During the Semester:					
No.	Assessment Method	Week Due	Mark	Proportion of Final Assessment	Aligned Course Learning Outcomes
1	Tasks and Assignments	weekly	10	10%	a1,a2
2	Test 1	W4	10	10%	a1,a2
3	Midterm Exam	W8	30	30%	a1,a2,a3
4	Test 2	W10	10	10%	a1,a2,a3
5	Final Exam (theoretical)	W13-14	40	40%	a1,a2,a3

IX. Learning Resources:					
Author, (Year), Book Title, Edition, Publisher, Country of publishing					
1- Required Textbook(s) (maximum two).					
Organic Chemistry, by Morrison and Boyd, Sixth Edition.					
2- Essential References.					
Organic Chemistry, by F. Carey., 5 th Edition, ISBN: 0072424583					
3- Electronic Materials and Web Sites etc.					
<ol style="list-style-type: none"> 1. www.bookzz.org 2. www.libgen.io 3. http://en-booksee.org 					

X. Course Policies:	
1	<p>Class Attendance:</p> <ol style="list-style-type: none"> Attendance in all classes is required. There are no exceptions to this policy. Roll will be called in the very beginning of each class. If you arrive after roll has been called, you may be marked as absent. In any regular semester or summer term, students may miss no more than the equivalent of one third of class sessions scheduled. Students who exceed the above limits are automatically given an (AW) grade in the course by the UMS, and consequently not be allowed to attend class any longer.
2	<p>Tardy:</p> <ol style="list-style-type: none"> All students are expected to conduct themselves in a professional manner. Unprofessional behavior such as, but not limited to, repeated disruption of class (including habitually walking in after class has started), sleeping in class, doing other course work in class, reading a newspaper in class, a ringing cell phone, frequent side conversations with other students and/or rudeness toward any person will be considered a serious violation of this standard and will lower your grade accordingly. Please be sure to turn off your cell phone before the start of class. Attention to detail entails being prepared for class. This would include, but is not limited to; having a pencil/pen, note pad, calculator; reading and following the course syllabus, etc. All students are expected to conduct themselves in a professional manner. Unprofessional behavior such as, but not limited to, repeated disruption of class (including habitually walking in after class has started), sleeping in class, doing other course work in class, reading a newspaper in class, a ringing cell phone, frequent side conversations with other students and/or rudeness toward any person will be considered a serious violation of this standard and will lower your grade accordingly. Please be sure to turn off your cell phone before the start of class. Attention to detail entails being prepared for class. This would include, but is not limited to; having a pencil/pen, note pad, calculator; reading and following the course syllabus, etc.
3	<p>Exam Attendance/Punctuality:</p> <p>As per university council decision, a student is eligible for a Quizzes, Midterm or Final examination make-up if and only if he/she had the following incidents:</p> <ol style="list-style-type: none"> Sickness; proved by hospitalization report; that is; a discharge summary is necessary. Death in the family proved by a death certificate or equivalent and personal identification. Accidents proved by an expert report. Military/Official engagement.
4	<p>Assignments & Projects:</p> <p>Homework should be clearly presented i.e.:</p> <ol style="list-style-type: none"> It should be written on A4 paper. It should include a title page (Course Name, Semester, Date, Name...). Your instructor will ask you to submit your homework online or as a hard copy. In the latter case, it should be stapled together.

5	Cheating: <ul style="list-style-type: none">• Cheating is strictly prohibited behavior.• University regulations will be pursued and enforced on any cheating student.
6	Plagiarism: <ul style="list-style-type: none">• Plagiarism is defined as “copying or stealing someone else’s words or ideas and claiming or presenting them as if they were your own.”• University regulations will be pursued and enforced on any plagiarism attempt.
7	Other policies: Please refer to the university policy.

Lebanese International University
 The School of Pharmacy and Medical Sciences
 Department: CLINICAL PHARMACY
 Title of the Program: Bachelor of Clinical Pharmacy



Course Specification of
 PHAR-CHEM250 Organic Chemistry I

I. - Information about Faculty Member Responsible for the Course:							
Name of Faculty Member	Dr. Wafa M. Al Madhaji	Office Hours					
Location & Telephone No.	(967) 733744714	SAT	SUN	MON	TUE	WED	THU
E-mail	walmadhaji1983@gmail.com		√	√		√	

II. Course Identification and General Information:						
1	Course Title:	Organic Chemistry I				
2	Course Number & Code:	CHEM250				
3	Credit hours:	C.H				Total
		Theory	Seminars, exercises.	Practical	Field training	
		3				
4	Study level/year at which this course is offered:	First, SUMMER				
5	Pre –requisite (if any):	CHEM200 ENGL150				
6	Co –requisite (if any):					
7	Program (s) in which the course is offered	Bachelor of Clinical Pharmacy				
8	Language of teaching the course:	English				
9	System of study:	Credits Hours System				
10	Mode of delivery:	Lectures				
11	Location of teaching the course:	LIU Sana'a				

III. Course Description:

This course will focus on laying the fundamental principles of Organic chemistry. We will analyze in depth the theory of chemical bonding, molecular structure and physicochemical properties in organic chemistry. We will cover also the acidity and basicity, inductive effect, stereochemistry and nucleophilic substitution (SN1, SN2, E1 and E2) concepts and applications. These principles will be applied to the chemistry of alkanes, alkyl halides, alcohols, ethers and alkenes in the first semester of organic chemistry

IV. Intended learning outcomes (ILOs) of the course:

Upon successful completion of the course, students would be able to:

1. Review the basic fundamental concepts, the properties and mechanism of chemical interaction and reactivity of various organic molecules
2. Explain in depth the theory of chemical bonding, molecular structure and physicochemical properties of aromatics and their reactions such as aromaticity and electrophilic aromatic substitution.
3. Discuss the discipline wherein structure/ properties relationship is essential and where organic chemicals are the building blocks of drugs, fine chemicals, cosmetics and petrochemicals.

V. Course Content:

Distribution of Semester Weekly Plan Of course Topics/Items and Activities.

A – Theoretical Aspect:

Order	Topics List	Week Due	Contact Hours
1	Lewis structure, binding	W1	3
2	Chemical properties and electronic effect	W2	3
3	Stereochemistry	W3	3
4	Stereochemistry II	W4	3
5	Alkane preparation	W5	3
6	Alkane reaction	W6	3
7	Alkene	W7	3
8	Alkene reaction I	W8	3
9	Alkene reaction II	W9	3
10	Alkyl halide	W10	3
11	Alkyl halide reaction	W11	3
12	Alcohols & Ether.	W12	3
13	Final Exam	W13-14	
Number of Weeks /and Units Per Semester		14	36

VI. Teaching strategies of the course:

- Cooperative education
- Group discussion
- Problems solving
- Brainstorming method
- Lecture

VII. Assignments:

No	Assignments	Week Due	Mark
1	Assignment about the one group of stereochemistry	W3	5
2	Research assignments about alkane	W6	5
3	Assignments about alkyl halide	W12	5

VIII. Schedule of Assessment Tasks for Students During the Semester:

Assessment	Type of Assessment Tasks	Week Due	Mark	Proportion of Final Assessment
1	Tasks and Assignments	weekly	10	10%
2	Test 1	W4	10	10%
3	Midterm Exam	W8	30	30%
4	Test 2	W10	10	10%
5	Final Exam (theoretical)	W13-14	40	40%

IX. Learning Resources:

Author, (Year), Book Title, Edition, Publisher, Country of publishing

1- Required Textbook(s) (maximum two).

Organic Chemistry, by Morrison and Boyd, Sixth Edition.

2- Essential References.

Organic Chemistry, by F. Carey, ., 5th Edition, ISBN: 0072424583

3- Electronic Materials and Web Sites *etc.*

1. www.bookzz.org
2. www.libgen.io
3. <http://en-booksee.org>

X. Course Policies:	
Unless otherwise stated, the normal course administration policies and rules of the School of Business apply.	
1	<p>Class Attendance:</p> <ol style="list-style-type: none"> 1. Attendance in all classes is required. There are no exceptions to this policy. 2. Roll will be called in the very beginning of each class. If you arrive after roll has been called, you may be marked as absent. 3. In any regular semester or summer term, students may miss no more than the equivalent of one third of class sessions scheduled. Students who exceed the above limits are automatically given an (AW) grade in the course by the UMS, and consequently not be allowed to attend class any longer.
2	<p>Tardy:</p> <ol style="list-style-type: none"> 1. All students are expected to conduct themselves in a professional manner. Unprofessional behavior such as, but not limited to, repeated disruption of class (including habitually walking in after class has started), sleeping in class, doing other course work in class, reading a newspaper in class, a ringing cell phone, frequent side conversations with other students and/or rudeness toward any person will be considered a serious violation of this standard and will lower your grade accordingly. Please be sure to turn off your cell phone before the start of class. 2. Attention to detail entails being prepared for class. This would include, but is not limited to; having a pencil/pen, note pad, calculator; reading and following the course syllabus, etc. All students are expected to conduct themselves in a professional manner. Unprofessional behavior such as, but not limited to, repeated disruption of class (including habitually walking in after class has started), sleeping in class, doing other course work in class, reading a newspaper in class, a ringing cell phone, frequent side conversations with other students and/or rudeness toward any person will be considered a serious violation of this standard and will lower your grade accordingly. Please be sure to turn off your cell phone before the start of class. 3. Attention to detail entails being prepared for class. This would include, but is not limited to; having a pencil/pen, note pad, calculator; reading and following the course syllabus, etc.
3	<p>Exam Attendance/Punctuality:</p> <p>As per university council decision, a student is eligible for a Quizzes, Midterm or Final examination make-up if and only if he/she had the following incidents:</p> <ol style="list-style-type: none"> 1. Sickness; proved by hospitalization report; that is; a discharge summary is necessary. 2. Death in the family proved by a death certificate or equivalent and personal identification. 3. Accidents proved by an expert report. 4. Military/Official engagement.
4	<p>Assignments & Projects:</p> <p>Homework should be clearly presented i.e.:</p> <ol style="list-style-type: none"> 1. It should be written on A4 paper. 2. It should include a title page (Course Name, Semester, Date, Name...). 3. Your instructor will ask you to submit your homework online or as a hard copy. In the latter case, it should be stapled together.

5	Cheating: <ul style="list-style-type: none">• Cheating is strictly prohibited behavior.• University regulations will be pursued and enforced on any cheating student.
6	Plagiarism: <ul style="list-style-type: none">• Plagiarism is defined as “copying or stealing someone else’s words or ideas and claiming or presenting them as if they were your own.”• University regulations will be pursued and enforced on any plagiarism attempt.
7	Other policies: Please refer to the university policy.

Lebanese International University
 The School of Pharmacy and Medical Sciences
 Department: CLINICAL PHARMACY
 Title of the Program: Bachelor of Clinical Pharmacy
 Course Specification of
 PHAR-CHEM300-Organic Chemistry II



I. Course Identification and General Information:						
1	Course Title:	Organic Chemistry II				
2	Course Code & Number:	CHEM300				
3	Credit hours:	C.H			TOTAL	
		Theory	Seminars, exercises	Practical		Field training
		3				
4	Study level/ semester at which this course is offered:	Second/ fall				
5	Pre –requisite (if any):	ENGL150 CHEM250				
6	Co –requisite (if any):	CHEM300L				
8	Program (s) in which the course is offered:	Bachelor of Clinical Pharmacy				
9	Language of teaching the course:	English				
10	Location of teaching the course:	LIU Sana'a				
11	Prepared by:	Dr. Wafa M. Al Madhagi				
12	Reviewed by:	Dr.Afrah Ali Mohammed				
13	Date of approval:					

II. Course Description:	
<p>This course will continue the study of the fundamental principles of Organic chemistry started in CHEM 250. We will analyze in depth the theory of chemical bonding, molecular structure and physicochemical properties of aromatics and their reactions such as aromaticity and electrophilic aromatic substitution. The chemistry and properties of other functional groups such as aldehydes, ketones, carboxylic acids and amines and their derivatives. The final part of this course will focus on spectroscopy and structure of organic compounds</p>	

III. Course Intended Learning Outcomes (CILOs):	
(A) Knowledge and Understanding:	
Alignment of CILOs (Course Intended Learning Outcomes) to PILOs (Program Intended Learning Outcomes)	
Knowledge and Understanding PILOs	Knowledge and Understanding CILOs
After completing this program, graduates would be able to:	After completing this course, students would be able to:
A1. Review the knowledge facts and principles of both basic and medical sciences.	a1. Review the basic fundamental concepts, the properties and mechanism of chemical interaction and reactivity of various organic molecules a2. Explain in depth the theory of chemical bonding, molecular structure and physicochemical properties of aromatics and their reactions such as aromaticity and electrophilic aromatic substitution. a3. Discuss the discipline wherein structure/properties relationship is essential and where organic chemicals are the building blocks of drugs, fine chemicals, cosmetics and petrochemicals. a4. recognize the basic fundamental concepts, the properties and mechanism of chemical interaction and reactivity of various organic molecules

(B) Intellectual Skills:	
Alignment of CILOs (Course Intended Learning Outcomes) to PILOs (Program Intended Learning Outcomes)	
Intellectual Skills PILOs	Intellectual Skills CILOs
After completing this program, graduates would be able to:	After completing this course, students would be able to:

(C) Professional and Practical Skills	
Alignment of CILOs (Course Intended Learning Outcomes) to PILOs (Program Intended Learning Outcomes)	
Professional and Practical Skills PILOs	Professional and Practical Skills CILOs

After completing this program, graduates would be able to:	After completing this course, students would be able to:

(D) Transferable (General) Skills:	
Alignment of CILOs (Course Intended Learning Outcomes) to PILOs (Program Intended Learning Outcomes)	
Transferable (General) Skills PILOs	Transferable (General) Skills CILOs
After completing this program, graduates would be able to:	After completing this course, students would be able to:

IV. Alignment of CILOs to Teaching and Assessment Strategies		
(A) Alignment Course Intended Learning Outcomes of Knowledge and Understanding to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
a1.Review the basic fundamental concepts, the properties and mechanism of chemical interaction and reactivity of various organic molecules	Lecture Group discussion Brainstorming method -	- Quizzes, Presentation and Written exam
a2.Explain in depth the theory of chemical bonding, molecular structure and physicochemical properties of aromatics and their reactions such as aromaticity and electrophilic aromatic substitution.	Lecture Group discussion Brainstorming method -	- Quizzes, Presentation and Written exam
a3.Discuss the discipline wherein structure/properties relationship is essential and where organic chemicals are the building blocks of drugs, fine chemicals, cosmetics and petrochemicals.	Lecture Group discussion Brainstorming method -	- Quizzes, Presentation and Written exam
a4. recognize the basic fundamental concepts, the properties and mechanism of chemical interaction and reactivity of various organic molecules	Lecture Group discussion Brainstorming method -	- Quizzes, Presentation and Written exam

(B) Alignment Course Intended Learning Outcomes of Intellectual Skills to Teaching Strategies and Assessment Strategies:

Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
	-	-
	-	-
	-	-

(C) Alignment Course Intended Learning Outcomes of Professional and Practical Skills to Teaching Strategies and Assessment Strategies:

Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
	-	-
	-	-
	-	-

(D) Alignment Course Intended Learning Outcomes of Transferable Skills to Teaching Strategies and Assessment Strategies:

Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
	-	-
	-	-
	-	-

V. Course Content:**A – Theoretical Aspect:**

Order	Units/Topics List	Learning Outcomes	Sub Topics List	Number of Weeks	Contact hours
1	Alkynes,	a1,	Preparation and properties, electrophilic addition reactions acidity, hydration and tautomerism. -	W1	1.5
2	Aromaticity and Benzene Structure,	a1,a2,a3,a4	stability and resonance, the Huckel rule. heats of hydrogenation and combustion. -	W2	1.5

3	Electrophilic aromatic substitution I	a1,a2,a3,a4	Effect of substituent groups, orientation and relative reactivity. Mechanism of nitration, sulfonation and alkylation.	W3	3
4	Electrophilic aromatic substitution II	a1,a2,a3,a4	Electron release via resonance. Friedel-Crafts alkylation. mechanism and limitations. Aliphatic/aromatic compounds structure and chemistry. Oxidation and reduction. -	W4	3
5	Aldehydes and ketones,	a1,a2,a3,a4	Structure and preparation. Friedel-Crafts acylation, or oxidation of alcohols.. Nucleophilic addition, oxidation, reduction, Acetal, Grignard reagents and analysis. -	W5	3
6	Aldehydes and ketones reaction	a1,a2,a3,a4	Acidity of alpha-hydrogen, Aldol condensation, dehydration of aldol products and uses in synthesis. halogenation of ketones The Wittig reactions.	W6	3
7	Carboxylic acids and derivatives,	a1,a2,a3,a4	Structure, preparation and reactions. Ionization, K_a , inductive effect, conversion to ester, amides and acid chlorides. Diacids. Nucleophilic acyl substitution. Hydrolysis of esters and amides. -	W7	3

8	Amines:	a1,a2,a3,a4	Classification, nomenclature and preparation ammonolysis of halides, reductive amination, Hofmann rearrangement.	W8	3
9	Heterocyclic amines	a1,a2,a3,a4	Reactions, basicity and substituents effect. Aromatic amines E2 elimination, diazonium salts. -	W9	3
10	Spectroscopy and structure Determination of structure	a1,a2,a3,a4	- principle - type - UV-visible	W10	3
11	Spectroscopy	a1,a2,a3,a4	Infra Red, Mass spectroscopy -	W11	3
12	Spectroscopy	a1,a2,a3,a4	- NMR of hydrogen carbon NMR	W12	3
13	Spectroscopy	a1,a2,a3,a4	- APPLICATION	W13	3
14	Final Exam	all	-	W13	
Number of Weeks /and Units Per Semester				14	36

B - Practical Aspect: (if any)				
Order	Tasks/ Experiments	Number of Weeks	contact hours	Learning Outcomes
1				
Number of Weeks /and Units Per Semester				

VI. Teaching strategies of the course:
<ul style="list-style-type: none"> - Cooperative education - Group discussion - Problems solving - Brainstorming method
- Interactive lectures

VII. Assignments:				
No	Assignments	Aligned CILOs (symbols)	Week Due	Mark
1	Assignment about the one group of BENZEN	a1,b1	W3	5
2	Research assignments about amine	a1,b1	W6	5
3	Assignments about alkyl spectroscopy	a1,b1	W14	5

VIII. Schedule of Assessment Tasks for Students During the Semester:					
No.	Assessment Method	Week Due	Mark	Proportion of Final Assessment	Aligned Course Learning Outcomes
1	Tasks and Assignments	Weekly	10	10%	a1,a2,a3,a4
2	Test 1	W4	10	10%	a1,a2,a3,a4
3	Midterm Exam	W10	20	20%	a1,a2,a3,a4
4	Test 2	W13	10	10%	a1,a2,a3,a4
5	Attendance	All	10	10%	a1,a2,a3,a4
6	Final Exam (theoretical)	W16	50	40%	a1,a2,a3,a4

IX. Learning Resources:	
Author, (Year), Book Title, Edition, Publisher, Country of publishing	
1- Required Textbook(s) (maximum two).	
Organic Chemistry, by Morrison and Boyd, Sixth Edition.	
2- Essential References.	
Organic Chemistry, by F. Carey,., 5 th Edition, ISBN: 0072424583	
3- Electronic Materials and Web Sites etc.	
1. www.bookzz.org	
2. www.libgen.io	
http://en-booksee.org	

X. Course Policies:	
1	<p>Class Attendance:</p> <ol style="list-style-type: none"> 1. Attendance in all classes is required. There are no exceptions to this policy. 2. Roll will be called in the very beginning of each class. If you arrive after roll has been called, you may be marked as absent. 3. In any regular semester or summer term, students may miss no more than the equivalent of one third of class sessions scheduled. Students who exceed the above limits are automatically given an (AW) grade in the course by the UMS, and consequently not be allowed to attend class any longer.
2	<p>Tardy:</p> <ol style="list-style-type: none"> 1. All students are expected to conduct themselves in a professional manner. Unprofessional behavior such as, but not limited to, repeated disruption of class (including habitually walking in after class has started), sleeping in class, doing other course work in class, reading a newspaper in class, a ringing cell phone, frequent side conversations with other students and/or rudeness toward any person will be considered a serious violation of this standard and will lower your grade accordingly. Please be sure to turn off your cell phone before the start of class. 2. Attention to detail entails being prepared for class. This would include, but is not limited to; having a pencil/pen, note pad, calculator; reading and following the course syllabus, etc. All students are expected to conduct themselves in a professional manner. Unprofessional behavior such as, but not limited to, repeated disruption of class (including habitually walking in after class has started), sleeping in class, doing other course work in class, reading a newspaper in class, a ringing cell phone, frequent side conversations with other students and/or rudeness toward any person will be considered a serious violation of this standard and will lower your grade accordingly. Please be sure to turn off your cell phone before the start of class. 3. Attention to detail entails being prepared for class. This would include, but is not limited to; having a pencil/pen, note pad, calculator; reading and following the course syllabus, etc.
3	<p>Exam Attendance/Punctuality:</p> <p>As per university council decision, a student is eligible for a Quizzes, Midterm or Final examination make-up if and only if he/she had the following incidents:</p> <ol style="list-style-type: none"> 1. Sickness; proved by hospitalization report; that is; a discharge summary is necessary. 2. Death in the family proved by a death certificate or equivalent and personal identification.

	<ol style="list-style-type: none"> 3. Accidents proved by an expert report. 4. Military/Official engagement.
4	<p>Assignments & Projects: Homework should be clearly presented i.e.:</p> <ol style="list-style-type: none"> 1. It should be written on A4 paper. 2. It should include a title page (Course Name, Semester, Date, Name...). 3. Your instructor will ask you to submit your homework online or as a hard copy. In the latter case, it should be stapled together.
5	<p>Cheating:</p> <ul style="list-style-type: none"> • Cheating is strictly prohibited behavior. • University regulations will be pursued and enforced on any cheating student.
6	<p>Plagiarism:</p> <ul style="list-style-type: none"> • Plagiarism is defined as “copying or stealing someone else’s words or ideas and claiming or presenting them as if they were your own.” • University regulations will be pursued and enforced on any plagiarism attempt.
7	<p>Other policies: Please refer to the university policy.</p>

Lebanese International University
 The School of Pharmacy and Medical Sciences
 Department: CLINICAL PHARMACY
 Title of the Program: Bachelor of Clinical Pharmacy



Course Specification of
 PHAR-CHEM300-Organic Chemistry II

I. - Information about Faculty Member Responsible for the Course:							
Name of Faculty Member	Dr. Wafa M. Al Madhaji	Office Hours					
Location & Telephone No.	(967) 733744714	SAT	SUN	MON	TUE	WED	THU
E-mail	walmadhaji1983@gmail.com		√	√		√	
II. Course Identification and General Information:							
1	Course Title:	Organic Chemistry II					
2	Course Number & Code:	CHEM300					
3	Credit hours:	C.H				Total	
		Theory	Seminars, exercises.	Practical	Field training		
		3					3
4	Study level/year at which this course is offered:	Second/ fall					
5	Pre –requisite (if any):	ENGL150 CHEM250					
6	Co –requisite (if any):	CHEM300L					
7	Program (s) in which the course is offered						
8	Language of teaching the course:	English					
9	System of study:	Credits Hours System					
10	Mode of delivery:	Lectures					
11	Location of teaching the course:	LIU Sana'a					
III. Course Description:							
This course will continue the study of the fundamental principles of Organic chemistry started in CHEM 250. We will analyze in depth the theory of chemical bonding, molecular structure and physicochemical properties of aromatics and their reactions such as aromaticity and electrophilic aromatic substitution. The chemistry and properties of other functional groups such aldehydes, ketones, carboxylic acids and amines and their derivatives. The final part of this course will focus on spectroscopy and structure of organic compounds							

IV. Intended learning outcomes (ILOs) of the course:**Upon successful completion of the course, students would be able to:**

1. Review the basic fundamental concepts, the properties and mechanism of chemical interaction and reactivity of various organic molecules
2. Explain in depth the theory of chemical bonding, molecular structure and physicochemical properties of aromatics and their reactions such as aromaticity and electrophilic aromatic substitution.
3. Discuss the discipline wherein structure/ properties relationship is essential and where organic chemicals are the building blocks of drugs, fine chemicals, cosmetics and petrochemicals.
4. Recognize the basic fundamental concepts, the properties and mechanism of chemical interaction and reactivity of various organic molecules

V. Course Content:**Distribution of Semester Weekly Plan Of course Topics/Items and Activities.****A – Theoretical Aspect:**

Order	Topics List	Week Due	Contact Hours
1	Alkynes,	W1	3
2	Aromaticity and Benzene Structure,	W2	3
3	Electrophilic aromatic substitution I	W3	3
4	Electrophilic aromatic substitution II	W4	3
5	Aldehydes and ketones,	W5	3
6	Aldehydes and ketones reaction	W6	3
7	Carboxylic acids and derivatives,	W7	3
8	Amines:	W8	3
9	Heterocyclic amines	W9	3
10	Spectroscopy and structure Determination of structure	W10	3
11	Spectroscopy	W11	3
12	Spectroscopy	W12	3
13	Spectroscopy	W13	3
14	Final exam	W13	
Number of Weeks /and Units Per Semester		14	36

B – Practical Aspect: (if any)			
Order	Topics List	Week Due	Contact Hours
1			
Number of Weeks /and Units Per Semester			

VI. Teaching strategies of the course:
<ul style="list-style-type: none"> - Cooperative education - Group discussion - Problems solving - Brainstorming method

VII. Assignments:			
No	Assignments	Week Due	Mark
1	Assignment about the one group of BENZEN	W3	5
2	Research assignments about amine	W6	5
3	Assignments about alkyl spectroscopy	W12	5

VIII. Schedule of Assessment Tasks for Students During the Semester:				
Assessment	Type of Assessment Tasks	Week Due	Mark	Proportion of Final Assessment
1	Tasks and Assignments	Weekly	10	10%
2	Test 1	W4	10	10%
3	Midterm Exam	W10	20	20%
4	Test 2	W13	10	10%
5	Attendance	All	10	10%
6	Final Exam (theoretical)	W16	50	40%

IX. Learning Resources:	
Author, (Year), Book Title, Edition, Publisher, Country of publishing	
1- Required Textbook(s) (maximum two).	
Organic Chemistry, by Morrison and Boyd, Sixth Edition.	
2- Essential References.	
Organic Chemistry, by F. Carey., 5 th Edition, ISBN: 0072424583	
3- Electronic Materials and Web Sites <i>etc.</i>	
3. www.bookzz.org	
4. www.libgen.io	
http://en-booksee.org	

X. Course Policies:	
Unless otherwise stated, the normal course administration policies and rules of the School of Business apply.	
1	<p>Class Attendance:</p> <ol style="list-style-type: none"> Attendance in all classes is required. There are no exceptions to this policy. Roll will be called in the very beginning of each class. If you arrive after roll has been called, you may be marked as absent. In any regular semester or summer term, students may miss no more than the equivalent of one third of class sessions scheduled. Students who exceed the above limits are automatically given an (AW) grade in the course by the UMS, and consequently not be allowed to attend class any longer.
2	<p>Tardy:</p> <ol style="list-style-type: none"> All students are expected to conduct themselves in a professional manner. Unprofessional behavior such as, but not limited to, repeated disruption of class (including habitually walking in after class has started), sleeping in class, doing other course work in class, reading a newspaper in class, a ringing cell phone, frequent side conversations with other students and/or rudeness toward any person will be considered a serious violation of this standard and will lower your grade accordingly. Please be sure to turn off your cell phone before the start of class. Attention to detail entails being prepared for class. This would include, but is not limited to; having a pencil/pen, note pad, calculator; reading and following the course syllabus, etc. All students are expected to conduct themselves in a professional manner. Unprofessional behavior such as, but not limited to, repeated disruption of class (including habitually walking in after class has started), sleeping in class, doing other course work in class, reading a newspaper in class, a ringing cell phone, frequent side conversations with other students and/or rudeness toward any person will be considered a serious violation of this standard and will lower your grade accordingly. Please be sure to turn off your cell phone before the start of class. Attention to detail entails being prepared for class. This would include, but is not limited to; having a pencil/pen, note pad, calculator; reading and following the course syllabus, etc.
3	<p>Exam Attendance/Punctuality:</p> <p>As per university council decision, a student is eligible for a Quizzes, Midterm or Final examination</p>

	<p>make-up if and only if he/she had the following incidents:</p> <ol style="list-style-type: none"> 1. Sickness; proved by hospitalization report; that is; a discharge summary is necessary. 2. Death in the family proved by a death certificate or equivalent and personal identification. 3. Accidents proved by an expert report. 4. Military/Official engagement.
4	<p>Assignments & Projects:</p> <p>Homework should be clearly presented i.e.:</p> <ol style="list-style-type: none"> 1. It should be written on A4 paper. 2. It should include a title page (Course Name, Semester, Date, Name...). 3. Your instructor will ask you to submit your homework online or as a hard copy. In the latter case, it should be stapled together.
5	<p>Cheating:</p> <ul style="list-style-type: none"> • Cheating is strictly prohibited behavior. • University regulations will be pursued and enforced on any cheating student.
6	<p>Plagiarism:</p> <ul style="list-style-type: none"> • Plagiarism is defined as “copying or stealing someone else’s words or ideas and claiming or presenting them as if they were your own.” • University regulations will be pursued and enforced on any plagiarism attempt.
7	<p>Other policies:</p> <p>Please refer to the university policy.</p>

Lebanese International University
The School of Pharmacy and Medical Sciences
Department: CLINICAL PHARMACY
Title of the Program: Bachelor of Clinical Pharmacy
Course Specification of
PHAR-PHAR200 – Introduction to Drug Information



I. Course Identification and General Information:						
1	Course Title:	Introduction to Drug Information				
2	Course Code & Number:	PHAR200				
3	Credit hours:	C.H			TOTAL	
		Theory	Seminars, exercises	Practical		Field training
		2				2
4	Study level/ semester at which this course is offered:	Second Years				
5	Pre –requisite (if any):	ENGL200				
6	Co –requisite (if any):					
8	Program (s) in which the course is offered:	Clinical Pharmacy				
9	Language of teaching the course:	English				
10	Location of teaching the course:	LIU Sana'a				
11	Prepared by:	Dr.ABDULAH AL-dahbli				
12	Reviewed by:	Dr.Faiz Khaled skran				
13	Date of approval:					

II. Course Description:	
<p>This course introduces students to basic principles of drug information including, medical terminologies, and drug monograph. In addition, students will learn how to identify the different parts for the (SOAP note). The course also provides students with the knowledge to write drug consults and drug utilization review. The course will help students to recognize the different literature resources available, different types of a study design and apply basic biostatistics calculations.</p>	

III. Course Intended Learning Outcomes (CILOs):	
(A) Knowledge and Understanding:	
Alignment of CILOs (Course Intended Learning Outcomes) to PILOs (Program Intended Learning Outcomes)	
Knowledge and Understanding PILOs	Knowledge and Understanding CILOs
After completing this program, graduates would be able to:	After completing this course, students would be able to:
A1 Review the knowledge facts and principles of both basic and medical sciences.	a1. Recognize all medical terminologies used by health care professionals.
	a2. Identify the different parts of the SOAP note.
A2. Identify the role of each of the pharmaceutical sciences in the development and use of pharmaceutical products.	a3. Identify the parts of a drug monograph.
	a4. Identify different drug information including administration, distribution, metabolism and elimination to formulate a drug consult or drug utilization review

(B) Intellectual Skills:	
Alignment of CILOs (Course Intended Learning Outcomes) to PILOs (Program Intended Learning Outcomes)	
Intellectual Skills PILOs	Intellectual Skills CILOs
After completing this program, graduates would be able to:	After completing this course, students would be able to:
B3. Compare alternative therapeutic plans for each drug-related problem based on evidence of effectiveness, safety, and cost.	b1. Distinguish all the methods of searching, analyzing and providing knowledge to patients and health care professionals such as guideline, drug information center (DIC), drug consult and Drug Information Resources
	b2. Interpret different scientific literature related to the medical field and reference any type of literature.
	b3. Write the Reference of Textbooks, Journal Articles & Electronic Databases
	b4. interpret all parts related to subjective, objective and assessment plan related to patient care.

(C) Professional and Practical Skills
Alignment of CILOs (Course Intended Learning Outcomes) to PILOs (Program Intended Learning Outcomes)

Professional and Practical Skills PILOs	Professional and Practical Skills CILOs
After completing this program, graduates would be able to:	After completing this course, students would be able to:

(D) Transferable (General) Skills:	
Alignment of CILOs (Course Intended Learning Outcomes) to PILOs (Program Intended Learning Outcomes)	
Transferable (General) Skills PILOs	Transferable (General) Skills CILOs
After completing this program, graduates would be able to:	After completing this course, students would be able to:
D2. Develop presentation, promotion, marketing, business administration, numeric and computation skills.	d1. Develop effective presentations for students by Presenting case studies and Monograph for any drugs.
D4. Communicate clearly by verbal and written means.	d2. Envision the skills for effective listening, communication and searching

IV. Alignment of CILOs to Teaching and Assessment Strategies		
(A) Alignment Course Intended Learning Outcomes of Knowledge and Understanding to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
a1. Recognize all medical terminologies used by health care professionals.	- Lectures as PowerPoint presentations	- Test - Final exam
a2. Identify the different parts of the SOAP note.	- Lectures as PowerPoint presentations - Case study	- Test - Assignment - Final exam
a3. Identify the parts of a drug monograph.	- Lectures as PowerPoint presentations - Case study	- Test - Assignment - Presentation - Final exam
a4. Identify different drug information including administration, distribution, metabolism and elimination to formulate a drug consult or drug utilization review	- Lectures as PowerPoint presentations	- Midterm - Presentation - Final exam

(B) Alignment Course Intended Learning Outcomes of Intellectual Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
b1. Distinguish all the methods of searching, analyzing and providing knowledge to patients and health care professionals such as guideline, drug information center (DIC), drug consult and Drug Information Resources	- Lectures as PowerPoint presentations - Case study	- Assignment - Final exam
b2. Interpret different scientific literature related to the medical field and reference any type of literature.	- Lectures as PowerPoint presentations - Case study	- Assignment - Final exam
b3. Write the Reference of Textbooks, Journal Articles & Electronic Databases	- Lectures as PowerPoint presentations - Case study	- Assignment - Final exam
b4. interpret all parts related to subjective, objective and assessment plan related to patient care.	- Lectures as PowerPoint presentations - Case study	- Case study - Final exam

(C) Alignment Course Intended Learning Outcomes of Professional and Practical Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
	-	-
	-	-
	-	-

(D) Alignment Course Intended Learning Outcomes of Transferable Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
d1. Develop effective presentations for students by Presenting case studies and Monograph for any drugs.	- Presentations	- Project

d2. Envision the skills for effective listening, communication and searching	- Lectures as PowerPoint presentations - Case study	- Final exam
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V. Course Content:					
A – Theoretical Aspect:					
Order	Units/Topics List	Learning Outcomes	Sub Topics List	Number of Weeks	Contact hours
1	-Introduction: Syllabus, description of the course - Medical Terminology and definitions	a1	- Grade System - Medical Terminology and definitions	1	2
2	Medical Terminology and definitions	a1	- Medical Terminology and definitions	1	2
3	SOAP Note	a2,b4	- Subjective - Objective - Assessment - Plan	1	2
4	Drug Monograph	a3,d1	- Define parts of a drug monograph - Extract Information from a drug monograph - Writing a drug monograph	1	2
5	Drug Information Center	b1,d2	- Major components of DIC - Major activities - Answering Drug Info Questions - Background Information of drugs	1	2

6	Drug Information Resources	b1,b2	- Primary resources: Journals - Secondary resources: Search engines & abstracting services - Tertiary resources: Handbooks, textbooks -	2	4
7	Drug Information Resources	b1,b2,d2	- MEDLINE search, JAMA, NEJM, other on-line resources	1	2
8	Writing a drug Consult and Referencing	a4,b1,b2,b3	- Introduction - Subjective - Objective - Assessment & plan - Plan & conclusion - References	1	2
9	Referencing textbooks, studies, electrical databases	b2,b3	- How to reference textbooks? - How to reference a journal article? - How to reference internet sources?	1	2
10	Evaluation of the literature	b1,b2,b3	- Study Design - Types of studies - Criteria For Evaluation	1	2
11	Evaluation of the literature	b1,b2	- Evidence-based Clinical Practice Guidelines	1	2
12	Case study Presentation	a2,a3,a4, b1,b2,b3	- SOAP Note - Evaluation of the literature - Drugs Monograph	1	2
13	Final exam	a2,a3,a4, b1,b2,b3,d1	- All chapters	2	
14			-		
Number of Weeks /and Units Per Semester				14	24

B - Practical Aspect: (if any)				
Order	Tasks/ Experiments	Number of Weeks	contact hours	Learning Outcomes
1				

Number of Weeks /and Units Per Semester		
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VI. Teaching strategies of the course:
- Lectures as PowerPoint presentations - Case study

VII. Assignments:				
No	Assignments	Aligned CILOs (symbols)	Week Due	Mark
1	SOAP Note	a2,b4	3	5
2	Write the Five Referencing of Textbooks from college Library	b1,b3	10	5
3	Case study and presentation	All	12-14	10

VIII. Schedule of Assessment Tasks for Students During the Semester:					
No.	Assessment Method	Week Due	Mark	Proportion of Final Assessment	Aligned Course Learning Outcomes
1	Attendance	All	10	10 %	All
2	Test	2-4	10	10 %	a1,a2,a3
3	Midterm	6-8	20	20 %	a4,b1,b2
4	Assignment and Presentation	3-10-12-13	20	20%	All
5	Final exam	14	40	40 %	All

IX. Learning Resources:	
Author, (Year), Book Title, Edition, Publisher, Country of publishing	
1- Required Textbook(s) (maximum two).	
Malon,P.M.et al. (2018). Drug information: a guide for pharmacists. 6 th edition.USA McGraw Hill	
2- Essential References.	
Corbett,A.H.et al.(2017) Drug Information Handbook,26 th edition.USA : Wolters Kluwer	
3- Electronic Materials and Web Sites etc.	
<ul style="list-style-type: none"> ○ http://opl.org.lb ○ http://www.fda.gov 	

X. Course Policies:	
1	<p>Class Attendance:</p> <ol style="list-style-type: none"> 1. Attendance in all classes is required. There are no exceptions to this policy. 2. Roll will be called in the very beginning of each class. If you arrive after roll has been called, you may be marked as absent. 3. In any regular semester or summer term, students may miss no more than the equivalent of one third of class sessions scheduled. Students who exceed the above limits are automatically given an (AW) grade in the course by the UMS, and consequently not be allowed to attend class any longer.
2	<p>Tardy:</p> <ol style="list-style-type: none"> 1. All students are expected to conduct themselves in a professional manner. Unprofessional behavior such as, but not limited to, repeated disruption of class (including habitually walking in after class has started), sleeping in class, doing other course work in class, reading a newspaper in class, a ringing cell phone, frequent side conversations with other students and/or rudeness toward any person will be considered a serious violation of this standard and will lower your grade accordingly. Please be sure to turn off your cell phone before the start of class. 2. Attention to detail entails being prepared for class. This would include, but is not limited to; having a pencil/pen, note pad, calculator; reading and following the course syllabus, etc. All students are expected to conduct themselves in a professional manner. Unprofessional behavior such as, but not limited to, repeated disruption of class (including habitually walking in after class has started), sleeping in class, doing other course work in class, reading a newspaper in class, a ringing cell phone, frequent side conversations with other students and/or rudeness toward any person will be considered a serious violation of this standard and will lower your grade accordingly. Please be sure to turn off your cell phone before the start of class. 3. Attention to detail entails being prepared for class. This would include, but is not limited to; having a pencil/pen, note pad, calculator; reading and following the course syllabus, etc.
3	<p>Exam Attendance/Punctuality:</p> <p>As per university council decision, a student is eligible for a Quizzes, Midterm or Final examination make-up if and only if he/she had the following incidents:</p> <ol style="list-style-type: none"> 1. Sickness; proved by hospitalization report; that is; a discharge summary is necessary. 2. Death in the family proved by a death certificate or equivalent and personal identification. 3. Accidents proved by an expert report.

	4. Military/Official engagement.
4	<p>Assignments & Projects: Homework should be clearly presented i.e.:</p> <ol style="list-style-type: none"> 1. It should be written on A4 paper. 2. It should include a title page (Course Name, Semester, Date, Name...). 3. Your instructor will ask you to submit your homework online or as a hard copy. In the 4. latter case, it should be stapled together.
5	<p>Cheating:</p> <ul style="list-style-type: none"> • Cheating is strictly prohibited behavior. • University regulations will be pursued and enforced on any cheating student.
6	<p>Plagiarism:</p> <ul style="list-style-type: none"> • Plagiarism is defined as “copying or stealing someone else’s words or ideas and claiming or presenting them as if they were your own.” • University regulations will be pursued and enforced on any plagiarism attempt.
7	<p>Other policies: Please refer to the university policy.</p>

**Course Specification of
 PHAR200 – Introduction to Drug Information**

I. - Information about Faculty Member Responsible for the Course:							
Name of Faculty Member	Faiz Khaled sakran	Office Hours					
Location & Telephone No.	770210538	SAT	SUN	MON	TUE	WED	THU
E-mail	Faiz.sakran@ye.liu.edu.lb	√	√	√	√	√	

II. Course Identification and General Information:						
1	Course Title:	Introduction to Drug Information				
2	Course Number & Code:	PHAR200				
3	Credit hours:	C.H				Total
		Theory	Seminars, exercises.	Practical	Field training	
		2				
4	Study level/year at which this course is offered:	Second				
5	Pre –requisite (if any):	ENGL200				
6	Co –requisite (if any):					
7	Program (s) in which the course is offered	Clinical Pharmacy				
8	Language of teaching the course:	English				
9	System of study:	Credits Hours System				
10	Mode of delivery:	Lectures				
11	Location of teaching the course:	LIU Sana'a				

III. Course Description:
 This course introduces students to basic principles of drug information including, medical terminologies, and drug monograph. In addition, students will learn how to identify the different parts for the (SOAP note). The course also provides students with the knowledge to write drug consults and drug utilization review. The course will help students to recognize the different literature resources available, different types of a study design and apply basic biostatistics calculations.

IV. Intended learning outcomes (ILOs) of the course:**Upon successful completion of the course, students would be able to:**

1. Recognize all medical terminologies used by health care professionals.
2. Identify the different parts of the SOAP note.
3. Identify the parts of a drug monograph.
4. Identify different drug information including administration, distribution, metabolism and elimination to formulate a drug consult or drug utilization review
5. Distinguish all the methods of searching, analyzing and providing knowledge to patients and health care professionals such as guideline, drug information center (DIC), drug consult and Drug Information Resources
6. Interpret different scientific literature related to the medical field and reference any type of literature .
7. Write the Reference of Textbooks, Journal Articles & Electronic Databases
8. Interpret all parts related to subjective, objective and assessment plan related to patient care.
9. Develop effective presentations for students by Presenting case studies and Monograph for any drugs.
10. Envision the skills for effective listening, communication and searching

V. Course Content:**Distribution of Semester Weekly Plan Of course Topics/Items and Activities.****A – Theoretical Aspect:**

Order	Topics List	Week Due	Contact Hours
1	Introduction: Syllabus, description of the course Medical Terminology and definitions	1	2
2	Medical Terminology and definitions	2	2
3	SOAP Note	3	2
4	Drug Monograph	4	2
5	Drug Information Center	5	2
6	Drug Information Resources	6	2
7	Drug Information Resources	7	2
8	Writing a drug Consult and Referencing	8	3
9	Referencing textbooks, studies, electronical databases	9	2
10	Evaluation of the literature	10	2
11	Evaluation of the literature	11	2
12	Case study	12	4

	Presentation		
13	Final exam	14	3
Number of Weeks /and Units Per Semester		14	24

B – Practical Aspect: (if any)			
Order	Topics List	Week Due	Contact Hours
1			
Number of Weeks /and Units Per Semester			

VI. Teaching strategies of the course:
- Lectures as PowerPoint presentations - Case study

VII. Assignments:			
No	Assignments	Week Due	Mark
1	SOAP Note	3	5
2	Write the Five Referencing of Textbooks from college Library	10	5
3	Case study and presentation	12-14	10

VIII. Schedule of Assessment Tasks for Students During the Semester:				
Assessment	Type of Assessment Tasks	Week Due	Mark	Proportion of Final Assessment
1	Attendance	All	10	10 %
2	Test	2-4	10	10 %
3	Midterm	6-8	20	20 %
4	Assignment and Presentation	3-10-12-13-14	20	20%

5	Final exam	14	40	40 %
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IX. Learning Resources:				
Author, (Year), Book Title, Edition, Publisher, Country of publishing				
1- Required Textbook(s) (maximum two).				
Malon,P.M.et al. (2018). Drug information: a guide for pharmacists. 6 th edition.USA McGraw Hill				
2- Essential References.				
Corbett,A.H.et al.(2017) Drug Information Handbook,26 th edition.USA : Wolters Kluwer				
3- Electronic Materials and Web Sites <i>etc.</i>				
<ul style="list-style-type: none"> ○ http://opl.org.lb ○ http://www.fda.gov 				

X. Course Policies:	
Unless otherwise stated, the normal course administration policies and rules of the School of Business apply.	
1	Class Attendance: <ol style="list-style-type: none"> 1. Attendance in all classes is required. There are no exceptions to this policy. 2. Roll will be called in the very beginning of each class. If you arrive after roll has been called, you may be marked as absent. 3. In any regular semester or summer term, students may miss no more than the equivalent of one third of class sessions scheduled. Students who exceed the above limits are automatically given an (AW) grade in the course by the UMS, and consequently not be allowed to attend class any longer.
2	Tardy: <ol style="list-style-type: none"> 1. All students are expected to conduct themselves in a professional manner. Unprofessional behavior such as, but not limited to, repeated disruption of class (including habitually walking in after class has started), sleeping in class, doing other course work in class, reading a newspaper in class, a ringing cell phone, frequent side conversations with other students and/or rudeness toward any person will be considered a serious violation of this standard and will lower your grade accordingly. Please be sure to turn off your cell phone before the start of class. 2. Attention to detail entails being prepared for class. This would include, but is not limited to; having a pencil/pen, note pad, calculator; reading and following the course syllabus, etc. All students are expected to conduct themselves in a professional manner. Unprofessional behavior such as, but not limited to, repeated disruption of class (including habitually walking in after class has started), sleeping in class, doing other course work in class, reading a newspaper in class, a ringing cell phone, frequent side conversations with other students and/or rudeness toward any person will be considered a serious violation of this standard and will lower your grade accordingly. Please be sure to turn off your cell phone before the start of class.

	<p>3. Attention to detail entails being prepared for class. This would include, but is not limited to; having a pencil/pen, note pad, calculator; reading and following the course syllabus, etc.</p>
3	<p>Exam Attendance/Punctuality: As per university council decision, a student is eligible for a Quizzes, Midterm or Final examination make-up if and only if he/she had the following incidents:</p> <ol style="list-style-type: none"> 1. Sickness; proved by hospitalization report; that is; a discharge summary is necessary. 2. Death in the family proved by a death certificate or equivalent and personal identification. 3. Accidents proved by an expert report. 4. Military/Official engagement.
4	<p>Assignments & Projects: Homework should be clearly presented i.e.:</p> <ol style="list-style-type: none"> 1. It should be written on A4 paper. 2. It should include a title page (Course Name, Semester, Date, Name...). 3. Your instructor will ask you to submit your homework online or as a hard copy. In the latter case, it should be stapled together.
5	<p>Cheating:</p> <ul style="list-style-type: none"> • Cheating is strictly prohibited behavior. • University regulations will be pursued and enforced on any cheating student.
6	<p>Plagiarism:</p> <ul style="list-style-type: none"> • Plagiarism is defined as “copying or stealing someone else’s words or ideas and claiming or presenting them as if they were your own.” • University regulations will be pursued and enforced on any plagiarism attempt.
7	<p>Other policies: Please refer to the university policy.</p>

Lebanese International University
 The School of Pharmacy and Medical Sciences
 Department: CLINICAL PHARMACY
 Title of the Program: Bachelor of Clinical Pharmacy



Course Specification of
 PHAR-PHAR250– Pharmacy History, Practice and Ethics

I. Course Identification and General Information:						
1	Course Title:	Pharmacy History, Practice and Ethics				
2	Course Code & Number:	PHAR250				
3	Credit hours:	C.H			TOTAL	
		Theory	Seminars, exercises	Practical		Field training
		3				
4	Study level/ semester at which this course is offered:	Second Year				
5	Pre –requisite (if any):	ENGL200 PHAR200				
6	Co –requisite (if any):	PHAR300				
8	Program (s) in which the course is offered:	Bachelor of Clinical Pharmacy				
9	Language of teaching the course:	English				
10	Location of teaching the course:	LIU Sana'a				
11	Prepared by:	Dr.Mohammed Kubas				
12	Reviewed by:	Dr.Zahraa Faissal				
13	Date of approval:					

II. Course Description:	
<p>This 3-credit course emphasizes upon the historical background and major milestones in the evolution of pharmacy from apothecaries to clinical pharmacy. The first part for this course deals with pharmacy history present and future. The second part deals with pharmacy practice including major medical terms and abbreviations, function for international pharmaceutical organizations and overview about drug classes and dosage forms. The last part deals with ethical principles governing patient–pharmacist relationship.</p>	

III. Course Intended Learning Outcomes (CILOs):	
(A) Knowledge and Understanding:	
Alignment of CILOs (Course Intended Learning Outcomes) to PILOs (Program Intended Learning Outcomes)	
Knowledge and Understanding PILOs	Knowledge and Understanding CILOs
After completing this program, graduates would be able to:	After completing this course, students would be able to:
A1 Review the knowledge facts and principles of both basic and medical sciences.	a1. Recognize the main events leading to the evolution of pharmacy from apothecaries to clinical pharmacy a2. Describe common medical practices discovered and practiced in history a3. Identify the main issues of global pharmaceutical legislation a4. Describe the pharmacist duty in different institutions. a5. Identify the phases for drug development and clinical testing.
A5 Recall the ethics and methods of scientific research	a6. Identify the importance of ethics in research a7. explain the main problem in an ethical dilemma and give the best alternative options a8. Identify the phases for drug development and clinical testing

(B) Intellectual Skills:	
Alignment of CILOs (Course Intended Learning Outcomes) to PILOs (Program Intended Learning Outcomes)	
Intellectual Skills PILOs	Intellectual Skills CILOs
After completing this program, graduates would be able to:	After completing this course, students would be able to:

(C) Professional and Practical Skills	
Alignment of CILOs (Course Intended Learning Outcomes) to PILOs (Program Intended Learning Outcomes)	
Professional and Practical Skills PILOs	Professional and Practical Skills CILOs

After completing this program, graduates would be able to:	After completing this course, students would be able to:

(D) Transferable (General) Skills:	
Alignment of CILOs (Course Intended Learning Outcomes) to PILOs (Program Intended Learning Outcomes)	
Transferable (General) Skills PILOs	Transferable (General) Skills CILOs
After completing this program, graduates would be able to:	After completing this course, students would be able to:

IV. Alignment of CILOs to Teaching and Assessment Strategies		
(A) Alignment Course Intended Learning Outcomes of Knowledge and Understanding to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
a1 Recognize the main events leading to the evolution of pharmacy from apothecaries to clinical pharmacy	- Lecturer as power point Presentation	- Test - Midterm exam - Assignments - Final exam
a2 Describe common medical practices discovered and practiced in history	- Lecturer as power point Presentation	- Test - Midterm exam - Final exam
a3 Identify the main issues of global pharmaceutical legislation.	- Lecturer as power point Presentation	- Test - Midterm exam - Final exam
a4 Describe the pharmacist duty in different institutions	- Lecturer as power point Presentation	- Test - Midterm exam - Final exam
a5 Explain common medical terms.	- Lecturer as power point Presentation	- Test - Midterm exam - Final exam

a6 Identify the importance of ethics in research	- Lecturer as power point Presentation	- Test - Midterm exam - Final exam
a7 explain the main problem in an ethical dilemma and give the best alternative options	- Lecturer as power point Presentation - Ethical Case study	- Final exam - Case discussion
a8. Identify the phases for drug development and clinical testing	- Lecturer as power point Presentation - Ethical Case study	- Final exam - Case discussion

(B) Alignment Course Intended Learning Outcomes of Intellectual Skills to Teaching Strategies and Assessment Strategies:

Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
	-	-

(C) Alignment Course Intended Learning Outcomes of Professional and Practical Skills to Teaching Strategies and Assessment Strategies:

Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
	-	-

V. Course Content:					
A – Theoretical Aspect:					
Order	Units/Topics List	Learning Outcomes	Sub Topics List	Number of Weeks	Contact hours
1	Introduction & Prehistoric pharmacy	a1, a2,	- Course description - Prehistoric peoples	W1	1.5
2	-Antiquity – Babylonian – Ancient Egypt -The Greco---Roman period.	a1, a2,	-Dosage form and drugs in Babylonian - Egyptian medicine and Drug Dosage forms - Medicinal herbs and plants used by Egyptians. - Hippocrates theory - Galen theory - Greek Polypharmaceutical preparations	W1	1.5
3	The Middle Ages – The Arabs – The Renaissance period	a1, a2,	-Arab medicine - Rhazes - Avicenna - Chemistry during the Arab Era - herbal medicines and their uses among Arabs - Printing revolution - “Paracelsus - Chemistry advancements - chemistry laboratories and new drugs.	W2	3

			<ul style="list-style-type: none"> - New regulations appeared for pharmacy practitioners - Chemical Apparatus 		
4	<p>The new era</p> <ul style="list-style-type: none"> – Early modern Europe – American 	a1, a2,	<ul style="list-style-type: none"> -Chemistry Revolution - Early modern Europe discovers -Early modern Europe synthetic drugs. -practiced Pharmacy in American era . American Pharmacy: found its niche - The search for professionalism -American Pharmacy: era of dramatic change 	W4	3
5	Pharmacy and the emergence of clinical pharmacy	a3,a4	<ul style="list-style-type: none"> -Change in pharmacy program. -concept of clinical pharmacy. 	W5	1.5
6	Common pharmacy abbreviations&	a3,a4	<ul style="list-style-type: none"> -medical abbreviation -pharmacy abbreviation 	W5	1.5
7	Pharmacy Careers, Pharmacy Organizations	a3,a4	<ul style="list-style-type: none"> -Community pharmacy (Ambulatory patient care) -Institutional pharmacy Hospital Clinics -Walk-In-Health centers -Long-term care facility: nursing home -Wholesalers -Industrial pharmacy (pharmaceutical companies) -Pharmaceutical Sales and Marketing, and CRA -Pharmaceutical education and universities 	W6-7	6

			Local, State, and Federal Government and Armed Services -Pharmacy journalism -Organizational management Consultant Pharmacy -Drug Research and Development (R&D) -Public Health Service -Mail Service/Internet Pharmacy		
8	Drug development, Phases of clinical testing	a3,a4,a5,a8	A. Pre-Clinical Investigation B. Clinical Investigation: Investigational new drug application (IND or INDA). C. Phases of clinical testing	W8	3
9	Drug schedules & major drug groups pharmaceutical dosage forma	a3,a4,a5	-Definitions -Legal Classification -Drug Schedules -Drug abuse - Pharmaceutical preparations. Introduction to Drug Dosage forms	W9	3
10	-Pharmacist---Patient relationship - Ethics in Research	a1, a2, a3, a4 a6,a7,a8	Respect - Trust - Veracity - Privacy - Confidentiality	W10	1.5
10	Pharmacy as a profession	a1, a2, a3, a4 a6,a7,a8	-Characteristics of a profession -Rights and Duties in the Practice of Pharmacy Profession	W10	1.5
11	Solving an ethical dilemma Black market and	a1, a2, a3, a4 a6,a7	- ethical dilemma is typically described as a complex situation	W11	3

	counterfeit drugs		that involves a conflict between different morals or ethical principles		
12	Case study Review	a1, a2, a3, a4 ,a5 a6,a7	- All Chapters	W12	3
13	Final exam	a1, a2, a3, a4,a5 a6,a7	- All	13-14	
Number of Weeks /and Units Per Semester				14	36

B - Practical Aspect: (if any)

Order	Tasks/ Experiments	Number of Weeks	contact hours	Learning Outcomes
1				
Number of Weeks /and Units Per Semester				

VI. Teaching strategies of the course:

- LECTURE as power point presentation
- CASE STUDY

VII. Assignments:

No	Assignments	Aligned CILOs (symbols)	Week Due	Mark
1	Black market and counterfeit drugs	a1, a2,a3,a4	2	4
2	Determine proper formulation for a given dosage form	a1, a2, a3, a4	4	3
3	List major drug groups	a1, a2, a3, a4	8	3

VIII. Schedule of Assessment Tasks for Students During the Semester:

No.	Assessment Method	Week Due	Mark	Proportion of Final Assessment	Aligned Course Learning Outcomes
1	Attendance	All	10	10%	a1, a2, a3, a4 ,a5 a6,a7
2	Test 1	2-4	10	10%	a1, a2, a3,a4
3	Midterm	6-8	20	20%	a1, a2, a3, a4 ,a5 a6,a7,a8

4	Test 2	10	10	10%	a1, a2, a3, a4 ,a5,a8 a6,a7
	Assignment and case discussion	11	10	10%	a1, a2, a3, a4 ,a5,a8
5	Final exam	13-14	40	40%	a1, a2, a3, a4 ,a5 a6,a7,a8

IX. Learning Resources:	
Author, (Year), Book Title, Edition, Publisher, Country of publishing	
1- Required Textbook(s) (maximum two).	
<ul style="list-style-type: none"> • Remington, Robert Veatch medical case edition. 	
2- Essential References.	
<ul style="list-style-type: none"> • Classroom notes and reading material 	
3- Electronic Materials and Web Sites etc.	
<ul style="list-style-type: none"> • www.ACCP .org • RX list 	

X. Course Policies:	
1	Class Attendance: <ol style="list-style-type: none"> 1. Attendance in all classes is required. There are no exceptions to this policy. 2. Roll will be called in the very beginning of each class. If you arrive after roll has been called, you may be marked as absent. 3. In any regular semester or summer term, students may miss no more than the equivalent of one third of class sessions scheduled. Students who exceed the above limits are automatically given an (AW) grade in the course by the UMS, and consequently not be allowed to attend class any longer.
2	Tardy: <ol style="list-style-type: none"> 1. All students are expected to conduct themselves in a professional manner. Unprofessional behavior such as, but not limited to, repeated disruption of class (including habitually walking in after class has started), sleeping in class, doing other course work in class, reading a newspaper in class, a ringing cell phone, frequent side conversations with other students and/or rudeness toward any person will be considered a serious violation of this standard and will lower your grade accordingly. Please be sure to turn off your cell phone before the start of class. 2. Attention to detail entails being prepared for class. This would include, but is not limited to; having a pencil/pen, note pad, calculator; reading and following the course syllabus, etc. All students are expected to conduct themselves in a professional manner. Unprofessional behavior such as, but not limited to, repeated disruption of

	<p>class (including habitually walking in after class has started), sleeping in class, doing other course work in class, reading a newspaper in class, a ringing cell phone, frequent side conversations with other students and/or rudeness toward any person will be considered a serious violation of this standard and will lower your grade accordingly. Please be sure to turn off your cell phone before the start of class.</p> <p>3. Attention to detail entails being prepared for class. This would include, but is not limited to; having a pencil/pen, note pad, calculator; reading and following the course syllabus, etc.</p>
3	<p>Exam Attendance/Punctuality: As per university council decision, a student is eligible for a Quizzes, Midterm or Final examination make-up if and only if he/she had the following incidents:</p> <ol style="list-style-type: none"> 1. Sickness; proved by hospitalization report; that is; a discharge summary is necessary. 2. Death in the family proved by a death certificate or equivalent and personal identification. 3. Accidents proved by an expert report. 4. Military/Official engagement.
4	<p>Assignments & Projects: Homework should be clearly presented i.e.:</p> <ol style="list-style-type: none"> 1. It should be written on A4 paper. 2. It should include a title page (Course Name, Semester, Date, Name...). 3. Your instructor will ask you to submit your homework online or as a hard copy. In the latter case, it should be stapled together.
5	<p>Cheating:</p> <ul style="list-style-type: none"> • Cheating is strictly prohibited behavior. • University regulations will be pursued and enforced on any cheating student.
6	<p>Plagiarism:</p> <ul style="list-style-type: none"> • Plagiarism is defined as “copying or stealing someone else’s words or ideas and claiming or presenting them as if they were your own.” • University regulations will be pursued and enforced on any plagiarism attempt.
7	<p>Other policies: Please refer to the university policy.</p>

Lebanese International University
 The School of Pharmacy and Medical Sciences
 Department: CLINICAL PHARMACY
 Title of the Program: Bachelor of Clinical Pharmacy
 Course Specification of
 PHAR250– Pharmacy History, Practice and Ethics



I. - Information about Faculty Member Responsible for the Course:							
Name of Faculty Member	Dr. Mohammed Kubas	Office Hours					
Location & Telephone No.	LIU-Yemen, Building A, 4 th floor, Ext. 125	SAT	SUN	MON	TUE	WED	THU
E-mail		9am-1pm			9am-3pm	9am-11am	

II. i						
1	Course Title:	Pharmacy History, Practice and Ethics				
2	Course Number & Code:	PHAR250				
3	Credit hours:	C.H				Total
		Theory	Seminars, exercises.	Practical	Field training	
		3				
4	Study level/year at which this course is offered:	Second Year				
5	Pre –requisite (if any):	PHAR 200 ,ENGL200				
6	Co –requisite (if any):	PHAR300				
7	Program (s) in which the course is offered	Bachelor of Clinical Pharmacy				
8	Language of teaching the course:	English				
9	System of study:	Credits Hours System				
10	Mode of delivery:	Lectures				
11	Location of teaching the course:	LIU Sana'a				

III. Course Description:

IV. Intended learning outcomes (ILOs) of the course:

Upon successful completion of the course, students would be able to:

1. Recognize the main events leading to the evolution of pharmacy from apothecaries to clinical pharmacy
2. Describe common medical practices discovered and practiced in history
3. Identify the main issues of global pharmaceutical legislation
4. Describe the pharmacist duty in different institutions.
5. Identify the phases for drug development and clinical testing.
6. Identify the importance of ethics in research
7. Explain the main problem in an ethical dilemma and give the best alternative options
8. Identify the phases for drug development and clinical testing

V. Course Content:

Distribution of Semester Weekly Plan Of course Topics/Items and Activities.

A – Theoretical Aspect:

Order	Topics List	Week Due	Contact Hours
	Introduction & Prehistoric pharmacy	1	3
1	-Antiquity – Babylonian – Ancient Egypt -The Greco---Roman period.	2	3
2	The Middle Ages – The Arabs – The Renaissance period	3	3
3	The new era – Early modern Europe – American	4-5	6
4	Pharmacy and the emergence of clinical pharmacy	6	3
5	Common pharmacy abbreviations&	7	3
6	Pharmacy	8	3

	Careers, Pharmacy Organizations		
7	Drug development, Phases of clinical testing	9	3
8	Drug schedules & major drug groups	10	3
9	Pharmacist---Patient relationship – Respect – Trust – Veracity – Privacy – Confidentiality – Ethics in Research	11	3
10	Pharmacy as a profession	12	3
11	Case study Review	W13	
12	Final exam	W13-14	
Number of Weeks /and Units Per Semester		14	36

B – Practical Aspect: (if any)			
Order	Topics List	Week Due	Contact Hours
1			
Number of Weeks /and Units Per Semester			

VI. Teaching strategies of the course:

- LECTURES AS POWER POINT PRESENTION
- CASE STUDY

VII. Schedule of Assessment Tasks for Students During the Semester:

Assessment	Type of Assessment Tasks	Week Due	Mark	Proportion of Final Assessment
1	Attendance	ALL	10	10 %
2	Test 1	2-4	10	10 %
3	Midterm	6-8	30	20 %
4	Test 2	10	10	10 %
5	assignment	2-7	10	10 %
6	Final exam	13-15	40	40 %

VIII. Learning Resources:

Author, (Year), Book Title, Edition, Publisher, Country of publishing

1- Required Textbook(s) (maximum two).

- Remington, Federal Law book, Robert Veatch medical case edition, classroom notes and reading material

2- Essential References.

Remington, Federal Law book, Robert Veatch medical case edition, classroom notes and reading material

3- Electronic Materials and Web Sites *etc.*

- www.ACCP.org
- RX list

IX. Course Policies:	
Unless otherwise stated, the normal course administration policies and rules of the School of Business apply.	
1	<p>Class Attendance:</p> <ol style="list-style-type: none"> Attendance in all classes is required. There are no exceptions to this policy. Roll will be called in the very beginning of each class. If you arrive after roll has been called, you may be marked as absent. In any regular semester or summer term, students may miss no more than the equivalent of one third of class sessions scheduled. Students who exceed the above limits are automatically given an (AW) grade in the course by the UMS, and consequently not be allowed to attend class any longer.
2	<p>Tardy:</p> <ol style="list-style-type: none"> All students are expected to conduct themselves in a professional manner. Unprofessional behavior such as, but not limited to, repeated disruption of class (including habitually walking in after class has started), sleeping in class, doing other course work in class, reading a newspaper in class, a ringing cell phone, frequent side conversations with other students and/or rudeness toward any person will be considered a serious violation of this standard and will lower your grade accordingly. Please be sure to turn off your cell phone before the start of class. Attention to detail entails being prepared for class. This would include, but is not limited to; having a pencil/pen, note pad, calculator; reading and following the course syllabus, etc. All students are expected to conduct themselves in a professional manner. Unprofessional behavior such as, but not limited to, repeated disruption of class (including habitually walking in after class has started), sleeping in class, doing other course work in class, reading a newspaper in class, a ringing cell phone, frequent side conversations with other students and/or rudeness toward any person will be considered a serious violation of this standard and will lower your grade accordingly. Please be sure to turn off your cell phone before the start of class. Attention to detail entails being prepared for class. This would include, but is not limited to; having a pencil/pen, note pad, calculator; reading and following the course syllabus, etc.
3	<p>Exam Attendance/Punctuality:</p> <p>As per university council decision, a student is eligible for a Quizzes, Midterm or Final examination make-up if and only if he/she had the following incidents:</p> <ol style="list-style-type: none"> Sickness; proved by hospitalization report; that is; a discharge summary is necessary. Death in the family proved by a death certificate or equivalent and personal identification. Accidents proved by an expert report. Military/Official engagement.
4	<p>Assignments & Projects:</p> <p>Homework should be clearly presented i.e.:</p> <ol style="list-style-type: none"> It should be written on A4 paper. It should include a title page (Course Name, Semester, Date, Name...). Your instructor will ask you to submit your homework online or as a hard copy. In the latter case, it should be stapled together.

5	Cheating: <ul style="list-style-type: none">• Cheating is strictly prohibited behavior.• University regulations will be pursued and enforced on any cheating student.
6	Plagiarism: <ul style="list-style-type: none">• Plagiarism is defined as “copying or stealing someone else’s words or ideas and claiming or presenting them as if they were your own.”• University regulations will be pursued and enforced on any plagiarism attempt.
7	Other policies: Please refer to the university policy.

Lebanese International University
 The School of Pharmacy and Medical Sciences
 Department: CLINICAL PHARMACY
 Title of the Program: Bachelor of Clinical Pharmacy



Course Specification of
 PHAR-PHAR300-Pharmaceutical Calculations

I. Course Identification and General Information:						
1	Course Title:	Pharmaceutical Calculations				
2	Course Code & Number:	PHAR300				
3	Credit hours:	C.H			TOTAL	
		Theory	Seminars, exercises	Practical		Field training
		2	-	-		-
4	Study level/ semester at which this course is offered:	Second Year – Spring Semester				
5	Pre –requisite (if any):	ENGL100, PHAR200, PHAR250, CHEM200				
6	Co –requisite (if any):	-				
8	Program (s) in which the course is offered:	Bachelor of Clinical Pharmacy				
9	Language of teaching the course:	English				
10	Location of teaching the course:	LIU Sana'a				
11	Prepared by:	Dr. Khaled Al-Tahami				
12	Reviewed by:	Dr. ADIB ABDU NASHER AL-HAKIMI				
13	Date of approval:					

II. Course Description:	
<p>This course provides the pharmacy student with the knowledge and skills needed to perform pharmaceutical calculations to obtain concentration/ dose, to convert measurements from the metric system to the apothecary system and vice versa, to calculate doses needed for pediatrics or adults, to mathematically adjust medication doses in case of renal or hepatic compromise, and to interpret correctly standard abbreviations and symbols used in prescriptions and medication orders.</p>	

III. Course Intended Learning Outcomes (CILOs):	
(A) Knowledge and Understanding:	
Alignment of CILOs (Course Intended Learning Outcomes) to PILOs (Program Intended Learning Outcomes)	
Knowledge and Understanding PILOs	Knowledge and Understanding CILOs
After completing this program, graduates would be able to:	After completing this course, students would be able to:
A1 Review the knowledge facts and principles of both basic and medical sciences.	a1. Identify basic pharmaceutical calculations. a2. List the components of and abbreviations used in prescriptions and medication orders. a3. Discuss various dose calculations encountered in pharmacy practice.

(B) Intellectual Skills:	
Alignment of CILOs (Course Intended Learning Outcomes) to PILOs (Program Intended Learning Outcomes)	
Intellectual Skills PILOs	Intellectual Skills CILOs
After completing this program, graduates would be able to:	After completing this course, students would be able to:
B3 Compare alternative therapeutic plans for each drug-related problem based on evidence of effectiveness, safety, and cost.	b1. Propose the appropriate dose for patients individually based on patient parameters. b2. Differentiate between various approaches to perform dose calculations.

(C) Professional and Practical Skills	
Alignment of CILOs (Course Intended Learning Outcomes) to PILOs (Program Intended Learning Outcomes)	
Professional and Practical Skills PILOs	Professional and Practical Skills CILOs
After completing this program, graduates would be able to:	After completing this course, students would be able to:
C1 Provide pharmaceutical care professionally in various pharmacy practice setting.	c1. Conduct unit conversion, density, strength, dose, dose adjustment, and parenteral calculations.

(D) Transferable (General) Skills:	
Alignment of CILOs (Course Intended Learning Outcomes) to PILOs (Program Intended Learning Outcomes)	
Transferable (General) Skills PILOs	Transferable (General) Skills CILOs

After completing this program, graduates would be able to:	After completing this course, students would be able to:
D2 Develop presentation, promotion, marketing, business administration, numeric and computation skills.	d1. Value the influence of proper dose calculations on the success of treatment plans.

IV. Alignment of CILOs to Teaching and Assessment Strategies		
(A) Alignment Course Intended Learning Outcomes of Knowledge and Understanding to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
a1. Identify basic pharmaceutical calculations.	- Lectures.	- Exams.
a2. List the components of and abbreviations used in prescriptions and medication orders.	- Lectures.	- Exams.
a3. Discuss various dose calculations encountered in pharmacy practice.	- Lectures.	- Exams.
(B) Alignment Course Intended Learning Outcomes of Intellectual Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
b1. Propose the appropriate dose for patients individually based on patient parameters.	- Lectures. - Interactive class discussions.	- Exams.
b2. Differentiate between various approaches to perform pharmaceutical calculations.	- Lectures. - Interactive class discussions.	- Exams
(C) Alignment Course Intended Learning Outcomes of Professional and Practical Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
c1. Conduct unit conversion, density, strength, dose, dose adjustment, and parenteral calculations.	- Lectures. - Interactive class discussions.	- Exams.
(D) Alignment Course Intended Learning Outcomes of Transferable Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
d1. Value the influence of proper dose calculations on the success of treatment plans.	- Lectures. - Interactive class discussions.	- Exams.
V. Course Content:		
A – Theoretical Aspect:		

Order	Units/Topics List	Learning Outcomes	Sub Topics List	Number of Weeks	Contact hours
1	Fundamentals of measurement and calculation + Metric and common systems and formulas conversion	a1, a3, c1, d1	<ul style="list-style-type: none"> - Introduction to pharmaceutical calculations - Techniques towards proper calculations - number and numerals - Roman letters, - International system of units - common systems of measurements - Intersystem conversion 	2	2
2	Pharmaceutical measurements	a1, a3, b2, c1, d1	<ul style="list-style-type: none"> - measurement of volumes and weights - aliquot method - percentage of error 	1	2
3	Interpretation of the prescription and medication orders	a1, a2	<ul style="list-style-type: none"> - prescription - responsibilities of a prescriber - components - interpretation of medical abbreviations 	1	2
4	Density and specific gravity	a1, a3, b2, c1, d1	<ul style="list-style-type: none"> - difference - pycnometer method - displacement method - plummet method - specific volume 	1	2
5	Strength calculations	a1, a3, b1, b2, c1, d1	<ul style="list-style-type: none"> - percentage - ratio strength - parts per million 	1	2
6	Calculations of doses (General considerations)	a1, a3, b1, c1, d1	<ul style="list-style-type: none"> - concepts - dose measurements - general dose calculations 	1	2
7	Calculations of doses (patient parameters)	a1, a3, b1, c1, d1	<ul style="list-style-type: none"> - pediatric patients - dosage based on age - dosage based on body weight and surface area - nomograms 	1	2

			- considerations in chemotherapy regimens.		
8	Dilution and Concentration of formulations	a1, a3, b1, b2, c1, d1	- stock solution - conversion factor method - alligation method	1	2
9	Selected clinical calculations	a1, a3, b1, b2, c1, d1	- heparin dosing calculations. - calculations based on creatinine clearance.	1	2
10	Isotonic solutions + Electrolyte solutions	a1, a3, b1, b2, c1, d1	- concept of tonicity - dissociation factor - sodium chloride equivalent - milliequivalent. - millimoles. - Osmolarity	1	2
11	Body mass index (BMI) + Parenteral admixtures	a1, a3, b1, b2, c1, d1	- BMI significance - BMI calculations - Intravenous infusions - Parenteral admixtures - flow rate of infusions	1	4
	Exams	a1, a2, a3, b1, b2, c1	-	13-14	
Number of Weeks /and Units Per Semester				14	24
B - Practical Aspect: (if any)					
Order	Tasks/ Experiments	Number of Weeks	contact hours	Learning Outcomes	
1					
Number of Weeks /and Units Per Semester					
VI. Teaching strategies of the course:					
- Lectures. - Interactive class discussions.					
VII. Assignments:					
No	Assignments	Aligned CILOs (symbols)	Week Due	Mark	

1				
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VIII. Schedule of Assessment Tasks for Students During the Semester:

No.	Assessment Method	Week Due	Mark	Proportion of Final Assessment	Aligned Course Learning Outcomes
1	Test 1	4	10	10%	a1, a3, b1, b2, c1
2	Midterm	6	30	30%	a1, a2, a3, b1, b2, c1
3	Test 2	9	10	10%	a1, a3, b1, b2, c1
4	Final exam	14	40	40%	a1, a2, a3, b1, b2, c1
5	Attendance	12	10	10%	

IX. Learning Resources:

Author, (Year), Book Title, Edition, Publisher, Country of publishing

1- Required Textbook(s) (maximum two).

Howard Ansel, (2009), Pharmaceutical Calculations, Thirteenth edition. Lippincott Williams & Wilkins, USA.

2- Essential References.

Loyd V. Allen, Jr., (2005), Remington: The Science and Practice of Pharmacy, Twenty first edition. Lippincott Williams & Wilkins, USA.

Judith Rees, Ian Smith, (2010), Introduction to Pharmaceutical Calculations, Third edition. Pharmaceutical Press, USA.

3- Electronic Materials and Web Sites *etc.*

X. Course Policies:

1 Class Attendance:

1. Attendance in all classes is required. There are no exceptions to this policy.
2. Roll will be called in the very beginning of each class. If you arrive after roll has been called, you may be marked as absent.

	<p>3. In any regular semester or summer term, students may miss no more than the equivalent of one third of class sessions scheduled. Students who exceed the above limits are automatically given an (AW) grade in the course by the UMS, and consequently not be allowed to attend class any longer.</p>
2	<p>Tardy:</p> <ol style="list-style-type: none"> 1. All students are expected to conduct themselves in a professional manner. Unprofessional behavior such as, but not limited to, repeated disruption of class (including habitually walking in after class has started), sleeping in class, doing other course work in class, reading a newspaper in class, a ringing cell phone, frequent side conversations with other students and/or rudeness toward any person will be considered a serious violation of this standard and will lower your grade accordingly. Please be sure to turn off your cell phone before the start of class. 2. Attention to detail entails being prepared for class. This would include, but is not limited to; having a pencil/pen, note pad, calculator; reading and following the course syllabus, etc. All students are expected to conduct themselves in a professional manner. Unprofessional behavior such as, but not limited to, repeated disruption of class (including habitually walking in after class has started), sleeping in class, doing other course work in class, reading a newspaper in class, a ringing cell phone, frequent side conversations with other students and/or rudeness toward any person will be considered a serious violation of this standard and will lower your grade accordingly. Please be sure to turn off your cell phone before the start of class. 3. Attention to detail entails being prepared for class. This would include, but is not limited to; having a pencil/pen, note pad, calculator; reading and following the course syllabus, etc.
3	<p>Exam Attendance/Punctuality: As per university council decision, a student is eligible for a Quizzes, Midterm or Final examination make-up if and only if he/she had the following incidents:</p> <ol style="list-style-type: none"> 1. Sickness; proved by hospitalization report; that is; a discharge summary is necessary. 2. Death in the family proved by a death certificate or equivalent and personal identification. 3. Accidents proved by an expert report. 4. Military/Official engagement.
4	<p>Assignments & Projects: Homework should be clearly presented i.e.:</p> <ol style="list-style-type: none"> 1. It should be written on A4 paper. 2. It should include a title page (Course Name, Semester, Date, Name...). 3. Your instructor will ask you to submit your homework online or as a hard copy. In the latter case, it should be stapled together.
5	<p>Cheating:</p> <ul style="list-style-type: none"> • Cheating is strictly prohibited behavior. • University regulations will be pursued and enforced on any cheating student.
6	<p>Plagiarism:</p> <ul style="list-style-type: none"> • Plagiarism is defined as “copying or stealing someone else’s words or ideas and claiming or presenting them as if they were your own.”

	<ul style="list-style-type: none">• University regulations will be pursued and enforced on any plagiarism attempt.
7	Other policies: Please refer to the university policy.

Lebanese International University
 The School of Pharmacy and Medical Sciences
 Department: CLINICAL PHARMACY
 Title of the Program: Bachelor of Clinical Pharmacy



**Course Specification of
 PHAR-PHAR300-Pharmaceutical Calculations**

I. - Information about Faculty Member Responsible for the Course:

Name of Faculty Member	Dr. Khaled Al-Tahami	Office Hours					
Location & Telephone No.	+967-777436341	SAT	SUN	MON	TUE	WED	THU
E-mail	Email: tahami@gmail.com	√	√		√	√	

II. Course Identification and General Information:

1	Course Title:	Pharmaceutical Calculations				
2	Course Number & Code:	PHAR300				
3	Credit hours:	C.H				Total
		Theory	Seminars, exercises.	Practical	Field training	
		2	-	-	-	2
4	Study level/year at which this course is offered:	Second Year – Spring Semester				
5	Pre –requisite (if any):	ENGL100, PHAR200, PHAR250, CHEM200				
6	Co –requisite (if any):	-				
7	Program (s) in which the course is offered	Bachelor of Clinical Pharmacy				
8	Language of teaching the course:	English				
9	System of study:	Credits Hours System				
10	Mode of delivery:	Lectures				
11	Location of teaching the course:	LIU Sana'a				

III. Course Description:

This course provides the pharmacy student with the knowledge and skills needed to perform pharmaceutical calculations to obtain concentration/ dose, to convert measurements from the metric system to the apothecary system and vice versa, to calculate doses needed for pediatrics or adults, to mathematically adjust medication doses in case of renal or hepatic compromise, and to interpret correctly standard abbreviations and symbols used in prescriptions and medication orders.

IV. Intended learning outcomes (ILOs) of the course:

Upon successful completion of the course, students would be able to:

1. Identify basic pharmaceutical calculations.
2. List the components of and abbreviations used in prescriptions and medication orders.
3. Discuss various dose calculations encountered in pharmacy practice
4. Propose the appropriate dose for patients individually based on patient parameters.
5. Differentiate between various approaches to perform dose calculations.
6. Conduct unit conversion, density, strength, dose, dose adjustment, and parenteral calculations.
7. Value the influence of proper dose calculations on the success of treatment plans.

V. Course Content:

Distribution of Semester Weekly Plan Of course Topics/Items and Activities.

A – Theoretical Aspect:

Order	Topics List	Week Due	Contact Hours
1	Fundamentals of measurement and calculation + Metric and common systems and formulas conversion	1-2	4
2	Pharmaceutical measurements	3	2
3	Interpretation of the prescription and medication orders	4	2
4	Density and specific gravity	5	2
5	Strength calculations	6	2
6	Calculations of doses (General considerations)	7	2
7	Calculations of doses (patient parameters)	8	2
8	Dilution and Concentration of formulations	9	2
9	Selected clinical calculations	10	2
10	Isotonic solutions + Electrolyte solutions	11	2
11	Body mass index (BMI) + Parenteral admixtures	12	2
12	Exams	13-14	
Number of Weeks /and Units Per Semester		14	24

VI. Teaching strategies of the course:				
<ul style="list-style-type: none"> - Lectures. - Interactive class discussions. 				
VII. Assignments:				
No	Assignments	Week Due	Mark	
1				
VIII. Schedule of Assessment Tasks for Students During the Semester:				
Assessment	Type of Assessment Tasks	Week Due	Mark	Proportion of Final Assessment
1	Test 1	4	10	10%
2	Midterm	6	30	30%
3	Test 2	9	10	10%
4	Final exam	14	40	40%
5	Attendance	12	10	10%
IX. Learning Resources:				
Author, (Year), Book Title, Edition, Publisher, Country of publishing				
1- Required Textbook(s) (maximum two).				
Howard Ansel, (2009), Pharmaceutical Calculations, Thirteenth edition. Lippincott Williams & Wilkins, USA.				
2- Essential References.				
Lloyd V. Allen, Jr., (2005), Remington: The Science and Practice of Pharmacy, Twenty first edition. Lippincott Williams & Wilkins, USA.				
Judith Rees, Ian Smith, (2010), Introduction to Pharmaceutical Calculations, Third edition. Pharmaceutical Press, USA.				
3- Electronic Materials and Web Sites <i>etc.</i>				
X. Course Policies:				
Unless otherwise stated, the normal course administration policies and rules of the School of Business apply.				
1	Class Attendance: <ol style="list-style-type: none"> 1. Attendance in all classes is required. There are no exceptions to this policy. 2. Roll will be called in the very beginning of each class. If you arrive after roll has been called, you may be marked as absent. 			

	<p>3. In any regular semester or summer term, students may miss no more than the equivalent of one third of class sessions scheduled. Students who exceed the above limits are automatically given an (AW) grade in the course by the UMS, and consequently not be allowed to attend class any longer.</p>
2	<p>Tardy:</p> <ol style="list-style-type: none"> 1. All students are expected to conduct themselves in a professional manner. Unprofessional behavior such as, but not limited to, repeated disruption of class (including habitually walking in after class has started), sleeping in class, doing other course work in class, reading a newspaper in class, a ringing cell phone, frequent side conversations with other students and/or rudeness toward any person will be considered a serious violation of this standard and will lower your grade accordingly. Please be sure to turn off your cell phone before the start of class. 2. Attention to detail entails being prepared for class. This would include, but is not limited to; having a pencil/pen, note pad, calculator; reading and following the course syllabus, etc. All students are expected to conduct themselves in a professional manner. Unprofessional behavior such as, but not limited to, repeated disruption of class (including habitually walking in after class has started), sleeping in class, doing other course work in class, reading a newspaper in class, a ringing cell phone, frequent side conversations with other students and/or rudeness toward any person will be considered a serious violation of this standard and will lower your grade accordingly. Please be sure to turn off your cell phone before the start of class. 3. Attention to detail entails being prepared for class. This would include, but is not limited to; having a pencil/pen, note pad, calculator; reading and following the course syllabus, etc.
3	<p>Exam Attendance/Punctuality: As per university council decision, a student is eligible for a Quizzes, Midterm or Final examination make-up if and only if he/she had the following incidents:</p> <ol style="list-style-type: none"> 1. Sickness; proved by hospitalization report; that is; a discharge summary is necessary. 2. Death in the family proved by a death certificate or equivalent and personal identification. 3. Accidents proved by an expert report. 4. Military/Official engagement.
4	<p>Assignments & Projects: Homework should be clearly presented i.e.:</p> <ol style="list-style-type: none"> 1. It should be written on A4 paper. 2. It should include a title page (Course Name, Semester, Date, Name...). 3. Your instructor will ask you to submit your homework online or as a hard copy. In the latter case, it should be stapled together.
5	<p>Cheating:</p> <ul style="list-style-type: none"> • Cheating is strictly prohibited behavior. • University regulations will be pursued and enforced on any cheating student.
6	<p>Plagiarism:</p> <ul style="list-style-type: none"> • Plagiarism is defined as “copying or stealing someone else’s words or ideas and claiming or presenting them as if they were your own.” • University regulations will be pursued and enforced on any plagiarism attempt.

7	Other policies: Please refer to the university policy.
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Lebanese International University
 The School of Pharmacy and Medical Sciences
 Department: CLINICAL PHARMACY
 Title of the Program: Bachelor of Clinical Pharmacy



**Course Specification of
 PHAR-PHAR400- Medicinal Chemistry I**

I. Course Identification and General Information:						
1	Course Title:	Medicinal Chemistry I				
2	Course Code & Number:	PHAR 400				
3	Credit hours:	C.H			TOTAL	
		Theory	Seminars, exercises	Practical		Field training
		3				
4	Study level/ semester at which this course is offered:	Second/ Fall				
5	Pre –requisite (if any):	CHEM300				
6	Co –requisite (if any):					
8	Program (s) in which the course is offered:	Bachelor of Clinical pharmacy				
9	Language of teaching the course:	English				
10	Location of teaching the course:	LIU Sana'a				
11	Prepared by:	Dr. Wafa M. Al Madhagi				
12	Reviewed by:	Dr Abdullah Al-Diahbli				
13	Date of approval:					

II. Course Description:	
<p>This course will introduce the principles of medicinal chemistry which deals with the physicochemical properties of drugs that affect their therapeutic applications. Discussion will include the chemical stability, dosage form, synthesis and biotransformation pathways, absorption and structure-activity relationship (SAR) of pharmaceutical agents. During this course, factors like the chemical, stereochemical and physical properties of certain classes of drugs will be emphasized. The drug classes will include the following: drugs affecting cholinergic, adrenergic, and serotonergic neurotransmissions, general and local anesthetics.</p>	

III. Course Intended Learning Outcomes (CILOs):	
(A) Knowledge and Understanding:	
Alignment of CILOs (Course Intended Learning Outcomes) to PILOs (Program Intended Learning Outcomes)	
Knowledge and Understanding PILOs	Knowledge and Understanding CILOs
After completing this program, graduates would be able to:	After completing this course, students would be able to:
A2. Identify the role of each of the pharmaceutical sciences in the development and use of pharmaceutical products.	a1. Describe definition and objectives in medicinal chemistry, classifications and its related diseases; expression of drug action
A4. Relate the biologic effects of medicinal substances to their physicochemical properties and their interactions with the living systems.	a2. Identify concepts that are closely related to structure-activity relationship (SAR) of drugs and its quantitative aspects
(B) Intellectual Skills:	
Alignment of CILOs (Course Intended Learning Outcomes) to PILOs (Program Intended Learning Outcomes)	
Intellectual Skills PILOs	Intellectual Skills CILOs
After completing this program, graduates would be able to:	After completing this course, students would be able to:
B3. Compare alternative therapeutic plans for each drug-related problem based on evidence of effectiveness, safety, and cost.	b1. Analyze the chemistry of drugs with respect to their pharmacological activity
	b2. explore the source and fundamentals of drug search and discovery; development and design of drugs; stereochemical functions in drug activities and pro-drug aspects.
(C) Professional and Practical Skills	
Alignment of CILOs (Course Intended Learning Outcomes) to PILOs (Program Intended Learning Outcomes)	
Professional and Practical Skills PILOs	Professional and Practical Skills CILOs
After completing this program, graduates would be able to:	After completing this course, students would be able to:
(D) Transferable (General) Skills:	
Alignment of CILOs (Course Intended Learning Outcomes) to PILOs (Program Intended Learning Outcomes)	
Transferable (General) Skills PILOs	Transferable (General) Skills CILOs
After completing this program, graduates would be able to:	After completing this course, students would be able to:

D1. Advocate leadership by initiating and advocating change to develop new opportunities in response to problems they identify	d1. Present ideas clearly, effectively and confidently, in both oral and written forms
D3. Capability of time management, critical thinking, problem solving, decision-making and team-working	d2. cooperate with others to solve problem and Work effectively in a team

IV. Alignment of CILOs to Teaching and Assessment Strategies

(A) Alignment Course Intended Learning Outcomes of Knowledge and Understanding to Teaching Strategies and Assessment Strategies:

Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
a1. Describe definition and objectives in medicinal chemistry, classifications and its related diseases; expression of drug action	Lecture Group discussion Brainstorming method -	- Quizzes, Presentation and Written exam
a2. Identify concepts that are closely related to structure-activity relationship (SAR) of drugs and its quantitative aspects	Lecture Collaborative learning - Exercises	- Quizzes, Presentation and Written exam
	-	-

(B) Alignment Course Intended Learning Outcomes of Intellectual Skills to Teaching Strategies and Assessment Strategies:

Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
b1. Analyze the chemistry of drugs with respect to their pharmacological activity	Working in small groups Cooperative learning -	Oral presentation Short tests -
b2. explore the source and fundamentals of drug search and discovery; development and design of drugs; stereochemical functions in drug activities and pro-drug aspects.	Brainstorming method Demo mode -	- Assignments
	-	-

(C) Alignment Course Intended Learning Outcomes of Professional and Practical Skills to Teaching Strategies and Assessment Strategies:

Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
	-	-

	-	-
	-	-

(D) Alignment Course Intended Learning Outcomes of Transferable Skills to Teaching Strategies and Assessment Strategies:

Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
d1. Present ideas clearly, effectively and confidently, in both oral and written forms	Group discussions -	- home work
d2. cooperate with others to solve problem and Work effectively in a team	Group discussions -	- assignment
	-	-

V. Course Content:

A – Theoretical Aspect:

Order	Units/Topics List	Learning Outcomes	Sub Topics List	Number of Weeks	Contact hours
1	Introduction	a1, b2,d1	- Introduction to Medicinal Chemistry - History and development of medicinal chemistry	Week1	3
2	Drug design and development, preclinical and clinical evaluation of new drugs	a1, ,b2 d2	Traditional analog (QSAR) and mechanism-based approaches: Hansch Equation, Craig Plot, Topliss Scheme - Computer Aided Drug Designing (CADD) and Molecular modeling	Week2	3
3	Drug design and relationship of functional groups to pharmacologic activity; with emphasis on the physicochemical properties of drugs.	a1 ,b2,d2	Physicochemical properties in relation to biological action: - Ionization - Solubility - Partition Coefficient, - Hydrogen bonding,	Week3	3

			- electronic effect,		
4	Receptors and drug action	a1, b1,b2,d2	- Type of receptor type of bond used factor affect drug- receptor binding Biological specificity -	Week5	3
5	Drug design through enzyme inhibitors	a1,a2 b1,b2	- Lipinski rule of five - Bioisosterism - type of enzymes inhibitor -	Week 6	3
6	Physiochemical and biopharmaceutical properties of drug substances and pharmacokinetics	a1, b1,b2,d1,d2	Hard and soft drug Type of prodrug Application of Functional group in prodrugs	Week 7	3
7	Drug metabolism:	a1,a2 b1,b2,d2	- phase I, Phase II and Phase III metabolism; factors which affect drug metabolism; CYP450 polymorphism and drug-drug interactions.	Week 8	3
8	Drugs affecting Cholinergic neurotransmission:	a1,a2 b1,b2,d1	- Cholinergic neurotransmitters: Biosynthesis and catabolism of acetylcholine. Cholinergic receptors (Muscarinic & Nicotinic) and their distribution. - Parasympathomimetic agents: SAR of Parasympathomimetic agents - Direct acting agents - Indirect acting/ Cholinesterase	Week 9	3

			inhibitors (Reversible & Irreversible) <ul style="list-style-type: none"> - Cholinesterase reactivator - Cholinergic Blocking agents: SAR of cholinolytic agents - Synthetic cholinergic blocking agents 		
9	Drugs affecting adrenergic neurotransmission:	a1, b1,b2,d2	<ul style="list-style-type: none"> - Adrenergic Neurotransmitters: Biosynthesis and catabolism of catecholamine. Adrenergic receptors (Alpha & Beta) and their distribution. - Sympathomimetic agents: SAR of Sympathomimetic agents - Direct acting - Indirect acting agents: - Agents with mixed mechanism - Adrenergic Antagonists: Alpha adrenergic blockers - Beta adrenergic blockers: SAR of beta blockers 	Week 10	3
11	Drugs affecting serotonergic neurotransmission:	a2 b1,d1	<ul style="list-style-type: none"> - 5-HT synthesis, release and and metabolism, 5-HT receptors types and subtypes; 5-HT receptors agonists and 	Week 11	3

			antagonists and their clinical applications.		
14	Local Anesthetics + Volatile Anesthetics	a2 b1,d1, d2	- Classification of local anesthetic - Benzoic acid derivatives - Aniline derivatives (Amides) - inhalation anesthetic - intravenous anesthetic - volatile anesthetic	Week 12	3
15	Final term exam		-	Week 13-14	2
Number of Weeks /and Units Per Semester				14	36
B - Practical Aspect: (if any)					
Order	Tasks/ Experiments	Number of Weeks	contact hours	Learning Outcomes	
1					
Number of Weeks /and Units Per Semester					
VI. Teaching strategies of the course:					
<ul style="list-style-type: none"> - Cooperative education - Group discussion - Problems solving - Brainstorming method - Interactive lectures 					
VII. Assignments:					
No	Assignments	Aligned CILOs (symbols)	Week Due	Mark	
1	Assignments about log P calculation	a1,a2,b1	W3	5	
2	Presentation about drug binding and application	a1,b1,c1,d1	W6	5	
3	Assignments about drug metabolism	a1,a2	W9	5	
4	Research assignments about ANS drug in the market	a1,b1,c1,d1	W12	5	
VIII. Schedule of Assessment Tasks for Students During the Semester:					
No.	Assessment Method	Week Due	Mark	Proportion of Final Assessment	Aligned Course Learning Outcomes
1	Tasks and Assignments	weekly	10	10%	a1,b1,b2,d1,d2

2	Test 1	W4	10	10%	a1,b1
3	Midterm Exam	W7-8	20	20%	a1,b1, d1
4	Test 2	W11	10	10%	a1,b1,b2 d1
5	Attendance	All	10	10%	a1,b1,b2,d1,d2
	Final Exam (theoretical)	W14	40	40%	All

IX. Learning Resources:

Author, (Year), Book Title, Edition, Publisher, Country of publishing

1- Required Textbook(s) (maximum two).

Patrick, G. L., An Introduction to Medicinal Chemistry, 4th Ed. Oxford University Press, Oxford, 2009. ISBN:978-0-19-923447-9

2- Essential References.

1. Foye's Principles of Medicinal Chemistry, 6th Ed. Lippincott Williams & Wilkins, 2007.
2. Wilson and Gisvold's Textbook of Organic Medicinal and Pharmaceutical Chemistry, 12th Ed. Lippincott Williams & Wilkins, 2010

3- Electronic Materials and Web Sites etc.

1. www.bookzz.org
2. www.libgen.io
3. <http://en-booksee.org>

X. Course Policies:

1 Class Attendance:

1. Attendance in all classes is required. There are no exceptions to this policy.
2. Roll will be called in the very beginning of each class. If you arrive after roll has been called, you may be marked as absent.
3. In any regular semester or summer term, students may miss no more than the equivalent of one third of class sessions scheduled. Students who exceed the above limits are automatically given an (AW) grade in the course by the UMS, and consequently not be allowed to attend class any longer.

2 Tardy:

1. All students are expected to conduct themselves in a professional manner. Unprofessional behavior such as, but not limited to, repeated disruption of class (including habitually walking in after class has started), sleeping in class, doing other course work in class, reading a newspaper in class, a ringing cell phone, frequent side conversations with other students and/or rudeness toward any person will be considered a serious violation of this standard and will lower your grade accordingly. Please be sure to turn off your cell phone before the start of class.
2. Attention to detail entails being prepared for class. This would include, but is not limited to; having a pencil/pen, note pad, calculator; reading and following the course syllabus, etc. All students are expected to conduct themselves in a professional manner. Unprofessional behavior such as, but not limited to, repeated disruption of class (including habitually walking in after class has started), sleeping in class, doing

	<p>other course work in class, reading a newspaper in class, a ringing cell phone, frequent side conversations with other students and/or rudeness toward any person will be considered a serious violation of this standard and will lower your grade accordingly. Please be sure to turn off your cell phone before the start of class.</p> <p>3. Attention to detail entails being prepared for class. This would include, but is not limited to; having a pencil/pen, note pad, calculator; reading and following the course syllabus, etc.</p>
3	<p>Exam Attendance/Punctuality: As per university council decision, a student is eligible for a Quizzes, Midterm or Final examination make-up if and only if he/she had the following incidents:</p> <ol style="list-style-type: none"> 1. Sickness; proved by hospitalization report; that is; a discharge summary is necessary. 2. Death in the family proved by a death certificate or equivalent and personal identification. 3. Accidents proved by an expert report. 4. Military/Official engagement.
4	<p>Assignments & Projects: Homework should be clearly presented i.e.:</p> <ol style="list-style-type: none"> 1. It should be written on A4 paper. 2. It should include a title page (Course Name, Semester, Date, Name...). 3. Your instructor will ask you to submit your homework online or as a hard copy. In the latter case, it should be stapled together.
5	<p>Cheating:</p> <ul style="list-style-type: none"> • Cheating is strictly prohibited behavior. • University regulations will be pursued and enforced on any cheating student.
6	<p>Plagiarism:</p> <ul style="list-style-type: none"> • Plagiarism is defined as “copying or stealing someone else’s words or ideas and claiming or presenting them as if they were your own.” • University regulations will be pursued and enforced on any plagiarism attempt.
7	<p>Other policies: Please refer to the university policy.</p>

Lebanese International University
 The School of Pharmacy and Medical Sciences
 Department: CLINICAL PHARMACY
 Title of the Program: Bachelor of Clinical Pharmacy



**Course Specification of
 PHAR400- Medicinal Chemistry I**

I. - Information about Faculty Member Responsible for the Course:							
Name of Faculty Member	Dr. Wafa M. Al Madhagi	Office Hours					
Location & Telephone No.	(967) 733744714	SAT	SUN	MON	TUE	WED	THU
E-mail	walmadhaji1983@gmail.com			√		√	
II. Course Identification and General Information:							
1	Course Title:	Medicinal Chemistry I					
2	Course Number & Code:	PHAR 400					
3	Credit hours:	C.H				Total	
		Theory	Seminars, exercises.	Practical	Field training		
		3					3
4	Study level/year at which this course is offered:	Second/ Fall					
5	Pre –requisite (if any):	CHEM300					
6	Co –requisite (if any):						
7	Program (s) in which the course is offered	Clinical pharmacy					
8	Language of teaching the course:	English					
9	System of study:	Credits Hours System					
10	Mode of delivery:	Lectures					
11	Location of teaching the course:	LIU Sana'a					
III. Course Description:							
This course will introduce the principles of medicinal chemistry which deals with the physicochemical properties of drugs that affect their therapeutic applications. Discussion will include the chemical stability, dosage form, synthesis and biotransformation pathways, absorption and structure-activity relationship (SAR) of pharmaceutical agents. During this course, factors like the chemical, stereochemical and physical properties of certain classes of drugs will be emphasized. The drug classes will include the following: drugs affecting cholinergic, adrenergic, and serotonergic neurotransmissions, general and local anesthetics							

IV. Intended learning outcomes (ILOs) of the course:**Upon successful completion of the course, students would be able to:**

1. Describe definition and objectives in medicinal chemistry, classifications and its related diseases; expression of drug action
2. Identify concepts that are closely related to structure-activity relationship (SAR) of drugs and its quantitative aspects
3. Analyze the chemistry of drugs with respect to their pharmacological activity
4. explore the source and fundamentals of drug search and discovery; development and design of drugs; stereo chemical functions in drug activities and pro-drug aspects.
5. Present ideas clearly, effectively and confidently, in both oral and written forms
6. cooperate with others to solve problem and work effectively in a team

V. Course Content:**Distribution of Semester Weekly Plan Of course Topics/Items and Activities.****A – Theoretical Aspect:**

Order	Topics List	Week Due	Contact Hours
1	Introduction	W1	3
2	Drug design and development, preclinical and clinical evaluation of new drugs	W2	3
3	Drug design and relationship of functional groups to pharmacologic activity; with emphasis on the physiochemical properties of drugs.	W3	3
5	Receptors and drug action	W4	3
6	Drug design through enzyme inhibitors	W5	3
7	Physiochemical and biopharmaceutical properties of drug substances and pharmacokinetics	W6	3
9	Drug metabolism:	W7	3
10	Drugs affecting Cholinergic neurotransmission:	W8	3
11	Drugs affecting adrenergic neurotransmission:	W9	3
13	Drugs affecting serotonergic neurotransmission:	W10	3
14	Local Anesthetics	W11	3
15	Volatile Anesthetics	W12	3
16	Final term exam	W13-14	2
Number of Weeks /and Units Per Semester		14	36

VI. Teaching strategies of the course:

- Group discussion
- Problems solving
- Brainstorming method
- Interactive lectures

VII. Assignments:

No	Assignments	Week Due	Mark
1	Assignments about log P calculation	W3	5
2	Presentation about drug binding and application	W6	5
3	Assignments about drug metabolism	W9	5
4	Research assignments about ANS drug in the market	W12	5

VIII. Schedule of Assessment Tasks for Students During the Semester:

Assessment	Type of Assessment Tasks	Week Due	Mark	Proportion of Final Assessment
1	Tasks and Assignments	weekly	10	10%
2	Test 1	W4	10	10%
3	Midterm Exam	W7-8	20	20%
4	Test 2	W11	10	10%
5	Attendance	All	10	10%
6	Final Exam (theoretical)	W14	40	40%

IX. Learning Resources:

Author, (Year), Book Title, Edition, Publisher, Country of publishing

1- Required Textbook(s) (maximum two).

Patrick, G. L., An Introduction to Medicinal Chemistry, 4th Ed. Oxford University Press, Oxford, 2009. ISBN:978-0-19-923447-9

2- Essential References.

1. Foye's Principles of Medicinal Chemistry, 6th Ed. Lippincott Williams & Wilkins, 2007.
2. Wilson and Gisvold's Textbook of Organic Medicinal and Pharmaceutical Chemistry, 12th Ed. Lippincott Williams & Wilkins, 2010

3- Electronic Materials and Web Sites <i>etc.</i>	
1.	www.bookzz.org
2.	www.libgen.io
3.	http://en-booksee.org

X. Course Policies:	
Unless otherwise stated, the normal course administration policies and rules of the School of Business apply.	
1	<p>Class Attendance:</p> <ol style="list-style-type: none"> Attendance in all classes is required. There are no exceptions to this policy. Roll will be called in the very beginning of each class. If you arrive after roll has been called, you may be marked as absent. In any regular semester or summer term, students may miss no more than the equivalent of one third of class sessions scheduled. Students who exceed the above limits are automatically given an (AW) grade in the course by the UMS, and consequently not be allowed to attend class any longer.
2	<p>Tardy:</p> <ol style="list-style-type: none"> All students are expected to conduct themselves in a professional manner. Unprofessional behavior such as, but not limited to, repeated disruption of class (including habitually walking in after class has started), sleeping in class, doing other course work in class, reading a newspaper in class, a ringing cell phone, frequent side conversations with other students and/or rudeness toward any person will be considered a serious violation of this standard and will lower your grade accordingly. Please be sure to turn off your cell phone before the start of class. Attention to detail entails being prepared for class. This would include, but is not limited to; having a pencil/pen, note pad, calculator; reading and following the course syllabus, etc. All students are expected to conduct themselves in a professional manner. Unprofessional behavior such as, but not limited to, repeated disruption of class (including habitually walking in after class has started), sleeping in class, doing other course work in class, reading a newspaper in class, a ringing cell phone, frequent side conversations with other students and/or rudeness toward any person will be considered a serious violation of this standard and will lower your grade accordingly. Please be sure to turn off your cell phone before the start of class. Attention to detail entails being prepared for class. This would include, but is not limited to; having a pencil/pen, note pad, calculator; reading and following the course syllabus, etc.
3	<p>Exam Attendance/Punctuality:</p> <p>As per university council decision, a student is eligible for a Quizzes, Midterm or Final examination make-up if and only if he/she had the following incidents:</p> <ol style="list-style-type: none"> Sickness; proved by hospitalization report; that is; a discharge summary is necessary. Death in the family proved by a death certificate or equivalent and personal identification. Accidents proved by an expert report. Military/Official engagement.

4	<p>Assignments & Projects: Homework should be clearly presented i.e.:</p> <ol style="list-style-type: none"> 1. It should be written on A4 paper. 2. It should include a title page (Course Name, Semester, Date, Name...). 3. Your instructor will ask you to submit your homework online or as a hard copy. In the latter case, it should be stapled together.
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7	<p>Other policies: Please refer to the university policy.</p>

Lebanese International University
 The School of Pharmacy and Medical Sciences
 Department: CLINICAL PHARMACY
 Title of the Program: Bachelor of Clinical Pharmacy



Course Specification of
**PHAR-PHAR405- PHARMACEUTICAL ANALYSIS
 &BIOTECHNOLOGY**

I. Course Identification and General Information:						
1	Course Title:	PHARMACEUTICAL ANALYSIS				
2	Course Code & Number:	PHA 405				
3	Credit hours:	C.H			TOTAL	
		Theory	Seminars, exercises	Practical		Field training
		2				2
4	Study level/ semester at which this course is offered:	Second/summer				
5	Pre –requisite (if any):	CHEM300				
6	Co –requisite (if any):	PHAR405L				
8	Program (s) in which the course is offered:	Bachelor of Clinical pharmacy				
9	Language of teaching the course:	English				
10	Location of teaching the course:	LIU Sana'a				
11	Prepared by:	Dr. Wafa Mohammed				
12	Reviewed by:	Dr.Khaled Tahami				
13	Date of approval:					

II. Course Description:	
The course introduces the fundamental principles of modern instrumental methods used in pharmaceutical analysis, including the theoretical background and calculations needed, with their applications for identifying, separating and quantifying drugs. Instrumentation discussed within this course fall into: Spectroscopic methods (UV-Visible, IR and Atomic Absorption), chromatographic methods (TLC, HPLC and GC), and electroanalytical methods.	

III. Course Intended Learning Outcomes (CILOs):	
(A) Knowledge and Understanding:	
Alignment of CILOs (Course Intended Learning Outcomes) to PILOs (Program Intended Learning Outcomes)	
Knowledge and Understanding PILOs	Knowledge and Understanding CILOs
After completing this program, graduates would be able to:	After completing this course, students would be able to:
A2. Identify the role of each of the pharmaceutical sciences in the development and use of pharmaceutical products	a1. Describe the basic principles, the instrumental design and advantages/limitations of a variety of analytical techniques used in pharmaceutical analysis
(B) Intellectual Skills:	
Alignment of CILOs (Course Intended Learning Outcomes) to PILOs (Program Intended Learning Outcomes)	
Intellectual Skills PILOs	Intellectual Skills CILOs
After completing this program, graduates would be able to:	After completing this course, students would be able to:
No applicable	
(C) Professional and Practical Skills	
Alignment of CILOs (Course Intended Learning Outcomes) to PILOs (Program Intended Learning Outcomes)	
Professional and Practical Skills PILOs	Professional and Practical Skills CILOs
After completing this program, graduates would be able to:	After completing this course, students would be able to:

(D) Transferable (General) Skills:	
Alignment of CILOs (Course Intended Learning Outcomes) to PILOs (Program Intended Learning Outcomes)	
Transferable (General) Skills PILOs	Transferable (General) Skills CILOs
After completing this program, graduates would be able to:	After completing this course, students would be able to:
D1. Advocate leadership by initiating and advocating change to develop new opportunities in response to problems they identify	d1. Demonstrate capability of choosing the appropriate instrumental method for a particular investigation pertinent to a certain drug or pharmaceutical product
D3. Capability of time management, critical thinking, problem solving, decision-making and team-working	d2. Apply critical thinking in scientific inquiry

IV. Alignment of CILOs to Teaching and Assessment Strategies		
(A) Alignment Course Intended Learning Outcomes of Knowledge and Understanding to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
a1. Describe the basic principles, the instrumental design and advantages/limitations of a variety of analytical techniques used in pharmaceutical analysis	- Lectures as PowerPoint Brainstorming method -	- presentations - Assignments - Test

(B) Alignment Course Intended Learning Outcomes of Intellectual Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
	-	-
	-	-
	-	-

(C) Alignment Course Intended Learning Outcomes of Professional and Practical Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
	-	-
	-	-
	-	-

(D) Alignment Course Intended Learning Outcomes of Transferable Skills to Teaching Strategies and Assessment Strategies:

Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
d1. Demonstrate capability of choosing the appropriate instrumental method for a particular investigation pertinent to a certain drug or pharmaceutical product	- Problem Solving - Group discussions	- homework - quiz
d2. Apply critical thinking in scientific inquiry	- Problem Solving - Group discussions	- homework - quiz
	-	-

V. Course Content:

A – Theoretical Aspect:

Order	Units/Topics List	Learning Outcomes	Sub Topics List	Number of Weeks	Contact hours
1	Introduction to Pharmaceutical Analysis	a1, d1	- definition - importance - type of identification	W1	2
2	Quality control of pharmaceutical products	a1, d1,d2	- monograph - application - instrument used - GMP	W2	2
3	Control of errors in analysis	a1, d1,d2	- Type of error - reason of error - control of error	W3	2
4	Validation of analytical methods	a1, d1,d2	- definition - type of validation - process of validation	W4	2
5	Basic Calculations	a1 ,d2	- dose calculation - assay concentration	W5	2
6	UV-Vis Spectrophotometry	a1, d1,d2	-definition Principle Application	W6	2
7	Physicochemical properties of drug molecules	a1, d1,d2	- type of properties - effect on analysis - H bond - solubility - complexity	W7	2
8	Enzymology	a1, d1,d2	- principle - type - application	W8	2
9	Conductometric Titrations	a1, d1,d2	- principle	W9	2

			- type - application		
10	Column Chromatography	a1, d1,d2	- principle - type - application	W10	2
11	Gas Chromatography	a1, d1,d2	- principle - type - application	W11	2
12	High Pressure Liquid Chromatography	a1, d1,d2	- principle - type - application	W12	2
12	Atomic Absorption Spectrophotometry Infrared Spectroscopy	a1, d1,d2	- principle - type - application - principle - type - application	W13	2
Number of Weeks /and Units Per Semester				14	24

B - Practical Aspect: (if any)				
Order	Tasks/ Experiments	Number of Weeks	contact hours	Learning Outcomes
1				
Number of Weeks /and Units Per Semester				

VI. Teaching strategies of the course:	
<ul style="list-style-type: none"> - Cooperative education - Group discussion - Problems solving - Brainstorming method - Interactive lectures 	

VII. Assignments:				
No	Assignments	Aligned CILOs (symbols)	Week Due	Mark
1	Presentation about monograph	a1, d1,d2	W3	5
2	Research assignments about chromatography	a1, d1,d2	W10	5
3	Assignments about spectroscopy	a1, d1,d2	W12	5

VIII. Schedule of Assessment Tasks for Students During the Semester:

No.	Assessment Method	Week Due	Mark	Proportion of Final Assessment	Aligned Course Learning Outcomes
1	Tasks and Assignments	weekly	10	10%	a1, d1,d2
2	Test 1	W4	10	10%	a1, d1,d2
3	Midterm Exam	W7-8	20	20%	a1, d1,d2
	Test 2	W11	10	10%	
4	Attendance	All	10	10%	a1, d1,d2
5	Final Exam (theoretical)	W14	40	40%	a1, d1,d2

IX. Learning Resources:

Author, (Year), Book Title, Edition, Publisher, Country of publishing

1- Required Textbook(s) (maximum two).

satinfer Ahuja and Stephen scypinski, (2015), Handbook of modern pharmaceutical analysis, volume 3, academic press, USA

2- Essential References.

Pharmaceutical Analysis: A textbook for pharmacy students and pharmaceutical chemists, Fourth Edition.

Quantitative Chemical Analysis, Ninth edition.

3- Electronic Materials and Web Sites etc.

1. www.bookzz.org
2. www.libgen.io
3. <http://en-booksee.org>

X. Course Policies:

1 Class Attendance:

1. Attendance in all classes is required. There are no exceptions to this policy.
2. Roll will be called in the very beginning of each class. If you arrive after roll has been called, you may be marked as absent.
3. In any regular semester or summer term, students may miss no more than the equivalent of one third of class sessions scheduled. Students who exceed the above limits are automatically given an (AW) grade in the course by the UMS, and consequently not be allowed to attend class any longer.

2 Tardy:

1. All students are expected to conduct themselves in a professional manner. Unprofessional behavior such as, but not limited to, repeated disruption of class (including habitually walking in after class has started), sleeping in class, doing other course work in class, reading a newspaper in class, a ringing cell phone, frequent side

	<p>conversations with other students and/or rudeness toward any person will be considered a serious violation of this standard and will lower your grade accordingly. Please be sure to turn off your cell phone before the start of class.</p> <p>2. Attention to detail entails being prepared for class. This would include, but is not limited to; having a pencil/pen, note pad, calculator; reading and following the course syllabus, etc. All students are expected to conduct themselves in a professional manner. Unprofessional behavior such as, but not limited to, repeated disruption of class (including habitually walking in after class has started), sleeping in class, doing other course work in class, reading a newspaper in class, a ringing cell phone, frequent side conversations with other students and/or rudeness toward any person will be considered a serious violation of this standard and will lower your grade accordingly. Please be sure to turn off your cell phone before the start of class.</p> <p>3. Attention to detail entails being prepared for class. This would include, but is not limited to; having a pencil/pen, note pad, calculator; reading and following the course syllabus, etc.</p>
3	<p>Exam Attendance/Punctuality: As per university council decision, a student is eligible for a Quizzes, Midterm or Final examination make-up if and only if he/she had the following incidents:</p> <ol style="list-style-type: none"> 1. Sickness; proved by hospitalization report; that is; a discharge summary is necessary. 2. Death in the family proved by a death certificate or equivalent and personal identification. 3. Accidents proved by an expert report. 4. Military/Official engagement.
4	<p>Assignments & Projects: Homework should be clearly presented i.e.:</p> <ol style="list-style-type: none"> 1. It should be written on A4 paper. 2. It should include a title page (Course Name, Semester, Date, Name...). 3. Your instructor will ask you to submit your homework online or as a hard copy. In the latter case, it should be stapled together.
5	<p>Cheating:</p> <ul style="list-style-type: none"> • Cheating is strictly prohibited behavior. • University regulations will be pursued and enforced on any cheating student.
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Lebanese International University
 The School of Pharmacy and Medical Sciences
 Department: CLINICAL PHARMACY
 Title of the Program: Bachelor of Clinical Pharmacy



**Course Specification of
 PHAR-PHAR405- PHARMACEUTICAL ANALYSIS
 &BIOTECHNOLOGY**

I. - Information about Faculty Member Responsible for the Course:							
Name of Faculty Member	Dr. Wafa Mohammed	Office Hours					
Location & Telephone No.	(967) 733744714	SAT	SUN	MON	TUE	WED	THU
E-mail	walmadhaji1983@gmail.com			√		√	
II. Course Identification and General Information:							
1	Course Title:	PHARMACEUTICAL ANALYSIS					
2	Course Number & Code:	PHAR 405					
3	Credit hours:	C.H				Total	
		Theory	Seminars, exercises.	Practical	Field training		
		2					2
4	Study level/year at which this course is offered:	Second/summer					
5	Pre –requisite (if any):	CHEM300					
6	Co –requisite (if any):	PHAR405L					
7	Program (s) in which the course is offered	Bachelor of Clinical Pharmacy					
8	Language of teaching the course:	English					
9	System of study:	Credits Hours System					
10	Mode of delivery:	Lectures					
11	Location of teaching the course:	LIU Sana'a					
III. Course Description:							
The course introduces the fundamental principles of modern instrumental methods used in pharmaceutical analysis, including the theoretical background and calculations needed, with their applications for identifying, separating and quantifying drugs. Instrumentation discussed within this course fall into: Spectroscopic methods (UV-Visible, IR and Atomic Absorption), chromatographic methods (TLC, HPLC and GC), and electroanalytical methods.							

IV. Intended learning outcomes (ILOs) of the course:

Upon successful completion of the course, students would be able to:

1. Describe the basic principles, the instrumental design and advantages/limitations of a variety of analytical techniques used in pharmaceutical analysis
2. Demonstrate capability of choosing the appropriate instrumental method for a particular investigation pertinent to a certain drug or pharmaceutical product
3. Apply critical thinking in scientific inquiry

V. Course Content:

Distribution of Semester Weekly Plan Of course Topics/Items and Activities.

A – Theoretical Aspect:

Order	Topics List	Week Due	Contact Hours
1	Introduction to Pharmaceutical Analysis	W1	2
2	Quality control of pharmaceutical products	W2	2
3	Control of errors in analysis	W3	2
4	Validation of analytical methods	W4	2
5	Basic Calculations	W5	2
6	UV-Vis Spectrophotometry	W6	2
7	Physicochemical properties of drug molecules	W7	2
8	Enzymology	W8	2
9	Conductometric Titrations	W9	2
10	Column Chromatography	W10	2
11	Gas Chromatography	W11	1
12	High Pressure Liquid Chromatography	W11	1
13	Atomic Absorption Spectrophotometry	W12	1
14	Infrared Spectroscopy	W12	1
Number of Weeks /and Units Per Semester		14	24

B – Practical Aspect: (if any)

Order	Topics List	Week Due	Contact Hours	
1				
Number of Weeks /and Units Per Semester				
VI. Teaching strategies of the course:				
<ul style="list-style-type: none"> - Cooperative education - Group discussion - Problems solving - Brainstorming method - Interactive lectures				
VII. Assignments:				
No	Assignments	Week Due	Mark	
1	Presentation about monograph	W3	5	
2	Research assignments about chromatography	W10	5	
3	Assignments about spectroscopy	W12	5	
VIII. Schedule of Assessment Tasks for Students During the Semester:				
Assessment	Type of Assessment Tasks	Week Due	Mark	Proportion of Final Assessment
1	Tasks and Assignments	weekly	10	10%
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1- Required Textbook(s) (maximum two).				
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- Quantitative Chemical Analysis, Ninth edition.

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	4. Military/Official engagement.
4	<p>Assignments & Projects: Homework should be clearly presented i.e.:</p> <ol style="list-style-type: none"> 1. It should be written on A4 paper. 2. It should include a title page (Course Name, Semester, Date, Name...). 3. Your instructor will ask you to submit your homework online or as a hard copy. In the latter case, it should be stapled together.
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6	<p>Plagiarism:</p> <ul style="list-style-type: none"> • Plagiarism is defined as “copying or stealing someone else’s words or ideas and claiming or presenting them as if they were your own.” • University regulations will be pursued and enforced on any plagiarism attempt.
7	<p>Other policies: Please refer to the university policy.</p>

Lebanese International University
 The School of Pharmacy and Medical Sciences
 Department: CLINICAL PHARMACY
 Title of the Program: Bachelor of Clinical Pharmacy



Course Specification of
 PHAR-PHAR410-Drug Dosage Forms I

I. Course Identification and General Information:						
1	Course Title:	Drug Dosage Forms I				
2	Course Code & Number:	PHAR410				
3	Credit hours:	C.H			TOTAL	
		Theory	Seminars, exercises	Practical		Field training
		3	-	-		-
4	Study level/ semester at which this course is offered:	Third Year – Fall Semester				
5	Pre –requisite (if any):	PHAR300				
6	Co –requisite (if any):	-				
8	Program (s) in which the course is offered:	Bachelor of Clinical Pharmacy				
9	Language of teaching the course:	English				
10	Location of teaching the course:	LIU Sana'a				
11	Prepared by:	Dr. Khaled Al-Tahami				
12	Reviewed by:	Dr.Abdallah Al Dahbal				
13	Date of approval:					

II. Course Description:	
<p>This course introduces the students to the different types and preparation of pharmaceutical dosage forms encountered in pharmacy practice. Solid dosage forms, semisolid dosage forms, and transdermal drug delivery systems will be covered in this course. This course relates the basic scientific background to pharmaceutical practice regarding the dosage forms preparation and quality control.</p>	

III. Course Intended Learning Outcomes (CILOs):	
(A) Knowledge and Understanding:	
Alignment of CILOs (Course Intended Learning Outcomes) to PILOs (Program Intended Learning Outcomes)	
Knowledge and Understanding PILOs	Knowledge and Understanding CILOs
After completing this program, graduates would be able to:	After completing this course, students would be able to:
A2 Identify the role of each of the pharmaceutical sciences in the development and use of pharmaceutical products.	a1. Define the different dosage forms and routes of drug administration. a2. Recognize the importance of pharmaceutical standards, good manufacturing practice, and drug development process. a3. Discuss the different aspects of preparation, quality control, and labeling of powders, granules, capsules, tablets, modified release solid dosage forms, ointments, creams, gels, and transdermal drug delivery systems.

(B) Intellectual Skills:	
Alignment of CILOs (Course Intended Learning Outcomes) to PILOs (Program Intended Learning Outcomes)	
Intellectual Skills PILOs	Intellectual Skills CILOs
After completing this program, graduates would be able to:	After completing this course, students would be able to:
B4 Create a patient-specific pharmaceutical care plan to achieve definite outcome for each drug-related problem.	b1. Propose the appropriate dosage form and route of administration of a drug.
(C) Professional and Practical Skills	
Alignment of CILOs (Course Intended Learning Outcomes) to PILOs (Program Intended Learning Outcomes)	
Professional and Practical Skills PILOs	Professional and Practical Skills CILOs
After completing this program, graduates would be able to:	After completing this course, students would be able to:
C3 Contribute in developing, implementing and monitoring pharmaceutical care plan.	c1. Implement proper techniques towards selection, preparation and administration of dosage forms.
(D) Transferable (General) Skills:	
Alignment of CILOs (Course Intended Learning Outcomes) to PILOs (Program Intended Learning Outcomes)	
Transferable (General) Skills PILOs	Transferable (General) Skills CILOs

After completing this program, graduates would be able to:	After completing this course, students would be able to:
D3 Capability of time management, critical thinking, problem solving, decision-making and team-working.	d1. Value the influence of proper dosage form selection on the success of treatment plans.

IV. Alignment of CILOs to Teaching and Assessment Strategies

(A) Alignment Course Intended Learning Outcomes of Knowledge and Understanding to Teaching Strategies and Assessment Strategies:

Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
a1. Define the different dosage forms and routes of drug administration.	- Lectures.	- Exams.
a2. Recognize the importance of pharmaceutical standards, good manufacturing practice, and drug development process.	- Lectures.	- Exams.
a3. Discuss the different aspects of preparation, quality control, and labeling of powders, granules, capsules, tablets, modified release solid dosage forms, ointments, creams, gels, and transdermal drug delivery systems.	- Lectures. - Videos. - Pharmaceutical industry visit.	- Exams.

(B) Alignment Course Intended Learning Outcomes of Intellectual Skills to Teaching Strategies and Assessment Strategies:

Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
b1. Propose the appropriate dosage form and route of administration of a drug.	- Lectures. - Interactive class discussions.	- Exams.

(C) Alignment Course Intended Learning Outcomes of Professional and Practical Skills to Teaching Strategies and Assessment Strategies:

Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
c1. Implement proper techniques towards selection, preparation and administration of dosage forms.	- Lectures. - Interactive class discussions.	- Exams.

(D) Alignment Course Intended Learning Outcomes of Transferable Skills to Teaching Strategies and Assessment Strategies:

Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
d1. Value the influence of proper dosage form selection on the success of treatment plans.	- Lectures. Interactive class discussions.	- Exams.

V. Course Content:					
A – Theoretical Aspect:					
Order	Units/Topics List	Learning Outcomes	Sub Topics List	Number of Weeks	Contact hours
1	Introduction	a1, a2	<ul style="list-style-type: none"> - Definitions – dosage forms. - Need for dosage forms and ideal attributes. - Routes of administration. - Need for standards (USP/NF). - Good manufacturing practice. - Drug development process. 	2	6
2	Powders and granules	a1, a3, b1, c1, d1	<ul style="list-style-type: none"> - Types. - Methods of preparation. - Characteristics. 	1	3
3	Capsules	a1, a3, b1, c1, d1	<ul style="list-style-type: none"> - Types. - Advantages. - Shell compositions. - Formulation and manufacturing. - Quality control. 	2	6
4	Tablets	a1, a3, b1, c1, d1	<ul style="list-style-type: none"> - Types. - Roles of excipients. - Compression. - Formulation and manufacturing. - Coating. - Quality control. 	3	9
5	Modified solid dosage forms	a1, a3, b1, c1, d1	<ul style="list-style-type: none"> - Rationale. - Types. - Formulation. 	1	3
6	Ointments	a1, a3, b1, c1, d1	<ul style="list-style-type: none"> - Classification of bases. - Factors affecting base selection. - Methods of preparation. - Packaging and labeling. 	1	3
7	Creams and gels	a1, a3, b1, c1, d1	<ul style="list-style-type: none"> - Composition, types, preparation. 	1	3

8	Transdermal drug delivery systems	a1, a3, b1, c1, d1	- Percutaneous absorption. - Types. - Advances in transdermal delivery	1	3
9	Exams	a1, a3, b1, c1, d1	-	2	2
Number of Weeks /and Units Per Semester				14	36
B - Practical Aspect: (if any)					
Order	Tasks/ Experiments	Number of Weeks	contact hours	Learning Outcomes	
1					
Number of Weeks /and Units Per Semester					
VI. Teaching strategies of the course:					
<ul style="list-style-type: none"> - Lectures. - Videos. - Interactive class discussions. - Pharmaceutical industry visit. 					
VII. Assignments:					
No	Assignments	Aligned CILOs (symbols)	Week Due	Mark	
1					

VIII. Schedule of Assessment Tasks for Students During the Semester:					
No.	Assessment Method	Week Due	Mark	Proportion of Final Assessment	Aligned Course Learning Outcomes
1	Test 1	4	10	10%	a1, a2, a3, b1, c1
2	Midterm	7	30	30%	a1, a2, a3, b1, c1
3	Test 2	10	10	10%	a1, a2, a3, b1, c1
4	Final exam	14	40	40%	a1, a2, a3, b1, c1

5	Attendance	12	10	10%	
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IX. Learning Resources:

Author, (Year), Book Title, Edition, Publisher, Country of publishing

1- Required Textbook(s) (maximum two).
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Loyd V. Allen Jr., Nicholas G. Popovich, Howard C. Ansel, (2014), Ansel's Pharmaceutical Dosage Forms and Drug Delivery Systems, tenth edition. Lippincott Williams & Wilkins, USA.

2- Essential References.

1. Loyd V. Allen, Jr., (2012), Remington: The Science and Practice of Pharmacy, twenty second edition. Lippincott Williams & Wilkins, USA.
2. Leon Lachman, Herbert A. Lieberman, Joseph L. Kanig, (1986), The Theory and Practice of Industrial Pharmacy, third edition, Lea & Febiger, USA.

3- Electronic Materials and Web Sites etc.

X. Course Policies:

1 Class Attendance:

1. Attendance in all classes is required. There are no exceptions to this policy.
2. Roll will be called in the very beginning of each class. If you arrive after roll has been called, you may be marked as absent.
3. In any regular semester or summer term, students may miss no more than the equivalent of one third of class sessions scheduled. Students who exceed the above limits are automatically given an (AW) grade in the course by the UMS, and consequently not be allowed to attend class any longer.

2 Tardy:

1. All students are expected to conduct themselves in a professional manner. Unprofessional behavior such as, but not limited to, repeated disruption of class (including habitually walking in after class has started), sleeping in class, doing other course work in class, reading a newspaper in class, a ringing cell phone, frequent side conversations with other students and/or rudeness toward any person will be considered a serious violation of this standard and will lower your grade accordingly. Please be sure to turn off your cell phone before the start of class.
2. Attention to detail entails being prepared for class. This would include, but is not limited to; having a pencil/pen, note pad, calculator; reading and following the course syllabus, etc. All students are expected to conduct themselves in a professional manner. Unprofessional behavior such as, but not limited to, repeated disruption of class (including habitually walking in after class has started), sleeping in class, doing other course work in class, reading a newspaper in class, a ringing cell phone, frequent side conversations with other students and/or rudeness toward any person will be considered a serious violation of this standard and will lower your grade accordingly. Please be sure to turn off your cell phone before the start of class.
3. Attention to detail entails being prepared for class. This would include, but is not limited to; having a pencil/pen, note pad, calculator; reading and following the course syllabus, etc.

3	<p>Exam Attendance/Punctuality: As per university council decision, a student is eligible for a Quizzes, Midterm or Final examination make-up if and only if he/she had the following incidents:</p> <ol style="list-style-type: none"> 1. Sickness; proved by hospitalization report; that is; a discharge summary is necessary. 2. Death in the family proved by a death certificate or equivalent and personal identification. 3. Accidents proved by an expert report. 4. Military/Official engagement.
4	<p>Assignments & Projects: Homework should be clearly presented i.e.:</p> <ol style="list-style-type: none"> 1. It should be written on A4 paper. 2. It should include a title page (Course Name, Semester, Date, Name...). 3. Your instructor will ask you to submit your homework online or as a hard copy. In the latter case, it should be stapled together.
5	<p>Cheating:</p> <ul style="list-style-type: none"> • Cheating is strictly prohibited behavior. • University regulations will be pursued and enforced on any cheating student.
6	<p>Plagiarism:</p> <ul style="list-style-type: none"> • Plagiarism is defined as “copying or stealing someone else’s words or ideas and claiming or presenting them as if they were your own.” • University regulations will be pursued and enforced on any plagiarism attempt.
7	<p>Other policies: Please refer to the university policy.</p>

Lebanese International University
The School of Pharmacy and Medical Sciences
Department: CLINICAL PHARMACY
Title of the Program: Bachelor of Clinical Pharmacy
Course Specification of
PHAR-PHAR410- Drug Dosage Forms I



I. - Information about Faculty Member Responsible for the Course:							
Name of Faculty Member	Dr. Khaled Al-Tahami	Office Hours					
Location & Telephone No.	+967-777436341	SAT	SUN	MON	TUE	WED	THU
E-mail	Email: tahami@gmail.com	√	√		√	√	

II. Course Identification and General Information:						
1	Course Title:	Drug Dosage Forms I				
2	Course Number & Code:	PHAR410				
3	Credit hours:	C.H				Total
		Theory	Seminars, exercises.	Practical	Field training	
		3	-	-	-	
4	Study level/year at which this course is offered:	Third Year – Fall Semester				
5	Pre –requisite (if any):	PHAR300				
6	Co –requisite (if any):	-				
7	Program (s) in which the course is offered	Clinical Pharmacy				
8	Language of teaching the course:	English				
9	System of study:	Credits Hours System				
10	Mode of delivery:	Lectures				
11	Location of teaching the course:	LIU Sana'a				

III. Course Description:

This course introduces the students to the different types and preparation of pharmaceutical dosage forms encountered in pharmacy practice. Solid dosage forms, semisolid dosage forms, and transdermal drug delivery systems will be covered in this course. This course relates the basic scientific background to pharmaceutical practice regarding the dosage forms preparation and quality control.

IV. Intended learning outcomes (ILOs) of the course:

Upon successful completion of the course, students would be able to:

1. Define the different dosage forms and routes of drug administration.
2. Recognize the importance of pharmaceutical standards, good manufacturing practice, and drug development process.
3. Discuss the different aspects of preparation, quality control, and labeling of powders, granules, capsules, tablets, modified release solid dosage forms, ointments, creams, gels, and transdermal drug delivery systems.
4. Propose the appropriate dosage form and route of administration of a drug.
5. Implement proper techniques towards selection, preparation and administration of dosage forms.
6. Value the influence of proper dosage form selection on the success of treatment plans.

V. Course Content:

Distribution of Semester Weekly Plan Of course Topics/Items and Activities.

A – Theoretical Aspect:

Order	Topics List	Week Due	Contact Hours
1	Introduction	1-2	6
2	Powders and granules	3	3
3	Capsules	4-5	6
4	Tablets	6-8	9
5	Modified solid dosage forms	9	3
6	Ointments	10	3
7	Creams and gels	11	3
8	Transdermal drug delivery systems	12	3
9	Exams	13-14	
Number of Weeks /and Units Per Semester		14	36

B – Practical Aspect: (if any)

Order	Topics List	Week Due	Contact Hours
1			

Number of Weeks /and Units Per Semester				
VI. Teaching strategies of the course:				
<ul style="list-style-type: none"> - Lectures. - Videos. - Interactive class discussions. - Pharmaceutical industry visit. 				
VII. Assignments:				
No	Assignments	Week Due	Mark	
1				
VIII. Schedule of Assessment Tasks for Students During the Semester:				
Assessment	Type of Assessment Tasks	Week Due	Mark	Proportion of Final Assessment
1	Test 1	4	10	10%
2	Midterm	6	30	30%
3	Test 2	9	10	10%
4	Final exam	14	40	40%
5	Attendance	12	10	10%
IX. Learning Resources:				
Author, (Year), Book Title, Edition, Publisher, Country of publishing				
1- Required Textbook(s) (maximum two).				
Lloyd V. Allen Jr., Nicholas G. Popovich, Howard C. Ansel, (2014), Ansel's Pharmaceutical Dosage Forms and Drug Delivery Systems, tenth edition. Lippincott Williams & Wilkins, USA.				
2- Essential References.				
1 .Lloyd V. Allen, Jr., (2012), Remington: The Science and Practice of Pharmacy, twenty second edition. Lippincott Williams & Wilkins, USA.				
2. Leon Lachman, Herbert A. Lieberman, Joseph L. Kanig, (1986), The Theory and Practice of Industrial Pharmacy, third edition, Lea & Febiger, USA.				
3- Electronic Materials and Web Sites etc.				
X. Course Policies:				
Unless otherwise stated, the normal course administration policies and rules of the School of Business apply.				
1	Class Attendance:			
	1. Attendance in all classes is required. There are no exceptions to this policy.			

	<ol style="list-style-type: none"> 2. Roll will be called in the very beginning of each class. If you arrive after roll has been called, you may be marked as absent. 3. In any regular semester or summer term, students may miss no more than the equivalent of one third of class sessions scheduled. Students who exceed the above limits are automatically given an (AW) grade in the course by the UMS, and consequently not be allowed to attend class any longer.
2	<p>Tardy:</p> <ol style="list-style-type: none"> 1. All students are expected to conduct themselves in a professional manner. Unprofessional behavior such as, but not limited to, repeated disruption of class (including habitually walking in after class has started), sleeping in class, doing other course work in class, reading a newspaper in class, a ringing cell phone, frequent side conversations with other students and/or rudeness toward any person will be considered a serious violation of this standard and will lower your grade accordingly. Please be sure to turn off your cell phone before the start of class. 2. Attention to detail entails being prepared for class. This would include, but is not limited to; having a pencil/pen, note pad, calculator; reading and following the course syllabus, etc. All students are expected to conduct themselves in a professional manner. Unprofessional behavior such as, but not limited to, repeated disruption of class (including habitually walking in after class has started), sleeping in class, doing other course work in class, reading a newspaper in class, a ringing cell phone, frequent side conversations with other students and/or rudeness toward any person will be considered a serious violation of this standard and will lower your grade accordingly. Please be sure to turn off your cell phone before the start of class. 3. Attention to detail entails being prepared for class. This would include, but is not limited to; having a pencil/pen, note pad, calculator; reading and following the course syllabus, etc.
3	<p>Exam Attendance/Punctuality: As per university council decision, a student is eligible for a Quizzes, Midterm or Final examination make-up if and only if he/she had the following incidents:</p> <ol style="list-style-type: none"> 1. Sickness; proved by hospitalization report; that is; a discharge summary is necessary. 2. Death in the family proved by a death certificate or equivalent and personal identification. 3. Accidents proved by an expert report. 4. Military/Official engagement.
4	<p>Assignments & Projects: Homework should be clearly presented i.e.:</p> <ol style="list-style-type: none"> 1. It should be written on A4 paper. 2. It should include a title page (Course Name, Semester, Date, Name...). 3. Your instructor will ask you to submit your homework online or as a hard copy. In the latter case, it should be stapled together.
5	<p>Cheating:</p> <ul style="list-style-type: none"> • Cheating is strictly prohibited behavior. • University regulations will be pursued and enforced on any cheating student.
6	<p>Plagiarism:</p> <ul style="list-style-type: none"> • Plagiarism is defined as “copying or stealing someone else’s words or ideas and claiming or presenting them as if they were your own.”

	<ul style="list-style-type: none">• University regulations will be pursued and enforced on any plagiarism attempt.
7	Other policies: Please refer to the university policy.

Lebanese International University
 The School of Pharmacy and Medical Sciences
 Department: CLINICAL PHARMACY
 Title of the Program: Bachelor of Clinical Pharmacy
 Course Specification of
 PHAR-PHAR420 Physical pharmacy



I. Course Identification and General Information:						
1	Course Title:	Physical pharmacy				
2	Course Code & Number:	PHAR 420				
3	Credit hours:	C.H			TOTAL	
		Theory	Seminars, exercises	Practical		Field training
		2	-	-		-
4	Study level/ semester at which this course is offered:	Second Year				
5	Pre –requisite (if any):	PHAR300 -PHAR250 -ENGL350				
6	Co –requisite (if any):					
7	Program (s) in which the course is offered:	Bachelor of Clinical Pharmacy				
8	Language of teaching the course:	English				
9	Location of teaching the course:	LIU Sana'a				
10	Prepared by:	Dr.Khaled Al-Tahami				
11	Reviewed by:	Adib Al-Hakimi				
12	Date of approval:					

II. Course Description:
This 3-credit course explores the application of physical chemical principles in relation to pharmaceutical sciences. Physical and theoretical foundations are discussed and applied and problem solving is emphasized. This course helps pharmacy students in using foundational elements of mathematics, chemistry, and physics in their pharmacy-related work and study.

III. Course Intended Learning Outcomes (CILOs):	
(A) Knowledge and Understanding:	
Alignment of CILOs (Course Intended Learning Outcomes) to PILOs (Program Intended Learning Outcomes)	
Knowledge and Understanding PILOs	Knowledge and Understanding CILOs
After completing this program, graduates would be able to:	After completing this course, students would be able to:

A1. Review the knowledge facts and principles of both basic and medical sciences.	a1. Identify the physiochemical properties of dosage forms a2. Recognize foundational physical and chemical properties pertaining to drug compounds
A4. Relate the biologic effects of medicinal substances to their physicochemical properties and their interactions with the living systems.	a3. Recognize a proper formulation for suspensions, emulsions, colloids, and other pharmaceutical dosage forms a4- Describe essential physiochemical factors affecting drug stability, compatibility, and essential formulation

(B) Intellectual Skills:	
Alignment of CILOs (Course Intended Learning Outcomes) to PILOs (Program Intended Learning Outcomes)	
Intellectual Skills PILOs	Intellectual Skills CILOs
After completing this program, graduates would be able to:	After completing this course, students would be able to:

(C) Professional and Practical Skills	
Alignment of CILOs (Course Intended Learning Outcomes) to PILOs (Program Intended Learning Outcomes)	
Professional and Practical Skills PILOs	Professional and Practical Skills CILOs
After completing this program, graduates would be able to:	After completing this course, students would be able to:

(D) Transferable (General) Skills:	
Alignment of CILOs (Course Intended Learning Outcomes) to PILOs (Program Intended Learning Outcomes)	
Transferable (General) Skills PILOs	Transferable (General) Skills CILOs
After completing this program, graduates would be able to:	After completing this course, students would be able to:

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IV. Alignment of CILOs to Teaching and Assessment Strategies

(A) Alignment Course Intended Learning Outcomes of Knowledge and Understanding to Teaching Strategies and Assessment Strategies:

Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
a1. Identify the physiochemical properties of dosage forms.	- Lectures as PowerPoint presentations	- Written exam, report, hands-on, presentation, case study
a2. Recognize foundational physical and chemical properties pertaining to drug compounds	- Lectures as PowerPoint presentations	- Written exam, report, hands-on, presentation, case study)
a3. Recognize a proper formulation for suspensions, emulsions, colloids, and other pharmaceutical dosage forms	- Lectures as PowerPoint presentations	- Written exam, report, hands-on, presentation, case study
a4- Describe essential physiochemical factors affecting drug stability, compatibility, and essential formulation	- Lectures as PowerPoint presentations	- Written exam, report, hands-on, presentation, case study
	-	-

(B) Alignment Course Intended Learning Outcomes of Intellectual Skills to Teaching Strategies and Assessment Strategies:

Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
	-	-
	-	-
	-	-
	-	-

(C) Alignment Course Intended Learning Outcomes of Professional and Practical Skills to Teaching Strategies and Assessment Strategies:

Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
	-	-
	-	-

(D) Alignment Course Intended Learning Outcomes of Transferable Skills to Teaching Strategies and Assessment Strategies:

Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
	-	-
	-	-
	-	-
	-	-

V. Course Content:

A – Theoretical Aspect:

Order	Units/Topics List	Learning Outcomes	Sub Topics List	Number of Weeks	Contact hours
1	Course description and Introduction to Physical Pharmacy		- Definitions. - Importance of physical pharmacy. - Physicochemical properties of substances	1	2
2	States of Matter	a1, a2	- Binding forces between molecules. - Van derWaals Forces, Dipole force, Ionic Interactions, hydrogen bond - The liquid state - The vapor pressure - The boiling point - Aerosols - Solid and crystalline state. - Polymorphism, solvates and amorphous solids. - Melting of solids. - The liquid crystalline state.	2	3
3	Gaseous State	a1, a2, a3	- The Ideal Gas Law - Molecular Weight - Kinetic Molecular Theory	3	1.5

4	Thermodynamics	a4	<ul style="list-style-type: none"> - Isothermal and Adiabatic Processes - Reversible Processes - Thermochemistry - Hess's Law 	3	1.5
5	Solutions of Non-electrolytes	a1, a2, a3, a4	<ul style="list-style-type: none"> - Physical properties of substances - Types of solutions - Concentration expressions - Percentage expression - Equivalent weight - Ideal solutions and real solutions - Physical properties of substance and solution - Osmotic pressure 	4	3
6	Solutions of Electrolytes	a1, a2, a3, a4	<ul style="list-style-type: none"> - Properties of electrolyte solutions - Drugs and ionization - Degree of dissociation - Strong electrolytes - Types of solvents 	5	3
7	Ionic Equilibrium	a1, a2, a3, a4	<ul style="list-style-type: none"> - Bronsted-Lowry Theory - Classification of solvents - Acid-base equilibria - Ionization of weak acids, bases and water - Calculation of pH 	6	3
8	Buffered and Isotonic Solutions	a1, a2, a3, a4	<ul style="list-style-type: none"> - The buffer equations - Drugs as Buffers - Buffer capacity - Buffers in pharmaceutical and biological fluids 	7	3

			<ul style="list-style-type: none"> - Buffered isotonic solutions - pH and solubility - Measurement of tonicity 		
9	Interfacial Phenomenon	a1, a2, a3, a4	<ul style="list-style-type: none"> - The liquid interface - Measuring the surface tension - Adsorption at liquid and solid interfaces - Surface active agents - Activated charcoal - Applications of surface active agents - Lung surfactants 	8	3
10	Colloids	a5, a6, a7, d1, d4	<ul style="list-style-type: none"> - Size and Shape of Colloidal Particles - Types of colloidal systems - Properties of colloids - Solubilization - Pharmaceutical applications of colloids 	9	3
11	Coarse Dispersions	a1, a2, a3, a4	<ul style="list-style-type: none"> - Suspensions - Settling in suspensions - Formulation of suspensions - Preparation of suspensions - Physical stability of suspensions - Emulsions and theory of emulsification - Physical stability of emulsions - Rheologic properties of emulsions 	10	3

			- Classification of semisolids		
12	Drug Release and dissolution	a1, a2, a3, a4	- Dissolution - Dissolution and release from drug product - In-vitro dissolution test	11	3
13	Solubility	a1, a2, a3, a4	- Solvent –solute interaction - Solubility of liquids in liquids - Solubility of solids in liquids - Effect of pH and solvent - Thermodynamic and kinetic of solubility	12	3
	Final Exam		-	13-14	
Number of Weeks /and Units Per Semester				14	36

B - Practical Aspect: (if any)				
Order	Tasks/ Experiments	Number of Weeks	contact hours	Learning Outcomes
1				
Number of Weeks /and Units Per Semester				

VI. Teaching strategies of the course:
Lectures as PowerPoint presentations

VII. Assignments:				
No	Assignments	Aligned CILOs (symbols)	Week Due	Mark
1				

VIII. Schedule of Assessment Tasks for Students During the Semester:

No.	Assessment Method	Week Due	Mark	Proportion of Final Assessment	Aligned Course Learning Outcomes
1	Test one	4	15	10%	a1
2	Midterm exam	6	20	30%	a1,a2,a3
3	Test two	9	15	10%	a4
4	Attendance	13	10	10%	a1,a2,a3,a4
5	Final exam	13	40	40%	all

IX. Learning Resources:

Author, (Year), Book Title, Edition, Publisher, Country of publishing

1- Required Textbook(s) (maximum two).

- Amiji, M.M., Cook, T.J., and Mobley, W.C. Applied Physical Pharmacy, 2nd edition, McGraw Hill Education, 2014
- Dash, A.K., Singh, S. and Tolman, J. Pharmaceutics: Basic Principles and Application to Pharmacy Practice. Elsevier Academic Press, 2014
- Allen, L., Popovich, N., and Ansel, H., Ansel's Pharmaceutical dosage Forms and Drug Delivery Systems, 9th edition, LWW, 2011
- Attwood, D. and Florence, A., Physical Pharmacy, Pharmaceutical Press, 2008 • Ghosh, T. and Jasti, B., Theory and Practice of CONTEMPORARY PHARMACEUTICS, CRC Press, 2005
- Florence, A. and Atwood, D., Physicochemical Principles Of Pharmacy, 4th Edition, Pharmaceutical Press, 2006

2- Essential References.

- Ansel HC and Popovich NG, Ansel's pharmaceutical dosage forms and drug delivery systems, 9th edition, Williams and Wilkins 2011.

3- Electronic Materials and Web Sites etc.

Liu-elibrary

X. Course Policies:

1	<p>Class Attendance:</p> <ol style="list-style-type: none"> 1. Attendance in all classes is required. There are no exceptions to this policy. 2. Roll will be called in the very beginning of each class. If you arrive after roll has been called, you may be marked as absent. 3. In any regular semester or summer term, students may miss no more than the equivalent of one third of class sessions scheduled. Students who exceed the above limits are automatically given an (AW) grade in the course by the UMS, and consequently not be allowed to attend class any longer.
2	Tardy:

	<ol style="list-style-type: none"> 1. All students are expected to conduct themselves in a professional manner. Unprofessional behavior such as, but not limited to, repeated disruption of class (including habitually walking in after class has started), sleeping in class, doing other course work in class, reading a newspaper in class, a ringing cell phone, frequent side conversations with other students and/or rudeness toward any person will be considered a serious violation of this standard and will lower your grade accordingly. Please be sure to turn off your cell phone before the start of class. 2. Attention to detail entails being prepared for class. This would include, but is not limited to; having a pencil/pen, note pad, calculator; reading and following the course syllabus, etc. All students are expected to conduct themselves in a professional manner. Unprofessional behavior such as, but not limited to, repeated disruption of class (including habitually walking in after class has started), sleeping in class, doing other course work in class, reading a newspaper in class, a ringing cell phone, frequent side conversations with other students and/or rudeness toward any person will be considered a serious violation of this standard and will lower your grade accordingly. Please be sure to turn off your cell phone before the start of class. 3. Attention to detail entails being prepared for class. This would include, but is not limited to; having a pencil/pen, note pad, calculator; reading and following the course syllabus, etc.
3	<p>Exam Attendance/Punctuality: As per university council decision, a student is eligible for a Quizzes, Midterm or Final examination make-up if and only if he/she had the following incidents:</p> <ol style="list-style-type: none"> 1. Sickness; proved by hospitalization report; that is; a discharge summary is necessary. 2. Death in the family proved by a death certificate or equivalent and personal identification. 3. Accidents proved by an expert report. 4. Military/Official engagement.
4	<p>Assignments & Projects: Homework should be clearly presented i.e.:</p> <ol style="list-style-type: none"> 1. It should be written on A4 paper. 2. It should include a title page (Course Name, Semester, Date, Name...). 3. Your instructor will ask you to submit your homework online or as a hard copy. In the latter case, it should be stapled together.
5	<p>Cheating:</p> <ul style="list-style-type: none"> • Cheating is strictly prohibited behavior. • University regulations will be pursued and enforced on any cheating student.
6	<p>Plagiarism:</p> <ul style="list-style-type: none"> • Plagiarism is defined as “copying or stealing someone else’s words or ideas and claiming or presenting them as if they were your own.” • University regulations will be pursued and enforced on any plagiarism attempt.

Lebanese International University
 The School of Pharmacy and Medical Sciences
 Department: CLINICAL PHARMACY
 Title of the Program: Bachelor of Clinical Pharmacy



**Course Specification of
 PHAR-PHAR420 Physical Pharmacy**

I. - Information about Faculty Member Responsible for the Course:							
Name of Faculty Member	Dr. Khaled Al-Tahami	Office Hours					
Location & Telephone No.	+967-777436341	SAT	SUN	MON	TUE	WED	THU
E-mail	Email: tahami@gmail.com	√	√		√	√	

II. Course Identification and General Information:						
1	Course Title:	Physical pharmacy				
2	Course Number & Code:	PHAR 420				
3	Credit hours:	C.H				Total
		Theory	Seminars, exercises.	Practical	Field training	

4	Study level/year at which this course is offered:	Second Years			
5	Pre –requisite (if any):	PHAR300 -PHAR250 -ENGL350			
6	Co –requisite (if any):				
7	Program (s) in which the course is offered	Bachelor of Clinical Pharmacy			
8	Language of teaching the course:	English			
9	System of study:	Credits Hours System			
10	Mode of delivery:	Lectures			
11	Location of teaching the course:	LIU Sana'a			

III. Course Description:

This 3-credit course explores the application of physical chemical principles in relation to pharmaceutical sciences. Physical and theoretical foundations are discussed and applied and problem solving is emphasized. This course helps pharmacy students in using foundational elements of mathematics, chemistry, and physics in their pharmacy-related work and study.

IV. Intended learning outcomes (ILOs) of the course:

Upon successful completion of the course, students would be able to:

1. Identify the physiochemical properties of dosage forms
2. Recognize foundational physical and chemical properties pertaining to drug compounds
3. Recognize a proper formulation for suspensions, emulsions, colloids, and other pharmaceutical dosage forms
4. Describe essential physiochemical factors affecting drug stability, compatibility, and essential formulation

V. Course Content:

Distribution of Semester Weekly Plan Of course Topics/Items and Activities.

A – Theoretical Aspect:

Order	Topics List	Week Due	Contact Hours
1	Course description and Introduction to Physical Pharmacy	1	2
2	States of Matter	2	4
3	Gaseous State	3	1.5
4	Thermodynamics	3	1.5
5	Solutions of Non-electrolytes	4	3

Test 1

6	Solutions of Electrolytes	5	3
7	Ionic Equilibrium	6	3
8	Buffered and Isotonic Solutions	7	3
9	Interfacial Phenomenon	8	3
10	Colloids	9	3
11	Coarse Dispersions	10	3
12	Drug Release and dissolution	11	3
13	Solubility	12	3
14	Final exam		
Number of Weeks /and Units Per Semester		14	36

B – Practical Aspect: (if any)			
Order	Topics List	Week Due	Contact Hours
1			
Number of Weeks /and Units Per Semester			

VI. Teaching strategies of the course:
-

VII. Assignments:			
No	Assignments	Week Due	Mark
1			

VIII. Schedule of Assessment Tasks for Students During the Semester:				
Assessment	Type of Assessment Tasks	Week Due	Mark	Proportion of Final Assessment
1	Test one	4	15	10%
2	Midterm exam	6	20	30%
3	Test two	9	15	10%
4	Attendance	13	10	10%
5	Final exam	13-14	40	40%
		14	100	100%

IX. Learning Resources:	
Author, (Year), Book Title, Edition, Publisher, Country of publishing	
1- Required Textbook(s) (maximum two).	
<ul style="list-style-type: none"> • Amiji, M.M., Cook, T.J., and Mobley, W.C. Applied Physical Pharmacy, 2nd edition, McGraw Hill Education, 2014 • Dash, A.K., Singh, S. and Tolman, J. Pharmaceutics: Basic Principles and Application to Pharmacy Practice. Elsevier Academic Press, 2014 • Allen, L., Popovich, N., and Ansel, H., Ansel's Pharmaceutical dosage Forms and Drug Delivery Systems, 9th edition, LWW, 2011 • Attwood, D. and Florence, A., Physical Pharmacy, Pharmaceutical Press, 2008 • Ghosh, T. and Jasti, B., Theory and Practice of CONTEMPORARY PHARMACEUTICS, CRC Press, 2005 • Florence, A. and Atwood, D., Physicochemical Principles Of Pharmacy, 4th Edition, Pharmaceutical Press, 2006 	
2- Essential References.	
<ul style="list-style-type: none"> • Ansel HC and Popovich NG, Ansel's pharmaceutical dosage forms and drug delivery systems, 9th edition, Williams and Wilkins 2011. 	
3- Electronic Materials and Web Sites etc.	
LIU-ELIBRARY	

X. Course Policies:	
Unless otherwise stated, the normal course administration policies and rules of the School of Business apply.	
1	<p>Class Attendance:</p> <ol style="list-style-type: none"> 1. Attendance in all classes is required. There are no exceptions to this policy. 2. Roll will be called in the very beginning of each class. If you arrive after roll has been called, you may be marked as absent. 3. In any regular semester or summer term, students may miss no more than the equivalent of one third of class sessions scheduled. Students who exceed the above limits are automatically given an (AW) grade in the course by the UMS, and consequently not be allowed to attend class any longer.

2	<p>Tardy:</p> <ol style="list-style-type: none"> 1. All students are expected to conduct themselves in a professional manner. Unprofessional behavior such as, but not limited to, repeated disruption of class (including habitually walking in after class has started), sleeping in class, doing other course work in class, reading a newspaper in class, a ringing cell phone, frequent side conversations with other students and/or rudeness toward any person will be considered a serious violation of this standard and will lower your grade accordingly. Please be sure to turn off your cell phone before the start of class. 2. Attention to detail entails being prepared for class. This would include, but is not limited to; having a pencil/pen, note pad, calculator; reading and following the course syllabus, etc. All students are expected to conduct themselves in a professional manner. Unprofessional behavior such as, but not limited to, repeated disruption of class (including habitually walking in after class has started), sleeping in class, doing other course work in class, reading a newspaper in class, a ringing cell phone, frequent side conversations with other students and/or rudeness toward any person will be considered a serious violation of this standard and will lower your grade accordingly. Please be sure to turn off your cell phone before the start of class. 3. Attention to detail entails being prepared for class. This would include, but is not limited to; having a pencil/pen, note pad, calculator; reading and following the course syllabus, etc.
3	<p>Exam Attendance/Punctuality: As per university council decision, a student is eligible for a Quizzes, Midterm or Final examination make-up if and only if he/she had the following incidents:</p> <ol style="list-style-type: none"> 1. Sickness; proved by hospitalization report; that is; a discharge summary is necessary. 2. Death in the family proved by a death certificate or equivalent and personal identification. 3. Accidents proved by an expert report. 4. Military/Official engagement.
4	<p>Assignments & Projects: Homework should be clearly presented i.e.:</p> <ol style="list-style-type: none"> 1. It should be written on A4 paper. 2. It should include a title page (Course Name, Semester, Date, Name...). 3. Your instructor will ask you to submit your homework online or as a hard copy. In the latter case, it should be stapled together.
5	<p>Cheating:</p> <ul style="list-style-type: none"> • Cheating is strictly prohibited behavior. • University regulations will be pursued and enforced on any cheating student.
6	<p>Plagiarism:</p> <ul style="list-style-type: none"> • Plagiarism is defined as “copying or stealing someone else’s words or ideas and claiming or presenting them as if they were your own.” • University regulations will be pursued and enforced on any plagiarism attempt.
7	<p>Other policies: Please refer to the university policy.</p>



Course Specification of
 PHAR-PHAR450-Medicinal Chemistry II

I. Course Identification and General Information:						
1	Course Title:	Medicinal Chemistry II				
2	Course Code & Number:	PHAR450				
3	Credit hours:	C.H			TOTAL	
		Theory	Seminars, exercises	Practical		Field training
		3				
4	Study level/ semester at which this course is offered:	Third/fall				
5	Pre –requisite (if any):	PHAR400				
6	Co –requisite (if any):					
8	Program (s) in which the course is offered:	Bachelor of Clinical pharmacy				
9	Language of teaching the course:	English				
10	Location of teaching the course:	LIU Sana'a				
11	Prepared by:	Dr. Wafa M. Al Madhagi				
12	Reviewed by:	Dr. Abdullah Al-Diahably				
13	Date of approval:					
II. Course Description:						
<p>This course helps the students to explore the principal classes of prescription drugs including neurologic, anesthetic, analgesic, anti-inflammatory, anti-bacterial, and cardiovascular agents. It will also familiarize the students with the indications of neurologic, anesthetic, analgesic, anti-inflammatory, anti-bacterial, and cardiovascular agents, along with their related pharmacokinetics, pharmacodynamics and pharmacological profile.</p>						
III. Course Intended Learning Outcomes (CILOs):						
(A) Knowledge and Understanding:						
Alignment of CILOs (Course Intended Learning Outcomes) to PILOs (Program Intended Learning Outcomes)						
Knowledge and Understanding PILOs		Knowledge and Understanding CILOs				
After completing this program, graduates would be able to:		After completing this course, students would be able to:				
A2. Identify the role of each of the pharmaceutical sciences in the development and use of pharmaceutical products		a1. Describe the classifications of cardiovascular drug and drug acting on central nervous expression of drug action.				

A4. Relate the biologic effects of medicinal substances to their physicochemical properties and their interactions with the living systems.	a2. Identify concepts that are closely related to structure-activity relationship (SAR) of drugs and its quantitative aspects

(B) Intellectual Skills:	
Alignment of CILOs (Course Intended Learning Outcomes) to PILOs (Program Intended Learning Outcomes)	
Intellectual Skills PILOs	Intellectual Skills CILOs
After completing this program, graduates would be able to:	After completing this course, students would be able to:
B3. Compare alternative therapeutic plans for each drug-related problem based on evidence of effectiveness, safety, and cost.	b1. Predict the source and fundamentals of drug search and discovery; development and design of drugs; stereochemical functions in drug activities and pro-drug aspects

(C) Professional and Practical Skills	
Alignment of CILOs (Course Intended Learning Outcomes) to PILOs (Program Intended Learning Outcomes)	
Professional and Practical Skills PILOs	Professional and Practical Skills CILOs
After completing this program, graduates would be able to:	After completing this course, students would be able to:

(D) Transferable (General) Skills:	
Alignment of CILOs (Course Intended Learning Outcomes) to PILOs (Program Intended Learning Outcomes)	
Transferable (General) Skills PILOs	Transferable (General) Skills CILOs
After completing this program, graduates would be able to:	After completing this course, students would be able to:
D1. Advocate leadership by initiating and advocating change to develop new opportunities in response to problems they identify.	d1. Review the primary structural pharmacokinetic and pharmacodynamic problems neurologic, anesthetic, analgesic, anti-inflammatory, anti-bacterial, and cardiovascular agents, while defining their safe and effective treatment goals.

D3. Capability of time management, critical thinking, problem solving, decision-making and team-working.	d2.Cooperate together as team work to evaluate the suitable medication for effective treatment.

IV. Alignment of CILOs to Teaching and Assessment Strategies

(A) Alignment Course Intended Learning Outcomes of Knowledge and Understanding to Teaching Strategies and Assessment Strategies:

Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
a1. Describe the classifications of cardiovascular drug and drug acting on central nervous expression of drug action.	Lecture Group discussion Brainstorming method -	- Quizzes, Presentation and Written exam
a2. Identify concepts that are closely related to structure-activity relationship (SAR) of drugs and its quantitative aspects	Lecture Group discussion Collaborative learning - Exercises	- Lectures as PowerPoint presentations Problem Solving
	-	-

(B) Alignment Course Intended Learning Outcomes of Intellectual Skills to Teaching Strategies and Assessment Strategies:

Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
b1. Predict the source and fundamentals of drug search and discovery; development and design of drugs; stereochemical functions in drug activities and pro-drug aspects	Working in small groups Demo mode Brainstorming method Cooperative learning -	Oral presentation Short tests - Assignments

(C) Alignment Course Intended Learning Outcomes of Professional and Practical Skills to Teaching Strategies and Assessment Strategies:

Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
	-	-
	-	-
	-	-

(D) Alignment Course Intended Learning Outcomes of Transferable Skills to Teaching Strategies and Assessment Strategies:

Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
d1. Review the primary structural pharmacokinetic and pharmacodynamic problems neurologic, anesthetic, analgesic, anti-inflammatory, anti-bacterial, and cardiovascular agents, while defining their safe and effective treatment goals.	Group discussions -	- Homework
d2. Cooperate together as team work to evaluate the suitable medication for effective treatment.	Group discussions -	- Homework
	-	-

V. Course Content:					
A – Theoretical Aspect:					
Order	Units/Topics List	Learning Outcomes	Sub Topics List	Number of Weeks	Contact hours
1	Amino acid neurotransmitters in the central nervous system:	a2,b1, d1, d2	- Historical background, NT definition, pathway, types and clinical significance, glutamate	W1	1.5
2	Ionotropic and Metabotropic receptors	a2,b1, d1, d2	- (NMDA, AMPA and kainite) Metabotropic receptors (GABA receptors) Glutamate, GHB, and glycine	W2	1.5
3	Sedatives/Hypnotics/Anxiolytics: <div style="border: 1px solid orange; padding: 2px; display: inline-block;">Test 1</div>	a1, a2,b1, d1	- Definitions, introduction to insomnia, hypnosis and anxiety, Benzodiazepines classification, MOA, pharmacological effects, and SAR	W3	3
4	Barbiturates	a1, a2,b1, d1	SAR, pharmacokinetics and metabolism, Chloral derivatives,	W4	3

			tertiary acetylenic alcohol, ureide, piperidinediones, antihistamines, melatonin receptor agonists -			
5	GABA-A partial agonists, miscellaneous anxiolytics, barbiturates	a1, a2,b1, d1, d2	- classification, MOA, and pharmacological effects	W5	3	
7	Antiseizure/Antiepileptic Drugs (AEDs)	a1, a2,b1, d1, d2	Classification of epileptic seizures, MOA, SEs, and SAR of AEDs	W6	3	
8	Antipsychotics	Midterm	a1, a2,b1, d1, d2	- Schizophrenia and dopamine hypothesis; Typical antipsychotics (Phenothiazines, thioxanthenes, and butyrophenones) and atypical antipsychotics	W7	3
9	Antidepressants:	a1, a2,b1, d1, d2	- Types of depressive disorders, treatments, SAR, MOA, SEs, drug interactions, and metabolism	W8	3	
10	Opioid Analgesics:	a2,b1, d1	- Introduction, opioid receptors (m, k&d) classification and MOA Morphine SAR (pure agonists)	W9	3	
11	NSAIDS	a2,b1, d1	- : Inflammation (PGs, LTs, COX, LO, PLA) Non selective COX inhibitors: para aminophenols and salicylates SAR,	W10	3	

			MOA, metabolism, SEs, drug interactions and toxicity		
13	Drugs used in Heart Failure:	Test 2	a1, a2,b1, d1, d2	- Heart diseases Heart failure treatment (Inotropic agents): a- Cardiac glycosides: MOA, SEs & SAR Parenteral inotropic agents	W11 1.5
14	A- Antiangina agents Organic nitrates: Antiarrhythmic drugs		a1, a2,b1, d1, d2	- MOA, Routes of administration and DOA B- Antiarrhythmic drugs Class I, Class II, Class III & Class IV	W11 1.5
15	Diuretics:		a2, b1, d1, d2	- Osmotic diuretics, carbonic anhydrase inhibitors, loop diuretics, thiazide diuretics, and K ⁺ sparing diuretics	W12 1.5
17	Antibiotics and Antimicrobial Drugs		a2, b1, d1, d2	- : Introduction, classification, Penicillins, cephalosporins, aminoglycosides, macrolides and tetracyclines SAR, MOA, therapeutic effects, SEs and metabolism	W12 1.5
18	Final				
Number of Weeks /and Units Per Semester				14	36
B - Practical Aspect: (if any)					
Order	Tasks/ Experiments	Number of Weeks	contact hours	Learning Outcomes	
1					
Number of Weeks /and Units Per Semester					

VI. Teaching strategies of the course:					
<ul style="list-style-type: none"> - Cooperative education - Group discussion - Problems solving - Brainstorming method - Interactive lectures 					
VII. Assignments:					
No	Assignments	Aligned CILOs (symbols)	Week Due	Mark	
1	Presentation about the one group of benzodiazepine	a2, b1, d1	W3	5	
2	Research assignments about CNS drug	a1, b1, d1, d2	W6	5	
3	Assignments about sulfonamide group on diuretic and hypoglycemic	a1, a2, b1, d1,d2	W14	5	
VIII. Schedule of Assessment Tasks for Students During the Semester:					
No.	Assessment Method	Week Due	Mark	Proportion of Final Assessment	Aligned Course Learning Outcomes
1	Tasks and Assignments	weekly	10	10%	a2, b1, d1
2	Test 1	W4	10	10%	a1, b1,
3	Midterm Exam	W7	20	20%	a1, a2, b1, d1
4	Test 2	W11	10	10%	a2, b1, d1
5	Attendance	All	10	10%	All
6	Final Exam (theoretical)	W14	40	40%	a1, b1, d2
IX. Learning Resources:					
Author, (Year), Book Title, Edition, Publisher, Country of publishing					
1- Required Textbook(s) (maximum two).					
<ol style="list-style-type: none"> 1. Foye's Principles of Medicinal Chemistry, David A. William Thomas L. Lemke; 7th edition 2013, Lippincott Williams & Wilkins. 2. An Introduction to Medicinal Chemistry, (5th edition, 2012) by Graham L. Patrick, Oxford Press, ISBN 0-19-927500-9. 					
2- Essential References.					
<ol style="list-style-type: none"> 1. Foye's Principles of Medicinal Chemistry, 6th Ed. Lippincott Williams & Wilkins, 2007. 2. Wilson and Gisvold's Textbook of Organic Medicinal and Pharmaceutical Chemistry, 12th Ed. Lippincott Williams & Wilkins, 2010 					
3- Electronic Materials and Web Sites etc.					
<ol style="list-style-type: none"> 1. www.bookzz.org 					

2. www.libgen.io
3. <http://en-booksee.org>

X. Course Policies:

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2	<p>Tardy:</p> <ol style="list-style-type: none"> 1. All students are expected to conduct themselves in a professional manner. Unprofessional behavior such as, but not limited to, repeated disruption of class (including habitually walking in after class has started), sleeping in class, doing other course work in class, reading a newspaper in class, a ringing cell phone, frequent side conversations with other students and/or rudeness toward any person will be considered a serious violation of this standard and will lower your grade accordingly. Please be sure to turn off your cell phone before the start of class. 2. Attention to detail entails being prepared for class. This would include, but is not limited to; having a pencil/pen, note pad, calculator; reading and following the course syllabus, etc. All students are expected to conduct themselves in a professional manner. Unprofessional behavior such as, but not limited to, repeated disruption of class (including habitually walking in after class has started), sleeping in class, doing other course work in class, reading a newspaper in class, a ringing cell phone, frequent side conversations with other students and/or rudeness toward any person will be considered a serious violation of this standard and will lower your grade accordingly. Please be sure to turn off your cell phone before the start of class. 3. Attention to detail entails being prepared for class. This would include, but is not limited to; having a pencil/pen, note pad, calculator; reading and following the course syllabus, etc.
3	<p>Exam Attendance/Punctuality:</p> <p>As per university council decision, a student is eligible for a Quizzes, Midterm or Final examination make-up if and only if he/she had the following incidents:</p> <ol style="list-style-type: none"> 1. Sickness; proved by hospitalization report; that is; a discharge summary is necessary. 2. Death in the family proved by a death certificate or equivalent and personal identification. 3. Accidents proved by an expert report. 4. Military/Official engagement.
4	<p>Assignments & Projects:</p> <p>Homework should be clearly presented i.e.:</p> <ol style="list-style-type: none"> 1. It should be written on A4 paper.

	<p>2. It should include a title page (Course Name, Semester, Date, Name...).</p> <p>3. Your instructor will ask you to submit your homework online or as a hard copy. In the latter case, it should be stapled together.</p>
5	<p>Cheating:</p> <ul style="list-style-type: none"> • Cheating is strictly prohibited behavior. • University regulations will be pursued and enforced on any cheating student.
6	<p>Plagiarism:</p> <ul style="list-style-type: none"> • Plagiarism is defined as “copying or stealing someone else’s words or ideas and claiming or presenting them as if they were your own.” • University regulations will be pursued and enforced on any plagiarism attempt.
7	<p>Other policies: Please refer to the university policy.</p>

Course Specification of Medicinal Chemistry II

I. - Information about Faculty Member Responsible for the Course:							
Name of Faculty Member	Wafa Mohamed A. R. Al-Madhaji	Office Hours					
Location & Telephone No.	(967) 733744714	SAT	SUN	MON	TUE	WED	THU
E-mail	walmadhaji1983@gmail.com			√		√	

II. Course Identification and General Information:						
1	Course Title:	Medicinal Chemistry II				
2	Course Number & Code:	PHAR450				
3	Credit hours:	C.H			Total	
		Theory	Seminars, exercises.	Practical		Field training
		3				
4	Study level/year at which this course is offered:	Third/fall				
5	Pre –requisite (if any):	PHAR400				
6	Co –requisite (if any):					
7	Program (s) in which the course is offered	Bachelor degree of clinical Pharmacy				
8	Language of teaching the course:	English				
9	System of study:	Credits Hours System				
10	Mode of delivery:	Lectures				
11	Location of teaching the course:	LIU Sana'a				

III. Course Description:
 This course helps the students to explore the principal classes of prescription drugs including neurologic, anesthetic, analgesic, anti-inflammatory, anti-bacterial, and cardiovascular agents. It will also familiarize the students with the indications of neurologic, anesthetic, analgesic, anti-inflammatory, anti-bacterial, and cardiovascular agents, along with their related pharmacokinetics, pharmacodynamics and pharmacological profile.

IV. Intended learning outcomes (ILOs) of the course:**Upon successful completion of the course, students would be able to:**

1. Describe the classifications of cardiovascular drug and drug acting on central nervous expression of drug action
2. Identify concepts that are closely related to structure-activity relationship (SAR) of drugs and its quantitative aspects
3. Predict the source and fundamentals of drug search and discovery; development and design of drugs; stereochemical functions in drug activities and pro-drug aspects
4. Review the primary structural pharmacokinetic and pharmacodynamic problems neurologic, anesthetic, analgesic, anti-inflammatory, anti-bacterial, and cardiovascular agents, while defining their safe and effective treatment goals
5. Cooperate together as team work to evaluate the suitable medication for effective treatment

V. Course Content:**Distribution of Semester Weekly Plan Of course Topics/Items and Activities.****A – Theoretical Aspect:**

Order	Topics List	Week Due	Contact Hours
1	Amino acid neurotransmitters in the central nervous system:	W1	3
2	Ionotropic and Metabotropic receptors	W2	3
3	Sedatives/Hypnotics/Anxiolytics:	W3	3
4	Barbiturates	W4	3
5	GABA-A partial agonists, miscellaneous anxiolytics, barbiturates	W5	3
6	Antiseizure/Antiepileptic Drugs (AEDs)	W6	3
7	Antipsychotics	W7	3
8	Antidepressants:	W8	3
9	Opioid Analgesics:	W9	3
10	NSAIDS	W10	3
11	Mid-term exam	W11	1.5
12	Drugs used in Heart Failure: A- Antiangina agents Organic nitrates: Antiarrhythmic drugs	W11	1.5
13	Diuretics:	W12	1.5
14	Antibiotics and Antimicrobial Drugs	W12	1.5
Number of Weeks /and Units Per Semester		14	36

VI. Teaching strategies of the course:

- Interactive lectures
- Group discussion
- Problems solving
- Brainstorming method

VII. Assignments:

No	Assignments	Week Due	Mark
1	Presentation about the one group of benzodiazepine	W3	5
2	Research assignments about CNS drug	W6	5
3	Assignments about sulfonamide group on diuretic and hypoglycemic	W12	5

VIII. Schedule of Assessment Tasks for Students During the Semester:

Assessment	Type of Assessment Tasks	Week Due	Mark	Proportion of Final Assessment
1	Tasks and Assignments	weekly	10	10%
2	Test 1	W4	10	10%
3	Midterm Exam	W7-8	20	20%
4	Test 2	W11	10	10%
5	Attendance	All	10	10%
6	Final Exam (theoretical)	W14	40	40%

IX. Learning Resources:

Author, (Year), Book Title, Edition, Publisher, Country of publishing

1- Required Textbook(s) (maximum two).

1. Foye's Principles of Medicinal Chemistry, David A. William Thomas L. Lemke; 7th edition 2013, Lippincott Williams & Wilkins.
2. An Introduction to Medicinal Chemistry, (5th edition, 2012) by Graham L. Patrick, Oxford Press, ISBN 0-19-927500-9.

2- Essential References.

1. Foye's Principles of Medicinal Chemistry, 6th Ed. Lippincott Williams & Wilkins, 2007.
2. Wilson and Gisvold's Textbook of Organic Medicinal and Pharmaceutical Chemistry, 12th Ed. Lippincott Williams & Wilkins, 2010

3- Electronic Materials and Web Sites <i>etc.</i>	
1.	www.bookzz.org
2.	www.libgen.io
3.	http://en-booksee.org

X. Course Policies:	
Unless otherwise stated, the normal course administration policies and rules of the School of Business apply.	
1	<p>Class Attendance:</p> <ol style="list-style-type: none"> Attendance in all classes is required. There are no exceptions to this policy. Roll will be called in the very beginning of each class. If you arrive after roll has been called, you may be marked as absent. In any regular semester or summer term, students may miss no more than the equivalent of one third of class sessions scheduled. Students who exceed the above limits are automatically given an (AW) grade in the course by the UMS, and consequently not be allowed to attend class any longer.
2	<p>Tardy:</p> <ol style="list-style-type: none"> All students are expected to conduct themselves in a professional manner. Unprofessional behavior such as, but not limited to, repeated disruption of class (including habitually walking in after class has started), sleeping in class, doing other course work in class, reading a newspaper in class, a ringing cell phone, frequent side conversations with other students and/or rudeness toward any person will be considered a serious violation of this standard and will lower your grade accordingly. Please be sure to turn off your cell phone before the start of class. Attention to detail entails being prepared for class. This would include, but is not limited to; having a pencil/pen, note pad, calculator; reading and following the course syllabus, etc. All students are expected to conduct themselves in a professional manner. Unprofessional behavior such as, but not limited to, repeated disruption of class (including habitually walking in after class has started), sleeping in class, doing other course work in class, reading a newspaper in class, a ringing cell phone, frequent side conversations with other students and/or rudeness toward any person will be considered a serious violation of this standard and will lower your grade accordingly. Please be sure to turn off your cell phone before the start of class. Attention to detail entails being prepared for class. This would include, but is not limited to; having a pencil/pen, note pad, calculator; reading and following the course syllabus, etc.
3	<p>Exam Attendance/Punctuality:</p> <p>As per university council decision, a student is eligible for a Quizzes, Midterm or Final examination make-up if and only if he/she had the following incidents:</p> <ol style="list-style-type: none"> Sickness; proved by hospitalization report; that is; a discharge summary is necessary. Death in the family proved by a death certificate or equivalent and personal identification. Accidents proved by an expert report. Military/Official engagement.

4	<p>Assignments & Projects: Homework should be clearly presented i.e.:</p> <ol style="list-style-type: none"> 1. It should be written on A4 paper. 2. It should include a title page (Course Name, Semester, Date, Name...). 3. Your instructor will ask you to submit your homework online or as a hard copy. In the latter case, it should be stapled together.
5	<p>Cheating:</p> <ul style="list-style-type: none"> • Cheating is strictly prohibited behavior. • University regulations will be pursued and enforced on any cheating student.
6	<p>Plagiarism:</p> <ul style="list-style-type: none"> • Plagiarism is defined as “copying or stealing someone else’s words or ideas and claiming or presenting them as if they were your own.” • University regulations will be pursued and enforced on any plagiarism attempt.
7	<p>Other policies: Please refer to the university policy.</p>

Lebanese International University
 The School of Pharmacy and Medical Sciences
 Department: CLINICAL PHARMACY
 Title of the Program: Bachelor of Clinical Pharmacy



**Course Specification of
 PHAR460-Pharmacy Management and Marketing**

I. Course Identification and General Information:						
1	Course Title:	Pharmacy Management and Marketing				
2	Course Code & Number:	PHAR 460				
3	Credit hours:	C.H			TOTAL	
		Theory	Seminars, exercises	Practical		Field training
		3				
4	Study level/ semester at which this course is offered:	Third Year				
5	Pre –requisite (if any):	PHAR455-PHAR300				
6	Co –requisite (if any):					
8	Program (s) in which the course is offered:	Bachelor degree of clinical Pharmacy				
9	Language of teaching the course:	English				
10	Location of teaching the course:	LIU Sana'a				
11	Prepared by:	Prof Dr/ Mahmoud Mahyoob Alburyhi				
12	Reviewed by:	Dr.Khaled Al-Tahami				
13	Date of approval:					

II. Course Description:	
<p>Pharmacy Management and Marketing is a course that aims to provide students with the fundamental principles of business management and marketing as applied to pharmaceutical organizations. The course covers various aspects of pharmaceutical management, including financial management, human resources management, strategic planning, and quality management. Students will also learn about the various marketing strategies employed by pharmaceutical organizations to promote their products, including advertising, direct marketing, public relations, and branding.</p>	

III. Course Intended Learning Outcomes (CILOs):	
(A) Knowledge and Understanding:	
Alignment of CILOs (Course Intended Learning Outcomes) to PILOs (Program Intended Learning Outcomes)	
Knowledge and Understanding PILOs	Knowledge and Understanding CILOs
After completing this program, graduates would be able to:	After completing this course, students would be able to:
A2 Identify the role of each of the pharmaceutical sciences in the development and use of pharmaceutical products.	a1. Identify the different types of pharmacy business models, and marketing principles. a2. Explain the strategic plan for a pharmacy business.

(B) Intellectual Skills:	
Alignment of CILOs (Course Intended Learning Outcomes) to PILOs (Program Intended Learning Outcomes)	
Intellectual Skills PILOs	Intellectual Skills CILOs
After completing this program, graduates would be able to:	After completing this course, students would be able to:
B5. Integrate patient’s demographic, social, and health data to discover drug-related problems	b1. Explore Financial and Business management and the pharmaceutical products and services,

(C) Professional and Practical Skills	
Alignment of CILOs (Course Intended Learning Outcomes) to PILOs (Program Intended Learning Outcomes)	
Professional and Practical Skills PILOs	Professional and Practical Skills CILOs
After completing this program, graduates would be able to:	After completing this course, students would be able to:

(D) Transferable (General) Skills:	
Alignment of CILOs (Course Intended Learning Outcomes) to PILOs (Program Intended Learning Outcomes)	
Transferable (General) Skills PILOs	Transferable (General) Skills CILOs
After completing this program, graduates would be able to:	After completing this course, students would be able to:
D2. Develop presentation, promotion, marketing, business administration, numeric and computation skills.	d1. Review the financial, sales and market management skills
D3. Capability of time management, critical thinking, problem solving, decision-making and team-working.	d2. Evaluate the leadership and effective communication skills, including interpersonal communication, teamwork, and conflict resolution.

IV. Alignment of CILOs to Teaching and Assessment Strategies

(A) Alignment Course Intended Learning Outcomes of Knowledge and Understanding to Teaching Strategies and Assessment Strategies:

Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
a1. Identify the different types of pharmacy business models, and marketing principles.	- Lectures. - Seminars - Presentations and discussions in class	- Written examinations - Quizzes, - Midterm - Home work
a2. Explain the strategic plan for a pharmacy business	- Lectures. - Seminars - Presentations and discussions in class	▪ Written examinations ▪ Quizzes, ▪ Midterm - Home work

(B) Alignment Course Intended Learning Outcomes of Intellectual Skills to Teaching Strategies and Assessment Strategies:

Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
b1. Explore Financial and Business management and the pharmaceutical products and services,	- Lectures, Discussions.	- Exam, homework, report, Quizzes

(C) Alignment Course Intended Learning Outcomes of Professional and Practical Skills to Teaching Strategies and Assessment Strategies:

Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
	-	-

(D) Alignment Course Intended Learning Outcomes of Transferable Skills to Teaching Strategies and Assessment Strategies:

Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
d1. Review the financial, sales and market management skills	<ul style="list-style-type: none"> ▪ Tutorials/ seminars. ▪ Group work and problem-solving learning. 	<ul style="list-style-type: none"> ▪ Discussion. - Homework,
d2. Evaluate the leadership and effective communication skills, including interpersonal communication, teamwork, and conflict resolution.	<ul style="list-style-type: none"> ▪ Tutorials/ seminars. ▪ Group work and problem-solving learning. 	<ul style="list-style-type: none"> ▪ Discussion. - Homework,
-	-	-

V. Course Content:					
A – Theoretical Aspect:					
Order	Units/Topics List	Learning Outcomes	Sub Topics List	Number of Weeks	Contact hours
1	- Introduction to Pharmacy Management and Marketing	a1,a2,b1	- Overview of pharmacy management and marketing Key terms and concepts Historical development of pharmacy management and marketing	- 1	- 1.5
2	- Pharmaceutical Marketing Marketing research and analysis	- a1,a2,b1	- Marketing strategies Advertising and promotion Sales force management	- 1	- 1.5
3	- Pharmacy Operations Management	- a1,a2,b1	- Pharmacy workflow and process optimization Inventory management Quality control and assurance Staff management and scheduling	- 1	- 1.5
4	- Financial Management in Pharmacy	- a1,a2,b1	- Financial planning and budgeting Financial statement analysis Cash flow management Reimbursement and billing	- 1	- 1.5
5	- Health Policy and Law Regulatory compliance	- a1,a2,b1	- Healthcare policy and legislation Legal issues in pharmacy management and marketing	- 1	- 3

6	- Human Resource Management in Pharmacy	- a1,a2,b1	- Recruitment and retention Training and development Performance management Employee benefits and compensation	- 1	- 3
7	- Strategic Planning in Pharmacy	- a1,a2,b1	- SWOT analysis Mission, vision, and values Goal setting and action planning Implementation and evaluation	- 1	- 3
8	- Miterm	- a1,a2,b1	-	- 8	-
9	- Pharmacy Information Systems	- a1,a2,b1,d1,d2	- Electronic health records (EHRs) Data management and analysis Security and privacy Emerging technologies	- 1	- 3
10	- People Management	- a1,a2,b1,d1,d2	- Human Resources Management Functions - The Basics of Employment Law and Workplace Safety - Pharmacy Technicians - Performance Appraisal Systems	- 1	- 3
11	- Money Management -	-	- Financial Reports - Budgeting - Third-Party Payer Considerations	- 1	- 3
12	- Managing Traditional Goods and Services	-	- Marketing Fundamentals - Marketing Applications - Customer Service - Supply Chain Management - Merchandising	- 1	- 3
13	- Managing Value-Added Services	- a1,a2,b1,d1,d2	- Value-Added Services as a Component of Enhancing	- 1	- 3

			Pharmacists' Roles in Public Health - Implementing Value-Added Pharmacist Services		
14	- Specific Pharmacy Practice Settings	- a1,a2,b1,d1,d2	- Management Applications in Specific Pharmacy Practice Settings: Applications in Independent Community Pharmacy	- 1	- 3
15	- Patient Communication and Counseling & Emerging Trends in Pharmacy -	- a1,a2,b1,d1,d2	- Communication skills and techniques Patient education and counseling Health literacy and adherence Cultural competence	- 1	- 3
16	-	-	-	- 1	-
-				14	- 36

B - Practical Aspect: (if any)

Order	Tasks/ Experiments	Number of Weeks	contact hours	Learning Outcomes
1				
Number of Weeks /and Units Per Semester				

VI. Teaching strategies of the course:

- Lectures, Discussions, Group learning and Problem-based learning. Group work and problem-solving learning. Tutorials/ seminars.
- Presentations and discussions in class

VII. Assignments:

No	Assignments	Aligned CILOs (symbols)	Week Due	Mark
1	- Each student presents seminar on Marketing Applications	12 th		d1,d2

VIII. Schedule of Assessment Tasks for Students During the Semester:

No.	Assessment Method	Week Due	Mark	Proportion of Final Assessment	Aligned Course Learning Outcomes
1	Assignments	12 th	10	10%	a1,a2,b1,b2
2	Quizzes	10 th	20	20%	a1,a2,b1,b2,
3	Mid-Term Theoretical Exam	8 th	30	30%	a1,a2,b1,b2,c1, d1
4	Final Exam	16	40	40%	a1,a2,b1,b2,c1, d1

X. Learning Resources:

Author, (Year), Book Title, Edition, Publisher, Country of publishing

1- Required Textbook(s) (maximum two).

MD Karch, Drummer Steven B., Olaf, 2014. Leadership and Management in Pharmacy Practice, 2nd Edition, <https://doi.org/10.1201/b17919>

2- Essential References.

1. Shane P. Desselle, David P. Zgarrick, Greg L. Alston, 2020. Pharmacy Management: Essential All Practice Setting. 3rded.; ISBN: 978-0-07-177431-4
2. Dennis Tootelian , 2012. Essentials of Pharmacy Management, 2nd,

3- Electronic Materials and Web Sites etc.

- <https://www.ashp.org/Pharmacy-Practice/Policy-Positions-and-Guidelines/Browse-by-Topic/Pharmacy-Management?loginreturnUrl=SSOCheckOnly>
<https://www.fip.org>

Course Policies:

1 Class Attendance:

1. Attendance in all classes is required. There are no exceptions to this policy.
2. Roll will be called in the very beginning of each class. If you arrive after roll has been called, you may be marked as absent.
3. In any regular semester or summer term, students may miss no more than the equivalent of one third of class sessions scheduled. Students who exceed the above limits are automatically given an (AW) grade in the course by the UMS, and consequently not be allowed to attend class any longer.

2 Tardy:

	<ol style="list-style-type: none"> 1. All students are expected to conduct themselves in a professional manner. Unprofessional behavior such as, but not limited to, repeated disruption of class (including habitually walking in after class has started), sleeping in class, doing other course work in class, reading a newspaper in class, a ringing cell phone, frequent side conversations with other students and/or rudeness toward any person will be considered a serious violation of this standard and will lower your grade accordingly. Please be sure to turn off your cell phone before the start of class. 2. Attention to detail entails being prepared for class. This would include, but is not limited to; having a pencil/pen, note pad, calculator; reading and following the course syllabus, etc. All students are expected to conduct themselves in a professional manner. Unprofessional behavior such as, but not limited to, repeated disruption of class (including habitually walking in after class has started), sleeping in class, doing other course work in class, reading a newspaper in class, a ringing cell phone, frequent side conversations with other students and/or rudeness toward any person will be considered a serious violation of this standard and will lower your grade accordingly. Please be sure to turn off your cell phone before the start of class. 3. Attention to detail entails being prepared for class. This would include, but is not limited to; having a pencil/pen, note pad, calculator; reading and following the course syllabus, etc.
3	<p>Exam Attendance/Punctuality: As per university council decision, a student is eligible for a Quizzes, Midterm or Final examination make-up if and only if he/she had the following incidents:</p> <ol style="list-style-type: none"> 1. Sickness; proved by hospitalization report; that is; a discharge summary is necessary. 2. Death in the family proved by a death certificate or equivalent and personal identification. 3. Accidents proved by an expert report. 4. Military/Official engagement.
4	<p>Assignments & Projects: Homework should be clearly presented i.e.:</p> <ol style="list-style-type: none"> 1. It should be written on A4 paper. 2. It should include a title page (Course Name, Semester, Date, Name...). 3. Your instructor will ask you to submit your homework online or as a hard copy. In the latter case, it should be stapled together.
5	<p>Cheating:</p> <ul style="list-style-type: none"> • Cheating is strictly prohibited behavior. • University regulations will be pursued and enforced on any cheating student.
6	<p>Plagiarism:</p> <ul style="list-style-type: none"> • Plagiarism is defined as “copying or stealing someone else’s words or ideas and claiming or presenting them as if they were your own.” • University regulations will be pursued and enforced on any plagiarism attempt.
7	<p>Other policies: Please refer to the university policy.</p>

Lebanese International University
The School of Pharmacy and Medical Sciences
Department: CLINICAL PHARMACY
Title of the Program: Clinical Pharmacy



**Course Specification of
PHAR460- Pharmacy Management and Marketing**

I. - Information about Faculty Member Responsible for the Course:							
Name of Faculty Member	Prof Dr/ Mahmoud Mahyoob Alburyhi	Office Hours					
Location & Telephone No.	737005574	SAT	SUN	MON	TUE	WED	THU
E-mail	Alburyhi2020@gmail.com	√				√	

II. Course Identification and General Information:						
1	Course Title:	Pharmacy Management and Marketing				
2	Course Number & Code:	PHAR460				
3	Credit hours:	C.H				
		Theory	Seminars, exercises	Practical	Field training	TOTAL
		3				3
4	Study level/year at which this course is offered:	Third Year				
5	Pre –requisite (if any):	PHAR455-PHAR300				
6	Co –requisite (if any):					
7	Program (s) in which the course is offered	Bachelor degree of clinical Pharmacy				
8	Language of teaching the course:	English				
9	System of study:	Credits Hours System				
10	Mode of delivery:	Lectures				
11	Location of teaching the course:	LIU Sana'a				

III. Course Description:
Pharmacy Management and Marketing is a course that aims to provide students with the fundamental principles of business management and marketing as applied to pharmaceutical organizations. The course covers various aspects of pharmaceutical management, including financial management, human resources management, strategic planning, and quality management. Students will also learn about the various marketing strategies employed by pharmaceutical organizations to promote their products, including advertising, direct marketing, public relations, and branding.

IV. Intended learning outcomes (ILOs) of the course:

1. Identify the different types of pharmacy business models, and marketing principles.
2. Explain the strategic plan for a pharmacy business.
3. Explore Financial and Business management and the pharmaceutical products and services.
4. Review the financial, sales and market management skills.
5. Evaluate the leadership and effective communication skills, including interpersonal communication, teamwork, and conflict resolution

V. Course Content:**A – Theoretical Aspect:**

Order	Units/Topics List	Sub Topics List	Number of Weeks	Contact hours
1	- Introduction to Pharmacy Management and Marketing	- Overview of pharmacy management and marketing Key terms and concepts Historical development of pharmacy management and marketing	- 1	- 3
2	- Pharmaceutical Marketing Marketing research and analysis	- Marketing strategies Advertising and promotion Sales force management	- 1	- 3

3	- Pharmacy Operations Management	- Pharmacy workflow and process optimization Inventory management Quality control and assurance Staff management and scheduling	- 1	- 3
4	- Financial Management in Pharmacy	- Financial planning and budgeting Financial statement analysis Cash flow management Reimbursement and billing	- 1	- 3
5	- Health Policy and Law Regulatory compliance	- Healthcare policy and legislation Legal issues in pharmacy management and marketing	- 1	- 3
6	- Human Resource Management in Pharmacy	- Recruitment and retention Training and development Performance management Employee benefits and compensation	- 1	- 3
7	- Strategic Planning in Pharmacy	- SWOT analysis Mission, vision, and values Goal setting and action planning Implementation and evaluation	- 1	- 3
8	- Miterm	-	- 1	-
9	- Pharmacy Information Systems	- Electronic health records (EHRs) Data management and analysis Security and privacy Emerging technologies	- 1	- 3
10	- People Management	- Human Resources Management Functions - The Basics of Employment Law and Workplace Safety - Pharmacy Technicians - Performance Appraisal Systems	- 1	- 3
11	- Money Management -	- Financial Reports - Budgeting - Third-Party Payer Considerations	- 1	- 3

12	- Managing Traditional Goods and Services	- Marketing Fundamentals - Marketing Applications - Customer Service - Supply Chain Management - Merchandising	- 1	- 1.5
13	- Managing Value-Added Services	- Value-Added Services as a Component of Enhancing Pharmacists' Roles in Public Health - Implementing Value-Added Pharmacist Services	- 1	- 1.5
14	- Specific Pharmacy Practice Settings	- Management Applications in Specific Pharmacy Practice Settings: Applications in Independent Community Pharmacy	- 1	- 1.5
15	- Patient Communication and Counseling & Emerging Trends in Pharmacy -	- Communication skills and techniques Patient education and counseling Health literacy and adherence Cultural competence	- 1	- 1.5
16	-	-	-	- 1
				- 3
				14
				- 36

B – Practical Aspect: (if any)			
Order	Topics List	Week Due	Contact Hours
1	None		
Number of Weeks /and Units Per Semester			

V. Teaching strategies of the course:
<ul style="list-style-type: none"> - Lectures, Discussions, Group learning and Problem-based learning. Group work and problem-solving learning. Tutorials/ seminars. - Presentations and discussions in class

VI. Assignments:				
No	Assignments	Week Due	Mark	
1	- Each student presents seminar on Marketing Applications	12 th		

VII. Schedule of Assessment Tasks for Students During the Semester:				
Assessment	Type of Assessment Tasks	Week Due	Mark	Proportion of Final Assessment
1	Assignments	12 th	10	10%
2	Quizzes	4-10 th	20	20%
3	Mid-Term Theoretical Exam	8 th	30	30%
4	Final Exam	14	40	40%

VIII. Learning Resources:
Author, (Year), Book Title, Edition, Publisher, Country of publishing
1- Required Textbook(s) (maximum two).
MD Karch, Drummer Steven B., Olaf, 2014. Leadership and Management in Pharmacy Practice, 2nd Edition, https://doi.org/10.1201/b17919
2- Essential References.
1. Shane P. Desselle, David P. Zgarrick, Greg L. Alston, 2020. Pharmacy Management: Essential All Practice Setting. 3rd ed.; ISBN: 978-0-07-177431-4
2. Dennis Tootelian, 2012. Essentials of Pharmacy Management, 2 nd ,
3- Electronic Materials and Web Sites etc.
- https://www.ashp.org/Pharmacy-Practice/Policy-Positions-and-Guidelines/Browse-by-Topic/Pharmacy-Management?loginreturnUrl=SSOCheckOnly
https://www.fip.org

VIII. Course Policies:	
Unless otherwise stated, the normal course administration policies and rules of the School of Business apply.	
1	<p>Class Attendance:</p> <ol style="list-style-type: none"> 1. Attendance in all classes is required. There are no exceptions to this policy. 2. Roll will be called in the very beginning of each class. If you arrive after roll has been called, you may be marked as absent. 3. In any regular semester or summer term, students may miss no more than the equivalent of one third of class sessions scheduled. Students who exceed the above limits are automatically given an (AW) grade in the course by the UMS, and consequently not be allowed to attend class any longer.
2	<p>Tardy:</p> <ol style="list-style-type: none"> 1. All students are expected to conduct themselves in a professional manner. Unprofessional behavior such as, but not limited to, repeated disruption of class (including habitually walking in after class has started), sleeping in class, doing other course work in class, reading a newspaper in class, a ringing cell phone, frequent side conversations with other students and/or rudeness toward any person will be considered a serious violation of this standard and will lower your grade accordingly. Please be sure to turn off your cell phone before the start of class. 2. Attention to detail entails being prepared for class. This would include, but is not limited to; having a pencil/pen, note pad, calculator; reading and following the course syllabus, etc. All students are expected to conduct themselves in a professional manner. Unprofessional behavior such as, but not limited to, repeated disruption of class (including habitually walking in after class has started), sleeping in class, doing other course work in class, reading a newspaper in class, a ringing cell phone, frequent side conversations with other students and/or rudeness toward any person will be considered a serious violation of this standard and will lower your grade accordingly. Please be sure to turn off your cell phone before the start of class. 3. Attention to detail entails being prepared for class. This would include, but is not limited to; having a pencil/pen, note pad, calculator; reading and following the course syllabus, etc.
3	<p>Exam Attendance/Punctuality:</p> <p>As per university council decision, a student is eligible for a Quizzes, Midterm or Final examination make-up if and only if he/she had the following incidents:</p> <ol style="list-style-type: none"> 1. Sickness; proved by hospitalization report; that is; a discharge summary is necessary. 2. Death in the family proved by a death certificate or equivalent and personal identification. 3. Accidents proved by an expert report. 4. Military/Official engagement.
4	<p>Assignments & Projects:</p> <p>Homework should be clearly presented i.e.:</p> <ol style="list-style-type: none"> 1. It should be written on A4 paper. 2. It should include a title page (Course Name, Semester, Date, Name...). 3. Your instructor will ask you to submit your homework online or as a hard copy. In the latter case, it should be stapled together.

5	Cheating: <ul style="list-style-type: none">• Cheating is strictly prohibited behavior.• University regulations will be pursued and enforced on any cheating student.
6	Plagiarism: <ul style="list-style-type: none">• Plagiarism is defined as “copying or stealing someone else’s words or ideas and claiming or presenting them as if they were your own.”• University regulations will be pursued and enforced on any plagiarism attempt.
7	Other policies: Please refer to the university policy.



**Course Specification of
 PHAR-PHAR470-Drug Dosage Forms II**

I. Course Identification and General Information:						
1	Course Title:	Drug Dosage Forms II				
2	Course Code & Number:	PHAR470				
3	Credit hours:	C.H				TOTAL
		Theory	Seminars, exercises	Practical	Field training	
		3	-	-	-	
4	Study level/ semester at which this course is offered:	Third Year – Spring Semester				
5	Pre –requisite (if any):	PHAR410				
6	Co –requisite (if any):	PHAR470				
8	Program (s) in which the course is offered:	Bachelor of Clinical Pharmacy				
9	Language of teaching the course:	English				
10	Location of teaching the course:	LIU Sana'a				
11	Prepared by:	Dr. Khaled Al-Tahami				
12	Reviewed by:	Dr. Abdallah Al Dahbaly				
13	Date of approval:					
II. Course Description:						
<p>This course is the second part of the dosage forms courses which serve to introduce the students to the different types and preparation of pharmaceutical dosage forms encountered in pharmacy practice. Suppositories, liquids, disperse systems, pulmonary delivery systems, and sterile dosage forms will be covered in this course. This course relates the basic scientific background to pharmaceutical practice regarding the dosage forms preparation and quality control.</p>						

III. Course Intended Learning Outcomes (CILOs):	
(A) Knowledge and Understanding:	
Alignment of CILOs (Course Intended Learning Outcomes) to PILOs (Program Intended Learning Outcomes)	
Knowledge and Understanding PILOs	Knowledge and Understanding CILOs
After completing this program, graduates would be able to:	After completing this course, students would be able to:
A2 Identify the role of each of the pharmaceutical sciences in the development and use of pharmaceutical products.	a1. Recognize the different dosage forms and routes of drug administration. a2. Discuss the different aspects of preparation, quality control, and labeling of suppositories, liquids, disperse systems, pulmonary delivery systems, and sterile dosage forms.

(B) Intellectual Skills:	
Alignment of CILOs (Course Intended Learning Outcomes) to PILOs (Program Intended Learning Outcomes)	
Intellectual Skills PILOs	Intellectual Skills CILOs
After completing this program, graduates would be able to:	After completing this course, students would be able to:
B4 Create a patient-specific pharmaceutical care plan to achieve definite outcome for each drug-related problem.	b1. Propose the appropriate dosage form and route of administration of a drug.

(C) Professional and Practical Skills	
Alignment of CILOs (Course Intended Learning Outcomes) to PILOs (Program Intended Learning Outcomes)	
Professional and Practical Skills PILOs	Professional and Practical Skills CILOs
After completing this program, graduates would be able to:	After completing this course, students would be able to:
C3 Contribute in developing, implementing and monitoring pharmaceutical care plan.	c1. Implement proper techniques towards selection, preparation and administration of dosage forms.

(D) Transferable (General) Skills:	
Alignment of CILOs (Course Intended Learning Outcomes) to PILOs (Program Intended Learning Outcomes)	
Transferable (General) Skills PILOs	Transferable (General) Skills CILOs
After completing this program, graduates would be able to:	After completing this course, students would be able to:
D3 Capability of time management, critical thinking, problem solving, decision-making and team-working.	d1. Value the influence of proper dosage form selection on the success of treatment plans.

IV. Alignment of CILOs to Teaching and Assessment Strategies		
(A) Alignment Course Intended Learning Outcomes of Knowledge and Understanding to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
a1. Recognize the different dosage forms and routes of drug administration.	- Lectures. - Videos. - Pharmaceutical industry visit.	- Exams.
a2. Discuss the different aspects of preparation, quality control, and labeling of suppositories, liquids, disperse systems, pulmonary delivery systems, and sterile dosage forms.	- Lectures. - Videos. - Pharmaceutical industry visit.	- Exams.

(B) Alignment Course Intended Learning Outcomes of Intellectual Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
b1. Propose the appropriate dosage form and route of administration of a drug.	- Lectures. - Interactive class discussions.	- Exams.

(C) Alignment Course Intended Learning Outcomes of Professional and Practical Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
c1. Implement proper techniques towards selection, preparation and administration of dosage forms	- Lectures. - Interactive class discussions.	- Exams.

(D) Alignment Course Intended Learning Outcomes of Transferable Skills to Teaching Strategies and Assessment Strategies:

Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
d1. Value the influence of proper dosage form selection on the success of treatment plans.	- Lectures. - Interactive class discussions.	- Exams.

V. Course Content:

A – Theoretical Aspect:

Order	Units/Topics List	Learning Outcomes	Sub Topics List	Number of Weeks	Contact hours
1	Suppositories and inserts	a1, a2, b1, c1, d1	<ul style="list-style-type: none"> - Description and use - Types of suppositories - Local vs systemic function - Advantages and disadvantages - Bases - Suppositories preparation - Inserts and enemas - Counseling about administration 	1	3
2	Liquid dosage forms	a1, a2, b1, c1, d1	<ul style="list-style-type: none"> - Advantages and disadvantages. - Solubility - Formulation and additives. - Types. 	2	6
3	Suspensions	a1, a2, b1, c1, d1	<ul style="list-style-type: none"> - Definition and properties - Need for suspensions - Sedimentation: causes and solutions - Suspending agents - Methods of stabilizing suspensions - Crystal growth and caking - Quality control 	2	6

4	Emulsions	a1, a2, b1, c1, d1	<ul style="list-style-type: none"> - Definition - Internal and external emulsions - Application - Emulsifying agents - HLB and emulsification - Preparation of emulsion - Problems - Determination of emulsion type. 	2	6
5	Pulmonary delivery systems	a1, a2, b1, c1, d1	<ul style="list-style-type: none"> - Anatomy and physiology of lungs - Inhalation therapy - Advantages and disadvantages - Principle of aerosol generation - Factors influencing deposition - Types of devices - Advantage and disadvantage of each device - Selection criteria of the appropriate device - Counseling about use of aerosols 	1	3
6	Parenteral dosage forms	a1, a2, b1, c1, d1	<ul style="list-style-type: none"> - Definition of sterility - Methods of sterilization - Classification of parenterals - USP classification of injections - Aseptic techniques - Small and large volume parenteral formulations - Packaging - Quality control 	2	6
7	Nasal, otic, and ophthalmic dosage forms	a1, a2, b1, c1, d1	<ul style="list-style-type: none"> - Types. - Advantages and disadvantages. 	1	3

			- Additives - Patient counseling		
8	Novel drug delivery systems	a1, a2, b1, c1, d1	- Liposomes. - Implants.	1	3
9	Exams	a1, a2, b1, c1, d1		2	
Number of Weeks /and Units Per Semester				14	36

B - Practical Aspect: (if any)				
Order	Tasks/ Experiments	Number of Weeks	contact hours	Learning Outcomes
1				
Number of Weeks /and Units Per Semester				

VI. Teaching strategies of the course:				
<ul style="list-style-type: none"> - Lectures. - Videos. - Interactive class discussions. - Pharmaceutical industry visit. 				

VII. Assignments:				
No	Assignments	Aligned CILOs (symbols)	Week Due	Mark
1				

VIII. Schedule of Assessment Tasks for Students During the Semester:					
No.	Assessment Method	Week Due	Mark	Proportion of Final Assessment	Aligned Course Learning Outcomes
1	Test 1	4	10	10%	a1, a2, b1, c1
2	Midterm	7	30	30%	a1, a2, b1, c1
3	Test 2	9	10	10%	a1, a2, b1, c1

4	Final exam	14	40	40%	a1, a2, b1, c1
5	Attendance	12	10	10%	

IX. Learning Resources:					
Author, (Year), Book Title, Edition, Publisher, Country of publishing					
1- Required Textbook(s) (maximum two).					
Lloyd V. Allen Jr., Nicholas G. Popovich, Howard C. Ansel, (2014), Ansel's Pharmaceutical Dosage Forms and Drug Delivery Systems, tenth edition. Lippincott Williams & Wilkins, USA.					
2- Essential References.					
1. Lloyd V. Allen, Jr., (2012), Remington: The Science and Practice of Pharmacy, twenty second edition. Lippincott Williams & Wilkins, USA. 2. Leon Lachman, Herbert A. Lieberman, Joseph L. Kanig, (1986), The Theory and Practice of Industrial Pharmacy, third edition, Lea & Febiger, USA.					
3- Electronic Materials and Web Sites etc.					

X. Course Policies:	
1	<p>Class Attendance:</p> <ol style="list-style-type: none"> Attendance in all classes is required. There are no exceptions to this policy. Roll will be called in the very beginning of each class. If you arrive after roll has been called, you may be marked as absent. In any regular semester or summer term, students may miss no more than the equivalent of one third of class sessions scheduled. Students who exceed the above limits are automatically given an (AW) grade in the course by the UMS, and consequently not be allowed to attend class any longer.
2	<p>Tardy:</p> <ol style="list-style-type: none"> All students are expected to conduct themselves in a professional manner. Unprofessional behavior such as, but not limited to, repeated disruption of class (including habitually walking in after class has started), sleeping in class, doing other course work in class, reading a newspaper in class, a ringing cell phone, frequent side conversations with other students and/or rudeness toward any person will be considered a serious violation of this standard and will lower your grade accordingly. Please be sure to turn off your cell phone before the start of class. Attention to detail entails being prepared for class. This would include, but is not limited to; having a pencil/pen, note pad, calculator; reading and following the course syllabus, etc. All students are expected to conduct themselves in a professional manner. Unprofessional behavior such as, but not limited to, repeated disruption of class (including habitually walking in after class has started), sleeping in class, doing other course work in class, reading a newspaper in class, a ringing cell phone, frequent side conversations with other students and/or rudeness toward any person will be considered a serious violation of this standard and will lower your grade accordingly. Please be sure to turn off your cell phone before the start of class.

	<p>3. Attention to detail entails being prepared for class. This would include, but is not limited to; having a pencil/pen, note pad, calculator; reading and following the course syllabus, etc.</p>
3	<p>Exam Attendance/Punctuality: As per university council decision, a student is eligible for a Quizzes, Midterm or Final examination make-up if and only if he/she had the following incidents:</p> <ol style="list-style-type: none"> 1. Sickness; proved by hospitalization report; that is; a discharge summary is necessary. 2. Death in the family proved by a death certificate or equivalent and personal identification. 3. Accidents proved by an expert report. 4. Military/Official engagement.
4	<p>Assignments & Projects: Homework should be clearly presented i.e.:</p> <ol style="list-style-type: none"> 1. It should be written on A4 paper. 2. It should include a title page (Course Name, Semester, Date, Name...). 3. Your instructor will ask you to submit your homework online or as a hard copy. In the latter case, it should be stapled together.
5	<p>Cheating:</p> <ul style="list-style-type: none"> • Cheating is strictly prohibited behavior. • University regulations will be pursued and enforced on any cheating student.
6	<p>Plagiarism:</p> <ul style="list-style-type: none"> • Plagiarism is defined as “copying or stealing someone else’s words or ideas and claiming or presenting them as if they were your own.” • University regulations will be pursued and enforced on any plagiarism attempt.
7	<p>Other policies: Please refer to the university policy.</p>

**Course Specification of
 PHAR-PHAR470-Drug Dosage Forms II**

I. - Information about Faculty Member Responsible for the Course:							
Name of Faculty Member	Dr. Khaled Al-Tahami	Office Hours					
Location & Telephone No.	+967-777436341	SAT	SUN	MON	TUE	WED	THU
E-mail	Email: tahami@gmail.com	√	√		√	√	

II. Course Identification and General Information:					
1	Course Title:	Drug Dosage Forms II			
2	Course Number & Code:	PHAR470			
3	Credit hours:	C.H			Total
		Theory	Seminars, exercises.	Practical	
		3	-	-	-
4	Study level/year at which this course is offered:	Third Year – Spring Semester			
5	Pre –requisite (if any):	PHAR410			
6	Co –requisite (if any):	PHAR470			
7	Program (s) in which the course is offered	Clinical pharmacy			
8	Language of teaching the course:	English			
9	System of study:	Credits Hours System			
10	Mode of delivery:	Lectures			
11	Location of teaching the course:	LIU Sana'a			

III. Course Description:
<p>This course is the second part of the dosage forms courses which serve to introduce the students to the different types and preparation of pharmaceutical dosage forms encountered in pharmacy practice. Suppositories, liquids, disperse systems, pulmonary delivery systems, and sterile dosage forms will be covered in this course. This course relates the basic scientific background to pharmaceutical practice regarding the dosage forms preparation and quality control</p>

IV. Intended learning outcomes (ILOs) of the course:**Upon successful completion of the course, students would be able to:**

1. Recognize the different dosage forms and routes of drug administration.
2. Discuss the different aspects of preparation, quality control, and labeling of suppositories, liquids, disperse systems, pulmonary delivery systems, and sterile dosage forms.
3. Propose the appropriate dosage form and route of administration of a drug.
4. Implement proper techniques towards selection, preparation and administration of dosage forms
5. Value the influence of proper dosage form selection on the success of treatment plans.

V. Course Content:**Distribution of Semester Weekly Plan Of course Topics/Items and Activities.****A – Theoretical Aspect:**

Order	Topics List	Week Due	Contact Hours
1	Suppositories and inserts	1	3
2	Liquid dosage forms	2-3	6
3	Suspensions	4-5	6
4	Emulsions	6-7	6
5	Pulmonary delivery systems	8	3
6	Parenteral dosage forms	9-10	6
7	Nasal, otic, and ophthalmic dosage forms	11	3
8	Novel drug delivery systems	12	3
9	Exams	13-14	
Number of Weeks /and Units Per Semester		14	36

B – Practical Aspect: (if any)

Order	Topics List	Week Due	Contact Hours
1			
Number of Weeks /and Units Per Semester			

VI. Teaching strategies of the course:				
<ul style="list-style-type: none"> - Lectures. - Videos. - Interactive class discussions. - Pharmaceutical industry visit. 				
VII. Assignments:				
No	Assignments	Week Due	Mark	
1				
VIII. Schedule of Assessment Tasks for Students During the Semester:				
Assessment	Type of Assessment Tasks	Week Due	Mark	Proportion of Final Assessment
1	Test 1	4	10	10%
2	Midterm	6	30	30%
3	Test 2	9	10	10%
4	Final exam	14	40	40%
5	Attendance	2-12	10	10%
IX. Learning Resources:				
Author, (Year), Book Title, Edition, Publisher, Country of publishing				
1- Required Textbook(s) (maximum two).				
Lloyd V. Allen Jr., Nicholas G. Popovich, Howard C. Ansel, (2014), Ansel's Pharmaceutical Dosage Forms and Drug Delivery Systems, tenth edition. Lippincott Williams & Wilkins, USA.				
2- Essential References.				
1. Lloyd V. Allen, Jr., (2012), Remington: The Science and Practice of Pharmacy, twenty second edition. Lippincott Williams & Wilkins, USA. 2. Leon Lachman, Herbert A. Lieberman, Joseph L. Kanig, (1986), The Theory and Practice of Industrial Pharmacy, third edition, Lea & Febiger, USA.				
3- Electronic Materials and Web Sites <i>etc.</i>				
X. Course Policies:				
Unless otherwise stated, the normal course administration policies and rules of the School of Business apply.				
1	Class Attendance:			
	1. Attendance in all classes is required. There are no exceptions to this policy. 2. Roll will be called in the very beginning of each class. If you arrive after roll has been called, you may be marked as absent.			

	<p>3. In any regular semester or summer term, students may miss no more than the equivalent of one third of class sessions scheduled. Students who exceed the above limits are automatically given an (AW) grade in the course by the UMS, and consequently not be allowed to attend class any longer.</p>
2	<p>Tardy:</p> <ol style="list-style-type: none"> 1. All students are expected to conduct themselves in a professional manner. Unprofessional behavior such as, but not limited to, repeated disruption of class (including habitually walking in after class has started), sleeping in class, doing other course work in class, reading a newspaper in class, a ringing cell phone, frequent side conversations with other students and/or rudeness toward any person will be considered a serious violation of this standard and will lower your grade accordingly. Please be sure to turn off your cell phone before the start of class. 2. Attention to detail entails being prepared for class. This would include, but is not limited to; having a pencil/pen, note pad, calculator; reading and following the course syllabus, etc. All students are expected to conduct themselves in a professional manner. Unprofessional behavior such as, but not limited to, repeated disruption of class (including habitually walking in after class has started), sleeping in class, doing other course work in class, reading a newspaper in class, a ringing cell phone, frequent side conversations with other students and/or rudeness toward any person will be considered a serious violation of this standard and will lower your grade accordingly. Please be sure to turn off your cell phone before the start of class. 3. Attention to detail entails being prepared for class. This would include, but is not limited to; having a pencil/pen, note pad, calculator; reading and following the course syllabus, etc.
3	<p>Exam Attendance/Punctuality: As per university council decision, a student is eligible for a Quizzes, Midterm or Final examination make-up if and only if he/she had the following incidents:</p> <ol style="list-style-type: none"> 1. Sickness; proved by hospitalization report; that is; a discharge summary is necessary. 2. Death in the family proved by a death certificate or equivalent and personal identification. 3. Accidents proved by an expert report. 4. Military/Official engagement.
4	<p>Assignments & Projects: Homework should be clearly presented i.e.:</p> <ol style="list-style-type: none"> 1. It should be written on A4 paper. 2. It should include a title page (Course Name, Semester, Date, Name...). 3. Your instructor will ask you to submit your homework online or as a hard copy. In the latter case, it should be stapled together.
5	<p>Cheating:</p> <ul style="list-style-type: none"> • Cheating is strictly prohibited behavior. • University regulations will be pursued and enforced on any cheating student.
6	<p>Plagiarism:</p> <ul style="list-style-type: none"> • Plagiarism is defined as “copying or stealing someone else’s words or ideas and claiming or presenting them as if they were your own.” • University regulations will be pursued and enforced on any plagiarism attempt.

7	Other policies: Please refer to the university policy.
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Lebanese International University
 The School of Pharmacy and Medical Sciences
 Department: CLINICAL PHARMACY
 Title of the Program: Bachelor of Clinical Pharmacy



Course Specification of
 PHAR-PHAR470L-Drug Dosage Form II Lab

I. Course Identification and General Information:						
1	Course Title:	Drug Dosage Form II Lab				
2	Course Code & Number:	PHAR470L				
3	Credit hours:	C.H			TOTAL	
		Theory	Seminars, exercises	Practical		Field training
		-	-	1		3-
4	Study level/ semester at which this course is offered:	Third Year – Spring Semester				
5	Pre –requisite (if any):	-				
6	Co –requisite (if any):	PHAR470				
8	Program (s) in which the course is offered:	Bachelor of Clinical Pharmacy				
9	Language of teaching the course:	English				
10	Location of teaching the course:	LIU Sana'a				
11	Prepared by:	Dr. Khaled Al-Tahami				
12	Reviewed by:	Dr Abdallah Aldahbaly + Dr.Hajer.anisi				
13	Date of approval:					

II. Course Description:	
<p>This one-credit course is the practical part of the two series of dosage form courses (PHAR410, PHAR470) that deal with different formulations and drug delivery systems focusing on the rational and the significance of each dosage form. The course will help the students to acquire the skills in preparing different dosage forms in the lab based on guidelines and pharmacopeias.</p>	

III. Course Intended Learning Outcomes (CILOs):	
(A) Knowledge and Understanding:	
Alignment of CILOs (Course Intended Learning Outcomes) to PILOs (Program Intended Learning Outcomes)	
Knowledge and Understanding PILOs	Knowledge and Understanding CILOs
After completing this program, graduates would be able to:	After completing this course, students would be able to:
A2 Identify the role of each of the pharmaceutical sciences in the development and use of pharmaceutical products.	a1. Explain the different procedures employed in the preparation of different dosage forms.
(B) Intellectual Skills:	
Alignment of CILOs (Course Intended Learning Outcomes) to PILOs (Program Intended Learning Outcomes)	
Intellectual Skills PILOs	Intellectual Skills CILOs
After completing this program, graduates would be able to:	After completing this course, students would be able to:
B4 Create a patient-specific pharmaceutical care plan to achieve definite outcome for each drug-related problem.	b1. Propose the appropriate dosage form and route of administration of a drug. b2. Compare different excipients used for different dosage form.
(C) Professional and Practical Skills	
Alignment of CILOs (Course Intended Learning Outcomes) to PILOs (Program Intended Learning Outcomes)	
Professional and Practical Skills PILOs	Professional and Practical Skills CILOs
After completing this program, graduates would be able to:	After completing this course, students would be able to:
C3 Contribute in developing, implementing and monitoring pharmaceutical care plan.	c1. Perform calculations needed in the preparation of dosage forms. c2. Choose proper materials, instruments, formulations, and procedures towards the preparation of dosage forms. c3. Demonstrate mastery in preparing of dosage forms.
(D) Transferable (General) Skills:	
Alignment of CILOs (Course Intended Learning Outcomes) to PILOs (Program Intended Learning Outcomes)	
Transferable (General) Skills PILOs	Transferable (General) Skills CILOs
After completing this program, graduates would be able to:	After completing this course, students would be able to:
D3 Develop capability of time management, critical thinking, problem solving, decision-making and team-working.	d1. Present critical thinking, time-management, and responsibility. d2. Cooperate professionally and effectively with lab group members.

IV. Alignment of CILOs to Teaching and Assessment Strategies**(A) Alignment Course Intended Learning Outcomes of Knowledge and Understanding to Teaching Strategies and Assessment Strategies:**

Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
a1. Explain the different procedures employed in the preparation of different dosage forms.	- Lectures. - Laboratories. - Experimentations.	- Lab reports. - Practical exam. - Final exam.

(B) Alignment Course Intended Learning Outcomes of Intellectual Skills to Teaching Strategies and Assessment Strategies:

Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
b1. Propose the appropriate dosage form and route of administration of a drug.	- Lectures.	- Final exam.
b2. Compare different excipients used for different dosage form.	- Lectures. - Laboratories. - Experimentations.	- Lab reports. - Practical exam. - Final exam.

(C) Alignment Course Intended Learning Outcomes of Professional and Practical Skills to Teaching Strategies and Assessment Strategies:

Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
c1. Perform calculations needed in the preparation of dosage forms.	- Lectures. - Laboratories.	- Lab reports. - Practical exam. - Final exam.
c2. Choose proper materials, instruments, formulations, and procedures towards the preparation of dosage forms.	- Lectures. - Laboratories. - Experimentations.	- Lab reports. - Practical exam. - Final exam.
c3. Demonstrate mastery in preparing of dosage forms.	- Lectures. - Laboratories. - Experimentations.	- Lab reports. - Practical exam. - Final exam.

(D) Alignment Course Intended Learning Outcomes of Transferable Skills to Teaching Strategies and Assessment Strategies:

Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
d1. Present critical thinking, time-management, and responsibility.	- Laboratories. - Experimentations.	- Lab reports. - Practical exam.
d2. Cooperate professionally and effectively with lab group members.	- Laboratories.	- Lab reports.

V. Course Content:					
A – Theoretical Aspect:					
Order	Units/Topics List	Learning Outcomes	Sub Topics List	Number of Weeks	Contact hours
1			-		
Number of Weeks /and Units Per Semester					
B - Practical Aspect: (if any)					
Order	Tasks/ Experiments	Number of Weeks	contact hours	Learning Outcomes	
1	Domestic house-hold measures. (Report is mandatory)	1	2	c1, d1, d2	
2	Charcoal packaging Oral rehydration salts preparation Antacid powder	1	2	a1, b1, b2, c1, c2, c3, d1, d2	
3	Angle of repose Manual filling of capsules Weight variation (Report is mandatory)	1	2	a1, b1, b2, c1, c2, c3, d1, d2	
4	Disintegration, Dissolution, Hardness, Friability, Weight variation, Thickness tests (Report is mandatory)	1	2	a1, b1, b2, c1, c2, c3, d1, d2	
5	Effervescent granules (Report is mandatory)	1	2	a1, b1, b2, c1, c2, c3, d1, d2	
6	Cocoa butter and PEG suppositories (Report will be assigned by instructor)	1	2	a1, b1, b2, c1, c2, c3, d1, d2	
7	Paracetamol elixir Peppermint water Oral ferrous sulfate sol. Lugol's solution Potion Riviere- Compound Ammi visnaga (Report will be assigned by instructor)	1	2	a1, b1, b2, c1, c2, c3, d1, d2	
8	Sodium fluoride mouth wash Senna leaves suspension Antacid preparations Calamine lotion	1	2	a1, b1, b2, c1, c2, c3, d1, d2	

	(Report will be assigned by instructor)			
9	Menthol & Eucalyptus inhalation Castor Oil emulsion Liquid paraffin emulsion (Report will be assigned by instructor)	1	2	a1, b1, b2, c1, c2, c3, d1, d2
10	Vanishing cream Cold cream (Report will be assigned by instructor)	1	2	a1, b1, b2, c1, c2, c3, d1, d2
11	Calamine ointment Zinc oxide ointment (Report will be assigned by instructor)	1	2	a1, b1, b2, c1, c2, c3, d1, d2
12	Final Practical Exam	1	2	a1, b1, b2, c1, c2, c3, d1, d2
13	Final Written Exam	1	2	a1, b1, b2, c1, c2, c3, d1, d2
Number of Weeks /and Units Per Semester			14	24

VI. Teaching strategies of the course:

- Lectures.
- Laboratories.
- Experimentations.

VII. Assignments:

No	Assignments	Aligned CILOs (symbols)	Week Due	Mark
1				

VIII. Schedule of Assessment Tasks for Students During the Semester:

No.	Assessment Method	Week Due	Mark	Proportion of Final Assessment	Aligned Course Learning Outcomes
1	Attendance	13	10	10%	
2	Midterm	7	25	25%	a1, b1, b2, c1, c2, c3, d1, d2
3	Lab activity	13	10	10%	a1, b1, b2, c1, c2, c3, d1, d2

4	Reports	13	15	15%	a1, b1, b2, c1, c2, c3, d1, d2
5	Final Exam	13	40	40%	a1, b1, b2, c1, c2, c3, d1, d2

IX. Learning Resources:	
Author, (Year), Book Title, Edition, Publisher, Country of publishing	
1- Required Textbook(s) (maximum two).	
Lloyd V. Allen Jr., Nicholas G. Popovich, Howard C. Ansel, (2014), Ansel's Pharmaceutical Dosage Forms and Drug Delivery Systems, tenth edition. Lippincott Williams & Wilkins, USA	
2- Essential References.	
Lloyd V. Allen, Jr., (2012), Remington: The Science and Practice of Pharmacy, twenty second edition. Lippincott Williams & Wilkins, USA.	
3- Electronic Materials and Web Sites etc.	
X. Course Policies:	
1	<p>Class Attendance:</p> <ol style="list-style-type: none"> Attendance in all classes is required. There are no exceptions to this policy. Roll will be called in the very beginning of each class. If you arrive after roll has been called, you may be marked as absent. In any regular semester or summer term, students may miss no more than the equivalent of one third of class sessions scheduled. Students who exceed the above limits are automatically given an (AW) grade in the course by the UMS, and consequently not be allowed to attend class any longer.
2	<p>Tardy:</p> <ol style="list-style-type: none"> All students are expected to conduct themselves in a professional manner. Unprofessional behavior such as, but not limited to, repeated disruption of class (including habitually walking in after class has started), sleeping in class, doing other course work in class, reading a newspaper in class, a ringing cell phone, frequent side conversations with other students and/or rudeness toward any person will be considered a serious violation of this standard and will lower your grade accordingly. Please be sure to turn off your cell phone before the start of class. Attention to detail entails being prepared for class. This would include, but is not limited to; having a pencil/pen, note pad, calculator; reading and following the course syllabus, etc. All students are expected to conduct themselves in a professional manner. Unprofessional behavior such as, but not limited to, repeated disruption of class (including habitually walking in after class has started), sleeping in class, doing other course work in class, reading a newspaper in class, a ringing cell phone, frequent side conversations with other students and/or rudeness toward any person will be considered a serious violation of this standard and will lower your grade accordingly. Please be sure to turn off your cell phone before the start of class. Attention to detail entails being prepared for class. This would include, but is not limited to; having a pencil/pen, note pad, calculator; reading and following the course syllabus, etc.

3	<p>Exam Attendance/Punctuality: As per university council decision, a student is eligible for a Quizzes, Midterm or Final examination make-up if and only if he/she had the following incidents:</p> <ol style="list-style-type: none"> 1. Sickness; proved by hospitalization report; that is; a discharge summary is necessary. 2. Death in the family proved by a death certificate or equivalent and personal identification. 3. Accidents proved by an expert report. 4. Military/Official engagement.
4	<p>Assignments & Projects: Homework should be clearly presented i.e.:</p> <ol style="list-style-type: none"> 1. It should be written on A4 paper. 2. It should include a title page (Course Name, Semester, Date, Name...). 3. Your instructor will ask you to submit your homework online or as a hard copy. In the latter case, it should be stapled together.
5	<p>Cheating:</p> <ul style="list-style-type: none"> • Cheating is strictly prohibited behavior. • University regulations will be pursued and enforced on any cheating student.
6	<p>Plagiarism:</p> <ul style="list-style-type: none"> • Plagiarism is defined as “copying or stealing someone else’s words or ideas and claiming or presenting them as if they were your own.” • University regulations will be pursued and enforced on any plagiarism attempt.
7	<p>Other policies: Please refer to the university policy.</p>

Lebanese International University
 The School of Pharmacy and Medical Sciences
 Department: CLINICAL PHARMACY
 Title of the Program: Bachelor of Clinical Pharmacy



**Course Specification of
 PHAR-PHAR470L-Drug Dosage Form II Lab**

I. - Information about Faculty Member Responsible for the Course:							
Name of Faculty Member	Dr. Khaled Al-Tahami	Office Hours					
Location & Telephone No.	+967-777436341	SAT	SUN	MON	TUE	WED	THU
E-mail	Email: tahami@gmail.com	√	√		√	√	
II. Course Identification and General Information:							
1	Course Title:	Drug Dosage Form II Lab					
2	Course Number & Code:	PHAR470L					
3	Credit hours:	C.H				Total	
		Theory	Seminars, exercises.	Practical	Field training		
		-	-	1	2		3
4	Study level/year at which this course is offered:	Third Year – Spring Semester					
5	Pre –requisite (if any):	-					
6	Co –requisite (if any):	PHAR470					
7	Program (s) in which the course is offered	Bachelor of Clinical Pharmacy					
8	Language of teaching the course:	English					
9	System of study:	Credits Hours System					
10	Mode of delivery:	Lectures					
11	Location of teaching the course:	LIU Sana'a					
III. Course Description:							
<p>This one-credit course is the practical part of the two series of dosage form courses (PHAR410, PHAR470) that deal with different formulations and drug delivery systems focusing on the rational and the significance of each dosage form. The course will help the students to acquire the skills in preparing different dosage forms in the lab based on guidelines and pharmacopeias.</p>							

IV. Intended learning outcomes (ILOs) of the course:**Upon successful completion of the course, students would be able to:**

1. Explain the different procedures employed in the preparation of different dosage forms.
2. Propose the appropriate dosage form and route of administration of a drug.
3. Compare different excipients used for different dosage form.
4. Perform calculations needed in the preparation of dosage forms.
5. Choose proper materials, instruments, formulations, and procedures towards the preparation of dosage forms.
6. Demonstrate mastery in preparing of dosage forms.
7. Present critical thinking, time-management, and responsibility.
8. Cooperate professionally and effectively with lab group members.

B – Practical Aspect: (if any)

Order	Topics List	Week Due	Contact Hours
1	Domestic house-hold measures. (Report is mandatory)	1	2
2	Charcoal packaging Oral rehydration salts preparation Antacid powder	2	2
3	Angle of repose Manual filling of capsules Weight variation (Report is mandatory)	3	2
4	Disintegration, Dissolution, Hardness, Friability, Weight variation, Thickness tests (Report is mandatory)	4	2
5	Effervescent granules (Report is mandatory)	5	2
6	Cocoa butter and PEG suppositories (Report will be assigned by instructor)	6	2
7	Paracetamol elixir Peppermint water Oral ferrous sulfate sol. Lugol's solution Potion Riviere- Compound Ammi visnaga (Report will be assigned by instructor)	7	2
8	Sodium fluoride mouth wash Senna leaves suspension Antacid preparations Calamine lotion (Report will be assigned by instructor)	8	2
9	Menthol & Eucalyptus inhalation Castor Oil emulsion	9	2

	Liquid paraffin emulsion (Report will be assigned by instructor)		
10	Vanishing cream Cold cream (Report will be assigned by instructor)	10	2
11	Calamine ointment Zinc oxide ointment (Report will be assigned by instructor)	11	2
12	Final Practical Exam	12	2
13	Final Written Exam	13-14	
Number of Weeks /and Units Per Semester		14	24

V. Teaching strategies of the course:

- Lectures.
- Laboratories.
- Experimentations.

VI. Schedule of Assessment Tasks for Students During the Semester:

Assessment	Type of Assessment Tasks	Week Due	Mark	Proportion of Final Assessment
1	Attendance	13	10	10%
2	Midterm	7	25	25%
3	Lab activity	13	10	10%
4	Reports	13	15	15%
5	Final Exam	13	40	40%

VII. Learning Resources:

Author, (Year), Book Title, Edition, Publisher, Country of publishing

1- Required Textbook(s) (maximum two).

Loyd V. Allen Jr., Nicholas G. Popovich, Howard C. Ansel, (2014), Ansel's Pharmaceutical Dosage Forms and Drug Delivery Systems, tenth edition. Lippincott Williams & Wilkins, USA

2- Essential References.

Loyd V. Allen, Jr., (2012), Remington: The Science and Practice of Pharmacy, twenty second edition. Lippincott Williams & Wilkins, USA.

3- Electronic Materials and Web Sites *etc.*

VIII. Course Policies:	
Unless otherwise stated, the normal course administration policies and rules of the School of Business apply.	
1	<p>Class Attendance:</p> <ol style="list-style-type: none"> 1. Attendance in all classes is required. There are no exceptions to this policy. 2. Roll will be called in the very beginning of each class. If you arrive after roll has been called, you may be marked as absent. 3. In any regular semester or summer term, students may miss no more than the equivalent of one third of class sessions scheduled. Students who exceed the above limits are automatically given an (AW) grade in the course by the UMS, and consequently not be allowed to attend class any longer.
2	<p>Tardy:</p> <ol style="list-style-type: none"> 1. All students are expected to conduct themselves in a professional manner. Unprofessional behavior such as, but not limited to, repeated disruption of class (including habitually walking in after class has started), sleeping in class, doing other course work in class, reading a newspaper in class, a ringing cell phone, frequent side conversations with other students and/or rudeness toward any person will be considered a serious violation of this standard and will lower your grade accordingly. Please be sure to turn off your cell phone before the start of class. 2. Attention to detail entails being prepared for class. This would include, but is not limited to; having a pencil/pen, note pad, calculator; reading and following the course syllabus, etc. All students are expected to conduct themselves in a professional manner. Unprofessional behavior such as, but not limited to, repeated disruption of class (including habitually walking in after class has started), sleeping in class, doing other course work in class, reading a newspaper in class, a ringing cell phone, frequent side conversations with other students and/or rudeness toward any person will be considered a serious violation of this standard and will lower your grade accordingly. Please be sure to turn off your cell phone before the start of class. 3. Attention to detail entails being prepared for class. This would include, but is not limited to; having a pencil/pen, note pad, calculator; reading and following the course syllabus, etc.
3	<p>Exam Attendance/Punctuality:</p> <p>As per university council decision, a student is eligible for a Quizzes, Midterm or Final examination make-up if and only if he/she had the following incidents:</p> <ol style="list-style-type: none"> 1. Sickness; proved by hospitalization report; that is; a discharge summary is necessary. 2. Death in the family proved by a death certificate or equivalent and personal identification. 3. Accidents proved by an expert report. 4. Military/Official engagement.
4	<p>Assignments & Projects:</p> <p>Homework should be clearly presented i.e.:</p> <ol style="list-style-type: none"> 1. It should be written on A4 paper. 2. It should include a title page (Course Name, Semester, Date, Name...).

	3. Your instructor will ask you to submit your homework online or as a hard copy. In the latter case, it should be stapled together.
5	Cheating: <ul style="list-style-type: none"> • Cheating is strictly prohibited behavior. • University regulations will be pursued and enforced on any cheating student.
6	Plagiarism: <ul style="list-style-type: none"> • Plagiarism is defined as “copying or stealing someone else’s words or ideas and claiming or presenting them as if they were your own.” • University regulations will be pursued and enforced on any plagiarism attempt.
7	Other policies: Please refer to the university policy.



**Course Specifications of
Pharmacy Practice Experience I (PPEI)**

I. Course Identification and General Information:						
1	Course Title:	Pharmacy Practice Experience I (PPEI)				
2	Course Code & Number:	PHAR480				
3	Credit hours:	C.H			TOTAL	
		Theory	Seminars, exercises	Practical		Field training
				6		12 weeks
4	Study level/ semester at which this course is offered:	Fourth Year Summer				
5	Pre –requisite (if any):	PHAR515, PHAR520, PHAR565, PHAR570, PHAR615				
6	Co –requisite (if any):	PHAR650 - PHAR606				
8	Program (s) in which the course is offered:	Bachelor of Clinical Pharmacy				
9	Language of teaching the course:	English				
10	Location of teaching the course:	LIU Sana'a				
11	Prepared by:	Dr Abdallah Al-Dahbali				
12	Reviewed by:	Dr Khaled Al-Akhali				
13	Date of approval:					
II. Course Description:						
<p>Pharmacy Practice Experience Course I is the first of two practice experience courses. It introduces students to the philosophy and practice of pharmaceutical care, including patient counseling, plan creation and monitoring, patient outcome assessment, with emphasis on the role of the pharmacist as the primary manager of patient’s drug therapies. In each of these two courses, students are required to actively participate in a twelve-week supervised experiential program. Students are exposed to fundamental professional practice skills, have interactions with health care professionals and patients, and become involved in the provision of pharmaceutical care.</p>						

III. Course Intended Learning Outcomes (CILOs):	
(A) Knowledge and Understanding:	
Alignment of CILOs (Course Intended Learning Outcomes) to PILOs (Program Intended Learning Outcomes)	
Knowledge and Understanding PILOs	Knowledge and Understanding CILOs
After completing this program, graduates would be able to:	After completing this course, students would be able to:
A4. Relate the biologic effects of medicinal substances to their physicochemical properties and their interactions with the living systems.	a1. Explain the therapeutic values of drugs based on their pharmacological properties.
(B) Intellectual Skills:	
Alignment of CILOs (Course Intended Learning Outcomes) to PILOs (Program Intended Learning Outcomes)	
Intellectual Skills PILOs	Intellectual Skills CILOs
After completing this program, graduates would be able to:	After completing this course, students would be able to:
B1. Conceptualize pharmaceutical care as the standard framework of clinical pharmacy services in various healthcare settings.	b1. Assess drug-related needs of patients with GI, respiratory, rheumatic, and neurologic disorders.
B2. Integrate patient’s demographic, social, and health data to discover drug-related problems.	b2. Recognize patient-specific risk factors for aggravating and exacerbating respiratory, rheumatic, and neurologic disorders.
B3. Compare alternative therapeutic plans for each drug-related problem based on evidence of effectiveness, safety, and cost.	b3. Consider patient’s insurance coverage in drug selection to manage his GI, respiratory, rheumatic, and neurologic disorders.
B4. Create a patient-specific pharmaceutical care plan to achieve definite outcome for each drug-related problem	b4. Consider including symptom resolution and risk factor management in the care plans of respiratory, rheumatic, and neurologic disorders.
(C) Professional and Practical Skills	
Alignment of CILOs (Course Intended Learning Outcomes) to PILOs (Program Intended Learning Outcomes)	
Professional and Practical Skills PILOs	Professional and Practical Skills CILOs
After completing this program, graduates would be able to:	After completing this course, students would be able to:
C1. Provide pharmaceutical care professionally in various pharmacy practice setting.	c1. Gather and maintain patient information to prevent, identify, and resolve drug related problems.
C2. Communicate effectively with patients and other health care professionals.	c2. Translate instructions into a drug label that is apprehended by the patient.
C3. Contribute in developing, implementing and monitoring pharmaceutical care plan.	c3. Participate in professional discussions and drug-related decisions during hospital rounds.
C4. Counsel patient on the purpose and expectations of drug therapy.	c4. Apply the counselling techniques such as “Show & Tell” and the “Three Prime Questions”.

C5. Document pharmaceutical care steps in patient medical record.	c5. Document pharmacist workouts and follow-ups in the patient's medical record.
C6. Respond to drug information requests in systematic manners.	c6. Prepare clear, referenced answers to drug-related queries raised by patients and other healthcare team members.

(D) Transferable (General) Skills:		
Alignment of CILOs (Course Intended Learning Outcomes) to PILOs (Program Intended Learning Outcomes)		
Transferable (General) Skills PILOs	Transferable (General) Skills CILOs	
After completing this program, graduates would be able to:	After completing this course, students would be able to:	
D3. Exercise time management, critical thinking, problem solving, decision-making and team-working.	d1. Exercise time management, critical thinking, problem solving, decision-making and team-working.	
I. Alignment of CILOs to Teaching and Assessment Strategies		
(A) Alignment Course Intended Learning Outcomes of Knowledge and Understanding to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
a1. Explain the therapeutic values of drugs based on their pharmacological properties.	-Case Discussion -Group discussion -Case Presentation	- Case Discussion and Patient Education Rubric for the Faculty Assigned Preceptor - Final Exam
(B) Alignment Course Intended Learning Outcomes of Intellectual Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
b1. Assess drug-related needs of patients with GI, respiratory, rheumatic, and neurologic disorders.	-Case Discussion -Group discussion -Case Presentation	- Case Discussion and Patient Education Rubric for the Faculty Assigned Preceptor - Final Exam
b2. Recognize patient-specific risk factors for aggravating and exacerbating respiratory, rheumatic, and neurologic disorders.	-Case Discussion -Group discussion -Case Presentation	- Case Discussion and Patient Education Rubric for the Faculty Assigned Preceptor - Final Exam
b3. Consider patient's insurance coverage in drug selection to manage his GI, respiratory, rheumatic, and neurologic disorders.	-Case Discussion -Group discussion -Case Presentation	- Case Discussion and Patient Education Rubric for the Faculty Assigned Preceptor - Final Exam

b4. Consider including symptom resolution and risk factor management in the care plans of respiratory, rheumatic, and neurologic disorders.	-Case Discussion -Group discussion -Case Presentation	- Case Discussion and Patient Education Rubric for the Faculty Assigned Preceptor - Final Exam
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(C) Alignment Course Intended Learning Outcomes of Professional and Practical Skills to Teaching Strategies and Assessment Strategies:

Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
c1. Gather and maintain patient information to prevent, identify, and resolve drug related problems.	-Case Discussion -Group discussion -Case Presentation	- Case Discussion and Patient Education Rubric for the Faculty Assigned Preceptor - Final Exam
c2. Translate instructions into a drug label that is apprehended by the patient.	-Case Discussion -Group discussion - Case Presentation	- Case Discussion and Patient Education Rubric for the Faculty Assigned Preceptor - Final Exam
c3. Participate in professional discussions and drug-related decisions during hospital rounds.	-Case Discussion -Group discussion - Case Presentation	- Case Discussion and Patient Education Rubric for the Faculty Assigned Preceptor - Final Exam
c4. Apply the counselling techniques such as “Show & Tell” and the “Three Prime Questions”.	-Case Discussion -Group discussion -Case Presentation	- Case Discussion and Patient Education Rubric for the Faculty Assigned Preceptor - Final Exam
c5. Document pharmacist workouts and follow-ups in the patient’s medical record.	-Case Discussion -Group discussion -Case Presentation	- Case Discussion and Patient Education Rubric for the Faculty Assigned Preceptor - Final Exam
c6. Prepare clear, referenced answers to drug-related queries raised by patients and other healthcare team members.	-Case Discussion -Group discussion -Case Presentation	- Case Discussion and Patient Education Rubric for the Faculty Assigned Preceptor - Final Exam

(D) Alignment Course Intended Learning Outcomes of Transferable Skills to Teaching Strategies and Assessment Strategies:

Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
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d1. Exercise time management, critical thinking, problem solving, decision-making and team-working.	-Case Discussion -Group discussion -Case Presentation	- Case Discussion and Patient Education Rubric for the Faculty Assigned Preceptor - Final Exam
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II. Course Content:

A – Practical Aspect:

Order	Units/Topics List	Learning Outcomes	Sub Topics List	Number of Weeks	Contact hours
1	Module 1* Gastrointestinal & Rheumatologic Disorders	a1,b2,b3,b4, c1,c2,c3,c4,c5,c6,d3	<ul style="list-style-type: none"> - Peptic ulcer - IBS - Osteoarthritis - Gout - Osteoporosis - Gastroenteritis 	4*	24*
2	Module 2* Respiratory Disorders & Neurologic Disorders	a1,b2,b3,b4, c1,c2,c3,c4,c5,c6,d3	<ul style="list-style-type: none"> - Asthma - COPD - Drugs induce pulmonary disease - Epilepsy - Parkinson disease - Pain management - Stroke 	4	24
3	Module 3 Internal medicine (IM)	a1,b2,b3,b4, c1,c2,c3,c4,c5,c6,d3	<ul style="list-style-type: none"> - Parkinson - Alzheimer - Pain management - Hypertension - DVT prophylaxis /treatment - Diabetes Mellitus - CAP /HAP - Meningitis - Urinary tract infection - Dyslipidemia 	4	24
Number of Weeks /and Units Per Semester				14	72

* Including 12 credit hours of hospital training, which translates to 300 working hours: Saturday to Wednesday from 8:00 to 13:00 for 24 weeks. Clinical Training Plan.

B - Practical Aspect: (if any)				
Order	Tasks/ Experiments	Number of Weeks	contact hours	Learning Outcomes
1				
Number of Weeks /and Units Per Semester				

III. Teaching strategies of the course:
-

IV. Assignments:				
No	Assignments	Aligned CILOs (symbols)	Week Due	Mark
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				

V. Schedule of Assessment Tasks for Students During the Semester:

No.	Assessment Method	Week Due	Mark	Proportion of Final Assessment	Aligned Course Learning Outcomes
1	Case Discussions*	All weeks	40	40%	a1,b2,b3,b4, c1,c2,c3,c4,c5,c6,d3
2	PowerPoint Topic Presentation	End for each Module	10	10%	a1,b2,b3,b4, c1,c2,c3,c4,c5,c6,d3
3	Case Monitoring	All weeks	10%	10%	a1,b2,b3,b4, c1,c2,c3,c4,c5,c6,d3
4	Field Supervisor Evaluation	All weeks	10%	10%	a1,b2,b3,b4, c1,c2,c3,c4,c5,c6,d3
5	Final	12 & 24	30%	30%	a1,b2,b3,b4, c1,c2,c3,c4,c5,c6,d3

VI. Learning Resources:

Author, (Year), Book Title, Edition, Publisher, Country of publishing

1- Required Textbook(s) (maximum two).

- Dipiro, J. T. et al. (2021). Pharmacotherapy, A pathophysiologic approach, 12th edition. USA: McGraw Hill
- Koda-Kimble Mary Anne et al. (2018) Applied Therapeutics: the clinical use of drugs. 11th edition. Maryland: LIPPINCOTT WILLIAMS & WILKINS,

2- Essential References.

- Anderson PO, et al.(2001.) Handbook of Clinical Drug Data: McGraw-Hill Education;
- Helms RA,et al.(2006.)Textbook of Therapeutics: Drug and Disease Management: Lippincott Williams & Wilkins.

3- Electronic Materials and Web Sites etc.

- American Pharmacist Association www.aphanet.org
- The American Society of Health-System Pharmacists (ASHP) www.ashp.org
- U.S. Pharmacopeia www.usp.org
- U.S. Food and Drug Administration www.fda.gov/medwatch
- Centers for Disease Control www.cdc.gov
- The Clinician Ultimate Reference Guide www.globalrph.com
- Drug interactions checker http://www.drugs.com/drug_interactions.php
- Web site with common prescribing information <http://www.rxmed.com>
- Seventh Report of the Joint National Committee on Prevention, Detection, Evaluation, and Treatment of High Blood Pressure (full report)
<http://www.nhlbi.nih.gov/guidelines/hypertension/jnc7full.htm>
- National Guideline Clearinghouse <http://www.guideline.gov>
- High quality information about marketed drugs: <http://dailymed.nlm.nih.gov>

II. Course Policies:	
1	<p>Class Attendance:</p> <ol style="list-style-type: none"> Attendance in all classes is required. There are no exceptions to this policy. Roll will be called in the very beginning of each class. If you arrive after roll has been called, you may be marked as absent. In any regular semester or summer term, students may miss no more than the equivalent of one third of class sessions scheduled. Students who exceed the above limits are automatically given an (AW) grade in the course by the UMS, and consequently not be allowed to attend class any longer.
2	<p>Tardy:</p> <ol style="list-style-type: none"> All students are expected to conduct themselves in a professional manner. Unprofessional behavior such as, but not limited to, repeated disruption of class (including habitually walking in after class has started), sleeping in class, doing other course work in class, reading a newspaper in class, a ringing cell phone, frequent side conversations with other students and/or rudeness toward any person will be considered a serious violation of this standard and will lower your grade accordingly. Please be sure to turn off your cell phone before the start of class. Attention to detail entails being prepared for class. This would include, but is not limited to; having a pencil/pen, note pad, calculator; reading and following the course syllabus, etc. All students are expected to conduct themselves in a professional manner. Unprofessional behavior such as, but not limited to, repeated disruption of class (including habitually walking in after class has started), sleeping in class, doing other course work in class, reading a newspaper in class, a ringing cell phone, frequent side conversations with other students and/or rudeness toward any person will be considered a serious violation of this standard and will lower your grade accordingly. Please be sure to turn off your cell phone before the start of class. Attention to detail entails being prepared for class. This would include, but is not limited to; having a pencil/pen, note pad, calculator; reading and following the course syllabus, etc.
3	<p>Exam Attendance/Punctuality:</p> <p>As per university council decision, a student is eligible for a Quizzes, Midterm or Final examination make-up if and only if he/she had the following incidents:</p> <ol style="list-style-type: none"> Sickness; proved by hospitalization report; that is; a discharge summary is necessary. Death in the family proved by a death certificate or equivalent and personal identification. Accidents proved by an expert report. Military/Official engagement.
4	<p>Assignments & Projects:</p> <p>Homework should be clearly presented i.e.:</p> <ol style="list-style-type: none"> It should be written on A4 paper. It should include a title page (Course Name, Semester, Date, Name...). Your instructor will ask you to submit your homework online or as a hard copy. In the latter case, it should be stapled together.
5	<p>Cheating:</p>

	<ul style="list-style-type: none"> • Cheating is strictly prohibited behavior. • University regulations will be pursued and enforced on any cheating student.
6	<p>Plagiarism:</p> <ul style="list-style-type: none"> • Plagiarism is defined as “copying or stealing someone else’s words or ideas and claiming or presenting them as if they were your own.” • University regulations will be pursued and enforced on any plagiarism attempt.
7	<p>Other policies: Please refer to the university policy.</p>

**Course Specification of
 Pharmacy Practice Experience I (PPEI)**

I. - Information about Faculty Member Responsible for the Course:							
Name of Faculty Member	Dr Abdallah Al-Dahbali	Office Hours					
Location & Telephone No.	773800168	SAT	SUN	MON	TUE	WED	THU
E-mail	abdallah.dahbaly@ye.liu.edu.lb	√	√	√	√	√	
II. Course Identification and General Information:							
1	Course Title:	Pharmacy Practice Experience I (PPEI)					
2	Course Number & Code:	PHAR480					
3	Credit hours:	C.H				Total	
		Theory	Seminars, exercises.	Practical	Field training		
				6	300		6
4	Study level/year at which this course is offered:	Fourth Year Summer					
5	Pre –requisite (if any):	PHAR515,PHAR520,PHAR565,PHAR570,PHAR615					
6	Co –requisite (if any):	PHAR650 - PHAR606					
7	Program (s) in which the course is offered	Bachelor of Clinical Pharmacy					
8	Language of teaching the course:	English					
9	System of study:	Credits Hours System					
10	Mode of delivery:	Lectures					
11	Location of teaching the course:	LIU Sana'a					
III. Course Description:							
<p>Pharmacy Practice Experience Course I is the first of two practice experience courses. It introduces students to the philosophy and practice of pharmaceutical care, including patient counseling, plan creation and monitoring, patient outcome assessment, with emphasis on the role of the pharmacist as the primary manager of patient's drug therapies. In each of these two courses, students are required to actively participate in a twelve-week supervised experiential program. Students are exposed to fundamental professional practice skills, have interactions with health care professionals and patients, and become involved in the provision of pharmaceutical care.</p>							

IV. Intended learning outcomes (ILOs) of the course:**Upon successful completion of the course, students would be able to:**

1. Explain the therapeutic values of drugs based on their pharmacological properties.
2. Assess drug-related needs of patients with GI, respiratory, rheumatic, and neurologic disorders.
3. Recognize patient-specific risk factors for aggravating and exacerbating respiratory, rheumatic, and neurologic disorders.
4. Consider patient's insurance coverage in drug selection to manage his GI, respiratory, rheumatic, and neurologic disorders.
5. Consider including symptom resolution and risk factor management in the care plans of respiratory, rheumatic, and neurologic disorders.
6. Gather and maintain patient information to prevent, identify, and resolve drug related problems.
7. Translate instructions into a drug label that is apprehended by the patient.
8. Participate in professional discussions and drug-related decisions during hospital rounds.
9. Apply the counselling techniques such as "Show & Tell" and the "Three Prime Questions".
10. Document pharmacist workouts and follow-ups in the patient's medical record.
11. Prepare clear, referenced answers to drug-related queries raised by patients and other healthcare team members.

V. Course Content:**Distribution of Semester Weekly Plan Of course Topics/Items and Activities.****B – Practical Aspect: (if any)**

Order	Topics List	Week Due	Contact Hours*
1	Module 1* Gastrointestinal & Rheumatologic Disorders <ul style="list-style-type: none"> - Peptic ulcer - IBS - Osteoarthritis - Gout - Osteoporosis Gastroenteritis	1-4	24*
2	Module 2* Respiratory Disorders & Neurologic Disorders <ul style="list-style-type: none"> - Asthma - COPD - Drugs induce pulmonary disease - Epilepsy - Parkinson disease - Pain management Stroke	4-8	24
3	Module 3	8-12	24

	Internal medicine (IM) <ul style="list-style-type: none"> - Parkinson - Alzheimer - Pain management - Hypertension - DVT prophylaxis /treatment - Diabetes Mellitus - CAP /HAP - Meningitis - Urinary tract infection Dyslipidemia		
4	Club discussion, case Presentation	13-14	
5	Final Exam	13-14	
Number of Weeks /and Units Per Semester		14	72*

*Including 12 credit hours of hospital training, which translates to 300 working hours: Saturday to Wednesday from 8:00 to 13:00 for 24 weeks. Clinical Training Plan.

VI. Teaching strategies of the course:			
<ul style="list-style-type: none"> • Case Discussion • Group discussion 			
VII. Assignments:			
No	Assignments	Week Due	Mark
1	-		

VIII. Schedule of Assessment Tasks for Students During the Semester:				
Assessment	Type of Assessment Tasks	Week Due	Mark	Proportion of Final Assessment
1	Case Discussions*	All weeks	40	40%
2	PowerPoint Topic Presentation	End for each Module	10	10%
3	Case Monitoring	All weeks	10%	10%
4	Field Supervisor Evaluation	All weeks	10%	10%
5	Final	12 & 24	30%	30%
IX. Learning Resources:				
Author, (Year), Book Title, Edition, Publisher, Country of publishing				

1- Required Textbook(s) (maximum two).	
<ol style="list-style-type: none"> 1. Dipiro, J. T. et al. (2021). Pharmacotherapy, A pathophysiologic approach, 12th edition. USA: McGraw Hill 2. Koda-Kimble Mary Anne et al. (2018) Applied Therapeutics: the clinical use of drugs. 11th edition. Maryy land: LIPPINCOTT WILLIAMS & WILKINS, 	
2- Essential References.	
<ol style="list-style-type: none"> 1. Anderson PO, et al.(2001.) Handbook of Clinical Drug Data: McGraw-Hill Education; 2. Helms RA,et al.(2006.)Textbook of Therapeutics: Drug and Disease Management: Lippincott Williams & Wilkins. 	
3- Electronic Materials and Web Sites etc.	
<ul style="list-style-type: none"> •American Pharmacist Association www.aphanet.org •The American Society of Health-System Pharmacists (ASHP) www.ashp.org •U.S. Pharmacopeia www.usp.org •U.S. Food and Drug Administration www.fda.gov/medwatch •Centers for Disease Control www.cdc.gov •The Clinician Ultimate Reference Guide www.globalrph.com •Drug interactions checker http://www.drugs.com/drug_interactions.php •Web site with common prescribing information http://www.rxmed.com •Seventh Report of the Joint National Committee on Prevention, Detection, Evaluation, and Treatment of High Blood Pressure (full report) http://www.nhlbi.nih.gov/guidelines/hypertension/jnc7full.htm •National Guideline Clearinghouse http://www.guideline.gov •High quality information about marketed drugs: http://dailymed.nlm.nih.gov 	
X. Course Policies:	
Unless otherwise stated, the normal course administration policies and rules of the School of Business apply.	
1	Class Attendance: <ol style="list-style-type: none"> 1. Attendance in all classes is required. There are no exceptions to this policy. 2. Roll will be called in the very beginning of each class. If you arrive after roll has been called, you may be marked as absent. 3. In any regular semester or summer term, students may miss no more than the equivalent of one third of class sessions scheduled. Students who exceed the above limits are automatically given an (AW) grade in the course by the UMS, and consequently not be allowed to attend class any longer.
2	Tardy: <ol style="list-style-type: none"> 1. All students are expected to conduct themselves in a professional manner. Unprofessional behavior such as, but not limited to, repeated disruption of class (including habitually walking in after class has started), sleeping in class, doing other course work in class, reading a newspaper in class, a ringing cell phone, frequent side conversations with other students and/or rudeness toward any person will be considered a serious violation of this standard and will lower your grade accordingly. Please be sure to turn off your cell phone before the start of class.

	<p>2. Attention to detail entails being prepared for class. This would include, but is not limited to; having a pencil/pen, note pad, calculator; reading and following the course syllabus, etc. All students are expected to conduct themselves in a professional manner. Unprofessional behavior such as, but not limited to, repeated disruption of class (including habitually walking in after class has started), sleeping in class, doing other course work in class, reading a newspaper in class, a ringing cell phone, frequent side conversations with other students and/or rudeness toward any person will be considered a serious violation of this standard and will lower your grade accordingly. Please be sure to turn off your cell phone before the start of class.</p> <p>3. Attention to detail entails being prepared for class. This would include, but is not limited to; having a pencil/pen, note pad, calculator; reading and following the course syllabus, etc.</p>
3	<p>Exam Attendance/Punctuality: As per university council decision, a student is eligible for a Quizzes, Midterm or Final examination make-up if and only if he/she had the following incidents:</p> <ol style="list-style-type: none"> 1. Sickness; proved by hospitalization report; that is; a discharge summary is necessary. 2. Death in the family proved by a death certificate or equivalent and personal identification. 3. Accidents proved by an expert report. 4. Military/Official engagement.
4	<p>Assignments & Projects: Homework should be clearly presented i.e.:</p> <ol style="list-style-type: none"> 1. It should be written on A4 paper. 2. It should include a title page (Course Name, Semester, Date, Name...). 3. Your instructor will ask you to submit your homework online or as a hard copy. In the latter case, it should be stapled together.
5	<p>Cheating:</p> <ul style="list-style-type: none"> • Cheating is strictly prohibited behavior. • University regulations will be pursued and enforced on any cheating student.
6	<p>Plagiarism:</p> <ul style="list-style-type: none"> • Plagiarism is defined as “copying or stealing someone else’s words or ideas and claiming or presenting them as if they were your own.” • University regulations will be pursued and enforced on any plagiarism attempt.
7	<p>Other policies: Please refer to the university policy.</p>



Course Specification of
PHAR510-Biopharmaceutics & Pharmacokinetics

I. Course Identification and General Information:						
1	Course Title:	Biopharmaceutics & Pharmacokinetics				
2	Course Code & Number:	PHAR510				
3	Credit hours:	C.H			TOTAL	
		Theory	Seminars, exercises	Practical		Field training
		4				4
4	Study level/ semester at which this course is offered:	Third Year				
5	Pre –requisite (if any):	PHAR410				
6	Co –requisite (if any):					
8	Program (s) in which the course is offered:	Bachelor degree of clinical Pharmacy				
9	Language of teaching the course:	English				
10	Location of teaching the course:	LIU Sana'a				
11	Prepared by:	Prof Dr/ Mahmoud Mahyoob Alburyhi				
12	Reviewed by:	Dr Khaled Alakhali				
13	Date of approval:					

II. Course Description:	
<p>This course introduces the concepts of biopharmaceutics and pharmacokinetics. The course covers topics such as drug absorption, distribution, metabolism, and excretion, as well as drug delivery systems and their design, pharmacokinetics and pharmacodynamics of drugs, and regulatory aspects of drug development. drug concentration-time profiles, pharmacokinetic parameters, pharmacokinetic-pharmacodynamic modeling, and clinical applications of pharmacokinetics. The aim of this field is to provide a quantitative description of the ADME of drugs to optimize their therapeutic use.</p>	

III. Course Intended Learning Outcomes (CILOs):	
(A) Knowledge and Understanding:	
Alignment of CILOs (Course Intended Learning Outcomes) to PILOs (Program Intended Learning Outcomes)	
Knowledge and Understanding PILOs	Knowledge and Understanding CILOs
After completing this program, graduates would be able to:	After completing this course, students would be able to:
A2. Identify the role of each of the pharmaceutical sciences in the development and use of pharmaceutical products.	a1. Recognize the fundamental elements of Biopharmaceutics and Pharmacokinetics that are relevant to the safe and effective use of drugs.
A4. Relate the biologic effects of medicinal substances to their physicochemical properties and their interactions with the living systems.	a2. Explain the role of pharmacokinetics in dosage form selection, calculations and the pharmacokinetic profiles of different drugs

(B) Intellectual Skills:	
Alignment of CILOs (Course Intended Learning Outcomes) to PILOs (Program Intended Learning Outcomes)	
Intellectual Skills PILOs	Intellectual Skills CILOs
After completing this program, graduates would be able to:	After completing this course, students would be able to:
B2. Integrate patient's demographic, social, and health data to discover drug-related problems.	b1. Explore the scientific data related to pharmacokinetics and biopharmaceutics
B2. Integrate patient's demographic, social, and health data to discover drug-related problems.	b2. Differentiate between pharmacokinetics compartment models

(C) Professional and Practical Skills	
Alignment of CILOs (Course Intended Learning Outcomes) to PILOs (Program Intended Learning Outcomes)	
Professional and Practical Skills PILOs	Professional and Practical Skills CILOs
After completing this program, graduates would be able to:	After completing this course, students would be able to:
C3. Contribute in developing, implementing and monitoring pharmaceutical care plan.	c1. apply pharmacokinetic concepts in drug development, clinical trials, and personalized medicine.

(D) Transferable (General) Skills:

Alignment of CILOs (Course Intended Learning Outcomes) to PILOs (Program Intended Learning Outcomes)	
Transferable (General) Skills PILOs	Transferable (General) Skills CILOs
After completing this program, graduates would be able to:	After completing this course, students would be able to:
D2.Develop presentation, promotion, marketing, business administration, numeric and computation skills.	d1.Develop strong communication skills through the presentation of scientific data and the critical evaluation of research studies. Which is valuable in a range of careers, from science to business

IV. Alignment of CILOs to Teaching and Assessment Strategies

(A) Alignment Course Intended Learning Outcomes of Knowledge and Understanding to Teaching Strategies and Assessment Strategies:

Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
a1.Recognize the fundamental elements of Biopharmaceutics and Pharmacokinetics that are relevant to the safe and effective use of drugs.	- Lectures. - Seminars - Presentations and discussions in class	- Written examinations - Quizzes, - Midterm - Home work
a2.Explain the role of pharmacokinetics in dosage form selection, calculations and the pharmacokinetic profiles of different drugs	- Lectures. - Seminars - Presentations and discussions in class	▪ Written examinations ▪ Quizzes, ▪ Midterm - Home work
	-	-

(B) Alignment Course Intended Learning Outcomes of Intellectual Skills to Teaching Strategies and Assessment Strategies:

Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
b1.Explore the scientific data related to pharmacokinetics and biopharmaceutics	- Lectures, Discussions.	- Exam, homework, report, Quizzes
b2.Differentiate between pharmacokinetics compartment models	- Lectures, Discussions.	- Exam, homework, report, Quizzes
	-	-

(C) Alignment Course Intended Learning Outcomes of Professional and Practical Skills to Teaching Strategies and Assessment Strategies:

Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
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c1.apply pharmacokinetic concepts in drug development, clinical trials, and personalized medicine.	- Group learning and Problem-based learning.	- report, quiz
	-	-
	-	-

(D) Alignment Course Intended Learning Outcomes of Transferable Skills to Teaching Strategies and Assessment Strategies:

Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
d1.Develop strong communication skills through the presentation of scientific data and the critical evaluation of research studies. Which is valuable in a range of careers, from science to business	<ul style="list-style-type: none"> ▪ Tutorials/ seminars. ▪ Group work and problem-solving learning. 	<ul style="list-style-type: none"> ▪ Discussion. - Homework,
	-	

V. Course Content:

A – Theoretical Aspect:

Order	Units/Topics List	Learning Outcomes	Sub Topics List	Number of Weeks	Contact hours
1	Introduction to biopharmaceutics, pharmacokinetic, pharmacodynamic and clinical pharmacokinetics Drug absorption, Mechanisms of drug absorption	a1,a2,b1,b2,d1	Definitions, biopharmaceutics, pharmacokinetics and describe how pharmacokinetics is related to pharmacodynamics and drug toxicity, parameters and Mechanisms - Definition, Mechanisms of drug absorption process, factors affecting absorption	1	4

2	Physiologic factors related to drug absorption Physiochemical factors related to drug absorption	a1,a2,b1,b2, d1	- Types of factors pH, gastric and GIT factors - Nature of drug, drug solubility, dissolution and drug stability	1	4
3	Biopharmaceutical aspects of the active pharmaceutical ingredient and pharmaceutical equivalence Drug distribution Physiologic drug distribution and protein binding	a1,a2,b1,b2, d1	- Formulation factors, method of manufacture, excipients, drug dosage and dosage regimen Definition, parameters, volume of distribution, Mechanisms, factors and Clinical Application	1	4
4	Drug metabolism Pharmacogenetics and drug metabolism	a1,a2,b1,b2,c1	- Definition and parameters, - Mechanisms, classification and factors	1	4
5	Drug excretion Drug elimination, clearance, and renal clearance Drug elimination and hepatic clearance	a1,a2,b1,b2,c1	- Definition and parameters Mechanisms, classification and factors - Mechanisms, types and factors	1	4
		a1,a2,b1,b2,c1			
6	Pharmacokinetic parameters models, equations and order kinetics	a1,a2,b1,b2,c1, d1	Define various models representing rates and order of reactions and calculate pharmacokinetic parameters (eg, zero- and first-order) from experimental data based on these models. -	1	4
7	Bioavailability, The one-compartment open model with an intravenous bolus dose	a1,a2,b1,b2,c1, d1	Definition, classification, Relative bioavailability, Absolute bioavailability parameters and evaluations - PK parameters after I.V. dose bolus(plasma data) and (urine data)	1	4

8	Mid-term exam				
8	Bioavailability and bioequivalence The one-compartment open model with an intravenous infusion The one-compartment open model with absorption and elimination: (Extravascular PK).	a1,a2,b1,b2,c1, d1	Model parameters , drug absorption and bioavailability of dosage forms. PK parameters, Steady state during constant rate infusion Absorption rate and elimination rate - PK parameters after extravascular administration, e.g. oral dose.	1	4
9	Biopharmaceutic considerations in drug product design and in vitro drug product performance The one-compartment open model with multiple dosing kinetics: multiple dosing The two-compartment open model with intravenous administration	a1,a2,b1,b2,c1, d1	Pharmaceutical alternative, Pharmaceutical equivalent volume of distribution, drug clearance, and half-life can be affected by protein binding and PK parameters after multiple dosing PK parameters half-life Cp, Vd, Cl, t1/2 A, B, a, b, K12, K21, K, AUC -	1	4
10	Introduction to clinical pharmacokinetics	a1,a2,b1,b2,c1, d1	- clinical pharmacokinetics, ADME-system, pharmacodynamics, toxicokinetics, Pharmacokinetic models	1	4
11	Clinical Pharmacokinetic parameters	a1,a2,b1,b2,c1,	- Therapeutic concentration , volume of distribution, protein binding, metabolism,	1	4

			rate of elimination, elimination half-life, AUC, clearance and dose regimens.		
12	Factors affecting Clinical Pharmacokinetics	a1,a2,b1,b2,c1,	- Age, Renal diseases, hepatic diseases, obesity, cardiac diseases	1	4
13	Clinical Pharmacokinetic models	a1,a2,b1,b2,c1, d1	- Linear and Non-linear Clinical PK models.	1	4
14	Applications of Clinical Pharmacokinetics	a1,a2,b1,b2,c1, d1	- Aminoglycosides - Vancomycin - Theophylline , Warfarin, Digoxin, Phenytoin, Valproic acid	2	8
15	Final exam	a1,a2,b1,b2,c1, d1	-	13-14	
				14	48

B - Practical Aspect: (if any)				
Order	Tasks/ Experiments	Number of Weeks	contact hours	Learning Outcomes
1				
Number of Weeks /and Units Per Semester				

VI. Teaching strategies of the course:				
<ul style="list-style-type: none"> - Lectures, Discussions, Group learning and Problem-based learning. Group work and problem-solving learning. Tutorials/ seminars. - Presentations and discussions in class 				

VII. Assignments:				
No	Assignments	Aligned CILOs (symbols)	Week Due	Mark

1	Assignment 1: Homeworks	d2	12	d1
9				
10				

VIII. Schedule of Assessment Tasks for Students During the Semester:

No.	Assessment Method	Week Due	Mark	Proportion of Final Assessment	Aligned Course Learning Outcomes
1	Assignments	12 th	10	10%	a1,a2,b1,b2
2	Quizzes	4-10 th	20	20%	a1,a2,b1,b2,
3	Mid-Term Theoretical Exam	8 th	30	30%	a1,a2,b1,b2,c1, d1
4	Final Exam	16	40%	40%	a1,a2,b1,b2,c1, d1

IX. Learning Resources:	
Author, (Year), Book Title, Edition, Publisher, Country of publishing	
1- Required Textbook(s) (maximum two).	
Shargel, L and Yu, ABC., 2022, <i>Applied Biopharmaceutics & pharmacokinetics</i> , 8 th edition, McGraw-Hill Education, New York. 2-Bauer, LA, 2008, <i>Applied clinical pharmacokinetics</i> , 2nd edition, McGraw-Hill Companies, Inc, New York	
2- Essential References.	
-Rowland M, Tozer T, 1995, <i>Clinical Pharmacokinetics—Concepts and Applications</i> , 3rd ed, Lea & Febiger, Philadelphia. 2-Levine RR, 1990, <i>Drug Actions and Reactions</i> , 4th ed., Little, Brown, Boston. 1- Gibaldi, M. (1991) <i>Biopharmaceutics and Clinical Pharmacokinetics</i> , 4th edn. Lea & Febiger Philadelphia.	
3- Electronic Materials and Web Sites etc.	
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X. Course Policies:	
1	Class Attendance: <ol style="list-style-type: none"> Attendance in all classes is required. There are no exceptions to this policy. Roll will be called in the very beginning of each class. If you arrive after roll has been called, you may be marked as absent. In any regular semester or summer term, students may miss no more than the equivalent of one third of class sessions scheduled. Students who exceed the above limits are automatically given an (AW) grade in the course by the UMS, and consequently not be allowed to attend class any longer.
2	Tardy: <ol style="list-style-type: none"> All students are expected to conduct themselves in a professional manner. Unprofessional behavior such as, but not limited to, repeated disruption of class (including habitually walking in after class has started), sleeping in class, doing other course work in class, reading a newspaper in class, a ringing cell phone, frequent side conversations with other students and/or rudeness toward any person will be considered

	<p>a serious violation of this standard and will lower your grade accordingly. Please be sure to turn off your cell phone before the start of class.</p> <p>2. Attention to detail entails being prepared for class. This would include, but is not limited to; having a pencil/pen, note pad, calculator; reading and following the course syllabus, etc. All students are expected to conduct themselves in a professional manner. Unprofessional behavior such as, but not limited to, repeated disruption of class (including habitually walking in after class has started), sleeping in class, doing other course work in class, reading a newspaper in class, a ringing cell phone, frequent side conversations with other students and/or rudeness toward any person will be considered a serious violation of this standard and will lower your grade accordingly. Please be sure to turn off your cell phone before the start of class.</p> <p>3. Attention to detail entails being prepared for class. This would include, but is not limited to; having a pencil/pen, note pad, calculator; reading and following the course syllabus, etc.</p>
3	<p>Exam Attendance/Punctuality: As per university council decision, a student is eligible for a Quizzes, Midterm or Final examination make-up if and only if he/she had the following incidents:</p> <ol style="list-style-type: none"> 1. Sickness; proved by hospitalization report; that is; a discharge summary is necessary. 2. Death in the family proved by a death certificate or equivalent and personal identification. 3. Accidents proved by an expert report. 4. Military/Official engagement.
4	<p>Assignments & Projects: Homework should be clearly presented i.e.:</p> <ol style="list-style-type: none"> 1. It should be written on A4 paper. 2. It should include a title page (Course Name, Semester, Date, Name...). 3. Your instructor will ask you to submit your homework online or as a hard copy. In the latter case, it should be stapled together.
5	<p>Cheating:</p> <ul style="list-style-type: none"> • Cheating is strictly prohibited behavior. • University regulations will be pursued and enforced on any cheating student.
6	<p>Plagiarism:</p> <ul style="list-style-type: none"> • Plagiarism is defined as “copying or stealing someone else’s words or ideas and claiming or presenting them as if they were your own.” • University regulations will be pursued and enforced on any plagiarism attempt.
7	<p>Other policies: Please refer to the university policy.</p>

Lebanese International University
The School of Pharmacy and Medical Sciences
Department: CLINICAL PHARMACY
Title of the Program: Clinical Pharmacy



**Course Specification of
PHAR510-Biopharmaceutics & Pharmacokinetics**

I. - Information about Faculty Member Responsible for the Course:							
Name of Faculty Member	Prof Dr/ Mahmoud Mahyoob Alburyhi	Office Hours					
Location & Telephone No.	737005574	SAT	SUN	MON	TUE	WED	THU
E-mail	Alburyhi2020@gmail.com						

II. Course Identification and General Information:					
1	Course Title:	Biopharmaceutics & Pharmacokinetics			
2	Course Number & Code:	PHAR510			
3	Credit hours:	C.H			Total
		Theory	Seminars, exercises.	Practical	
4	Study level/year at which this course is offered:	Third Year			
5	Pre –requisite (if any):	PHAR410			
6	Co –requisite (if any):				
7	Program (s) in which the course is offered	Bachelor degree of clinical Pharmacy			
8	Language of teaching the course:	English			
9	System of study:	Credits Hours System			
10	Mode of delivery:	Lectures			
11	Location of teaching the course:	LIU Sana'a			

III. Course Description:
This course introduces the concepts of biopharmaceutics and pharmacokinetics. It highlights the process of absorption, distribution, metabolism, and excretion of drugs in order to improve the evaluation of drug delivery systems and the management of patients. It will help students to understand the clinical variability of drug response through exploring the relationships among physiological factors, compartmental models, pharmacokinetics and pharmacodynamics.

IV. Intended learning outcomes (ILOs) of the course:

1. Recognize the fundamental elements of Biopharmaceutics and Pharmacokinetics that are relevant to the safe and effective use of drugs.
2. Explain the role of pharmacokinetics in dosage form selection, calculations and the pharmacokinetic profiles of different drugs
3. Explore the scientific data related to pharmacokinetics and biopharmaceutics
4. Differentiate between pharmacokinetics compartment models
5. apply pharmacokinetic concepts in drug development, clinical trials, and personalized medicine.
6. Develop strong communication skills through the presentation of scientific data and the critical evaluation of research studies. Which is valuable in a range of careers, from science to business

XI. Course Content:**A – Theoretical Aspect:**

Order	Units/Topics List	Sub Topics List	Number of Weeks	Contact hours
1	Introduction to biopharmaceutics , pharmacokinetic, pharmacodynamic and clinical pharmacokinetics Drug absorption, Mechanisms of drug absorption	Definitions, biopharmaceutics, pharmacokinetics and describe how pharmacokinetics is related to pharmacodynamics and drug toxicity, parameters and Mechanisms - Definition, Mechanisms of drug absorption process, factors affecting absorption	1	4
2	Physiologic factors related to drug absorption Physiochemical factors related to drug absorption	- Types of factors pH, gastric and GIT factors - Nature of drug, drug solubility, dissolution and drug stability	1	4

3	Biopharmaceutical aspects of the active pharmaceutical ingredient and pharmaceutical equivalence Drug distribution Physiologic drug distribution and protein binding	- Formulation factors, method of manufacture, excipients, drug dosage and dosage regimen Definition, parameters, volume of distribution, Mechanisms, factors and Clinical Application	1	4
4	Drug metabolism Pharmacogenetics and drug metabolism	- Definition and parameters, - Mechanisms, classification and factors	1	4
5	Drug excretion Drug elimination, clearance, and renal clearance Drug elimination and hepatic clearance	- Definition and parameters Mechanisms, classification and factors - Mechanisms, types and factors	1	4
6	Pharmacokinetic parameters models, equations and order kinetics	Define various models representing rates and order of reactions and calculate pharmacokinetic parameters (eg, zero- and first-order) from experimental data based on these models. -	1	4
7	Bioavailability, The one-compartment open model with an intravenous bolus dose	Definition, classification, Relative bioavailability, Absolute bioavailability parameters and evaluations - PK parameters after I.V. dose bolus(plasma data) and (urine data)	1	4
8	Mid-term exam			
8	Bioavailability and bioequivalence The one-compartment open model with an intravenous infusion	Model parameters, drug absorption and bioavailability of dosage forms. PK parameters, Steady state during constant rate infusion	1	4

	The one-compartment open model with absorption and elimination: (Extravascular PK).	Absorption rate and elimination rate - PK parameters after extravascular administration, e.g. oral dose.		
9	Biopharmaceutic considerations in drug product design and in vitro drug product performance The one-compartment open model with multiple dosing kinetics: multiple dosing The two-compartment open model with intravenous administration	Pharmaceutical alternative, Pharmaceutical equivalent volume of distribution, drug clearance, and half-life can be affected by protein binding and PK parameters after multiple dosing PK parameters half-life C_p , V_d , Cl , $t_{1/2}$ A, B, a, b, K_{12} , K_{21} , K, AUC -	1	4
10	Introduction to clinical pharmacokinetics	- clinical pharmacokinetics, ADME-system, pharmacodynamics, toxicokinetics, Pharmacokinetic models	1	4
11	Clinical Pharmacokinetic parameters	- Therapeutic concentration , volume of distribution, protein binding, metabolism, rate of elimination, elimination half-life, AUC, clearance and dose regimens.	1	4
12	Factors affecting Clinical Pharmacokinetics	- Age, Renal diseases, hepatic diseases, obesity, cardiac diseases	1	4
13	Clinical Pharmacokinetic models	- Linear and Non-linear Clinical PK models.	1	4
14	Applications of Clinical Pharmacokinetics	- Aminoglycosides - Vancomycin - Theophylline , Warfarin, Digoxin, Phenytoin, Valproic acid	2	8

15	Final exam	-	13-14	4
			14 weeks	48

B – Practical Aspect: (if any)			
Order	Topics List	Week Due	Contact Hours
1	None		
Number of Weeks /and Units Per Semester			

V. Teaching strategies of the course:

- Lectures, Discussions, Group learning and Problem-based learning. Group work and problem-solving learning. Tutorials/ seminars.
- Presentations and discussions in class

VI. Assignments:

No	Assignments	Week Due	Mark
1	Assignment 1: Homeworks	12 th	

d1

VII. Schedule of Assessment Tasks for Students During the Semester:

Assessment	Type of Assessment Tasks	Week Due	Mark	Proportion of Final Assessment
1	Attendance & Assignments	12 th	10	10%
2	Quizzes	10 th	20	20%
3	Mid-Term Theoretical Exam	8 th	30	30%
4	Final Exam	13-14	40%	40%

VIII. Learning Resources:

Author, (Year), Book Title, Edition, Publisher, Country of publishing

1- Required Textbook(s) (maximum two).

Shargel, L and Yu, ABC., 2022, *Applied Biopharmaceutics & pharmacokinetics*, 8th edition, McGraw-Hill Education, New York.

2-Bauer, LA, 2008, *Applied clinical pharmacokinetics*, 2nd edition, McGraw-Hill Companies, Inc, New York

2- Essential References.

-Rowland M, Tozer T, 1995, *Clinical Pharmacokinetics—Concepts and Applications*, 3rd ed, Lea & Febiger, Philadelphia.

2-Levine RR, 1990, *Drug Actions and Reactions*, 4th ed., Little, Brown, Boston.

2- Gibaldi, M. (1991) *Biopharmaceutics and Clinical Pharmacokinetics*, 4th edn. Lea & Febiger Philadelphia.

3- Electronic Materials and Web Sites etc.

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VIII. Course Policies:

Unless otherwise stated, the normal course administration policies and rules of the School of Business apply.

1 Class Attendance:

1. Attendance in all classes is required. There are no exceptions to this policy.
2. Roll will be called in the very beginning of each class. If you arrive after roll has been called, you may be marked as absent.
3. In any regular semester or summer term, students may miss no more than the equivalent of one third of class sessions scheduled. Students who exceed the above limits are automatically given an (AW) grade in the course by the UMS, and consequently not be allowed to attend class any longer.

2 Tardy:

1. All students are expected to conduct themselves in a professional manner. Unprofessional behavior such as, but not limited to, repeated disruption of class (including habitually walking in after class has started), sleeping in class, doing other course work in class, reading a newspaper in class, a ringing cell phone, frequent side conversations with other students and/or rudeness toward any person will be considered a serious violation of this standard and will lower your grade accordingly. Please be sure to turn off your cell phone before the start of class.
2. Attention to detail entails being prepared for class. This would include, but is not limited to; having a pencil/pen, note pad, calculator; reading and following the course syllabus, etc. All students are expected to conduct themselves in a professional manner. Unprofessional behavior such as, but not limited to, repeated disruption of class (including habitually walking in after class has started), sleeping in class, doing other course work in class, reading a newspaper in class, a ringing cell phone, frequent side conversations with other students and/or rudeness toward any person will be considered a serious violation of this standard and will lower your grade accordingly. Please be sure to turn off your cell phone before the start of class.

	<p>3. Attention to detail entails being prepared for class. This would include, but is not limited to; having a pencil/pen, note pad, calculator; reading and following the course syllabus, etc.</p>
3	<p>Exam Attendance/Punctuality: As per university council decision, a student is eligible for a Quizzes, Midterm or Final examination make-up if and only if he/she had the following incidents:</p> <ol style="list-style-type: none"> 1. Sickness; proved by hospitalization report; that is; a discharge summary is necessary. 2. Death in the family proved by a death certificate or equivalent and personal identification. 3. Accidents proved by an expert report. 4. Military/Official engagement.
4	<p>Assignments & Projects: Homework should be clearly presented i.e.:</p> <ol style="list-style-type: none"> 1. It should be written on A4 paper. 2. It should include a title page (Course Name, Semester, Date, Name...). 3. Your instructor will ask you to submit your homework online or as a hard copy. In the latter case, it should be stapled together.
5	<p>Cheating:</p> <ul style="list-style-type: none"> • Cheating is strictly prohibited behavior. • University regulations will be pursued and enforced on any cheating student.
6	<p>Plagiarism:</p> <ul style="list-style-type: none"> • Plagiarism is defined as “copying or stealing someone else’s words or ideas and claiming or presenting them as if they were your own.” • University regulations will be pursued and enforced on any plagiarism attempt.
7	<p>Other policies: Please refer to the university policy.</p>



**Course Specification of
 PHAR515 Therapeutics I: Neurology/Psychiatry**

I. Course Identification and General Information:						
1	Course Title:	Therapeutics I: Neurology/Psychiatry				
2	Course Code & Number:	PHAR515				
3	Credit hours:	C.H			TOTAL	
		Theory	Seminars, exercises	Practical		Field training
		3				3
4	Study level/ semester at which this course is offered:	Fourth/ Summer				
5	Pre –requisite (if any):	PHAR505, PHAR575				
6	Co –requisite (if any):	PHAR555				
8	Program (s) in which the course is offered:	Clinical pharmacy				
9	Language of teaching the course:	English				
10	Location of teaching the course:	LIU Sana'a				
11	Prepared by:	Dr Abdallah Aldhabi				
12	Reviewed by:	Dr Khaled Alakhali				
13	Date of approval:					

II. Course Description:	
<p>This course is the first of a series of 7 courses of therapeutics that focus of identifies the pathophysiology, etiology, risk factors and signs and symptoms of most common neurologic and psychiatric disorders. It provides the nonpharmacologic and pharmacologic treatment options according to evidence-based guidelines. It introduces the students to the application of pharmacologic and pharmacokinetic parameters, and description of factors that would guide the selection of the best treatment options. It also familiarizes the students with how to evaluate the treatment therapy for psychiatric and neurologic diseases through highlighting on the monitoring parameters and important medications' adverse effects. The student will apply problem-solving strategies to patient-oriented cases and will develop patient treatment plan.</p>	

III. Course Intended Learning Outcomes (CILOs):	
(A) Knowledge and Understanding:	
Alignment of CILOs (Course Intended Learning Outcomes) to PILOs (Program Intended Learning Outcomes)	
Knowledge and Understanding PILOs	Knowledge and Understanding CILOs
After completing this program, graduates would be able to:	After completing this course, students would be able to:
A2. Identify the role of each of the pharmaceutical sciences in the development and use of pharmaceutical products.	a1. Recall the properties and usefulness of each dosage form in which the CNS drugs are formulated.
A3. Discuss disease pathophysiology and patient's clinical presentation.	a2. Explain the pathophysiology, signs, symptoms, and diagnostic tests associated with Psychiatry and Neurology disorder.
A4. Relate the biologic effects of medicinal substances to their physicochemical properties and their interactions with the living systems.	a3. Discuss site of action and receptor selectivity of drugs in subgroups of therapeutic classes such as antidepressants, antipsychotics, and antiepileptics.

(B) Intellectual Skills:	
Alignment of CILOs (Course Intended Learning Outcomes) to PILOs (Program Intended Learning Outcomes)	
Intellectual Skills PILOs	Intellectual Skills CILOs
After completing this program, graduates would be able to:	After completing this course, students would be able to:
B1. Conceptualize pharmaceutical care as the standard framework of clinical pharmacy services in various healthcare settings.	b1. Assess drug taking behavior and adherence of each patient.
B2. Integrate patient's demographic, social, and health data to discover drug-related problems.	b2. Identify social life and habits as well as drug interactions as possible causes of frequent readmissions and refractoriness of psychiatric and neurologic patients as well as patient's nonadherence.
B3. Compare alternative therapeutic plans for each drug-related problem based on evidence of effectiveness, safety, and cost.	b3. Realize the role of complementary psychologic therapies in management of psychiatric disorders.

B4.Create a patient-specific pharmaceutical care plan to achieve definite outcome for each drug-related problem.	b4.Anticipate, and explore potential causes of partial and suboptimal responses of psychiatric and neurologic patients to drug therapy.
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(C) Professional and Practical Skills	
Alignment of CILOs (Course Intended Learning Outcomes) to PILOs (Program Intended Learning Outcomes)	
Professional and Practical Skills PILOs	Professional and Practical Skills CILOs
After completing this program, graduates would be able to:	After completing this course, students would be able to:
C3. Contribute in developing, implementing and monitoring pharmaceutical care plan.	c1. Include MSE and TDM to assess the effectiveness of psychiatric and neurologic therapy.
C4. Counsel patient on the purpose and expectations of drug therapy.	c2. Counsel the patient on the potential ADR such as teratogenicity of antiepileptics and QT prolongation and metabolic effects of antipsychotics.

(D) Transferable (General) Skills:	
Alignment of CILOs (Course Intended Learning Outcomes) to PILOs (Program Intended Learning Outcomes)	
Transferable (General) Skills PILOs	Transferable (General) Skills CILOs
After completing this program, graduates would be able to:	After completing this course, students would be able to:

I. Alignment of CILOs to Teaching and Assessment Strategies		
(A) Alignment Course Intended Learning Outcomes of Knowledge and Understanding to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
a1.Recall the properties and usefulness of each dosage form in which the CNS drugs are formulated.	- Discussion - Case studies	- Test - Midterm exam - Final exam
a2. Explain the pathophysiology, signs, symptoms, and diagnostic tests associated with Psychiatry and Neurology disorder.	- Lecture - Case studies	- Test - Midterm exam - Final exam

a3. Discuss site of action and receptor selectivity of drugs in subgroups of therapeutic classes such as antidepressants, antipsychotics, and antiepileptics.	- Lecture - Case studies	- Test - Midterm exam - Final exam
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(B) Alignment Course Intended Learning Outcomes of Intellectual Skills to Teaching Strategies and Assessment Strategies:

Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
b1. Assess drug taking behavior and adherence of each patient.	- Lecture - Case studies	- Test - Midterm exam - Final exam
b2. Identify social life and habits as well as drug interactions as possible causes of frequent readmissions and refractoriness of psychiatric and neurologic patients as well as patient's nonadherence.	- Lecture - Case studies	- Test - Midterm exam - Final exam
b3. Realize the role of complementary psychologic therapies in management of psychiatric disorders.	- Lecture - Case studies	- Test - Midterm exam - Final exam
b4. Anticipate, and explore potential causes of partial and suboptimal responses of psychiatric and neurologic patients to drug therapy.	- Lecture - Case studies	- Test - Midterm exam - Final exam

(C) Alignment Course Intended Learning Outcomes of Professional and Practical Skills to Teaching Strategies and Assessment Strategies:

Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
c1. Include MSE and TDM to assess the effectiveness of psychiatric and neurologic therapy.	- Lecture - Case studies	- Test - Midterm exam - Final exam
c2. Counsel the patient on the potential ADR such as teratogenicity of antiepileptics and QT prolongation and metabolic effects of antipsychotics.	- Lecture - Case studies	- Test - Midterm exam - Final exam

(D) Alignment Course Intended Learning Outcomes of Transferable Skills to Teaching Strategies and Assessment Strategies:

Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
	-	-

II. Course Content:					
A – Theoretical Aspect:					
Order	Units/Topics List	Learning Outcomes	Sub Topics List	Number of Weeks	Contact hours
1	Course syllabus Introduction of Psychiatry and Neurology disorder	a2,	- Outline of course - Grade system - Review of SSRI, Antipsychotics, Anti-seizure drugs - Calculate of Creatine clearance	1	3
2	Psychiatry disorder <ul style="list-style-type: none"> Major Depressive Disorder 	a1.a2, a3, b1, b2, b3, b4, ., c1,c2	- Definition of Major Depressive Disorder? - Pathophysiology of Major Depressive Disorder? - Criteria use for diagnosis of Major Depressive Disorder? - Pharmacology and Non pharmacology of Major Depressive Disorder - Algorithm of Major Depressive Disorder - Evaluation of treatment. -	1	3
3	Psychiatry disorder <ul style="list-style-type: none"> Manic depressive disorder (bipolar disorder) 	a1.a2, a3, b1, b2, b3, b4,, c1,c2	Definition Manic depressive disorder (bipolar disorder) - Pathophysiology of bipolar disorder? - Criteria use for diagnosis of Major bipolar disorder? - Pharmacology and Non pharmacology of bipolar disorder	1	3

			<ul style="list-style-type: none"> - Algorithm of Major bipolar disorder r - Evaluation of treatment? - 		
4	Psychiatry disorder <ul style="list-style-type: none"> • Anxiety, OCD, panic attacks 	a1.a2, a3, b1, b2, b3, b4,, c1,c2	<ul style="list-style-type: none"> - GAD - SAD - OCD - Panic attacks 	2	6
6	Psychiatry disorder <ul style="list-style-type: none"> • Schizophrenia 	a1.a2, a3, b1, b2, b3, b4,, c1,c2	<ul style="list-style-type: none"> - Definition of Schizophrenia - Pathophysiology and Sings, symptoms Schizophrenia - Diagnosis of Schizophrenia - Treatment of Schizophrenia - Evaluation of Schizophrenia treatment. 	1	3
7	Neurology disorder <ul style="list-style-type: none"> • Epilepsy 	a1.a2, a3, b1, b2, b3, b4,, c1,c2	<ul style="list-style-type: none"> - Definition of Epilepsy - Pathophysiology and Sings, symptoms Epilepsy - Diagnosis of Epilepsy - Treatment of Epilepsy - Evaluation of Epilepsy treatment. 	1	3
8	Neurology disorder Parkinson disease	a1.a2, a3, b1, b2, b3, b4,, c1,c2	Defination of Parkinson disease Pathophysiology and Sings , symptoms Parkinson disease Diagnosis of Parkinson disease Treatment of Parkinson disease Evaluation of Parkinson disease treatment.	1	3

9	Neurology disorder Dementia, Alzheimer disease	a1.a2, a3, b1, b2, b3, b4,, c1,c2	- Defination of Alzheimer disease - Pathophysiology and Sings , symptoms Alzheimer disease - Diagnosis of Alzheimer disease - Treatment of Alzheimer disease - Evaluation of Alzheimer disease treatment.	1	3
10	Neurology disorder • Insomnia	a1.a2, a3, b1, b2, b3, b4, , c1,c2	- Definition of Insomnia - Pathophysiology and Sings, symptoms Insomnia - Diagnosis of Insomnia - Treatment of Insomnia - Evaluation of Insomnia treatment.	1	3
11	Neurology disorder • Headache disorders	a1.a2, a3, b1, b2, b3, b4,, c1,c2	Definition of Headache disorders Pathophysiology and Sings , symptoms Headache disorders Diagnosis of Headache disorders Treatment of Headache disorders Evaluation of Headache disorders treatment.	1	3
12	Neurology disorder • Eating disorders	a1.a2, a3, b1, b2, b3, b4, ., c1,c2	- Definition of Eating disorders - Pathophysiology and Sings , symptoms Eating disorders - Diagnosis of Eating disorders - Treatment of Eating disorders - Evaluation of Eating disorder treatment.	1	3

12	Case study Review	a1.a2, a3, b1, b2, b3, b4, ., c1,c2	- All Chapters	1	3
	Final exam	a1.a2, a3, b1, b2, b3, b4, ., c1,c2	- All	2	2
Number of Weeks /and Units Per Semester				14	36

B - Practical Aspect: (if any)				
Order	Tasks/ Experiments	Number of Weeks	contact hours	Learning Outcomes
1				
Number of Weeks /and Units Per Semester				

III. Teaching strategies of the course:
- LECTURES as power point presentation - CASE STUDIES

IV. Assignments:				
No	Assignments	Aligned CILOs (symbols)	Week Due	Mark
1				
2				
3				

V. Schedule of Assessment Tasks for Students During the Semester:					
No.	Assessment Method	Week Due	Mark	Proportion of Final Assessment	Aligned Course Learning Outcomes
1	Attendance	All	10	10%	
2	Test 1	2-4	10	10%	a1.a2, a3,b1, b2, b3,b4, ., c1,c2
3	Midterm	6-8	20	20%	a1.a2, a3,b1, b2, b3,b4, ., c1,c2
4	Presentation	12	10	10%	a1.a2, a3,b1, b2, b3,b4, ., c1,c2
5	Test 2	10	10	10%	a1.a2, a3,b1, b2, b3,b4, ., c1,c2
6	Final exam	13-14	40	40%	All

VI. Learning Resources:	
Author, (Year), Book Title, Edition, Publisher, Country of publishing	
1- Required Textbook(s) (maximum two).	
<ul style="list-style-type: none"> • Dipiro, J. T. et al. (2021). <i>Pharmacotherapy, A pathophysiologic approach</i>, 11th edition. USA: McGraw Hill • Koda-Kimble Mary Anne et al. (2018) <i>Applied Therapeutics: the clinical use of drugs</i>. 11th edition. Maryland: LIPPINCOTT WILLIAMS & WILKINS, 	
2- Essential References.	
<ul style="list-style-type: none"> • Anderson PO, et al.(2001.) <i>Handbook of Clinical Drug Data</i>: McGraw-Hill Education; • Helms RA,et al.(2006.)<i>Textbook of Therapeutics: Drug and Disease Management</i>: Lippincott Williams & Wilkins. 	
3- Electronic Materials and Web Sites etc.	
<ul style="list-style-type: none"> • www.Dynamed.com • WWW.PUBMED.COM 	

II. Course Policies:	
1	<p>Class Attendance:</p> <ol style="list-style-type: none"> 1. Attendance in all classes is required. There are no exceptions to this policy. 2. Roll will be called in the very beginning of each class. If you arrive after roll has been called, you may be marked as absent. 3. In any regular semester or summer term, students may miss no more than the equivalent of one third of class sessions scheduled. Students who exceed the above limits are automatically given an (AW) grade in the course by the UMS, and consequently not be allowed to attend class any longer.
2	<p>Tardy:</p> <ol style="list-style-type: none"> 1. All students are expected to conduct themselves in a professional manner. Unprofessional behavior such as, but not limited to, repeated disruption of class (including habitually walking in after class has started), sleeping in class, doing other course work in class, reading a newspaper in class, a ringing cell phone, frequent side conversations with other students and/or rudeness toward any person will be considered a serious violation of this standard and will lower your grade accordingly. Please be sure to turn off your cell phone before the start of class. 2. Attention to detail entails being prepared for class. This would include, but is not limited to; having a pencil/pen, note pad, calculator; reading and following the course syllabus, etc. All students are expected to conduct themselves in a professional manner. Unprofessional behavior such as, but not limited to, repeated disruption of class (including habitually walking in after class has started), sleeping in class, doing other course work in class, reading a newspaper in class, a ringing cell phone, frequent side conversations with other students and/or rudeness toward any person will be considered a serious violation of this standard and will lower your grade accordingly. Please be sure to turn off your cell phone before the start of class.

	<p>3. Attention to detail entails being prepared for class. This would include, but is not limited to; having a pencil/pen, note pad, calculator; reading and following the course syllabus, etc.</p>
3	<p>Exam Attendance/Punctuality: As per university council decision, a student is eligible for a Quizzes, Midterm or Final examination make-up if and only if he/she had the following incidents:</p> <ol style="list-style-type: none"> 1. Sickness; proved by hospitalization report; that is; a discharge summary is necessary. 2. Death in the family proved by a death certificate or equivalent and personal identification. 3. Accidents proved by an expert report. 4. Military/Official engagement.
4	<p>Assignments & Projects: Homework should be clearly presented i.e.:</p> <ol style="list-style-type: none"> 1. It should be written on A4 paper. 2. It should include a title page (Course Name, Semester, Date, Name...). 3. Your instructor will ask you to submit your homework online or as a hard copy. In the latter case, it should be stapled together.
5	<p>Cheating:</p> <ul style="list-style-type: none"> • Cheating is strictly prohibited behavior. • University regulations will be pursued and enforced on any cheating student.
6	<p>Plagiarism:</p> <ul style="list-style-type: none"> • Plagiarism is defined as “copying or stealing someone else’s words or ideas and claiming or presenting them as if they were your own.” • University regulations will be pursued and enforced on any plagiarism attempt.
7	<p>Other policies: Please refer to the university policy.</p>

Course Specification of
PHAR515 Therapeutics I: Neurology/Psychiatry

I. - Information about Faculty Member Responsible for the Course:							
Name of Faculty Member	Dr Abdallah Aldahbaly	Office Hours					
Location & Telephone No.	773800168	SAT	SUN	MON	TUE	WED	THU
E-mail	abdallah.dahbaly@ye.liu.edu.lb	√	√	√	√	√	
II. Course Identification and General Information:							
1	Course Title:	Therapeutics I: Neurology/Psychiatry					
2	Course Number & Code:	PHAR515					
3	Credit hours:	C.H				Total	
		Theory	Seminars, exercises.	Practical	Field training		
		3				3	
4	Study level/year at which this course is offered:	Fourth/ Summer					
5	Pre –requisite (if any):	Phar575, PHAR505					
6	Co –requisite (if any):	Phar555					
7	Program (s) in which the course is offered	CLINICAL PHARMACY					
8	Language of teaching the course:	English					
9	System of study:	Credits Hours System					
10	Mode of delivery:	Lectures					
11	Location of teaching the course:	LIU Sana'a					

III. Course Description:	
<p>This course is the first of a series of 7 courses of therapeutics that identifies the pathophysiology, etiology, risk factors and signs and symptoms of most common Neurology/Psychiatry disorders. It provides the non-pharmacologic and pharmacologic treatment options according to evidence-based guidelines. It introduces the students to the application of pharmacologic and pharmacokinetic parameters, and description of factors that would guide the selection of the best treatment options. It also familiarizes the students with how to evaluate the treatment therapy for Neurology/Psychiatry disorders through highlighting on the monitoring parameters and important medications' adverse effects. The student will apply problem-solving strategies to patient-oriented cases and will develop patient treatment plan</p>	

IV. Intended learning outcomes (ILOs) of the course:**Upon successful completion of the course, students would be able to:**

1. Recall the properties and usefulness of each dosage form in which the CNS drugs are formulated.
2. Explain the pathophysiology, signs, symptoms, and diagnostic tests associated with Psychiatry and Neurology disorder.
3. Discuss site of action and receptor selectivity of drugs in subgroups of therapeutic classes such as antidepressants, antipsychotics, and antiepileptics.
4. Assess drug taking behavior and adherence of each patient.
5. Identify social life and habits as well as drug interactions as possible causes of frequent readmissions and refractoriness of psychiatric and neurologic patients as well as patient's nonadherence.
6. Realize the role of complementary psychologic therapies in management of psychiatric disorders.
7. Anticipate, and explore potential causes of partial and suboptimal responses of psychiatric and neurologic patients to drug therapy.
8. Include MSE and TDM to assess the effectiveness of psychiatric and neurologic therapy .
9. Counsel the patient on the potential ADR such as teratogenicity of antiepileptics and QT prolongation and metabolic effects of antipsychotics.

V. Course Content:**Distribution of Semester Weekly Plan Of course Topics/Items and Activities.****A – Theoretical Aspect:**

Order	Topics List	Week Due	Contact Hours
	Course syllabus Introduction of Psychiatry and Neurology disorder	1	3
1	Major Depressive Disorder	2	3
2	Manic depressive disorder (bipolar disorder)	3	3
3	Anxiety, OCD, panic attacks	4-5	6
4	Schizophrenia	6	3
5	Eating disorders	7	3
6	Epilepsy	8	3
7	Parkinson disease	9	3
8	Dementia, Alzheimer disease	10	3
9	Insomnia	11	3

10	Headache disorders Case study Review	12	3
11	Final exam	13-14	
Number of Weeks /and Units Per Semester		14	36

B – Practical Aspect: (if any)			
Order	Topics List	Week Due	Contact Hours
1			
Number of Weeks /and Units Per Semester			

VI. Teaching strategies of the course:
- LECTURES AS POWER POINT PRESENTION - CASE STUDY

VII. Assignments:			
No	Assignments	Week Due	Mark

VIII. Schedule of Assessment Tasks for Students During the Semester:				
Assessment	Type of Assessment Tasks	Week Due	Mark	Proportion of Final Assessment
1	Attendance	ALL	10	10 %
2	Test 1	2-4	10	10 %
3	Midterm	6-8	20	20 %
4	Test 2	10	10	10 %
5	Presentation	12	10	10 %
6	Final exam	13-14	40	40 %

IX. Learning Resources:	
Author, (Year), Book Title, Edition, Publisher, Country of publishing	
1- Required Textbook(s) (maximum two).	
<ul style="list-style-type: none"> • Dipro, J. T. et al. (2021). <i>Pharmacotherapy, A pathophysiologic approach</i>, 11th edition. USA: McGraw Hill • Koda-Kimble Mary Anne et al. (2018) <i>Applied Therapeutics: the clinical use of drugs</i>. 11th edition. Maryland: LIPPINCOTT WILLIAMS & WILKINS, 	
2- Essential References.	
<ul style="list-style-type: none"> • Anderson PO, et al.(2001.) <i>Handbook of Clinical Drug Data</i>: McGraw-Hill Education; Helms RA,et al.(2006.)<i>Textbook of Therapeutics: Drug and Disease Management</i>: Lippincott Williams & Wilkins. 	
3- Electronic Materials and Web Sites etc.	
<ul style="list-style-type: none"> • WWW.Dynamed.COM • WWW.PUBMED.COM 	

X. Course Policies:	
Unless otherwise stated, the normal course administration policies and rules of the School of Business apply.	
1	Class Attendance: <ol style="list-style-type: none"> 1. Attendance in all classes is required. There are no exceptions to this policy. 2. Roll will be called in the very beginning of each class. If you arrive after roll has been called, you may be marked as absent. 3. In any regular semester or summer term, students may miss no more than the equivalent of one third of class sessions scheduled. Students who exceed the above limits are automatically given an (AW) grade in the course by the UMS, and consequently not be allowed to attend class any longer.
2	Tardy: <ol style="list-style-type: none"> 1. All students are expected to conduct themselves in a professional manner. Unprofessional behavior such as, but not limited to, repeated disruption of class (including habitually walking in after class has started), sleeping in class, doing other course work in class, reading a newspaper in class, a ringing cell phone, frequent side conversations with other students and/or rudeness toward any person will be considered a serious violation of this standard and will lower your grade accordingly. Please be sure to turn off your cell phone before the start of class. 2. Attention to detail entails being prepared for class. This would include, but is not limited to; having a pencil/pen, note pad, calculator; reading and following the course syllabus, etc. All students are expected to conduct themselves in a professional manner. Unprofessional behavior such as, but not limited to, repeated disruption of class (including habitually walking in after class has started), sleeping in class, doing other course work in class, reading a newspaper in class, a ringing cell phone, frequent side conversations with other students and/or rudeness toward any person will be considered a

	<p>serious violation of this standard and will lower your grade accordingly. Please be sure to turn off your cell phone before the start of class.</p> <p>3. Attention to detail entails being prepared for class. This would include, but is not limited to; having a pencil/pen, note pad, calculator; reading and following the course syllabus, etc.</p>
3	<p>Exam Attendance/Punctuality: As per university council decision, a student is eligible for a Quizzes, Midterm or Final examination make-up if and only if he/she had the following incidents:</p> <ol style="list-style-type: none"> 1. Sickness; proved by hospitalization report; that is; a discharge summary is necessary. 2. Death in the family proved by a death certificate or equivalent and personal identification. 3. Accidents proved by an expert report. 4. Military/Official engagement.
4	<p>Assignments & Projects: Homework should be clearly presented i.e.:</p> <ol style="list-style-type: none"> 1. It should be written on A4 paper. 2. It should include a title page (Course Name, Semester, Date, Name...). 3. Your instructor will ask you to submit your homework online or as a hard copy. In the latter case, it should be stapled together.
5	<p>Cheating:</p> <ul style="list-style-type: none"> • Cheating is strictly prohibited behavior. • University regulations will be pursued and enforced on any cheating student.
6	<p>Plagiarism:</p> <ul style="list-style-type: none"> • Plagiarism is defined as “copying or stealing someone else’s words or ideas and claiming or presenting them as if they were your own.” • University regulations will be pursued and enforced on any plagiarism attempt.
7	<p>Other policies: Please refer to the university policy.</p>



Course Specification of PHAR520 Pharmacotherapeutics II:
 Pulmonary/Gastrointestinal/Rheumatology

I. Course Identification and General Information:						
1	Course Title:	Pharmacotherapeutics II: Pulmonary/Rheumatology				
2	Course Code & Number:	PHAR520				
3	Credit hours:	C.H			TOTAL	
		Theory	Seminars, exercises	Practical		Field training
		3				
4	Study level/ semester at which this course is offered:	Third/ Summer				
5	Pre –requisite (if any):	PHAR505, PHAR575				
6	Co –requisite (if any):	PHAR555				
8	Program (s) in which the course is offered:	Clinical pharmacy				
9	Language of teaching the course:	English				
10	Location of teaching the course:	LIU Sana'a				
11	Prepared by:	Dr Abdallah Aldhabi				
12	Reviewed by:	Dr Khaled Alakhali				
13	Date of approval:					

II. Course Description:	
<p>This course identifies the pathophysiology, etiology, risk factors and signs and symptoms of most common Pulmonary/Gastrointestinal/Rheumatology Diseases. It provides the non-pharmacologic and pharmacologic treatment options according to evidence-based guidelines. It introduces the students to the application of pharmacologic and pharmacokinetic parameters, and description of factors that would guide the selection of the best treatment options. It also familiarizes the students with how to evaluate the treatment therapy for Pulmonary/Gastrointestinal/Rheumatology Diseases through highlighting on the monitoring parameters and important medications adverse effects. The student will apply problem-solving strategies to patient-oriented cases and will develop patient treatment plan.</p>	

III. Course Intended Learning Outcomes (CILOs):	
(A) Knowledge and Understanding:	
Alignment of CILOs (Course Intended Learning Outcomes) to PILOs (Program Intended Learning Outcomes)	
Knowledge and Understanding PILOs	Knowledge and Understanding CILOs
After completing this program, graduates would be able to:	After completing this course, students would be able to:
A2 Identify the role of each of the pharmaceutical sciences in the development and use of pharmaceutical products.	a1. Recall the advantages of inhalation as a route of drug administration, as well as the properties of coated tablets.
A3 Discuss disease pathophysiology and patient's clinical presentation.	a2. Depict how an organ dysfunction leads to symptoms/signs, e.g., bronchospasm-wheezing/low FEV1, ulceration-GI upset, inflammation-joint swelling.
A4 Relate the biologic effects of medicinal substances to their physicochemical properties and their interactions with the living systems.	a3. Associate the drug-specific mechanism and site of action to its roles in the therapy of specific disease as well as to its adverse reactions and interactions.

(B) Intellectual Skills:	
Alignment of CILOs (Course Intended Learning Outcomes) to PILOs (Program Intended Learning Outcomes)	
Intellectual Skills PILOs	Intellectual Skills CILOs
After completing this program, graduates would be able to:	After completing this course, students would be able to:
B1 Conceptualize pharmaceutical care as the standard framework of clinical pharmacy services in various healthcare settings.	b1. Recognize the potential causes of exacerbations of pulmonary and rheumatic diseases, GI ulcer recurrence, and patient's nonadherence to drugs of these diseases.
B2 Integrate patient's demographic, social, and health data to discover drug-related problems.	b2. Consider the status of the GI and the cardiovascular systems when selecting antirheumatic drugs.
B3 Compare alternative therapeutic plans for each drug-related problem based on evidence of effectiveness, safety, and cost.	b3 Recognize the needs for COX-2 NSAIDs, intraarticular injections, and surgery/replacement therapies.
B4 Create a patient-specific pharmaceutical care plan to achieve definite outcome for each drug-related problem.	b4. Design a patient's plan that induces and maintains remission of his pulmonary, lower gastrointestinal, and rheumatic diseases.

(C) Professional and Practical Skills

Alignment of CILOs (Course Intended Learning Outcomes) to PILOs (Program Intended Learning Outcomes)	
Professional and Practical Skills PILOs	Professional and Practical Skills CILOs
After completing this program, graduates would be able to:	After completing this course, students would be able to:
C3 Contribute in developing, implementing and monitoring pharmaceutical care plan.	c1 Respond to health team enquiries on choosing and dosing NSAIDs & DMARDs in renal failure.
C4 Counsel patient on the purpose and expectations of drug therapy.	c3. Educate the patient on the correct ways of inhaler use.

(D) Transferable (General) Skills:

Alignment of CILOs (Course Intended Learning Outcomes) to PILOs (Program Intended Learning Outcomes)	
Transferable (General) Skills PILOs	Transferable (General) Skills CILOs
After completing this program, graduates would be able to:	After completing this course, students would be able to:

I. Alignment of CILOs to Teaching and Assessment Strategies

(A) Alignment Course Intended Learning Outcomes of Knowledge and Understanding to Teaching Strategies and Assessment Strategies:

Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
a1. Recall the advantages of inhalation as a route of drug administration, as well as the properties of coated tablets.	- Lectures - Self studies	- Test - Midterm exam - Assignments - Final exam
a2. Depict how an organ dysfunction leads to symptoms/signs, e.g., bronchospasm-wheezing/low FEV1, ulceration-GI upset, inflammation-joint swelling.	- Lectures - Case studies	- Test - Midterm exam - Final exam - Case discussion
a3. Associate the drug-specific mechanism and site of action to its roles in the therapy of specific disease as well as to its adverse reactions and interactions.	- Lectures - Case studies	- Test - Midterm exam - Final exam - Case discussion

(B) Alignment Course Intended Learning Outcomes of Intellectual Skills to Teaching Strategies and Assessment Strategies:

Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
b1. Recognize the potential causes of exacerbations of pulmonary and rheumatic	- Lectures - Case studies	- Test - Midterm exam - Final exam

diseases, GI ulcer recurrence, and patient's nonadherence to drugs of these diseases.		- Case discussion
b2. Consider the status of the GI and the cardiovascular systems when selecting antirheumatic drugs.	- Lectures - Case studies	- Test - Midterm exam - Final exam - Case discussion
b3 Recognize the needs for COX-2 NSAIDs, intraarticular injections, and surgery/replacement therapies.	- Lectures - Case studies	- Test - Midterm exam - Final exam - Case discussion
b4. Design a plan that induces and maintains remission of pulmonary, lower gastrointestinal, and rheumatic diseases.	- Lectures - Case studies	- Test - Midterm exam - Final exam

(C) Alignment Course Intended Learning Outcomes of Professional and Practical Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
c1. Respond to health team enquiries on choosing and dosing NSAIDs & DMARDs in renal failure.	- Lectures - Case studies	- Case discussion - Final exam
c2. Educate the patient on the correct ways of inhaler use.	- Lectures - Case studies	- Case discussion - Case presentation

II. Course Content:					
A – Theoretical Aspect:					
Order	Units/Topics List	Learning Outcomes	Sub Topics List	Number of Weeks	Contact hours
1	-Course syllabus • Asthma	a1,a2,a3,a4	- outline of course - Grade system - Review of pulmonary system and drugs - Asthma pathophysiology	1	1.5
2	ASTHMA	a1,a2,a3,a4 b1, b2, b3, b4, b5	- Epidemiology, risk factors, Screening tests. - Diagnostic parameters including laboratory values and other special	2	3

			tests used to diagnose asthma or rule out other diseases - Spirometry -clinical presentation - asthma guideline updated - assessment asthma stage according to asthma guideline		
3	Asthma part 2	a1, a2, a3, a4 b1, b2, b3, b4, b5, c1,c2,c3	- Goal of therapy - General therapeutics Approach - Assessing asthma severity - Asthma in Pregnancy - ACUTE asthma exacerbation.	3	3
4	GERD	a1, a2, a3, a4 b1, b2, b3, b4, b5, c1,c2,c3	-Introduction -Pathophysiology -Clinical presentation -Diagnosis -Treatment non pharmacological Therapy and pharmacological therapy - Therapeutic approach to GERD in adults - Refractory GERD - Pregnant with GERD - Guideline recommendations	4	3
5	Peptic Ulcer Disease (PUD)	a1, a2, a3,a4 b1, b2, b3, b4, b5, c1,c2,c3	-Introduction -classification and complications -Pathophysiology -Clinical presentation -Diagnosis -Treatment non pharmacological Therapy and pharmacological therapy	5	3

			<ul style="list-style-type: none"> - Treatment of Helicobacter pylori-Associated Ulcers -Treatment of NSAIDs-Induced Ulcers -Refractory Ulcer 		
6	Inflammatory Bowel Disease (IBD)	a1, a2, a3, a4 b1, b2, b3, b4, b5, c1,c2,c3	<ul style="list-style-type: none"> -Introduction -classification& complications -Pathophysiology -Clinical presentation -Diagnosis &Classification -Treatment non-pharmacological Therapy& pharmacological therapy -Treatment Algorithm for UC -Treatment Algorithm for CD 	6	3
7	Irritable Bowel Syndrome (IBS)	a1, a2, a3, a4 b1, b2, b3, b4, b5, c1,c2,c3	<ul style="list-style-type: none"> -Definitions -Pathophysiology -Clinical presentation -Diagnosis &Classification -Treatment non pharmacological Therapy and pharmacological therapy -General approach to treatment -Treatment algorithm 	7	3
8	Osteoarthritis (OA)	a1, a2,a3,a4 b1, b2, b3, b4, b5, c1,c2,c3	<ul style="list-style-type: none"> -Definitions -Etiology -Pathophysiology -Clinical presentation -Diagnosis -Treatment non-pharmacological Therapy& pharmacological therapy -General approach to treatment 	8	3

			-Therapeutic Approach to Osteoarthritis		
9	Rheumatoid Arthritis part 1	a1,a2,a3,a4 b1, b2, b3, b4, b5, c1,c2,c3	-Definitions -Etiology -Pathophysiology -Clinical presentation -Diagnosis -Treatment non-pharmacological Therapy&	9	3
10	Rheumatoid Arthritis part 2	a1, a2, a3, a4 b1, b2, b3, b4, b5, c1,c2,c3	-General approach to treatment - Therapeutic options - Treatment algorithms	10	1.5
10	Gout part 1	a1, a2, a3, a4 b1, b2, b3, b4, b5, c1,c2,c3	- Introduction -Risk Factor -Pathophysiology -Clinical presentation -Diagnosis	10	1.5
11	Gout part 2	a1, a2, a3,a4 b1, b2, b3, b4, b5, c1,c2,c3	-Treatment - non-pharmacological Therapy - Acute gouty arthritis management - Urate Lowering Therapy	11	3
12	Case study Review	a1,a2,a3,a4 b1, b2, b3, b4, b5, c1,c2,c3	- All Chapters	12	3
13	Final exam	a1,a2,a3,a4 b1, b2, b3, b4, b5, c1,c2,c3	- All	13-14	
Number of Weeks /and Units Per Semester				14	36

B - Practical Aspect: (if any)				
Order	Tasks/ Experiments	Number of Weeks	contact hours	Learning Outcomes
1				
Number of Weeks /and Units Per Semester				

III. Teaching strategies of the course:					
- LECTURES - CASE STUDIES					
IV. Assignments:					
No	Assignments	Aligned CILOs (symbols)	Week Due	Mark	
1	Pharmacology classification and comparison Schedules of corticosteroids	a1, a2,a3,a4 b1, b2, b3, b4, b5, c1,c2,c3	2	4	
2	DO in presentation Patient education for PUD.	a1, a2, a3, a4 b1, b2, b3, b4, b5, c1,c2,c3	4	3	
3	patient education for osteoarthritis and gout patient.	a1, a2, a3, a4 b1, b2, b3, b4, b5, c1,c2,c3	8	3	
V. Schedule of Assessment Tasks for Students During the Semester:					
No.	Assessment Method	Week Due	Mark	Proportion of Final Assessment	Aligned Course Learning Outcomes
1	Attendance	All	10	10%	a1, a2,a3,a4 b1, b2, b3, b4, b5, c1,c2,c3
2	Test 1	2-4	10	10%	a1, a2, a3,a4 b1, b2, b3, b4, b5, c1, ,c3
3	Midterm	6-8	20	20%	a1, a2, a3, a4 b1, b2, b3, b4, b5, c1,c2,c3
4	Test 2	10	10	10%	a1, a2, a3, a4 b1, b2, b3, b4, b5, c1 ,c3
	Assignment and case discussion	11	10	10%	a1, a2, a3, a4 b1, b2, b3, b4, b5, c1,c2,c3
5	Final exam	13-14	40	40%	a1, a2,a3,a4 b1, b2, b3, b4, b5, c1,c2,c3
VI. Learning Resources:					
Author, (Year), Book Title, Edition, Publisher, Country of publishing					
1- Required Textbook(s) (maximum two).					

- Dipro, J. T. et al. (2021). *Pharmacotherapy, A pathophysiologic approach*, 11th edition. USA: McGraw Hill
- Koda-Kimble Mary Anne et al. (2018) *Applied Therapeutics: the clinical use of drugs*. 11th edition. Maryland: LIPPINCOTT WILLIAMS & WILKINS,

2- Essential References.

- Anderson PO, et al.(2001.) *Handbook of Clinical Drug Data*: McGraw-Hill Education;
- Helms RA,et al.(2006.)*Textbook of Therapeutics: Drug and Disease Management*: Lippincott Williams & Wilkins.

3- Electronic Materials and Web Sites etc.

- www.Dynamed.com
- WWW.PUBMED.COM

II. Course Policies:

1	<p>Class Attendance:</p> <ol style="list-style-type: none"> 1. Attendance in all classes is required. There are no exceptions to this policy. 2. Roll will be called in the very beginning of each class. If you arrive after roll has been called, you may be marked as absent. 3. In any regular semester or summer term, students may miss no more than the equivalent of one third of class sessions scheduled. Students who exceed the above limits are automatically given an (AW) grade in the course by the UMS, and consequently not be allowed to attend class any longer.
2	<p>Tardy:</p> <ol style="list-style-type: none"> 1. All students are expected to conduct themselves in a professional manner. Unprofessional behavior such as, but not limited to, repeated disruption of class (including habitually walking in after class has started), sleeping in class, doing other course work in class, reading a newspaper in class, a ringing cell phone, frequent side conversations with other students and/or rudeness toward any person will be considered a serious violation of this standard and will lower your grade accordingly. Please be sure to turn off your cell phone before the start of class. 2. Attention to detail entails being prepared for class. This would include, but is not limited to; having a pencil/pen, note pad, calculator; reading and following the course syllabus, etc. All students are expected to conduct themselves in a professional manner. Unprofessional behavior such as, but not limited to, repeated disruption of class (including habitually walking in after class has started), sleeping in class, doing other course work in class, reading a newspaper in class, a ringing cell phone, frequent side conversations with other students and/or rudeness toward any person will be considered a serious violation of this standard and will lower your grade accordingly. Please be sure to turn off your cell phone before the start of class.

	<p>3. Attention to detail entails being prepared for class. This would include, but is not limited to; having a pencil/pen, note pad, calculator; reading and following the course syllabus, etc.</p>
3	<p>Exam Attendance/Punctuality: As per university council decision, a student is eligible for a Quizzes, Midterm or Final examination make-up if and only if he/she had the following incidents:</p> <ol style="list-style-type: none"> 1. Sickness; proved by hospitalization report; that is; a discharge summary is necessary. 2. Death in the family proved by a death certificate or equivalent and personal identification. 3. Accidents proved by an expert report. 4. Military/Official engagement.
4	<p>Assignments & Projects: Homework should be clearly presented i.e.:</p> <ol style="list-style-type: none"> 1. It should be written on A4 paper. 2. It should include a title page (Course Name, Semester, Date, Name...). 3. Your instructor will ask you to submit your homework online or as a hard copy. In the latter case, it should be stapled together.
5	<p>Cheating:</p> <ul style="list-style-type: none"> • Cheating is strictly prohibited behavior. • University regulations will be pursued and enforced on any cheating student.
6	<p>Plagiarism:</p> <ul style="list-style-type: none"> • Plagiarism is defined as “copying or stealing someone else’s words or ideas and claiming or presenting them as if they were your own.” • University regulations will be pursued and enforced on any plagiarism attempt.
7	<p>Other policies: Please refer to the university policy.</p>

Lebanese International University
 The School of Pharmacy and Medical Sciences
 Department: CLINICAL PHARMACY
 Title of the Program: Bachelor of Clinical Pharmacy



**Course Specification of PHAR520 Pharmacotherapeutics II:
 Pulmonary/Gastrointestinal/Rheumatology**

I. - Information about Faculty Member Responsible for the Course:							
Name of Faculty Member	Dr Abdallah Aldahbaly	Office Hours					
Location & Telephone No.	773800168	SAT	SUN	MON	TUE	WED	THU
E-mail	abdallah.dahbaly@ye.liu.edu.lb	√	√	√	√	√	

II. i						
1	Course Title:	Pharmacotherapeutics II: Pulmonary/Rheumatology				
2	Course Number & Code:	PHAR520				
3	Credit hours:	C.H				Total
		Theory	Seminars, exercises.	Practical	Field training	
		3				
4	Study level/year at which this course is offered:					
5	Pre –requisite (if any):	PHAR505				
6	Co –requisite (if any):	PHAR555				
7	Program (s) in which the course is offered	Bachelor of Clinical Pharmacy				
8	Language of teaching the course:	English				
9	System of study:	Credits Hours System				
10	Mode of delivery:	Lectures				
11	Location of teaching the course:	LIU Sana'a				

III. Course Description:	
<p>This course identifies the pathophysiology, etiology, risk factors and signs and symptoms of most common Pulmonary/Gastrointestinal/Rheumatology Diseases. It provides the non-pharmacologic and pharmacologic treatment options according to evidence-based guidelines. It introduces the students to the application of pharmacologic and pharmacokinetic parameters, and description of factors that would guide the selection of the best treatment options. It also familiarizes the students with how to evaluate the treatment therapy for Pulmonary/Gastrointestinal/Rheumatology Diseases through highlighting on the monitoring parameters and important medications adverse effects. The student will apply problem-solving strategies to patient-oriented cases and will develop patient treatment plan.</p>	

IV. Intended learning outcomes (ILOs) of the course:**Upon successful completion of the course, students would be able to:**

1. Recall the advantages of inhalation as a route of drug administration, as well as the properties of coated tablets.
2. Depict how an organ dysfunction leads to symptoms/signs, e.g., bronchospasm-wheezing/low FEV1, ulceration-GI upset, inflammation-joint swelling.
3. Associate the drug-specific mechanism and site of action to its roles in the therapy of specific disease as well as to its adverse reactions and interactions.
4. Recognize the potential causes of exacerbations of pulmonary and rheumatic diseases, GI ulcer recurrence, and patient's nonadherence to drugs of these diseases.
5. Consider the status of the GI and cardiovascular systems when selecting antirheumatic drugs.
6. Recognize the needs for COX-2 NSAIDs, intraarticular injections, and surgery/replacement therapies.
7. Design a plan that induces and maintains remission of pulmonary and rheumatic diseases.
8. Respond to health team enquiries on choosing and dosing NSAIDs & DMARDs in renal failure.
9. Educate the patient on the correct ways of inhaler use.

V. Course Content:**Distribution of Semester Weekly Plan Of course Topics/Items and Activities.****A – Theoretical Aspect:**

Order	Topics List	Week Due	Contact Hours
1	Course syllabus Asthma	1	3
1	ASTHMA	2	3
2	Asthma part 2	3	3
3	GERD	4-5	6
4	Peptic Ulcer Disease (PUD)	6	3
5	Inflammatory Bowel Disease (IBD)	7	3
6	Irritable Bowel Syndrome (IBS)	8	3
7	Osteoarthritis (OA)	9	3
8	Rheumatoid Arthritis part 1	10	3
9	Rheumatoid Arthritis part 2	11	1.5
10	Gout part 1	11	1.5
11	Gout part 2	12	3
12	Final exam	13-14	
Number of Weeks /and Units Per Semester		14	36

B – Practical Aspect: (if any)			
Order	Topics List	Week Due	Contact Hours
1			
Number of Weeks /and Units Per Semester			

VI. Teaching strategies of the course:
- LECTURES - CASE STUDIES

VII. Schedule of Assessment Tasks for Students During the Semester:				
Assessment	Type of Assessment Tasks	Week Due	Mark	Proportion of Final Assessment
1	Attendance	ALL	10	10 %
2	Test 1	2-4	10	10 %
3	Midterm	6-8	30	20 %
4	Test 2	10	10	10 %
5	assignment	2-7	10	10 %
6	Final exam	13-15	40	40 %

VIII. Learning Resources:
Author, (Year), Book Title, Edition, Publisher, Country of publishing
1- Required Textbook(s) (maximum two).
<ul style="list-style-type: none"> Dipiro, J. T. et al. (2021). <i>Pharmacotherapy, A pathophysiologic approach</i>, 11th edition. USA: McGraw Hill Koda-Kimble Mary Anne et al. (2018) <i>Applied Therapeutics: the clinical use of drugs</i>. 11th edition. Maryland: LIPPINCOTT WILLIAMS & WILKINS,
2- Essential References.
<ul style="list-style-type: none"> Anderson PO, et al. (2001.) <i>Handbook of Clinical Drug Data</i>: McGraw-Hill Education;

Helms RA,et al.(2006.)Textbook of Therapeutics: Drug and Disease Management:
Lippincott Williams & Wilkins.

3- Electronic Materials and Web Sites *etc.*

- WWW.Dynamed.COM
- WWW.PUBMED.COM

IX. Course Policies:

Unless otherwise stated, the normal course administration policies and rules of the School of Business apply.

1 **Class Attendance:**

1. Attendance in all classes is required. There are no exceptions to this policy.
2. Roll will be called in the very beginning of each class. If you arrive after roll has been called, you may be marked as absent.
3. In any regular semester or summer term, students may miss no more than the equivalent of one third of class sessions scheduled. Students who exceed the above limits are automatically given an (AW) grade in the course by the UMS, and consequently not be allowed to attend class any longer.

2 **Tardy:**

1. All students are expected to conduct themselves in a professional manner. Unprofessional behavior such as, but not limited to, repeated disruption of class (including habitually walking in after class has started), sleeping in class, doing other course work in class, reading a newspaper in class, a ringing cell phone, frequent side conversations with other students and/or rudeness toward any person will be considered a serious violation of this standard and will lower your grade accordingly. Please be sure to turn off your cell phone before the start of class.
2. Attention to detail entails being prepared for class. This would include, but is not limited to; having a pencil/pen, note pad, calculator; reading and following the course syllabus, etc. All students are expected to conduct themselves in a professional manner. Unprofessional behavior such as, but not limited to, repeated disruption of class (including habitually walking in after class has started), sleeping in class, doing other course work in class, reading a newspaper in class, a ringing cell phone, frequent side conversations with other students and/or rudeness toward any person will be considered a serious violation of this standard and will lower your grade accordingly. Please be sure to turn off your cell phone before the start of class.
3. Attention to detail entails being prepared for class. This would include, but is not limited to; having a pencil/pen, note pad, calculator; reading and following the course syllabus, etc.

3 **Exam Attendance/Punctuality:**

As per university council decision, a student is eligible for a Quizzes, Midterm or Final examination

make-up if and only if he/she had the following incidents:

1. Sickness; proved by hospitalization report; that is; a discharge summary is necessary.
2. Death in the family proved by a death certificate or equivalent and personal identification.
3. Accidents proved by an expert report.
4. Military/Official engagement.

4	<p>Assignments & Projects: Homework should be clearly presented i.e.:</p> <ol style="list-style-type: none"> 1. It should be written on A4 paper. 2. It should include a title page (Course Name, Semester, Date, Name...). 3. Your instructor will ask you to submit your homework online or as a hard copy. In the latter case, it should be stapled together.
5	<p>Cheating:</p> <ul style="list-style-type: none"> • Cheating is strictly prohibited behavior. • University regulations will be pursued and enforced on any cheating student.
6	<p>Plagiarism:</p> <ul style="list-style-type: none"> • Plagiarism is defined as “copying or stealing someone else’s words or ideas and claiming or presenting them as if they were your own.” • University regulations will be pursued and enforced on any plagiarism attempt.
7	<p>Other policies: Please refer to the university policy.</p>

Lebanese International University
The School of Pharmacy and Medical Sciences
Department: CLINICAL PHARMACY
Title of the Program: Bachelor of Clinical Pharmacy



Course Specification of
PHAR565 Therapeutics III: Cardiology

I. Course Identification and General Information:						
1	Course Title:	Therapeutics III Cardiology				
2	Course Code & Number:	PHAR656				
3	Credit hours:	C.H			TOTAL	
		Theory	Seminars, exercises	Practical		Field training
		3				
4	Study level/ semester at which this course is offered:	Fourth/ Summer				
5	Pre –requisite (if any):	PHAR505, PHAR575, PHAR555				
6	Co –requisite (if any):	PHAR555				
8	Program (s) in which the course is offered:	Bachelor of Clinical Pharmacy				
9	Language of teaching the course:	English				
10	Location of teaching the course:	LIU Sana'a				
11	Prepared by:	Dr Abdullah Al-Dahbali				
12	Reviewed by:	Dr Khaled Alakhali				
13	Date of approval:					

II. Course Description:	
<p>This course is the third of a series of 7 courses of therapeutics that focus on diseases of various organ systems divided into modules. Within each module drug treatment of selected diseases is reviewed. An emphasis is placed on assessment, indications for drug therapy, selection of rational and safe drug therapy, identification of alternatives to drug therapy and patient monitoring. The student will apply problem-solving strategies to patient cases and develop patient care plans.</p>	

III. Course Intended Learning Outcomes (CILOs):	
(A) Knowledge and Understanding:	
Alignment of CILOs (Course Intended Learning Outcomes) to PILOs (Program Intended Learning Outcomes)	
Knowledge and Understanding PILOs	Knowledge and Understanding CILOs
After completing this program, graduates would be able to:	After completing this course, students would be able to:
A2. Identify the role of each of the pharmaceutical sciences in the development and use of pharmaceutical products.	a1. Recall the role of the sustained release pharmaceutical products and long-acting drugs in improving adherence of patients with cardiovascular diseases.
A3. Discuss disease pathophysiology and patient's clinical presentation.	a2. Depict how an organ dysfunction leads to symptom appearance, e.g., heart failure-edema, IHD-chest pain).

(B) Intellectual Skills:	
Alignment of CILOs (Course Intended Learning Outcomes) to PILOs (Program Intended Learning Outcomes)	
Intellectual Skills PILOs	Intellectual Skills CILOs
After completing this program, graduates would be able to:	After completing this course, students would be able to:
B1. Conceptualize pharmaceutical care as the standard framework of clinical pharmacy services in various healthcare settings.	b1. Identify social factors and habits that interfere with achieving the goal of decreasing cardiovascular (CV) morbidity and mortality as well as hospitalization.
B2. Integrate patient's demographic, social, and health data to discover drug-related problems.	b2. Base the selection of CV drugs on the presence of CV diseases and CV risks.
B3. Compare alternative therapeutic plans for each drug-related problem based on evidence of effectiveness, safety, and cost.	b3. Base adding and replacing a CV drug on its place in the CV disease therapy, patient tolerance, and cost.
B4. Create a patient-specific pharmaceutical care plan to achieve definite outcome for each drug-related problem.	b4. Match CV drugs to prevent, slow progression, prevent complications, and relieve symptoms of CV diseases.

(C) Professional and Practical Skills	
Alignment of CILOs (Course Intended Learning Outcomes) to PILOs (Program Intended Learning Outcomes)	
Professional and Practical Skills PILOs	Professional and Practical Skills CILOs
After completing this program, graduates would be able to:	After completing this course, students would be able to:

C3. Contribute in developing, implementing and monitoring pharmaceutical care plan.	c1. Evaluate adequacy, interactions, patient adherence/understanding to his drugs incl. OTC.
C4. Counsel patient on the purpose and expectations of drug therapy.	c2. Educate the patient on the importance, use, and effects of his drugs.

(D) Transferable (General) Skills:	
Alignment of CILOs (Course Intended Learning Outcomes) to PILOs (Program Intended Learning Outcomes)	
Transferable (General) Skills PILOs	Transferable (General) Skills CILOs
After completing this program, graduates would be able to:	After completing this course, students would be able to:

I. Alignment of CILOs to Teaching and Assessment Strategies		
(A) Alignment Course Intended Learning Outcomes of Knowledge and Understanding to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
a1. Recall the roles of the sustained release pharmaceutical products and long-acting drugs in improving adherence of patients with cardiovascular diseases.	- Lectures - Case studies	- Test - Midterm exam - Final exam
a2. Depict how an organ dysfunction leads to symptom appearance, e.g., heart failure-edema, IHD-chest pain).	- Lectures - Case studies	- Test - Midterm exam - Final exam

(B) Alignment Course Intended Learning Outcomes of Intellectual Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
b1. Identify social factors and habits that interfere with achieving the goal of decreasing cardiovascular (CV) morbidity and mortality as well as hospitalization.	- Lectures - Case studies	- Test - Midterm exam - Final exam
b2. Base the selection of CV drugs on the presence of CV diseases and CV risks.	- Lectures - Case studies	- Test - Midterm exam - Final exam
b3. Base adding and replacing a CV drug on its place in the CV disease therapy, patient tolerance, and cost.	- Lectures - Case studies	- Test - Midterm exam - Final exam

b4. Match CV drugs to prevent, slow progression, prevent complications, and relieve symptoms of CV diseases.	- Lectures - Case studies	- Test - Midterm exam - Final exam
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(C) Alignment Course Intended Learning Outcomes of Professional and Practical Skills to Teaching Strategies and Assessment Strategies:

Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
c1. Evaluate adequacy, interactions, patient adherence/understanding to his drugs incl. OTC.	- Lectures	- Test - Midterm exam - Final exam
c2. Educate the patient on the importance, use, and effects of his drugs.	- Case studies	- Test - Midterm exam - Final exam

(D) Alignment Course Intended Learning Outcomes of Transferable Skills to Teaching Strategies and Assessment Strategies:

Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
	-	-

II. Course Content:

A – Theoretical Aspect:

Order	Units/Topics List	Learning Outcomes	Sub Topics List	Number of Weeks	Contact hours
1	Course syllabus Introduction of Cardiology disease	a2	- Outline of course - Grade system - Review of Beta blocker, ACES,	1	3

			ARAB, CCB & Diuretics - Calculate of Body Mass index		
2	Chapter One • Hypertension	a1.a2, b1, b2, b3, b4, c1,c2	-Definition of Hypertension disease? - Pathophysiology of Hypertension? - Criteria use for diagnosis of Hypertension? - Pharmacology and Non pharmacology of Hypertension - Algorithm of Hypertension - Evaluation of treatment. -	2	6
3	Chapter Two • Hyperlipidemias	a1.a2, b1, b2, b3, b4, c1,c2	Definition Manic Hyperlipidemias - Pathophysiology of Hyperlipidemias? - Criteria use for diagnosis of Major Hyperlipidemias? - Pharmacology and Non pharmacology of Hyperlipidemias - Algorithm of Major Hyperlipidemias r - Evaluation of treatment? -	1	3
4	Chapter III • Ischemic heart disease:	a1.a2, b1, b2, b3, b4, c1,c2	-Stable Angina -Unstable angina -NSTEMI -STEMI	2	6

6	CHAPTER IV <ul style="list-style-type: none"> Heart failure 	a1.a2, b1, b2, b3, b4, c1,c2	<ul style="list-style-type: none"> - Definition of Heart failure - Pathophysiology and Signs, symptoms Heart failure - Diagnosis of Heart failure - Treatment of Heart failure - Update of HF - Evaluation of Heart failure treatment. 	2	6
7	CHAPTER V <ul style="list-style-type: none"> Stroke 	a1.a2, b1, b2, b3, b4, c1,c2	<ul style="list-style-type: none"> - Definition of Stroke - Pathophysiology and Signs, symptoms Stroke - Diagnosis of Stroke - Treatment of Stroke - Evaluation of Stroke treatment. 	1	3
8	CHAPTER VI <ul style="list-style-type: none"> Thromboembolism 	a1.a2, b1, b2, b3, b4, c1,c2	Definition of Thromboembolism Pathophysiology and Signs, symptoms Thromboembolism Diagnosis of Thromboembolism Treatment of Thromboembolism Evaluation of Thromboembolism treatment.	1	3
9	CHAPTER VII <ul style="list-style-type: none"> Arrhythmias 	a1.a2, b1, b2, b3, b4, c1,c2	<ul style="list-style-type: none"> - Definition of Arrhythmias - Pathophysiology and Signs , symptoms Arrhythmias 	2	5

			- Diagnosis of Arrhythmias - Treatment of Arrhythmias - Evaluation of Arrhythmias treatment.		
12	Case study Review	a1.a2, b1, b2, b3, b4, c1,c2		1	1.5
	Final exam	a1.a2, b1, b2, b3, b4, c1,c2	- All Chapters	2	
Number of Weeks /and Units Per Semester				14	36

B - Practical Aspect: (if any)				
Order	Tasks/ Experiments	Number of Weeks	contact hours	Learning Outcomes
1				
Number of Weeks /and Units Per Semester				

III. Teaching strategies of the course:				
- LECTURES - CASE STUDIES				
IV. Assignments:				
No	Assignments	Aligned CILOs (symbols)	Week Due	Mark
1				
2				
3				

V. Schedule of Assessment Tasks for Students During the Semester:					
No.	Assessment Method	Week Due	Mark	Proportion of Final Assessment	Aligned Course Learning Outcomes
1	Attendance	All	10	10%	All
2	Test 1	2-4	10	10%	a1.a2,b1, b2, b3,b4,c1,c2
3	Midterm	6-8	20	20%	a1.a2,b1, b2, b3,b4,c1,c2
4	Presentation	12	10	10%	a1.a2,b1, b2, b3,b4,c1,c2

5	Test 2	10	10	10%	a1.a2,b1, b2, b3,b4,c1,c2
6	Final exam	13-14	40	40%	a1.a2,b1, b2, b3,b4,c1,c2

VI. Learning Resources:	
Author, (Year), Book Title, Edition, Publisher, Country of publishing	
1- Required Textbook(s) (maximum two).	
<ul style="list-style-type: none"> • Dipiro, J. T. et al. (2021). <i>Pharmacotherapy, A pathophysiologic approach</i>, 11th edition. USA: McGraw Hill • Koda-Kimble Mary Anne et al. (2018) <i>Applied Therapeutics: the clinical use of drugs</i>. 11th edition. Maryland: LIPPINCOTT WILLIAMS & WILKINS, 	
2- Essential References.	
<ul style="list-style-type: none"> • Anderson PO, et al.(2001.) <i>Handbook of Clinical Drug Data</i>: McGraw-Hill Education; • Helms RA,et al.(2006.)<i>Textbook of Therapeutics: Drug and Disease Management</i>: Lippincott Williams & Wilkins. 	
3- Electronic Materials and Web Sites etc.	
<ul style="list-style-type: none"> • www.Dynamed.com • WWW.PUBMED.COM 	

II. Course Policies:	
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2	<p>Tardy:</p> <ol style="list-style-type: none"> 1. All students are expected to conduct themselves in a professional manner. Unprofessional behavior such as, but not limited to, repeated disruption of class (including habitually walking in after class has started), sleeping in class, doing other course work in class, reading a newspaper in class, a ringing cell phone, frequent side conversations with other students and/or rudeness toward any person will be considered a serious violation of this standard and will lower your grade accordingly. Please be sure to turn off your cell phone before the start of class. 2. Attention to detail entails being prepared for class. This would include, but is not limited to; having a pencil/pen, note pad, calculator; reading and following the course syllabus, etc. All students are expected to conduct themselves in a professional

	<p>manner. Unprofessional behavior such as, but not limited to, repeated disruption of class (including habitually walking in after class has started), sleeping in class, doing other course work in class, reading a newspaper in class, a ringing cell phone, frequent side conversations with other students and/or rudeness toward any person will be considered a serious violation of this standard and will lower your grade accordingly. Please be sure to turn off your cell phone before the start of class.</p> <p>3. Attention to detail entails being prepared for class. This would include, but is not limited to; having a pencil/pen, note pad, calculator; reading and following the course syllabus, etc.</p>
3	<p>Exam Attendance/Punctuality: As per university council decision, a student is eligible for a Quizzes, Midterm or Final examination make-up if and only if he/she had the following incidents:</p> <ol style="list-style-type: none"> 1. Sickness; proved by hospitalization report; that is; a discharge summary is necessary. 2. Death in the family proved by a death certificate or equivalent and personal identification. 3. Accidents proved by an expert report. 4. Military/Official engagement.
4	<p>Assignments & Projects: Homework should be clearly presented i.e.:</p> <ol style="list-style-type: none"> 1. It should be written on A4 paper. 2. It should include a title page (Course Name, Semester, Date, Name...). 3. Your instructor will ask you to submit your homework online or as a hard copy. In the latter case, it should be stapled together.
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7	<p>Other policies: Please refer to the university policy.</p>

Lebanese International University
The School of Clinical pharmacy
Department: Clinical Pharmacy
Title of the Program: Clinical Pharmacy



**Course Specification of
PHAR565 Therapeutics III Cardiology**

I. - Information about Faculty Member Responsible for the Course:							
Name of Faculty Member	Dr Abdallah Aldahbaly	Office Hours					
Location & Telephone No.	773800168	SAT	SUN	MON	TUE	WED	THU
E-mail	abdallah.dahbaly@ye.liu.edu.lb	√	√	√	√	√	

II. Course Identification and General Information:						
1	Course Title:	Therapeutics I: Neurology/Psychiatry				
2	Course Number & Code:	PHAR515				
3	Credit hours:	C.H				Total
		Theory	Seminars, exercises.	Practical	Field training	
		3				3
4	Study level/year at which this course is offered:	Fourth Year				
5	Pre –requisite (if any):	Phar575, PHAR505				
6	Co –requisite (if any):	Phar555				
7	Program (s) in which the course is offered	Bachelor of Clinical Pharmacy				
8	Language of teaching the course:	English				
9	System of study:	Credits Hours System				
10	Mode of delivery:	Lectures				
11	Location of teaching the course:	LIU Sana'a				

III. Course Description:
This course is the third of a series of 7 courses of therapeutics that focus on diseases of various organ systems divided into modules. Within each module drug treatment of selected diseases is reviewed. An emphasis is placed on assessment, indications for drug therapy, selection of rational and safe drug therapy, identification of alternatives to drug therapy and patient monitoring. The student will apply problem-solving strategies to patient cases and develop patient care plans.

IV. Intended learning outcomes (ILOs) of the course:**Upon successful completion of the course, students would be able to:**

1. Recall the roles of the sustained release pharmaceutical products and long-acting drugs in improving adherence of patients with cardiovascular diseases.
2. Depict how an organ dysfunction leads to symptom appearance, e.g., heart failure-edema, IHD-chest pain).
3. Identify social factors and habits that interfere with achieving the goal of decreasing cardiovascular (CV) morbidity and mortality as well as hospitalization.
4. Base the selection of CV drugs on the presence of CV diseases and CV risks.
5. Base adding and replacing a CV drug on its place in the CV disease therapy, patient tolerance, and cost.
6. Match CV drugs to prevent, slow progression, prevent complications, and relieve symptoms of CV diseases.
7. Evaluate adequacy, interactions, patient adherence/understanding to his drugs incl. OTC.
8. Educate the patient on the importance, use, and effects of his drugs.

V. Course Content:**Distribution of Semester Weekly Plan Of course Topics/Items and Activities.****A – Theoretical Aspect:**

Chapter	Topics List	Week Due	Contact Hours
	Course syllabus Introduction of Psychiatry and Neurology disorder	1	3
1	Hypertension	2	6
2	Hyperlipidemias	1	3
3	Ischemic heart disease: a. Stable Angina b. Unstable angina c. NSTEMI d. STEMI	2	6
4	Heart failure	2	6
5	Stroke	1	3
6	Thromboembolism	1	3
7	Arrhythmias	2	5
	Case study Review		1
	Final exam	13-14	
Number of Weeks /and Units Per Semester		14	36

VI. Teaching strategies of the course:				
- LECTURES AS POWER POINT PRESENTION - CASE STUDY				
VII. Assignments:				
No	Assignments	Week Due	Mark	
VIII. Schedule of Assessment Tasks for Students During the Semester:				
Assessment	Type of Assessment Tasks	Week Due	Mark	Proportion of Final Assessment
1	Attendance	ALL	10	10 %
2	Test 1	3-4	10	10 %
3	Midterm	7-8	30	30 %
4	Test 2	10-11	10	10 %
6	Final exam	13-14	40	40 %
IX. Learning Resources:				
Author, (Year), Book Title, Edition, Publisher, Country of publishing				
1- Required Textbook(s) (maximum two).				
<ul style="list-style-type: none"> • Dipiro, J. T. et al. (2021). <i>Pharmacotherapy, A pathophysiologic approach</i>, 11th edition. USA: McGraw Hill • Koda-Kimble Mary Anne et al. (2018) <i>Applied Therapeutics: the clinical use of drugs</i>. 11th edition. Mary land: LIPPINCOTT WILLIAMS & WILKINS, 				
2- Essential References.				
<ul style="list-style-type: none"> • Anderson PO, et al.(2001.) <i>Handbook of Clinical Drug Data</i>: McGraw-Hill Education; Helms RA,et al.(2006.)<i>Textbook of Therapeutics: Drug and Disease Management</i>: Lippincott Williams & Wilkins. 				
3- Electronic Materials and Web Sites etc.				
<ul style="list-style-type: none"> • WWW.Dynamed.COM • WWW.PUBMED.COM 				

X. Course Policies:	
Unless otherwise stated, the normal course administration policies and rules of the School of Business apply.	
1	<p>Class Attendance:</p> <ol style="list-style-type: none"> 1. Attendance in all classes is required. There are no exceptions to this policy. 2. Roll will be called in the very beginning of each class. If you arrive after roll has been called, you may be marked as absent. 3. In any regular semester or summer term, students may miss no more than the equivalent of one third of class sessions scheduled. Students who exceed the above limits are automatically given an (AW) grade in the course by the UMS, and consequently not be allowed to attend class any longer.
2	<p>Tardy:</p> <ol style="list-style-type: none"> 1. All students are expected to conduct themselves in a professional manner. Unprofessional behavior such as, but not limited to, repeated disruption of class (including habitually walking in after class has started), sleeping in class, doing other course work in class, reading a newspaper in class, a ringing cell phone, frequent side conversations with other students and/or rudeness toward any person will be considered a serious violation of this standard and will lower your grade accordingly. Please be sure to turn off your cell phone before the start of class. 2. Attention to detail entails being prepared for class. This would include, but is not limited to; having a pencil/pen, note pad, calculator; reading and following the course syllabus, etc. All students are expected to conduct themselves in a professional manner. Unprofessional behavior such as, but not limited to, repeated disruption of class (including habitually walking in after class has started), sleeping in class, doing other course work in class, reading a newspaper in class, a ringing cell phone, frequent side conversations with other students and/or rudeness toward any person will be considered a serious violation of this standard and will lower your grade accordingly. Please be sure to turn off your cell phone before the start of class. 3. Attention to detail entails being prepared for class. This would include, but is not limited to; having a pencil/pen, note pad, calculator; reading and following the course syllabus, etc.
3	<p>Exam Attendance/Punctuality:</p> <p>As per university council decision, a student is eligible for a Quizzes, Midterm or Final examination make-up if and only if he/she had the following incidents:</p> <ol style="list-style-type: none"> 1. Sickness; proved by hospitalization report; that is; a discharge summary is necessary. 2. Death in the family proved by a death certificate or equivalent and personal identification. 3. Accidents proved by an expert report. 4. Military/Official engagement.
4	<p>Assignments & Projects:</p> <p>Homework should be clearly presented i.e.:</p> <ol style="list-style-type: none"> 1. It should be written on A4 paper. 2. It should include a title page (Course Name, Semester, Date, Name...). 3. Your instructor will ask you to submit your homework online or as a hard copy. In the latter case, it should be stapled together.

5	Cheating: <ul style="list-style-type: none">• Cheating is strictly prohibited behavior.• University regulations will be pursued and enforced on any cheating student.
6	Plagiarism: <ul style="list-style-type: none">• Plagiarism is defined as “copying or stealing someone else’s words or ideas and claiming or presenting them as if they were your own.”• University regulations will be pursued and enforced on any plagiarism attempt.
7	Other policies: Please refer to the university policy.



**Course Specification of PHAR570 Pharmacotherapeutics IV:
 Endocrinology/Women Health**

I. Course Identification and General Information:						
1	Course Title:	Pharmacotherapeutics IV: Endocrinology/Women Health				
2	Course Code & Number:	PHAR570				
3	Credit hours:	C.H			TOTAL	
		Theory	Seminars, exercises	Practical		Field training
		3				
4	Study level/ semester at which this course is offered:	Fourth/ Summer				
5	Pre –requisite (if any):	PHAR505, PHAR575				
6	Co –requisite (if any):	PHAR555				
8	Program (s) in which the course is offered:	Bachelor of Clinical Pharmacy				
9	Language of teaching the course:	English				
10	Location of teaching the course:	LIU Sana'a				
11	Prepared by:	Dr Abdallah Aldhabi				
12	Reviewed by:	Dr Khaled Alakhali				
13	Date of approval:					

II. Course Description:	
<p>This course identifies the pathophysiology, etiology, risk factors and signs and symptoms of most common endocrinologic and women’s health related disorders. It provides the non-pharmacologic and pharmacologic treatment options according to evidence-based guidelines. It introduces the students to the application of pharmacologic and pharmacokinetic parameters, and description of factors that would guide the selection of the best treatment options. It also familiarizes the students with how to evaluate the treatment therapy for endocrinologic and women’s health related disorders through highlighting on the monitoring parameters and important medications adverse effects. The student will apply problem-solving strategies to patient-oriented cases and will develop patient treatment plan.</p>	

III. Course Intended Learning Outcomes (CILOs):	
(A) Knowledge and Understanding:	
Alignment of CILOs (Course Intended Learning Outcomes) to PILOs (Program Intended Learning Outcomes)	
Knowledge and Understanding PILOs	Knowledge and Understanding CILOs
After completing this program, graduates would be able to:	After completing this course, students would be able to:
A2 Identify the role of each of the pharmaceutical sciences in the development and use of pharmaceutical products.	a1. Demonstrate the roles of pharmaceutical technology in improving care through insulin and bisphosphonate products as well as women health products.
A3 Discuss disease pathophysiology and patient's clinical presentation.	a2. Depict how an organ dysfunction leads to symptoms/signs, e.g., diabetes-polyuria/FPG, HA1c; thyroid disorders-goiter/TSH, T4; osteoporosis-T-score, ...etc.
A4 Relate the biologic effects of medicinal substances to their physicochemical properties and their interactions with the living systems.	a3. Associate the drug-specific mechanism and site of action to its roles in the management of endocrine and women's health related disorders, as well as to adverse reactions and interactions of these drugs.

(B) Intellectual Skills:	
Alignment of CILOs (Course Intended Learning Outcomes) to PILOs (Program Intended Learning Outcomes)	
Intellectual Skills PILOs	Intellectual Skills CILOs
After completing this program, graduates would be able to:	After completing this course, students would be able to:
B1 Conceptualize pharmaceutical care as the standard framework of clinical pharmacy services in various healthcare settings.	b1. Consider the role of the pharmacist in health literacy, education and adherence of patients at risk for, or already with endocrine and women's health related disorders.
B2 Integrate patient's demographic, social, and health data to discover drug-related problems.	b2. Identify risk factors for drug-related problems in patients with endocrine and women's health related disorders such as uncontrolled diabetes, and fall/fractures and osteoporosis and cardiovascular events in postmenopausal women.
B3 Compare alternative therapeutic plans for each drug-related problem based on evidence of effectiveness, safety, and cost.	b3. Compare the risk of drug-induced hypoglycemia in patients with diabetes, and cardiovascular events in postmenopausal women on HRT.
B4 Create a patient-specific pharmaceutical care plan to achieve definite outcome for each drug-related problem.	b4. Design a patient's plan that achieves and maintains the target level of disease control such as euglycemia based on HbA1c in diabetes, TSH in thyroid disorders, and T-score in osteoporosis.

(C) Professional and Practical Skills	
Alignment of CILOs (Course Intended Learning Outcomes) to PILOs (Program Intended Learning Outcomes)	
Professional and Practical Skills PILOs	Professional and Practical Skills CILOs
After completing this program, graduates would be able to:	After completing this course, students would be able to:
C3 Contribute in developing, implementing and monitoring pharmaceutical care plan.	c.1 Conduct interview with patients with diabetes and osteoporosis.
C4 Counsel patient on the purpose and expectations of drug therapy.	c.2 Educate the patient on the importance of proper use and storage of drugs of disorders of endocrine and women's health.

(D) Transferable (General) Skills:	
Alignment of CILOs (Course Intended Learning Outcomes) to PILOs (Program Intended Learning Outcomes)	
Transferable (General) Skills PILOs	Transferable (General) Skills CILOs
After completing this program, graduates would be able to:	After completing this course, students would be able to:

I. Alignment of CILOs to Teaching and Assessment Strategies		
(A) Alignment Course Intended Learning Outcomes of Knowledge and Understanding to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
a1. Demonstrate the roles of pharmaceutical technology in improving care through insulin and bisphosphonate products as well as women health products.	- Lectures	- Test - Midterm exam - Assignments - Final exam
a2. Depict how an organ dysfunction leads to symptoms/signs, e.g., diabetes-polyuria/FPG, HA1c; thyroid disorders-goiter/TSH, T4; osteoporosis-T-score, ...etc.	- Lectures - Case studies	- Test - Midterm exam - Final exam - Case discussion
a3. Associate the drug-specific mechanism and site of action to its roles in the management of endocrine and women's health related disorders, as well as to adverse reactions and interactions of these drugs.	- Lectures - Case studies	- Test - Midterm exam - Final exam - Case discussion

(B) Alignment Course Intended Learning Outcomes of Intellectual Skills to Teaching Strategies and Assessment Strategies:

Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
b1. Consider the role of the pharmacist in health literacy, education and adherence of patients at risk for, or already with endocrine and women's health related disorders.	- Lectures - Case studies	- Test - Midterm exam - Final exam
b2. Identify risk factors for drug-related problems in patients with endocrine and women's health related disorders such as uncontrolled diabetes, and fall/fractures and osteoporosis and cardiovascular events in postmenopausal women.	- Lectures - Case studies	- Test - Midterm exam - Final exam
b3. Compare the risk of drug-induced hypoglycemia in patients with diabetes, and cardiovascular events in postmenopausal women on HRT.	- Lectures - Case studies	- Test - Midterm exam - Final exam
b4. Design a patient's plan that achieves and maintains the target level of disease control such as euglycemia based on HbA1c in diabetes, TSH in thyroid disorders, and T-score in osteoporosis.	- Lectures - Case studies	- Test - Midterm exam - Final exam - Case discussion

(C) Alignment Course Intended Learning Outcomes of Professional and Practical Skills to Teaching Strategies and Assessment Strategies:

Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
c.1 Conduct interview with patients with diabetes and osteoporosis.	- Lectures - Case studies	- Test - Midterm exam - Final exam - Case discussion
c.2 Educate the patient on the importance of proper use and storage of drugs of disorders of endocrine and women's health.	- Lectures - Case studies	- Case discussion - Case presentation

II. Course Content:					
A – Theoretical Aspect:					
Order	Units/Topics List	Learning Outcomes	Sub Topics List	Number of Weeks	Contact hours
1	-Course syllabus -Diabetic part 1	a1,a2,a3,a4	- outline of course - Grade system - Review of diabetic drugs. - diabetic pathophysiology	1	3
2	Diabetic part 2	a1,a2,a3,a4 b1, b2, b3, b4, b5,	- Epidemiology, risk factors, Screening tests. - Diagnostic parameters including laboratory values and other special tests used to diagnose diabetic or rule out other diseases -clinical presentation - Diabetic guideline ADA updated - glycemic targeting according to guideline -monitoring diabetic complications	2	3
3	<ul style="list-style-type: none"> DIABETIC Part 3 	a1,a2,a3,a4 b1, b2, b3, b4, b5, c1,c2,c3	- Goal of therapy - General therapeutics Approach - DM Type 2 management approach - DM Type 2 management ADA algorithm -Combination injectable therapy in type II DM - Treatment Of Concomitant	3	3

			Conditions And Complications - INSULIN types		
4	Diabetics Part 4	a1,a2,a3,a4 b1, b2, b3, b4, b5, c1,c2,c3	- Dosing and Administration -DM type 1 management Algorithm -Insulin administrations education and monitoring - Evaluating Fasting Hyperglycemia, somogyi effect, down phenomena - Diabetic Ketoacidosis	4	3
5	<ul style="list-style-type: none"> Thyroid disorders 	a1,a2,a3,a4 b1, b2, b3, b4, b5, c1,c2,c3	- Background on Thyroid Hormone (TH) - Pathophysiology - Classification - Hypothyroidism - Thyroid myxedema coma - Hyperthyroidism - Thyroid storm -Congenital hypothyroidism	5	3
6	- Hormone Replacement Therapy (HRT) In Menopause	a1,a2,a3,a4 b1, b2, b3, b4, b5, c1,c2,c3	- Definition - Epidemiology and Etiology - Pathophysiology - Clinical Presentation and Diagnosis: - Goals Of Therapy - Non-pharmacologic al Therapy	6	3

			<ul style="list-style-type: none"> - Pharmacologic al Therapy - Methods of Administration - Outcome Evaluation 		
7	Contraception	a1,a2,a3,a4 b1, b2, b3, b4, b5, c1,c2,c3	Basic concepts Goals of treatment TYPES (NON-Pharmacological, Pharmacological) Hormonal contraception Special population and CHC Management of CHC adverse events IUD Implants Emergency contraception	7	3
8	Adrenal gland disorders	a1, a2,a3,a4 b1, b2, b3, b4, b5, c1,c2,c3	<ul style="list-style-type: none"> - Basic concepts - Adrenal Gland disorders - Cushing’s Syndrome - Etiology - Diagnosis - Goals of therapy - General Therapy approach - Management of Cushing syndrome - Hyperaldosteronism - Hyperaldosteronism/ Diagnosis and treatment 	8	3
9	<ul style="list-style-type: none"> • Osteoporosis 	a1,a2,a3,a4 b1, b2, b3, b4, b5, c1,c2,c3	<ul style="list-style-type: none"> - Bone Physiology and pathophysiology - Etiology and risk factor/ Risk Factors Assessment - Clinical presentation 	9	3

			<ul style="list-style-type: none"> - Non-pharmacological therapy - Review of osteoporosis drugs pharmacology - Pharmacotherapy - Monitoring Parameters - Glucocorticoid-Induced Osteoporosis 		
10	Pregnancy and lactation	a1, a2, a3, a4 b1, b2, b3, b4, b5, c1,c2,c3	-Principles of pregnancy and lactation physiology .	10	3
11	Pregnancy and lactation	a1, a2, a3, a4 b1, b2, b3, b4, b5, c1,c2,c3	- Drugs can be used or avoid in pregnancy and lactation	11	3
12	Case study Review	a1, a2, a3, a4 b1, b2, b3, b4, b5, c1,c2,c3	- All Chapters	12	3
13	Final exam	a1, a2,a3,a4 b1, b2, b3, b4, b5, c1,c2,c3	- All	13-14	
Number of Weeks /and Units Per Semester				14	36

B - Practical Aspect: (if any)				
Order	Tasks/ Experiments	Number of Weeks	contact hours	Learning Outcomes
1				
Number of Weeks /and Units Per Semester				

III. Teaching strategies of the course:
<ul style="list-style-type: none"> - LECTURE as power point presentation - CASE STUDY

IV. Assignments:				
No	Assignments	Aligned CILOs (symbols)	Week Due	Mark
1	Pharmacology classification Schedules of oral antidiabetics drugs	a1,a2,a3,a4 b1, b2, b3, b4, b5, c1,c2,c3	1	4
2	Pharmacology classification Schedules of insulin	a1,a2,a3,a4 b1, b2, b3, b4, b5, c1,c2,c3	3	3
3	Pharmacology Comparison Chart of Contraceptive	a1,a2,a3,a4 b1, b2, b3, b4, b5, c1,c2,c3	7	3

V. Schedule of Assessment Tasks for Students During the Semester:					
No.	Assessment Method	Week Due	Mark	Proportion of Final Assessment	Aligned Course Learning Outcomes
1	Attendance	All	10	10%	a1, a2,a3,a4 b1, b2, b3, b4, b5, c1,c2,c3
2	Test 1	2-4	10	10%	a1, a2, a3,a4 b1, b2, b3, b4, b5, c1, ,c3
3	Midterm	6-8	20	20%	a1, a2, a3, a4 b1, b2, b3, b4, b5, c1,c2,c3
4	Test 2	10	10	10%	a1, a2, a3, a4 b1, b2, b3, b4, b5, c1 ,c3
	Assignment and case discussion	11	10	10%	a1, a2, a3, a4 b1, b2, b3, b4, b5, c1,c2,c3
5	Final exam	13-14	40	40%	a1, a2,a3,a4 b1, b2, b3, b4, b5, c1,c2,c3

VI. Learning Resources:	
Author, (Year), Book Title, Edition, Publisher, Country of publishing	
1- Required Textbook(s) (maximum two).	
<ul style="list-style-type: none"> • Dipiro, J. T. et al. (2021). <i>Pharmacotherapy, A pathophysiologic approach</i>, 11th edition. USA: McGraw Hill • Koda-Kimble Mary Anne et al. (2018) <i>Applied Therapeutics: the clinical use of drugs</i>. 11th edition. Maryland: LIPPINCOTT WILLIAMS & WILKINS, 	
2- Essential References.	
<ul style="list-style-type: none"> • Anderson PO, et al.(2001.) <i>Handbook of Clinical Drug Data</i>: McGraw-Hill Education; • Helms RA,et al.(2006.)<i>Textbook of Therapeutics: Drug and Disease Management</i>: Lippincott Williams & Wilkins. 	
3- Electronic Materials and Web Sites etc.	
<ul style="list-style-type: none"> • WWW.AACE.COM • WWW.ADA.COM 	

II. Course Policies:	
1	<p>Class Attendance:</p> <ol style="list-style-type: none"> 1. Attendance in all classes is required. There are no exceptions to this policy. 2. Roll will be called in the very beginning of each class. If you arrive after roll has been called, you may be marked as absent. 3. In any regular semester or summer term, students may miss no more than the equivalent of one third of class sessions scheduled. Students who exceed the above limits are automatically given an (AW) grade in the course by the UMS, and consequently not be allowed to attend class any longer.
2	<p>Tardy:</p> <ol style="list-style-type: none"> 1. All students are expected to conduct themselves in a professional manner. Unprofessional behavior such as, but not limited to, repeated disruption of class (including habitually walking in after class has started), sleeping in class, doing other course work in class, reading a newspaper in class, a ringing cell phone, frequent side conversations with other students and/or rudeness toward any person will be considered a serious violation of this standard and will lower your grade accordingly. Please be sure to turn off your cell phone before the start of class. 2. Attention to detail entails being prepared for class. This would include, but is not limited to; having a pencil/pen, note pad, calculator; reading and following the course syllabus, etc. All students are expected to conduct themselves in a professional manner. Unprofessional behavior such as, but not limited to, repeated disruption of class (including habitually walking in after class has started), sleeping in class, doing other course work in class, reading a newspaper in class, a ringing cell phone, frequent side conversations with other students and/or rudeness toward any person will be considered a serious violation of this standard and will lower your grade accordingly. Please be sure to turn off your cell phone before the start of class.

	<p>3. Attention to detail entails being prepared for class. This would include, but is not limited to; having a pencil/pen, note pad, calculator; reading and following the course syllabus, etc.</p>
3	<p>Exam Attendance/Punctuality: As per university council decision, a student is eligible for a Quizzes, Midterm or Final examination make-up if and only if he/she had the following incidents:</p> <ol style="list-style-type: none"> 1. Sickness; proved by hospitalization report; that is; a discharge summary is necessary. 2. Death in the family proved by a death certificate or equivalent and personal identification. 3. Accidents proved by an expert report. 4. Military/Official engagement.
4	<p>Assignments & Projects: Homework should be clearly presented i.e.:</p> <ol style="list-style-type: none"> 1. It should be written on A4 paper. 2. It should include a title page (Course Name, Semester, Date, Name...). 3. Your instructor will ask you to submit your homework online or as a hard copy. In the latter case, it should be stapled together.
5	<p>Cheating:</p> <ul style="list-style-type: none"> • Cheating is strictly prohibited behavior. • University regulations will be pursued and enforced on any cheating student.
6	<p>Plagiarism:</p> <ul style="list-style-type: none"> • Plagiarism is defined as “copying or stealing someone else’s words or ideas and claiming or presenting them as if they were your own.” • University regulations will be pursued and enforced on any plagiarism attempt.
7	<p>Other policies: Please refer to the university policy.</p>

Course Specification of PHAR570 Pharmacotherapeutics IV:
 Endocrinology/Women Health

I. - Information about Faculty Member Responsible for the Course:							
Name of Faculty Member	Dr Abdallah Aldahbaly	Office Hours					
Location & Telephone No.	773800168	SAT	SUN	MON	TUE	WED	THU
E-mail	abdallah.dahbaly@ye.liu.edu.lb	√	√	√	√	√	

II. Course Identification and General Information:						
1	Course Title:	Therapeutics IV:				
2	Course Number & Code:	PHAR570				
3	Credit hours:	C.H				Total
		Theory	Seminars, exercises.	Practical	Field training	
		3				
4	Study level/year at which this course is offered:	FOURTH YEARS				
5	Pre –requisite (if any):	PHAR555				
6	Co –requisite (if any):	PHAR575				
7	Program (s) in which the course is offered	Bachelor of Clinical Pharmacy				
8	Language of teaching the course:	English				
9	System of study:	Credits Hours System				
10	Mode of delivery:	Lectures				
11	Location of teaching the course:	LIU Sana'a				

III. Course Description:

This course identifies the pathophysiology, etiology, risk factors and signs and symptoms of most common endocrinologic and women’s health related disorders. It provides the non-pharmacologic and pharmacologic treatment options according to evidence-based guidelines. It introduces the students to the application of pharmacologic and pharmacokinetic parameters, and description of factors that would guide the selection of the best treatment options. It also familiarizes the students with how to evaluate the treatment therapy for endocrinologic and women’s health related disorders through highlighting on the monitoring parameters and important medications adverse effects. The student will apply problem-solving strategies to patient-oriented cases and will develop patient treatment plan.

IV. Intended learning outcomes (ILOs) of the course:**Upon successful completion of the course, students would be able to:**

1. Demonstrate the roles of pharmaceutical technology in improving care through insulin and bisphosphonate products as well as women health products.
2. Depict how an organ dysfunction leads to symptoms/signs, e.g., diabetes-polyuria/FPG, HA1c; thyroid disorders-goiter/TSH, T4; osteoporosis-T-score, ...etc.
3. Associate the drug-specific mechanism and site of action to its roles in the management of endocrine and women's health related disorders, as well as to adverse reactions and interactions of these drugs.
4. Consider the role of the pharmacist in health literacy, education and adherence of patients at risk for, or already with endocrine and women's health related disorders.
5. Identify risk factors for drug-related problems in patients with endocrine and women's health related disorders such as uncontrolled diabetes, and fall/fractures and osteoporosis and cardiovascular events in postmenopausal women.
6. Compare the risk of drug-induced hypoglycemia in patients with diabetes, and cardiovascular events in postmenopausal women on HRT.
7. Design a patient's plan that achieves and maintains the target level of disease control such as euglycemia based on HbA1c in diabetes, TSH in thyroid disorders, and T-score in osteoporosis.
8. Conduct interview with patients with diabetes and osteoporosis.
9. Educate the patient on the importance of proper use and storage of drugs of disorders of endocrine and women's health.

V. Course Content:**Distribution of Semester Weekly Plan Of course Topics/Items and Activities.****A – Theoretical Aspect:**

Order	Topics List	Week Due	Contact Hours
1	a-Course syllabus. b- Review of pharmacology of diabetic medication.	1	3
2	Diabetic part 1	1-2	3
3	Diabetic part 2	3-4	6
4	Thyroid disorder	5-6	3
5	Adrenal disorder	7	3
6	Contraceptive	8	3
7	Hormonal replacement therapy	9	3
8	Osteoporosis	10	3
9	Pregnancy and lactation	11	3

11	Case study Review	12	3
12	Final exam	13-14	
Number of Weeks /and Units Per Semester		14	36

B – Practical Aspect: (if any)			
Order	Topics List	Week Due	Contact Hours
1			
Number of Weeks /and Units Per Semester			

VI. Teaching strategies of the course:
- LECTURES AS POWER POINT PRESENTION - CASE STUDY

VII. Assignments:			
No	Assignments	Week Due	Mark

VIII. Schedule of Assessment Tasks for Students During the Semester:				
Assessment	Type of Assessment Tasks	Week Due	Mark	Proportion of Final Assessment
1	Attendance	ALL	10	10 %
2	Test 1	2-4	10	10 %
3	Midterm	6-8	20	20 %
4	Test 2	10	10	10 %
	ASSIGNMENT	11	10	10%
5	Final exam	13-14	40	40 %

IX. Learning Resources:	
Author, (Year), Book Title, Edition, Publisher, Country of publishing	
1- Required Textbook(s) (maximum two).	
<ul style="list-style-type: none"> • Dipiro, J. T. et al. (2021). <i>Pharmacotherapy, A pathophysiologic approach</i>, 11th edition. USA: McGraw Hill • Koda-Kimble Mary Anne et al. (2018) <i>Applied Therapeutics: the clinical use of drugs</i>. 11th edition. Maryland: LIPPINCOTT WILLIAMS & WILKINS, 	
2- Essential References.	
<ul style="list-style-type: none"> • Anderson PO, et al.(2001.) <i>Handbook of Clinical Drug Data</i>: McGraw-Hill Education; Helms RA,et al.(2006.)<i>Textbook of Therapeutics: Drug and Disease Management</i>: Lippincott Williams & Wilkins. 	
3- Electronic Materials and Web Sites etc.	
<ul style="list-style-type: none"> • WWW.AACE.COM • WWW.ADA.COM 	

X. Course Policies:	
Unless otherwise stated, the normal course administration policies and rules of the School of Business apply.	
1	Class Attendance: <ol style="list-style-type: none"> 1. Attendance in all classes is required. There are no exceptions to this policy. 2. Roll will be called in the very beginning of each class. If you arrive after roll has been called, you may be marked as absent. 3. In any regular semester or summer term, students may miss no more than the equivalent of one third of class sessions scheduled. Students who exceed the above limits are automatically given an (AW) grade in the course by the UMS, and consequently not be allowed to attend class any longer.
2	Tardy: <ol style="list-style-type: none"> 1. All students are expected to conduct themselves in a professional manner. Unprofessional behavior such as, but not limited to, repeated disruption of class (including habitually walking in after class has started), sleeping in class, doing other course work in class, reading a newspaper in class, a ringing cell phone, frequent side conversations with other students and/or rudeness toward any person will be considered a serious violation of this standard and will lower your grade accordingly. Please be sure to turn off your cell phone before the start of class. 2. Attention to detail entails being prepared for class. This would include, but is not limited to; having a pencil/pen, note pad, calculator; reading and following the course syllabus, etc. All students are expected to conduct themselves in a professional manner. Unprofessional behavior such as, but not limited to, repeated disruption of class (including habitually walking in after class has started), sleeping in class, doing other course work in class, reading a newspaper in class, a ringing cell phone, frequent side conversations with other students and/or rudeness toward any person will be considered a

	<p>serious violation of this standard and will lower your grade accordingly. Please be sure to turn off your cell phone before the start of class.</p> <p>3. Attention to detail entails being prepared for class. This would include, but is not limited to; having a pencil/pen, note pad, calculator; reading and following the course syllabus, etc.</p>
3	<p>Exam Attendance/Punctuality: As per university council decision, a student is eligible for a Quizzes, Midterm or Final examination make-up if and only if he/she had the following incidents:</p> <ol style="list-style-type: none"> 1. Sickness; proved by hospitalization report; that is; a discharge summary is necessary. 2. Death in the family proved by a death certificate or equivalent and personal identification. 3. Accidents proved by an expert report. 4. Military/Official engagement.
4	<p>Assignments & Projects: Homework should be clearly presented i.e.:</p> <ol style="list-style-type: none"> 1. It should be written on A4 paper. 2. It should include a title page (Course Name, Semester, Date, Name...). 3. Your instructor will ask you to submit your homework online or as a hard copy. In the latter case, it should be stapled together.
5	<p>Cheating:</p> <ul style="list-style-type: none"> • Cheating is strictly prohibited behavior. • University regulations will be pursued and enforced on any cheating student.
6	<p>Plagiarism:</p> <ul style="list-style-type: none"> • Plagiarism is defined as “copying or stealing someone else’s words or ideas and claiming or presenting them as if they were your own.” • University regulations will be pursued and enforced on any plagiarism attempt.
7	<p>Other policies: Please refer to the university policy.</p>



**Course Specification of
 Pharmacy Practice Experience II (PPEII)**

I. Course Identification and General Information:						
1	Course Title:	Pharmacy Practice Experience II (PPEI)				
2	Course Code & Number:	PHAR580				
3	Credit hours:	C.H			TOTAL	
		Theory	Seminars, exercises	Practical		Field training
				6		12 weeks
4	Study level/ semester at which this course is offered:	Fifth Year Summer				
5	Pre –requisite (if any):	PHAR515, PHAR520, PHAR565, PHAR570, PHAR615				
6	Co –requisite (if any):	PHAR650 - PHAR606				
8	Program (s) in which the course is offered:	Bachelor of Clinical Pharmacy				
9	Language of teaching the course:	English				
10	Location of teaching the course:	LIU Sana'a				
11	Prepared by:	Dr Abdallah Al-Dahbali				
12	Reviewed by:	Dr Khaled Al-Akhali				
13	Date of approval:					

II. Course Description:
Pharmacy Practice Experience Course II is the second of two practice experience courses. It introduces students to the philosophy and practice of pharmaceutical care, including patient counseling, plan creation and monitoring, patient outcome assessment, with emphasis on the role of the pharmacist as the primary manager of patient’s drug therapies. In each of these two courses, students are required to actively participate in a twelve-week supervised experiential program. Students are exposed to fundamental professional practice skills, have interactions with health care professionals and patients, and become involved in the provision of pharmaceutical care.

III. Course Intended Learning Outcomes (CILOs):	
(A) Knowledge and Understanding:	
Alignment of CILOs (Course Intended Learning Outcomes) to PILOs (Program Intended Learning Outcomes)	
Knowledge and Understanding PILOs	Knowledge and Understanding CILOs

After completing this program, graduates would be able to:	After completing this course, students would be able to:
A4. Relate the biologic effects of medicinal substances to their physicochemical properties and their interactions with the living systems.	a1. Explain the therapeutic values of drugs based on their pharmacological properties.
(B) Intellectual Skills:	
Alignment of CILOs (Course Intended Learning Outcomes) to PILOs (Program Intended Learning Outcomes)	
Intellectual Skills PILOs	Intellectual Skills CILOs
After completing this program, graduates would be able to:	After completing this course, students would be able to:
B1. Conceptualize pharmaceutical care as the standard framework of clinical pharmacy services in various healthcare settings.	b1. Assess drug-related needs of patients with cardiac and infectious diseases, as well as critically ill patients.
B2. Integrate patient's demographic, social, and health data to discover drug-related problems.	b2. Recognize patient-specific risk factors for aggravating and exacerbating cardiac and infectious diseases.
B3. Compare alternative therapeutic plans for each drug-related problem based on evidence of effectiveness, safety, and cost.	b3. Consider patient's insurance coverage in drug selection to manage his cardiac and infectious diseases.
B4. Create a patient-specific pharmaceutical care plan to achieve definite outcome for each drug-related problem	b4. Consider including symptom resolution and risk factor management in the care plans of patients with cardiac and infectious diseases, as well as critically ill patients.

(C) Professional and Practical Skills	
Alignment of CILOs (Course Intended Learning Outcomes) to PILOs (Program Intended Learning Outcomes)	
Professional and Practical Skills PILOs	Professional and Practical Skills CILOs
After completing this program, graduates would be able to:	After completing this course, students would be able to:
C1. Provide pharmaceutical care professionally in various pharmacy practice setting.	c1. Gather and maintain patient information to prevent, identify, and resolve drug related problems.
C2. Communicate effectively with patients and other health care professionals.	c2. Translate instructions into a drug label that is apprehended by the patient.
C3. Contribute in developing, implementing and monitoring pharmaceutical care plan.	c3. Participate in professional discussions and drug-related decisions during hospital rounds.
C4. Counsel patient on the purpose and expectations of drug therapy.	c4. Apply the counselling techniques such as "Show & Tell" and the "Three Prime Questions".
C5. Document pharmaceutical care steps in patient medical record.	c5. Document pharmacist workouts and follow-ups in the patient's medical record.

C6. Respond to drug information requests in systematic manners.	c6. Prepare clear, referenced answers to drug-related queries raised by patients and other healthcare team members.
(D) Transferable (General) Skills:	
Alignment of CILOs (Course Intended Learning Outcomes) to PILOs (Program Intended Learning Outcomes)	
Transferable (General) Skills PILOs	Transferable (General) Skills CILOs
After completing this program, graduates would be able to:	After completing this course, students would be able to:
D3. Exercise time management, critical thinking, problem solving, decision-making and team-working.	d1. Exercise time management, critical thinking, problem solving, decision-making and team-working.

I. Alignment of CILOs to Teaching and Assessment Strategies		
(A) Alignment Course Intended Learning Outcomes of Knowledge and Understanding to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
a1. Explain the therapeutic values of drugs based on their pharmacological properties.	-Case Discussion -Group discussion -Case Presentation	- Case Discussion and Patient Education Rubric for the Faculty Assigned Preceptor - Final Exam
(B) Alignment Course Intended Learning Outcomes of Intellectual Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
b1. Assess drug-related needs of patients with GI, respiratory, rheumatic, and neurologic disorders.	-Case Discussion -Group discussion -Case Presentation	- Case Discussion and Patient Education Rubric for the Faculty Assigned Preceptor - Final Exam
b2. Recognize patient-specific risk factors for aggravating and exacerbating respiratory, rheumatic, and neurologic disorders.	-Case Discussion -Group discussion -Case Presentation	- Case Discussion and Patient Education Rubric for the Faculty Assigned Preceptor - Final Exam
b3. Consider patient's insurance coverage in drug selection to manage his GI, respiratory, rheumatic, and neurologic disorders.	-Case Discussion -Group discussion -Case Presentation	- Case Discussion and Patient Education Rubric for the Faculty Assigned Preceptor - Final Exam

b4. Consider including symptom resolution and risk factor management in the care plans of respiratory, rheumatic, and neurologic disorders.	-Case Discussion -Group discussion -Case Presentation	- Case Discussion and Patient Education Rubric for the Faculty Assigned Preceptor - Final Exam
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(C) Alignment Course Intended Learning Outcomes of Professional and Practical Skills to Teaching Strategies and Assessment Strategies:

Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
c1. Gather and maintain patient information to prevent, identify, and resolve drug related problems.	-Case Discussion -Group discussion -Case Presentation	- Case Discussion and Patient Education Rubric for the Faculty Assigned Preceptor - Final Exam
c2. Translate instructions into a drug label that is apprehended by the patient.	-Case Discussion -Group discussion - Case Presentation	- Case Discussion and Patient Education Rubric for the Faculty Assigned Preceptor - Final Exam
c3. Participate in professional discussions and drug-related decisions during hospital rounds.	-Case Discussion -Group discussion - Case Presentation	- Case Discussion and Patient Education Rubric for the Faculty Assigned Preceptor - Final Exam
c4. Apply the counselling techniques such as “Show & Tell” and the “Three Prime Questions”.	-Case Discussion -Group discussion -Case Presentation	- Case Discussion and Patient Education Rubric for the Faculty Assigned Preceptor - Final Exam
c5. Document pharmacist workouts and follow-ups in the patient’s medical record.	-Case Discussion -Group discussion -Case Presentation	- Case Discussion and Patient Education Rubric for the Faculty Assigned Preceptor - Final Exam
c6. Prepare clear, referenced answers to drug-related queries raised by patients and other healthcare team members.	-Case Discussion -Group discussion -Case Presentation	- Case Discussion and Patient Education Rubric for the Faculty Assigned Preceptor - Final Exam

(D) Alignment Course Intended Learning Outcomes of Transferable Skills to Teaching Strategies and Assessment Strategies:

Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
d1. Exercise time management, critical thinking, problem solving, decision-making and team-working.	-Case Discussion -Group discussion	- Case Discussion and Patient Education Rubric for the Faculty Assigned Preceptor

	-Case Presentation	- Final Exam
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II. Course Content:

A – Practical Aspect:

Order	Units/Topics List	Learning Outcomes	Sub Topics List	Number of Weeks	Contact hours
4	Module 4 Cardiac Care Units (CCU)	a1,b2,b3,b4, c1,c2,c3,c4,c5,c6,d3	<ul style="list-style-type: none"> - Cardiovascular testing - Ischemic Heart disease - Cardiopulmonary Resuscitation - Myocardial infarction - CHF - Hypovolemic shock - Acute Coronary syndromes - Cardiac arrest - Cardiomyopathy /Diastolic Heart failure - Venous thromboembolism - Peripheral artery disease - 	4*	24*
5	Module 5 Intensive Care Unit (ICU)	a1,b2,b3,b4, c1,c2,c3,c4,c5,c6,d3	<ul style="list-style-type: none"> - Fluid and electrolytes disturbances - Chronic renal failure and end stage renal disease - Acute renal failure - Upper gastrointestinal bleeding - Lower gastrointestinal bleeding - Respiratory failure/ARDS and 	5	30

			<ul style="list-style-type: none"> mechanical ventilation - Diabetes ketoacidosis - Stroke - Parenteral Nutrition - Liver cirrhosis's - Hospital acquired pneumonia - Jaundice - Multiple organ dysfunction syndromes - Septic Shock - 		
6	Module 6 Infectious Diseases	a1,b2,b3,b4, c1,c2,c3,c4,c5,c6,d3	<ul style="list-style-type: none"> - Central Nervous System Infections - Lower Respiratory Tract Infections - Upper Respiratory Tract Infections - Skin and Soft Tissue Infections - Infective Endocarditis - Gastrointestinal Infections - Sepsis - Urinary Tract Infections and Prostatitis - Bone and Joints Infections - Febrile Neutropenia 	3	18
Number of Weeks /and Units Per Semester				14	72

* Including 12 credit hours of hospital training, which translates to 300 working hours: Saturday to Wednesday from 8:00 to 13:00 for 12 weeks. Clinical Training Plan.

III. Teaching strategies of the course:					
-Case Discussion -Group discussion -Case Presentation					
IV. Assignments:					
No	Assignments	Aligned CILOs (symbols)	Week Due	Mark	
1					
V. Schedule of Assessment Tasks for Students During the Semester:					
No.	Assessment Method	Week Due	Mark	Proportion of Final Assessment	Aligned Course Learning Outcomes
1	Case Discussions*	All weeks	40	40%	a1,b2,b3,b4, c1,c2,c3,c4,c5,c6,d3
2	PowerPoint Topic Presentation	End for each Module	10	10%	a1,b2,b3,b4, c1,c2,c3,c4,c5,c6,d3
3	Case Monitoring	All weeks	10%	10%	a1,b2,b3,b4, c1,c2,c3,c4,c5,c6,d3
4	Field Supervisor Evaluation	All weeks	10%	10%	a1,b2,b3,b4, c1,c2,c3,c4,c5,c6,d3
5	Final	12 & 24	30%	30%	a1,b2,b3,b4, c1,c2,c3,c4,c5,c6,d3
VI. Learning Resources:					
Author, (Year), Book Title, Edition, Publisher, Country of publishing					
1- Required Textbook(s) (maximum two).					
<ul style="list-style-type: none"> Dipiro, J. T. et al. (2021). Pharmacotherapy, A pathophysiologic approach, 12th edition. USA: McGraw Hill Koda-Kimble Mary Anne et al. (2018) Applied Therapeutics: the clinical use of drugs. 11th edition. Maryland: LIPPINCOTT WILLIAMS & WILKINS, 					
2- Essential References.					
<ul style="list-style-type: none"> Anderson PO, et al.(2001.) Handbook of Clinical Drug Data: McGraw-Hill Education; Helms RA,et al.(2006.)Textbook of Therapeutics: Drug and Disease Management: Lippincott Williams & Wilkins. 					
3- Electronic Materials and Web Sites etc.					
<ul style="list-style-type: none"> American Pharmacist Association www.aphanet.org The American Society of Health-System Pharmacists (ASHP) www.ashp.org U.S. Pharmacopeia www.usp.org U.S. Food and Drug Administration www.fda.gov/medwatch Centers for Disease Control www.cdc.gov The Clinician Ultimate Reference Guide www.globalrph.com Drug interactions checker http://www.drugs.com/drug_interactions.php 					

<ul style="list-style-type: none"> •Web site with common prescribing information http://www.rxmed.com •Seventh Report of the Joint National Committee on Prevention, Detection, Evaluation, and Treatment of High Blood Pressure (full report) http://www.nhlbi.nih.gov/guidelines/hypertension/jnc7full.htm •National Guideline Clearinghouse http://www.guideline.gov •High quality information about marketed drugs: http://dailymed.nlm.nih.gov 	
II. Course Policies:	
1	<p>Class Attendance:</p> <ol style="list-style-type: none"> 1. Attendance in all classes is required. There are no exceptions to this policy. 2. Roll will be called in the very beginning of each class. If you arrive after roll has been called, you may be marked as absent. 3. In any regular semester or summer term, students may miss no more than the equivalent of one third of class sessions scheduled. Students who exceed the above limits are automatically given an (AW) grade in the course by the UMS, and consequently not be allowed to attend class any longer.
2	<p>Tardy:</p> <ol style="list-style-type: none"> 1. All students are expected to conduct themselves in a professional manner. Unprofessional behavior such as, but not limited to, repeated disruption of class (including habitually walking in after class has started), sleeping in class, doing other course work in class, reading a newspaper in class, a ringing cell phone, frequent side conversations with other students and/or rudeness toward any person will be considered a serious violation of this standard and will lower your grade accordingly. Please be sure to turn off your cell phone before the start of class. 2. Attention to detail entails being prepared for class. This would include, but is not limited to; having a pencil/pen, note pad, calculator; reading and following the course syllabus, etc. All students are expected to conduct themselves in a professional manner. Unprofessional behavior such as, but not limited to, repeated disruption of class (including habitually walking in after class has started), sleeping in class, doing other course work in class, reading a newspaper in class, a ringing cell phone, frequent side conversations with other students and/or rudeness toward any person will be considered a serious violation of this standard and will lower your grade accordingly. Please be sure to turn off your cell phone before the start of class. 3. Attention to detail entails being prepared for class. This would include, but is not limited to; having a pencil/pen, note pad, calculator; reading and following the course syllabus, etc.
3	<p>Exam Attendance/Punctuality:</p> <p>As per university council decision, a student is eligible for a Quizzes, Midterm or Final examination make-up if and only if he/she had the following incidents:</p> <ol style="list-style-type: none"> 1. Sickness; proved by hospitalization report; that is; a discharge summary is necessary. 2. Death in the family proved by a death certificate or equivalent and personal identification. 3. Accidents proved by an expert report. 4. Military/Official engagement.
4	Assignments & Projects:

	<p>Homework should be clearly presented i.e.:</p> <ol style="list-style-type: none"> 1. It should be written on A4 paper. 2. It should include a title page (Course Name, Semester, Date, Name...). 3. Your instructor will ask you to submit your homework online or as a hard copy. In the latter case, it should be stapled together.
5	<p>Cheating:</p> <ul style="list-style-type: none"> • Cheating is strictly prohibited behavior. • University regulations will be pursued and enforced on any cheating student.
6	<p>Plagiarism:</p> <ul style="list-style-type: none"> • Plagiarism is defined as “copying or stealing someone else’s words or ideas and claiming or presenting them as if they were your own.” • University regulations will be pursued and enforced on any plagiarism attempt.
7	<p>Other policies: Please refer to the university policy.</p>

Lebanese International University
The School of Pharmacy and Medical Sciences
Department: CLINICAL PHARMACY
Title of the Program: Bachelor of Clinical Pharmacy



**Course Specification of
Pharmacy Practice Experience II (PPEII)**

I. - Information about Faculty Member Responsible for the Course:							
Name of Faculty Member	Dr Abdallah Al-Dahbali	Office Hours					
Location & Telephone No.	773800168	SAT	SUN	MON	TUE	WED	THU
E-mail	abdallah.dahbaly@ye.liu.edu.lb	√	√	√	√	√	
II. Course Identification and General Information:							
1	Course Title:	Pharmacy Practice Experience I (PPEI)					
2	Course Number & Code:	PHAR480					
3	Credit hours:	C.H				Total	
		Theory	Seminars, exercises.	Practical	Field training		
				6	300		72
4	Study level/year at which this course is offered:	Fifth Year Summer					
5	Pre –requisite (if any):	PHAR515,PHAR520,PHAR565,PHAR570,PHAR615					
6	Co –requisite (if any):	PHAR650 - PHAR606					
7	Program (s) in which the course is offered	Bachelor of Clinical Pharmacy					
8	Language of teaching the course:	English					
9	System of study:	Credits Hours System					
10	Mode of delivery:	Lectures					
11	Location of teaching the course:	LIU Sana'a					
III. Course Description:							
Pharmacy Practice Experience Course II is the second of two practice experience courses. It introduces students to the philosophy and practice of pharmaceutical care, including patient counseling, plan creation and monitoring, patient outcome assessment, with emphasis on the role of the pharmacist as the primary manager of patient’s drug therapies. In each of these two courses, students are required to actively participate in a twelve-week supervised experiential program. Students are exposed to fundamental professional practice skills, have interactions with health care professionals and patients, and become involved in the provision of pharmaceutical care.							

IV. Intended learning outcomes (ILOs) of the course:**Upon successful completion of the course, students would be able to:**

1. Explain the therapeutic values of drugs based on their pharmacological properties.
2. Assess drug-related needs of patients with GI, respiratory, rheumatic, and neurologic disorders.
3. Recognize patient-specific risk factors for aggravating and exacerbating respiratory, rheumatic, and neurologic disorders.
4. Consider patient's insurance coverage in drug selection to manage his GI, respiratory, rheumatic, and neurologic disorders.
5. Consider including symptom resolution and risk factor management in the care plans of respiratory, rheumatic, and neurologic disorders.
6. Gather and maintain patient information to prevent, identify, and resolve drug related problems.
7. Translate instructions into a drug label that is apprehended by the patient.
8. Participate in professional discussions and drug-related decisions during hospital rounds.
9. Apply the counselling techniques such as "Show & Tell" and the "Three Prime Questions".
10. Document pharmacist workouts and follow-ups in the patient's medical record.
11. Prepare clear, referenced answers to drug-related queries raised by patients and other healthcare team members.

V. Course Content:**Distribution of Semester Weekly Plan Of course Topics/Items and Activities.****B – Practical Aspect: (if any)**

Order	Topics List	Week Due	Contact Hours*
1	Module 4 Cardiac Care Units (CCU) <ul style="list-style-type: none"> - Cardiovascular testing - Ischemic Heart disease - Cardiopulmonary Resuscitation - Myocardial infarction - CHF - Hypovolemic shock - Acute Coronary syndromes - Cardiac arrest - Cardiomyopathy /Diastolic Heart failure - Venous thromboembolism - Peripheral artery disease 	1-4	24*
2	Module 5 Intensive Care Unit (ICU) <ul style="list-style-type: none"> - Fluid and electrolytes disturbances - Chronic renal failure and end stage renal disease 	4-8	24

	<ul style="list-style-type: none"> - Acute renal failure - Upper gastrointestinal bleeding - Lower gastrointestinal bleeding - Respiratory failure/ARDS and mechanical ventilation - Diabetes ketoacidosis - Stroke - Parenteral Nutrition - Liver cirrhosis's - Hospital acquired pneumonia - Jaundice - Multiple organ dysfunction syndromes - Septic Shock 		
3	Module 6 Infectious Diseases <ul style="list-style-type: none"> - Central Nervous System Infections - Lower Respiratory Tract Infections - Upper Respiratory Tract Infections - Skin and Soft Tissue Infections - Infective Endocarditis - Gastrointestinal Infections - Sepsis - Urinary Tract Infections and Prostatitis - Bone and Joints Infections Febrile Neutropenia	8-12	24
4	Club discussion, case Presentation	13-14	
5	Final Exam	13-14	
Number of Weeks /and Units Per Semester		14	72*

*Including 12 credit hours of hospital training, which translates to 300 working hours: Saturday to Wednesday from 8:00 to 13:00 for 24 weeks. Clinical Training Plan.

VI. Teaching strategies of the course:				
<ul style="list-style-type: none"> • Case Discussion • Group discussion 				
VII. Schedule of Assessment Tasks for Students During the Semester:				
Assessment	Type of Assessment Tasks	Week Due	Mark	Proportion of Final Assessment
1	Case Discussions*	All weeks	40	40%
2	PowerPoint Topic Presentation	End for each Module	10	10%

3	Case Monitoring	All weeks	10%	10%
4	Field Supervisor Evaluation	All weeks	10%	10%
5	Final	12 & 24	30%	30%

VIII. Learning Resources:

Author, (Year), Book Title, Edition, Publisher, Country of publishing

1- Required Textbook(s) (maximum two).

1. Dipiro, J. T. et al. (2021). Pharmacotherapy, A pathophysiologic approach, 12th edition. USA: McGraw Hill
2. Koda-Kimble Mary Anne et al. (2018) Applied Therapeutics: the clinical use of drugs. 11th edition. Maryland: LIPPINCOTT WILLIAMS & WILKINS,

2- Essential References.

1. Anderson PO, et al.(2001.) Handbook of Clinical Drug Data: McGraw-Hill Education;
2. Helms RA,et al.(2006.)Textbook of Therapeutics: Drug and Disease Management: Lippincott Williams & Wilkins.

3- Electronic Materials and Web Sites *etc.*

- American Pharmacist Association www.aphanet.org
- The American Society of Health-System Pharmacists (ASHP) www.ashp.org
- U.S. Pharmacopeia www.usp.org
- U.S. Food and Drug Administration www.fda.gov/medwatch
- Centers for Disease Control www.cdc.gov
- The Clinician Ultimate Reference Guide www.globalrph.com
- Drug interactions checker http://www.drugs.com/drug_interactions.php
- Web site with common prescribing information <http://www.rxmed.com>
- Seventh Report of the Joint National Committee on Prevention, Detection, Evaluation, and Treatment of High Blood Pressure (full report)
<http://www.nhlbi.nih.gov/guidelines/hypertension/jnc7full.htm>
- National Guideline Clearinghouse <http://www.guideline.gov>
- High quality information about marketed drugs: <http://dailymed.nlm.nih.gov>

IX. Course Policies:

Unless otherwise stated, the normal course administration policies and rules of the School of Business apply.

1	<p>Class Attendance:</p> <ol style="list-style-type: none"> 1. Attendance in all classes is required. There are no exceptions to this policy. 2. Roll will be called in the very beginning of each class. If you arrive after roll has been called, you may be marked as absent. 3. In any regular semester or summer term, students may miss no more than the equivalent of one third of class sessions scheduled. Students who exceed the above limits are automatically given an (AW) grade in the course by the UMS, and consequently not be allowed to attend class any longer.
2	Tardy:

	<ol style="list-style-type: none"> 1. All students are expected to conduct themselves in a professional manner. Unprofessional behavior such as, but not limited to, repeated disruption of class (including habitually walking in after class has started), sleeping in class, doing other course work in class, reading a newspaper in class, a ringing cell phone, frequent side conversations with other students and/or rudeness toward any person will be considered a serious violation of this standard and will lower your grade accordingly. Please be sure to turn off your cell phone before the start of class. 2. Attention to detail entails being prepared for class. This would include, but is not limited to; having a pencil/pen, note pad, calculator; reading and following the course syllabus, etc. All students are expected to conduct themselves in a professional manner. Unprofessional behavior such as, but not limited to, repeated disruption of class (including habitually walking in after class has started), sleeping in class, doing other course work in class, reading a newspaper in class, a ringing cell phone, frequent side conversations with other students and/or rudeness toward any person will be considered a serious violation of this standard and will lower your grade accordingly. Please be sure to turn off your cell phone before the start of class. 3. Attention to detail entails being prepared for class. This would include, but is not limited to; having a pencil/pen, note pad, calculator; reading and following the course syllabus, etc.
3	<p>Exam Attendance/Punctuality: As per university council decision, a student is eligible for a Quizzes, Midterm or Final examination make-up if and only if he/she had the following incidents:</p> <ol style="list-style-type: none"> 1. Sickness; proved by hospitalization report; that is; a discharge summary is necessary. 2. Death in the family proved by a death certificate or equivalent and personal identification. 3. Accidents proved by an expert report. 4. Military/Official engagement.
4	<p>Assignments & Projects: Homework should be clearly presented i.e.:</p> <ol style="list-style-type: none"> 1. It should be written on A4 paper. 2. It should include a title page (Course Name, Semester, Date, Name...). 3. Your instructor will ask you to submit your homework online or as a hard copy. In the latter case, it should be stapled together.
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7	<p>Other policies: Please refer to the university policy.</p>



Course Specifications of Non-Prescription Drugs

I. Course Identification and General Information						
1	Course Title:	Non-Prescription Drugs				
2	Course Code & Number:	PHAR606				
3	Credit hours:	C.H			TOTAL	
		Theory	Seminars, exercises	Practical		Field training
		3				
4	Study level/ semester at which this course is offered:	Fifth Year – Fall Semester				
5	Pre –requisite (if any):					
6	Co –requisite (if any):	PHAR650 & PHAR480				
8	Program (s) in which the course is offered:	Bachelor of Clinical Pharmacy				
9	Language of teaching the course:	English				
10	Location of teaching the course:	LIU-Yemen, Al-Khamseen St., Sana'a.				
11	Prepared by:	Dr. Abdullah Al-Dahbali				
12	Reviewed by:	Dr.Mohammed Kubas				
13	Date of approval:					

II. Course Description:	
<p>This course applies a consistent, systematic approach to advance pharmacy students' knowledge and problem-solving skills needed to assess patient's health status and practice self-treatment. Also, it introduces them to nonprescription medications approved by FDA along with nonpharmacological measures recommended to treat certain conditions. It highlights on conditions where self-treatment cannot be applied and referral to a primary care provider is indicated. To add, it trains them on the proper selection of nonprescription medications and the use of certain devices. It also focuses on patient education and counseling regarding self-treatment and health related issues.</p>	

III. Course Intended Learning Outcomes (CILOs):	
(A) Knowledge and Understanding:	
Alignment of CILOs (Course Intended Learning Outcomes) to PILOs (Program Intended Learning Outcomes)	
Knowledge and Understanding PILOs	Knowledge and Understanding CILOs
After completing this program, graduates would be able to:	After completing this course, students would be able to:
A2. Identify the role of each of the pharmaceutical sciences in the development and use of pharmaceutical products.	a1. Recall the properties of various pharmaceutical dosage forms as bases of proper product selection.
A3. Discuss disease pathophysiology and patient's clinical presentation.	a2. Define a potential linkage of symptoms to changes in health, treatments, habits, and life style of the individual.
A4. Relate the biologic effects of medicinal substances to their physicochemical properties and their interactions with the living systems.	a3. Review the individual's prescription, nonprescription, and complementary medications as possible causes of symptoms. a4. Name the potentially useful pharmacologic classes to alleviate the symptoms.

(B) Intellectual Skills:	
Alignment of CILOs (Course Intended Learning Outcomes) to PILOs (Program Intended Learning Outcomes)	
Intellectual Skills PILOs	Intellectual Skills CILOs
After completing this program, graduates would be able to:	After completing this course, students would be able to:
B1. Conceptualize pharmaceutical care as the standard framework of clinical pharmacy services in various healthcare settings.	b1. Assess the individual's drug-related needs.
B2. Integrate patient's demographic, social, and health data to discover drug-related problems.	b2. Explore changes in medical, medication, and social histories for possible links to the symptoms.
B3. Compare alternative therapeutic plans for each drug-related problem based on evidence of effectiveness, safety, and cost.	b3. Evaluate whether the individual is candidate for NPD treatment based on symptom characteristics. b4. Contrast NPD treatment vs. referral in terms of probability of plan success, and based on the likelihood of the individual's adherence.
B4. Create a patient-specific pharmaceutical care plan to achieve definite outcome for each drug-related problem.	b5. Figure out an appropriate NPD regimen with a follow up plan and instructions.

(C) Professional and Practical Skills
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Alignment of CILOs (Course Intended Learning Outcomes) to PILOs (Program Intended Learning Outcomes)	
Professional and Practical Skills PILOs	Professional and Practical Skills CILOs
After completing this program, graduates would be able to:	After completing this course, students would be able to:
C3. Contribute in developing, implementing and monitoring pharmaceutical care plan.	c1. Recommend NPD(s) according to the rules & the regulations. c2. Educate on the nonpharmacologic treatments. c3. Setup a time frame for symptom resolution.
C4. Counsel patient on the purpose and expectations of drug therapy.	c4. Provide information related to the NPDs & their effects.

(D) Transferable (General) Skills:	
Alignment of CILOs (Course Intended Learning Outcomes) to PILOs (Program Intended Learning Outcomes)	
Transferable (General) Skills PILOs	Transferable (General) Skills CILOs
After completing this program, graduates would be able to:	After completing this course, students would be able to:
D3. Exercise time management, critical thinking, problem solving, decision-making and team-working.	d1. Start & end conversations in a timely manner.

IV. Alignment of CILOs to Teaching and Assessment Strategies		
(A) Alignment Course Intended Learning Outcomes of Knowledge and Understanding to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
a1. Recall the properties of various pharmaceutical dosage forms as bases of proper product selection.	-Interactive lectures -Problem based learning	-Written tests (mid & final)
a2. Define a potential linkage of symptoms to changes in health, treatments, habits, and life style of the individual.	-Discussion -Brain storming -Problem based learning	-Written tests (mid & final)
a3. Review the individual's prescription, nonprescription, and complementary medications as possible causes of symptoms.	-Interactive lectures -Directed self- study	-Written tests (mid & final) -Presentation
a4. Name the potentially useful pharmacologic classes to alleviate the symptoms.	- Interactive lectures - Discussion	- Quizzes

(B) Alignment Course Intended Learning Outcomes of Intellectual Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
b1. Assess the individual's drug-related needs.	-Interactive lectures	-Written tests (mid & final)

	-Problem based learning	-Quizzes
b2. Explore changes in medical, medication, and social histories for possible links to the symptoms.	-Discussion -Directed self- study	-Written tests (mid & final) -Quizzes
b3. Evaluate the symptoms in the context of other individual's data.	-Interactive lectures -Problem based learning	-Written tests (mid & final) -Quizzes
b4. Contrast NPD treatment vs. referral in terms of probability of plan success, and based on the likelihood of the individual's adherence.	-Interactive lectures -Brain storming	-Written tests (mid & final) -Quizzes
b5. Figure out an appropriate NPD regimen with a follow up plan and instructions.	-Interactive lectures -Discussion -Directed self- study	-Written tests (mid & final) -Presentation

(C) Alignment Course Intended Learning Outcomes of Professional and Practical Skills to Teaching Strategies and Assessment Strategies:

Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
c1. Recommend NPD(s) according to the rules & the regulations.	-Interactive lectures -Role play -Directed self- study	-Written tests (mid & final) -Presentation
c2. Educate on the nonpharmacologic treatments.	-Interactive lectures -Problem based learning	-Written tests (mid & final) -Quizzes
c3. Setup a time frame for symptom resolution.	-Role play -Directed self- study	-Written tests (mid & final) -Presentation
c4. Provide information related to the NPDs & their effects.	-Role play -Directed self- study	-Written tests (mid & final) -Presentation

(D) Alignment Course Intended Learning Outcomes of Transferable Skills to Teaching Strategies and Assessment Strategies:

Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
d1. Start & end conversations in a timely manner.	-Role play -Discussion	-Quizzes -Presentation

V. Course Content:

A – Theoretical Aspect:

Order	Units/Topics List	Learning Outcomes	Sub Topics List	Number of Weeks	Contact hours
1	Introduction		-Concept of self-care -Principles of NPD therapy -Importance of self-care & NPD therapy -Pharmacist role in self-care & NPD therapy	1	3
2	Heartburn, Dyspepsia, Intestinal Gases		-Referral criteria -NPD therapy & Nondrug therapy	1	3
3	Constipation, Diarrhea, Nausea & Vomiting		-Referral criteria -NPD therapy & Nondrug therapy	1	3
4	Anorectal Disorders		-Types & Referral criteria -NPD therapy & Nondrug therapy	1	3
5	Cough & Disorders Related to Colds & Allergy		-NPD therapy & Nondrug therapy	1	3
6	Cough & Disorders Related to Colds & Allergy		-Referral criteria -Prevention	1	3
7	Atopic & Contact Dermatitis, Dermatophytoses, Acne		-NPD therapy & Nondrug therapy -Referral criteria -Prevention	1	3
8	Fever		-NPD therapy & Nondrug therapy -Referral criteria	1	3
9	Musculoskeletal Injuries & Disorders		-NPD therapy & Nondrug therapy -Referral criteria	1	3
10	Women's specific self-care issues		-Vaginal Disorders -Menstruation-Related Disorders -NPD therapy & Nondrug therapy, Prevention -Referral criteria	1	3
11	Infant Formulae		-Types & Compositions -Indications & Suitability	1	3
12	Ophthalmic & Otic Disorders		-NPD therapy & Nondrug therapy -Referral criteria	1	3

13	Oral Hygiene		-NPD therapy & Nondrug therapy -Referral criteria	1/3	1.5
14	Overweight & Obesity		-Prevention & NPD therapy -Referral criteria		
15	Final		-	13-14	
Number of Weeks /and Units Per Semester				14	36

B - Practical Aspect: (if any)				
Order	Tasks/ Experiments	Number of Weeks	contact hours	Learning Outcomes
1				
Number of Weeks /and Units Per Semester				

I. Teaching strategies of the course:				
<ul style="list-style-type: none"> -Interactive lectures -Role play -Directed self- study 				

II. Assignments:				
No	Assignments	Aligned CILOs (symbols)	Week Due	Mark
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				

III. Schedule of Assessment Tasks for Students During the Semester:					
No.	Assessment Method	Week Due	Mark	Proportion of Final Assessment	Aligned Course Learning

					Outcomes
1	Test	4	10	10%	All except d1
2	Midterm	7-8	25	25%	All
3	Presentation	11	10	10%	All
4	Discussion & Participation	All weeks	15	15%	All
5	Final Exam	all	40	40 %	All

IV. Learning Resources:

Author, (Year), Book Title, Edition, Publisher, Country of publishing

1- Required Textbook(s) (maximum two).

Symptoms in the Pharmacy, A Guide to the Management of Common Illnesses. A Publication by John Wiley & Sons, Inc., Edition 9, 2023.

2- Essential References.

Handbook of Nonprescription Drugs: An Interactive Approach to Self-Care, A Publication of the American Pharmacists Association, Edition 18, 2015.

3- Electronic Materials and Web Sites *etc.*

Distributed notes.

V. Course Policies:

1 Class Attendance:

- Attendance in all classes is required. There are no exceptions to this policy.
- Roll will be called in the very beginning of each class. If you arrive after roll has been called, you may be marked as absent.
- In any regular semester or summer term, students may miss no more than the equivalent of one third of class sessions scheduled. Students who exceed the above limits are automatically given an (AW) grade in the course by the UMS, and consequently not be allowed to attend class any longer.

2 Tardy:

- All students are expected to conduct themselves in a professional manner. Unprofessional behavior such as, but not limited to, repeated disruption of class (including habitually walking in after class has started), sleeping in class, doing other course work in class, reading a newspaper in class, a ringing cell phone, frequent side conversations with other students and/or rudeness toward any person will be considered a serious violation of this standard and will lower your grade accordingly. Please be sure to turn off your cell phone before the start of class.
- Attention to detail entails being prepared for class. This would include, but is not limited to; having a pencil/pen, note pad, calculator; reading and following the course syllabus, etc. All students are expected to conduct themselves in a professional manner. Unprofessional behavior such as, but not limited to, repeated disruption of class (including habitually walking in after class has started), sleeping in class, doing

	<p>other course work in class, reading a newspaper in class, a ringing cell phone, frequent side conversations with other students and/or rudeness toward any person will be considered a serious violation of this standard and will lower your grade accordingly. Please be sure to turn off your cell phone before the start of class.</p> <p>3. Attention to detail entails being prepared for class. This would include, but is not limited to; having a pencil/pen, note pad, calculator; reading and following the course syllabus, etc.</p>
3	<p>Exam Attendance/Punctuality: As per university council decision, a student is eligible for a Quizzes, Midterm or Final examination make-up if and only if he/she had the following incidents:</p> <ol style="list-style-type: none"> 1. Sickness; proved by hospitalization report; that is; a discharge summary is necessary. 2. Death in the family proved by a death certificate or equivalent and personal identification. 3. Accidents proved by an expert report. 4. Military/Official engagement.
4	<p>Assignments & Projects: Homework should be clearly presented i.e.:</p> <ol style="list-style-type: none"> 1. It should be written on A4 paper. 2. It should include a title page (Course Name, Semester, Date, Name...). 3. Your instructor will ask you to submit your homework online or as a hard copy. In the latter case, it should be stapled together.
5	<p>Cheating:</p> <ul style="list-style-type: none"> • Cheating is strictly prohibited behavior. • University regulations will be pursued and enforced on any cheating student.
6	<p>Plagiarism:</p> <ul style="list-style-type: none"> • Plagiarism is defined as “copying or stealing someone else’s words or ideas and claiming or presenting them as if they were your own.” • University regulations will be pursued and enforced on any plagiarism attempt.
7	<p>Other policies: Please refer to the university policy.</p>

Course Specifications of Non-Prescription Drugs

I. - Information about Faculty Member Responsible for the Course:

Name of Faculty Member	Dr. Abdullah Al-Dahbali	Office Hours					
Location & Telephone No.	LIU-Yemen, Building A, 4 th floor, Ext. 125	SAT	SUN	MON	TUE	WED	THU
E-mail	abdallah.dahbaly@ye.liu.edu.lb	9am-1pm			9am-3pm	9am-11am	

II. Course Identification and General Information:

1	Course Title:	Non-Prescription Drugs					
2	Course Number & Code:	PHAR606					
3	Credit hours:	C.H					Total
		Theory	Seminars, exercises.	Practical	Field training		
		3				3	
4	Study level/year at which this course is offered:	Fifth Year					
5	Pre –requisite (if any):						
6	Co –requisite (if any):	PHAR650, PHAR480					
7	Program (s) in which the course is offered	Bachelor of Clinical Pharmacy					
8	Language of teaching the course:	English					
9	System of study:	Credits Hours System					
10	Mode of delivery:	Lectures					
11	Location of teaching the course:	LIU Sana'a					

III. Course Description:

This course applies a consistent, systematic approach to advance pharmacy students' knowledge and problem-solving skills needed to assess patient's health status and practice self-treatment. Also, it introduces them to nonprescription medications approved by FDA along with nonpharmacological measures recommended to treat certain conditions. It highlights on conditions where self-treatment cannot be applied and referral to a primary care provider is indicated. To add, it trains them on the proper selection of nonprescription medications and the use of certain devices. It also focuses on patient education and counseling regarding self-treatment and health related issues.

IV. Intended learning outcomes (ILOs) of the course:

Upon successful completion of the course, students would be able to:

1. Recall the properties of various pharmaceutical dosage forms as bases of proper product selection .
2. Define a potential linkage of symptoms to changes in health, treatments, habits, and life style of the individual .
3. Review the individual's prescription, nonprescription, and complementary medications as possible causes of symptoms.
4. Name the potentially useful pharmacologic classes to alleviate the symptoms .
5. Assess the individual's drug-related needs.
6. Explore changes in medical, medication, and social histories for possible links to the symptoms .
7. Evaluate whether the individual is candidate for NPD treatment based on symptom characteristics.
8. Contrast NPD treatment vs. referral in terms of probability of plan success, and based on the likelihood of the individual's adherence .
9. Figure out an appropriate NPD regimen with a follow up plan and instructions.
10. Recommend NPD(s) according to the rules & the regulations .
11. Educate on the nonpharmacologic treatments .
12. Setup a time frame for symptom resolution .
13. Provide information related to the NPDs & their effects.
14. Start & end conversations in a timely manner.

V. Course Content:

Distribution of Semester Weekly Plan Of course Topics/Items and Activities.

A – Theoretical Aspect:

Order	Topics List	Week Due	Contact Hours
1	Introduction	1	3
2	Heartburn, Dyspepsia, Intestinal Gases	2	3
3	Constipation, Diarrhea, Nausea & Vomiting	3	3
4	Anorectal Disorders	4	3
5	Cough & Disorders Related to Colds & Allergy	5	3
6	Cough & Disorders Related to Colds & Allergy	6	3
7	Atopic & Contact Dermatitis, Dermatophytoses, Acne	8	3
8	Fever	9	3
9	Musculoskeletal Injuries & Disorders	10	3

10	Women's specific self-care issues	11	3
11	Infant Formulae	12	1.5
12	Ophthalmic & Otic Disorders	12	1.5
13	Oral Hygiene	13	1.5
14	Overweight & Obesity	13	1.5
15	Final Exam	14	
Number of Weeks /and Units Per Semester		14	36

B – Practical Aspect: (if any)			
Order	Topics List	Week Due	Contact Hours
1			
Number of Weeks /and Units Per Semester			

VI. Teaching strategies of the course:			
-Discussions -Interactive lectures -Role play			
VII. Assignments:			
No	Assignments	Week Due	Mark

Schedule of Assessment Tasks for Students During the Semester:				
No.	Assessment Method	Week Due	Mark	Proportion of Final Assessment
1	Test	4	10	10%
2	Midterm	7-8	25	25%
3	Presentation	11	10	10%
4	Discussion & Participation	All weeks	15	15%
5	Final Exam	all	40	40 %

VIII. Learning Resources:	
Author, (Year), Book Title, Edition, Publisher, Country of publishing	
1- Required Textbook(s) (maximum two).	
Symptoms in the Pharmacy, A Guide to the Management of Common Illnesses. A Publication by John Wiley & Sons, Inc., Edition 9, 2023.	
2- Essential References.	
Handbook of Nonprescription Drugs: An Interactive Approach to Self-Care, A Publication of the American Pharmacists Association, Edition 18, 2015.	
3- Electronic Materials and Web Sites <i>etc.</i>	
Distributed notes.	
IX. Course Policies:	
Unless otherwise stated, the normal course administration policies and rules of the School of Business apply.	
1	<p>Class Attendance:</p> <ol style="list-style-type: none"> Attendance in all classes is required. There are no exceptions to this policy. Roll will be called in the very beginning of each class. If you arrive after roll has been called, you may be marked as absent. In any regular semester or summer term, students may miss no more than the equivalent of one third of class sessions scheduled. Students who exceed the above limits are automatically given an (AW) grade in the course by the UMS, and consequently not be allowed to attend class any longer.
2	<p>Tardy:</p> <ol style="list-style-type: none"> All students are expected to conduct themselves in a professional manner. Unprofessional behavior such as, but not limited to, repeated disruption of class (including habitually walking in after class has started), sleeping in class, doing other course work in class, reading a newspaper in class, a ringing cell phone, frequent side conversations with other students and/or rudeness toward any person will be considered a serious violation of this standard and will lower your grade accordingly. Please be sure to turn off your cell phone before the start of class. Attention to detail entails being prepared for class. This would include, but is not limited to; having a pencil/pen, note pad, calculator; reading and following the course syllabus, etc. All students are expected to conduct themselves in a professional manner. Unprofessional behavior such as, but not limited to, repeated disruption of class (including habitually walking in after class has started), sleeping in class, doing other course work in class, reading a newspaper in class, a ringing cell phone, frequent side conversations with other students and/or rudeness toward any person will be considered a serious violation of this standard and will lower your grade accordingly. Please be sure to turn off your cell phone before the start of class.

	<p>3. Attention to detail entails being prepared for class. This would include, but is not limited to; having a pencil/pen, note pad, calculator; reading and following the course syllabus, etc.</p>
3	<p>Exam Attendance/Punctuality: As per university council decision, a student is eligible for a Quizzes, Midterm or Final examination make-up if and only if he/she had the following incidents:</p> <ol style="list-style-type: none"> 1. Sickness; proved by hospitalization report; that is; a discharge summary is necessary. 2. Death in the family proved by a death certificate or equivalent and personal identification. 3. Accidents proved by an expert report. 4. Military/Official engagement.
4	<p>Assignments & Projects: Homework should be clearly presented i.e.:</p> <ol style="list-style-type: none"> 1. It should be written on A4 paper. 2. It should include a title page (Course Name, Semester, Date, Name...). 3. Your instructor will ask you to submit your homework online or as a hard copy. In the latter case, it should be stapled together.
5	<p>Cheating:</p> <ul style="list-style-type: none"> • Cheating is strictly prohibited behavior. • University regulations will be pursued and enforced on any cheating student.
6	<p>Plagiarism:</p> <ul style="list-style-type: none"> • Plagiarism is defined as “copying or stealing someone else’s words or ideas and claiming or presenting them as if they were your own.” • University regulations will be pursued and enforced on any plagiarism attempt.
7	<p>Other policies: Please refer to the university policy.</p>



Course Specification of PHAR615 Pharmacotherapeutics V:
 Infectious Diseases

I. Course Identification and General Information:						
1	Course Title:	Pharmacotherapeutics V: Infectious Diseases				
2	Course Code & Number:	PHAR615				
3	Credit hours:	C.H			TOTAL	
		Theory	Seminars, exercises	Practical		Field training
		3				
4	Study level/ semester at which this course is offered:	Fourth/ Summer				
5	Pre –requisite (if any):	PHAR505, PHAR575				
6	Co –requisite (if any):	PHAR555				
8	Program (s) in which the course is offered:	Bachelor of Clinical Pharmacy				
9	Language of teaching the course:	English				
10	Location of teaching the course:	LIU Sana'a				
11	Prepared by:	Dr Khaled Alakhali				
12	Reviewed by:	Dr Abdallah Aldhabi				
13	Date of approval:					

II. Course Description:	
<p>This course identifies the pathophysiology, etiology, risk factors and signs and symptoms of Infectious Diseases. It provides the non-pharmacologic and pharmacologic treatment options according to evidence-based guidelines. It introduces the students to the application of pharmacologic and pharmacokinetic parameters, and description of factors that would guide the selection of the best antimicrobial treatment options. It also familiarizes the students with how to evaluate the treatment therapy for Infectious Diseases. through highlighting on the monitoring parameters and important medications adverse effects. The student will apply problem-solving strategies to patient-oriented cases and will develop patient treatment plan.</p>	

III. Course Intended Learning Outcomes (CILOs):	
(A) Knowledge and Understanding:	
Alignment of CILOs (Course Intended Learning Outcomes) to PILOs (Program Intended Learning Outcomes)	
Knowledge and Understanding PILOs	Knowledge and Understanding CILOs
After completing this program, graduates would be able to:	After completing this course, students would be able to:
A2 Identify the role of each of the pharmaceutical sciences in the development and use of pharmaceutical products.	a1. Identify antimicrobial drug classes, their spectrum of activity, ADRs and interactions, physicochemical properties, routes of administration, and clinical utility.
A3 Discuss disease pathophysiology and patient's clinical presentation.	a2. Explain the general signs and symptoms of infectious diseases as well as system- and organ-specific manifestations. a3. Define the causative microorganisms of the main infectious diseases of each body system.
A4 Relate the biologic effects of medicinal substances to their physicochemical properties and their interactions with the living systems.	a4. Discuss the advantages and disadvantages of antimicrobials based on their pharmacokinetic and pharmacodynamic profiles.

(B) Intellectual Skills:	
Alignment of CILOs (Course Intended Learning Outcomes) to PILOs (Program Intended Learning Outcomes)	
Intellectual Skills PILOs	Intellectual Skills CILOs
After completing this program, graduates would be able to:	After completing this course, students would be able to:
B1 Conceptualize pharmaceutical care as the standard framework of clinical pharmacy services in various healthcare settings.	b1. Adopt the culture of rational use of antimicrobials. b2. Propose policies and procedures for antimicrobial use.
B2 Integrate patient's demographic, social, and health data to discover drug-related problems.	b3. Base antimicrobial use and selection on the severity of infection, the most likely microorganism and its antibiogram results, as well as patient's organ functions & allergies.
B3 Compare alternative therapeutic plans for each drug-related problem based on evidence of effectiveness, safety, and cost.	b4. Base antimicrobial selection and dosage on patient's conditions (e.g., pregnancy and lactation).
B4 Create a patient-specific pharmaceutical care plan to achieve definite outcome for each drug-related problem.	b5. Plan stopping, replacing, and adding, antimicrobials based on timely changes in patient's status and infection signs.

(C) Professional and Practical Skills	
Alignment of CILOs (Course Intended Learning Outcomes) to PILOs (Program Intended Learning Outcomes)	
Professional and Practical Skills PILOs	Professional and Practical Skills CILOs
After completing this program, graduates would be able to:	After completing this course, students would be able to:
C3 Contribute in developing, implementing and monitoring pharmaceutical care plan.	c1. Validate the inpatient's antimicrobial regimen according to policies approved by stewardships.
C4 Counsel patient on the purpose and expectations of drug therapy.	c2. Educate the patient on the importance of completing the prescribed antimicrobial course, not to self-repeat it, and to report serious diarrhea, skin reactions, and heart beat abnormalities.

(D) Transferable (General) Skills:	
Alignment of CILOs (Course Intended Learning Outcomes) to PILOs (Program Intended Learning Outcomes)	
Transferable (General) Skills PILOs	Transferable (General) Skills CILOs
After completing this program, graduates would be able to:	After completing this course, students would be able to:

I. Alignment of CILOs to Teaching and Assessment Strategies		
(A) Alignment Course Intended Learning Outcomes of Knowledge and Understanding to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
a1. Identify antimicrobial drug classes, their spectrum of activity, ADRs and interactions, physicochemical properties, routes of administration, and clinical utility.	- Lectures	- Test - Midterm exam - Assignments - Final exam
a2. Explain the general signs and symptoms of infectious diseases as well as system- and organ-specific manifestations.	- Lectures - Case studies	- Test - Midterm exam - Final exam - Case discussion
a3. Define the causative microorganisms of the main infectious diseases of each body system.	- Lectures	- Test - Midterm exam - Final exam
a4. Discuss the advantages and disadvantages of antimicrobials based on their pharmacokinetic and pharmacodynamic profiles.	- Lectures - Case studies	- Test - Midterm exam - Final exam - Case discussion

(B) Alignment Course Intended Learning Outcomes of Intellectual Skills to Teaching Strategies and Assessment Strategies:

Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
b1. Adopt the culture of rational use of antimicrobials.	- Lectures - Case studies	- Case discussion Final exam
b2. Propose policies and procedures for antimicrobial use.	- Lectures - Case studies	- Test - Midterm exam - Final exam
b3. Base antimicrobial use and selection on the severity of infection, the most likely microorganism and its antibiogram results, as well as patient's organ functions & allergies.	- Lectures - Case studies	- Test - Midterm exam - Final exam
b4. Base antimicrobial selection and dosage on patient's conditions (e.g., pregnancy and lactation).	- Lectures - Case studies	- Test - Midterm exam - Final exam
b5. Plan stopping, replacing, and adding, antimicrobials based on timely changes in patient's status and infection signs.	- Lectures - Case studies	- Test - Midterm exam - Final exam

(C) Alignment Course Intended Learning Outcomes of Professional and Practical Skills to Teaching Strategies and Assessment Strategies:

Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
c1. Validate the inpatient's antimicrobial regimen according to policies approved by stewardships.	- Lectures - Case studies	- Test - Midterm exam - Final exam - Case discussion
c2. Educate the patient on the importance of completing the prescribed antimicrobial course, not to self-repeat it, and to report serious diarrhea, skin reactions, and heart beat abnormalities.	- Case studies	- Assignment - Case discussion

II. Course Content:

A – Theoretical Aspect:

Order	Units/Topics List	Learning Outcomes	Sub Topics List	Number of Weeks	Contact hours
1	-Course syllabus	a1,a2,a3,a4	- Outline of course	1	3

	-antimicrobial regimen selection -CNS Infection (meningitis) part1		- Grade system - Review of Antimicrobials - Pathophysiology of CNS infections		
2	Meningitis part 2	a1,a2,a3,a4 b1, b2, b3, b4, b5, c1,c2,c3	<ul style="list-style-type: none"> • Signs, symptoms, and clinical presentation of CNS infections • Most common pathogens: risk factor for each pathogen • Laboratory values: normal or indicative of a specific infective condition • Empirical antimicrobial regimens and modifications • Adjunctive agents • Management of close contact • Vaccines • Monitoring plan 	2	3
3	Upper Respiratory Tract Infections	a1,a2,a3,a4 b1, b2, b3, b4, b5, c1,c2,c3	<ul style="list-style-type: none"> - Otitis Media - Sinusitis - Pharyngitis - Epidemiology and Etiology - Pathophysiology - Clinical Presentation and Diagnosis - Treatment 	3	3
4	Lower Respiratory Tract Infections	a1,a2,a3,a4 b1, b2, b3, b4, b5, c1,c2,c3	- acute bronchitis -pneumonia ,corona virus	4	3

			<ul style="list-style-type: none"> - Epidemiology and Etiology - Pathophysiology - Clinical Presentation and Diagnosis - Pneumonia Severity Assessment - Treatment 		
5	<ul style="list-style-type: none"> • Tuberculosis 	a1,a2,a3,a4 b1, b2, b3, b4, b5, c1,c2,c3	<ul style="list-style-type: none"> • Risk factors • Latent vs Active • Diagnostic tests • Appropriate therapeutic plan • Modification of plan based on resistance, side effects or other factors • Adverse effects associated with selected regimens • Monitoring plan 	5	3
6	- Skin and Soft Tissue Infections	a1,a2,a3,a4 b1, b2, b3, b4, b5, c1,c2,c3	<ul style="list-style-type: none"> - Etiology - Pathophysiology - Clinical Presentation and Diagnosis: - Goals of Therapy - Non-pharmacological Therapy - Pharmacological Therapy - Outcome Evaluation 	6	3
7	Gastrointestinal Infections	a1,a2,a3,a4 b1, b2, b3, b4, b5, c1,c2,c3	<ul style="list-style-type: none"> • Define diarrhea • Identify infectious agents 	7	3

			<p>that cause diarrhea</p> <ul style="list-style-type: none"> • Describe the clinical presentation of the various gastrointestinal infections • Recognize the effect of immunosuppression on gastrointestinal infections • Develop an individualized treatment plan given a patient with each of the gastrointestinal infections • Describe the role of antimicrobials in gastrointestinal infections 		
8	Urinary Tract Infections and Prostatitis	a1,a2,a3,a4 b1, b2, b3, b4, b5, c1,c2,c3	<ul style="list-style-type: none"> - Identify the diagnostic criteria for significant bacteriuria - Describe the organism responsible for the majority of UTIs - Explain the three identified routes for bacteria to gain entry into the urinary tract - Describe the signs and symptoms of UTIs and how 	8	3

			<p>they differ in upper versus lower urinary tract disease</p> <p>Explain the laboratory tests that help in diagnosing patients with urinary tract infection</p> <p>Recommend an appropriate drug, dose and duration for UTIs</p>		
9	Sepsis	a1,a2,a3,a4 b1, b2, b3, b4, b5,	<ul style="list-style-type: none"> - Compare and contrast the definitions of syndromes related to sepsis - Identify pathogens associated with sepsis - Pathophysiology of sepsis - 	9	3
10	Sepsis	a1,a2,a3,a4 b1, b2, b3, b4, b5, c1,c2,c3	<ul style="list-style-type: none"> - . Patient symptoms, diagnostic and laboratory tests for patient treatment and monitoring - Complication of sepsis - Treatment and monitoring plan 	10	3
11	osteomyelitis	a1,a2,a3,a4 b1, b2, b3, b4, b5, c1,c2,c3	<ul style="list-style-type: none"> - Discuss the pathophysiology and risk factors of osteomyelitis 	11	3

			<ul style="list-style-type: none"> - Compare and contrast the classic signs and symptoms of acute and chronic osteomyelitis - Evaluate microbiology culture data and other laboratory tests utilized for the diagnosis and treatment of bone infections - List the most common pathogens isolated in acute and chronic osteomyelitis - Develop a treatment plan for osteomyelitis. - Identify septic arthritis, etiology, risk factors, clinical presentation, and treatment 		
12	Case study Review	a1,a2,a3,a4 b1, b2, b3, b4, b5, c1,c2,c3	- All Chapters	12	3
	Final exam	a1,a2,a3,a4 b1, b2, b3, b4, b5, c1,c2,c3	- All	13	
Number of Weeks /and Units Per Semester				14	36

B - Practical Aspect: (if any)				
Order	Tasks/ Experiments	Number of Weeks	contact hours	Learning Outcomes
1				

Number of Weeks /and Units Per Semester		
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III. Teaching strategies of the course:
- LECTURES - CASE STUDIES

IV. Assignments:				
No	Assignments	Aligned CILOs (symbols)	Week Due	Mark
1	Pharmacology classification Schedules of antimicrobial	a1,a2,a3,a4 b1, b2, b3, b4, b5, c1,c2,c3	2	5
2	Different Antimicrobial monograph	a1,a2,a3,a4 b1, b2, b3, b4, b5, c1,c2,c3	8	5

V. Schedule of Assessment Tasks for Students During the Semester:					
No.	Assessment Method	Week Due	Mark	Proportion of Final Assessment	Aligned Course Learning Outcomes
1	Attendance	All	10	10%	
2	Test 1	2-4	10	10%	a1,a2,a3,a4 b1, b2, b3, b4, b5, c1,c2,c3
3	Midterm	6-8	20	20%	a1,a2,a3,a4 b1, b2, b3, b4, b5, c1,c2,c3
4	Test 2	10	10	10%	a1,a2,a3,a4 b1, b2, b3, b4, b5, c1,c2,c3
	Assignment and case discussion	11	10	10%	a1,a2,a3,a4 b1, b2, b3, b4, b5, c1,c2,c3
5	Final exam	13	40	40%	a1,a2,a3,a4 b1, b2, b3, b4, b5, c1,c2,c3

VI. Learning Resources:	
Author, (Year), Book Title, Edition, Publisher, Country of publishing	
1- Required Textbook(s) (maximum two).	
<ul style="list-style-type: none"> • Dipiro, J. T. et al. (2021). <i>Pharmacotherapy, A pathophysiologic approach</i>, 11th edition. USA: McGraw Hill • Koda-Kimble Mary Anne et al. (2018) <i>Applied Therapeutics: the clinical use of drugs</i>. 11th edition. Maryland: LIPPINCOTT WILLIAMS & WILKINS, 	
2- Essential References.	
<ul style="list-style-type: none"> • Anderson PO, et al.(2001.) <i>Handbook of Clinical Drug Data</i>: McGraw-Hill Education; • Helms RA,et al.(2006.)<i>Textbook of Therapeutics: Drug and Disease Management</i>: Lippincott Williams & Wilkins. 	
3- Electronic Materials and Web Sites etc.	
<ul style="list-style-type: none"> • WWW.GlobalRPH.COM • WWW.WHO.COM 	

II. Course Policies:	
1	<p>Class Attendance:</p> <ol style="list-style-type: none"> 1. Attendance in all classes is required. There are no exceptions to this policy. 2. Roll will be called in the very beginning of each class. If you arrive after roll has been called, you may be marked as absent. 3. In any regular semester or summer term, students may miss no more than the equivalent of one third of class sessions scheduled. Students who exceed the above limits are automatically given an (AW) grade in the course by the UMS, and consequently not be allowed to attend class any longer.
2	<p>Tardy:</p> <ol style="list-style-type: none"> 1. All students are expected to conduct themselves in a professional manner. Unprofessional behavior such as, but not limited to, repeated disruption of class (including habitually walking in after class has started), sleeping in class, doing other course work in class, reading a newspaper in class, a ringing cell phone, frequent side conversations with other students and/or rudeness toward any person will be considered a serious violation of this standard and will lower your grade accordingly. Please be sure to turn off your cell phone before the start of class. 2. Attention to detail entails being prepared for class. This would include, but is not limited to; having a pencil/pen, note pad, calculator; reading and following the course syllabus, etc. All students are expected to conduct themselves in a professional manner. Unprofessional behavior such as, but not limited to, repeated disruption of class (including habitually walking in after class has started), sleeping in class, doing other course work in class, reading a newspaper in class, a ringing cell phone, frequent side conversations with other students and/or rudeness toward any person will be considered a serious violation of this standard and will lower your grade accordingly. Please be sure to turn off your cell phone before the start of class.

	<p>3. Attention to detail entails being prepared for class. This would include, but is not limited to; having a pencil/pen, note pad, calculator; reading and following the course syllabus, etc.</p>
3	<p>Exam Attendance/Punctuality: As per university council decision, a student is eligible for a Quizzes, Midterm or Final examination make-up if and only if he/she had the following incidents:</p> <ol style="list-style-type: none"> 1. Sickness; proved by hospitalization report; that is; a discharge summary is necessary. 2. Death in the family proved by a death certificate or equivalent and personal identification. 3. Accidents proved by an expert report. 4. Military/Official engagement.
4	<p>Assignments & Projects: Homework should be clearly presented i.e.:</p> <ol style="list-style-type: none"> 1. It should be written on A4 paper. 2. It should include a title page (Course Name, Semester, Date, Name...). 3. Your instructor will ask you to submit your homework online or as a hard copy. In the latter case, it should be stapled together.
5	<p>Cheating:</p> <ul style="list-style-type: none"> • Cheating is strictly prohibited behavior. • University regulations will be pursued and enforced on any cheating student.
6	<p>Plagiarism:</p> <ul style="list-style-type: none"> • Plagiarism is defined as “copying or stealing someone else’s words or ideas and claiming or presenting them as if they were your own.” • University regulations will be pursued and enforced on any plagiarism attempt.
7	<p>Other policies: Please refer to the university policy.</p>

Course Specification of PHAR615 Therapeutics V:
Infectious Diseases

I. - Information about Faculty Member Responsible for the Course:							
Name of Faculty Member	Dr Abdallah Aldahbaly	Office Hours					
Location & Telephone No.	773800168	SAT	SUN	MON	TUE	WED	THU
E-mail	abdallah.dahbaly@ye.liu.edu.lb	√	√	√	√	√	

II. Course Identification and General Information:						
1	Course Title:	Therapeutics V:				
2	Course Number & Code:	PHAR615				
3	Credit hours:	C.H				Total
		Theory	Seminars, exercises.	Practical	Field training	
		3				
4	Study level/year at which this course is offered:	FOURTH YEARS				
5	Pre –requisite (if any):	PHAR575, PHAR505				
6	Co –requisite (if any):	PHAR555				
7	Program (s) in which the course is offered	Bachelor of Clinical Pharmacy				
8	Language of teaching the course:	English				
9	System of study:	Credits Hours System				
10	Mode of delivery:	Lectures				
11	Location of teaching the course:	LIU Sana'a				

III. Course Description:	
<p>This course identifies the pathophysiology, etiology, risk factors and signs and symptoms of Infectious Diseases. It provides the non-pharmacologic and pharmacologic treatment options according to evidence-based guidelines. It introduces the students to the application of pharmacologic and pharmacokinetic parameters, and description of factors that would guide the selection of the best antimicrobial treatment options. It also familiarizes the students with how to evaluate the treatment therapy for Infectious Diseases. through highlighting on the monitoring parameters and important medications adverse effects. The student will apply problem-solving strategies to patient-oriented cases and will develop patient treatment plan.</p>	

IV. Intended learning outcomes (ILOs) of the course:

Upon successful completion of the course, students would be able to:

1. Identify antimicrobial drug classes, their spectrum of activity, ADRs and interactions, physicochemical properties, routes of administration, and clinical utility.
2. Explain the general signs and symptoms of infectious diseases as well as system- and organ-specific manifestations.
3. Define the causative microorganisms of the main infectious diseases of each body system.
4. Discuss the advantages and disadvantages of antimicrobials based on their pharmacokinetic and pharmacodynamic profiles.
5. Adopt the culture of rational use of antimicrobials.
6. Propose policies and procedures for antimicrobial use.
7. Base antimicrobial use and selection on the severity of infection, the most likely microorganism and its antibiogram results, as well as patient's organ functions & allergies.
8. Base antimicrobial selection and dosage on patient's conditions (e.g., pregnancy and lactation).
9. Plan stopping, replacing, and adding, antimicrobials based on timely changes in patient's status and infection signs.
10. Validate the inpatient's antimicrobial regimen according to policies approved by stewardships. Educate the patient on the importance of completing the prescribed antimicrobial course, not to self-repeat it, and to report serious diarrhea, skin reactions, and heart beat abnormalities.

V. Course Content:

Distribution of Semester Weekly Plan Of course Topics/Items and Activities.

A – Theoretical Aspect:

Order	Topics List	Week Due	Contact Hours
	Course syllabus Introduction of antimicrobial selection and Lab test .	1	3
1	CNS Infection	2	3
2	Upper Respiratory Infection	3	3
3	Lower Respiratory Infection	4-5	3
4	Urinary tract Infection	6	3
5	Gastrointestinal infection	7	3
6	Skin infection	8	3
7	Bone infection	9	3
8	Sepsis	10-11	6
11	Case study Review	12	3

12	Final exam	31-15	
Number of Weeks /and Units Per Semester		12	36

B – Practical Aspect: (if any)			
Order	Topics List	Week Due	Contact Hours
1			
Number of Weeks /and Units Per Semester			

VI. Teaching strategies of the course:
- LECTURES - CASE STUDIES

No	Assignments	Week Due	Mark
1	Pharmacology classification Schedules of antimicrobial	2	5
2	Different Antimicrobial monograph	8	5

VII. Schedule of Assessment Tasks for Students During the Semester:				
Assessment	Type of Assessment Tasks	Week Due	Mark	Proportion of Final Assessment
1	Attendance	ALL	10	10 %
2	Test 1	2-4	10	10 %
3	Midterm	6-8	30	20 %
4	Test 2	10	10	10 %
5	ASSIGNMENT			
6	Final exam	13-15	40	40 %

VIII. Learning Resources:
Author, (Year), Book Title, Edition, Publisher, Country of publishing

1- Required Textbook(s) (maximum two).	
<ul style="list-style-type: none"> • Dipiro, J. T. et al. (2021). <i>Pharmacotherapy, A pathophysiologic approach</i>, 11th edition. USA: McGraw Hill • Koda-Kimble Mary Anne et al. (2018) <i>Applied Therapeutics: the clinical use of drugs</i>. 11th edition. Maryland: LIPPINCOTT WILLIAMS & WILKINS, 	
2- Essential References.	
<ul style="list-style-type: none"> • Anderson PO, et al.(2001.) <i>Handbook of Clinical Drug Data</i>: McGraw-Hill Education; • Helms RA,et al.(2006.)<i>Textbook of Therapeutics: Drug and Disease Management</i>: Lippincott Williams & Wilkins. 	
3- Electronic Materials and Web Sites etc.	
<ul style="list-style-type: none"> • WWW.GlobalRPH.COM • WWW.WHO.COM 	

IX. Course Policies:	
Unless otherwise stated, the normal course administration policies and rules of the School of Business apply.	
1	Class Attendance: <ol style="list-style-type: none"> 1. Attendance in all classes is required. There are no exceptions to this policy. 2. Roll will be called in the very beginning of each class. If you arrive after roll has been called, you may be marked as absent. 3. In any regular semester or summer term, students may miss no more than the equivalent of one third of class sessions scheduled. Students who exceed the above limits are automatically given an (AW) grade in the course by the UMS, and consequently not be allowed to attend class any longer.
2	Tardy: <ol style="list-style-type: none"> 1. All students are expected to conduct themselves in a professional manner. Unprofessional behavior such as, but not limited to, repeated disruption of class (including habitually walking in after class has started), sleeping in class, doing other course work in class, reading a newspaper in class, a ringing cell phone, frequent side conversations with other students and/or rudeness toward any person will be considered a serious violation of this standard and will lower your grade accordingly. Please be sure to turn off your cell phone before the start of class. 2. Attention to detail entails being prepared for class. This would include, but is not limited to; having a pencil/pen, note pad, calculator; reading and following the course syllabus, etc. All students are expected to conduct themselves in a professional manner. Unprofessional behavior such as, but not limited to, repeated disruption of class (including habitually walking in after class has started), sleeping in class, doing other course work in class, reading a newspaper in class, a ringing cell phone, frequent side conversations with other students and/or rudeness toward any person will be considered a serious violation of this standard and will lower your grade accordingly. Please be sure to turn off your cell phone before the start of class.

	<p>3. Attention to detail entails being prepared for class. This would include, but is not limited to; having a pencil/pen, note pad, calculator; reading and following the course syllabus, etc.</p>
3	<p>Exam Attendance/Punctuality: As per university council decision, a student is eligible for a Quizzes, Midterm or Final examination make-up if and only if he/she had the following incidents:</p> <ol style="list-style-type: none"> 1. Sickness; proved by hospitalization report; that is; a discharge summary is necessary. 2. Death in the family proved by a death certificate or equivalent and personal identification. 3. Accidents proved by an expert report. 4. Military/Official engagement.
4	<p>Assignments & Projects: Homework should be clearly presented i.e.:</p> <ol style="list-style-type: none"> 1. It should be written on A4 paper. 2. It should include a title page (Course Name, Semester, Date, Name...). 3. Your instructor will ask you to submit your homework online or as a hard copy. In the latter case, it should be stapled together.
5	<p>Cheating:</p> <ul style="list-style-type: none"> • Cheating is strictly prohibited behavior. • University regulations will be pursued and enforced on any cheating student.
6	<p>Plagiarism:</p> <ul style="list-style-type: none"> • Plagiarism is defined as “copying or stealing someone else’s words or ideas and claiming or presenting them as if they were your own.” • University regulations will be pursued and enforced on any plagiarism attempt.
7	<p>Other policies: Please refer to the university policy.</p>

Lebanese International University
 The School of Pharmacy and Medical Sciences
 Department: CLINICAL PHARMACY
 Title of the Program: Bachelor of Clinical Pharmacy



**Course Specification of PHAR 620-Therapeutics VI:
 Hematology/Oncology**

I. Course Identification and General Information:						
1	Course Title:	Therapeutics VI: Hematology/Oncology				
2	Course Code & Number:	PHAR620				
3	Credit hours:	C.H				
		Theory	Seminars, exercises	Practical	Field training	TOTAL
		3				3
4	Study level/ semester at which this course is offered:	Fourth /Spring				
5	Pre –requisite (if any):	PHAR575				
6	Co –requisite (if any):					
8	Program (s) in which the course is offered:	Bachelor of Clinical Pharmacy				
9	Language of teaching the course:	English				
10	Location of teaching the course:	LIU Sana'a				
11	Prepared by:	Dr Abdallah Al-Dahbali				
12	Reviewed by:	Dr Khaled Al-Akhali				
13	Date of approval:					

II. Course Description:	
<p>This course is the sixth of a series of 7 courses of therapeutics that focus in pathophysiology of the most common cancer diseases, risk factors, prevention, and treatment approaches based on updated guidelines. An emphasis is placed on assessment, indications for drug therapy, selection of rational and safe chemotherapy, identification of alternatives to drug therapy and patient monitoring. The student will apply problem-solving strategies to patient cases and develop patient care plans.</p>	

III. Course Intended Learning Outcomes (CILOs):	
(A) Knowledge and Understanding:	
Alignment of CILOs (Course Intended Learning Outcomes) to PILOs (Program Intended Learning Outcomes)	
Knowledge and Understanding PILOs	Knowledge and Understanding CILOs
After completing this program, graduates would be able to:	After completing this course, students would be able to:
A2. Identify the role of each of the pharmaceutical sciences in the development and use of pharmaceutical products.	a1. Review pharmaceutical calculations necessary for accurate dosing of chemotherapeutics.
A3. Discuss disease pathophysiology and patient's clinical presentation.	a2. Describe the pathophysiology of cancer including the hallmarks, metastatic process, tumor markers, and mechanisms of resistance. a3. Explain patient's signs and symptoms based on whether the cancer is solid tumor or hematologic (leukemias vs lymphomas) and its stage.
A4. Relate the biologic effects of medicinal substances to their physicochemical properties and their interactions with the living systems.	a4. Relate chemotherapeutic toxicities (acute, delayed, chronic, general and organ-specific) and their severity to the phase affected in cell cycle and organ uptake.

(B) Intellectual Skills:	
Alignment of CILOs (Course Intended Learning Outcomes) to PILOs (Program Intended Learning Outcomes)	
Intellectual Skills PILOs	Intellectual Skills CILOs
After completing this program, graduates would be able to:	After completing this course, students would be able to:
B1. Conceptualize pharmaceutical care as the standard framework of clinical pharmacy services in various healthcare settings.	b1. Consider improving the patient's quality of life when designing the pharmaceutical care plan.
B2. Integrate patient's demographic, social, and health data to discover drug-related problems.	b2. Explore risk factors that predispose the patient to ADR of chemotherapeutics.
B3. Compare alternative therapeutic plans for each drug-related problem based on evidence of effectiveness, safety, and cost	b3. Design prevention and management strategies for common hematologic, gastrointestinal, and organ toxicities induced by anticancer treatments, as well as for oncological emergencies.
B4. Create a patient-specific pharmaceutical care plan to achieve definite outcome for each drug-related problem.	b4. Propose target values of hematologic indices to be achieved before administering chemotherapeutics.

(C) Professional and Practical Skills	
Alignment of CILOs (Course Intended Learning Outcomes) to PILOs (Program Intended Learning Outcomes)	
Professional and Practical Skills PILOs	Professional and Practical Skills CILOs

After completing this program, graduates would be able to:	After completing this course, students would be able to:
C3. Contribute in developing, implementing and monitoring pharmaceutical care plan.	c1. Inspect the IV bags and lines of chemotherapeutics being administered to the patient.
C4. Counsel patient on the purpose and expectations of drug therapy.	c2. Assure the patient on the preventability and the reversibility of chemotherapy ADRs.

(D) Transferable (General) Skills:	
Alignment of CILOs (Course Intended Learning Outcomes) to PILOs (Program Intended Learning Outcomes)	
Transferable (General) Skills PILOs	Transferable (General) Skills CILOs
After completing this program, graduates would be able to:	After completing this course, students would be able to:

I. Alignment of CILOs to Teaching and Assessment Strategies		
(A) Alignment Course Intended Learning Outcomes of Knowledge and Understanding to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
a1. Review pharmaceutical calculations necessary for accurate dosing of chemotherapeutics.	- Lectures	- Test - Final exam
a2. Describe the pathophysiology of cancer including the hallmarks, metastatic process, tumor markers, and mechanisms of resistance.	- Lectures - Case study	- Test - Midterm exam - Test - Final exam
a3. Explain patient's signs and symptoms based on whether the cancer is solid tumor or hematologic (leukemias vs lymphomas) and its stage.	- Lectures	- Test - Midterm - Final exam
a4. Relate chemotherapeutic toxicities (acute, delayed, chronic, general and organ-specific) and their severity to the phase affected in cell cycle and organ uptake.	- Lectures - Case Discussions	- Test - Midterm - Final exam

(B) Alignment Course Intended Learning Outcomes of Intellectual Skills to Teaching Strategies and Assessment Strategies:

Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
b1. Consider improving the patient's quality of life when designing the pharmaceutical care plan.	- Lectures - Case Discussions	- Midterm exam - Test - Presentation - Final exam
b2. Explore risk factors that predispose the patient to ADR of chemotherapeutics.	- Lectures - Case Discussions	- Midterm exam - Test - Final exam
b3. Design prevention and management strategies for common hematologic, gastrointestinal, and organ toxicities induced by anticancer treatments, as well as for oncological emergencies.	- Lectures - Case Discussions	- Midterm exam - Test - Final exam
b4. Propose target values of hematologic indices to be achieved before administering chemotherapeutics.	- Lectures - Case Discussions	- Midterm exam - Test - Final exam

(C) Alignment Course Intended Learning Outcomes of Professional and Practical Skills to Teaching Strategies and Assessment Strategies:

Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
c1. Inspect the IV bags and lines of chemotherapeutics being administered to the patient	- Lectures - Case Discussions	- Midterm exam - Test - Final exam
c1. Inspect the IV bags and lines of chemotherapeutics being administered to the patient.	- Lectures - Case Discussions	- Midterm exam - Test - Final exam

(D) Alignment Course Intended Learning Outcomes of Transferable Skills to Teaching Strategies and Assessment Strategies:

Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
	-	-
	-	-
	-	-

II. Course Content:

A – Theoretical Aspect:

Order	Units/Topics List	Learning Outcomes	Sub Topics List	Number of Weeks	Contact hours

1	Principles of cancer treatment	a1,a2	<ul style="list-style-type: none"> - Characteristics of Cancer cell - <i>Carcinogenesis</i> - Types of cancer - Risk Factors of cancer - Detection and Diagnosis - Staging - Treatment Modalities - Chemotherapy - Neoadjuvant, adjuvant and palliative treatment 	1	3
2	Prevention and treatment of chemotherapy related ADR	a3,b1 ,c1,c2	<ul style="list-style-type: none"> - Hematological Toxicities 	1	3
3	Prevention and treatment of chemotherapy related ADR	a3,b1,c1,c2	<ul style="list-style-type: none"> - Gastrointestinal Toxicities 	1	3
4	Prevention and treatment of chemotherapy related ADR	a3,b1,,c1,c2	<ul style="list-style-type: none"> - Cardiac Toxicities - Nephrotoxicity - Bladder Toxicity - Hepatotoxicity 	1	3
5	Antiemetic treatment	a3,b1,c1,c2	<ul style="list-style-type: none"> - Nausea and Vomiting 	1	3
6	Pain management in cancer patient	a3,b1,c1,c2	<ul style="list-style-type: none"> Introduction Pathophysiologic Classification Comprehensive Pain Assessment Management of Cancer Pain 	1	3
7	Breast cancer	a2,a3 b2,b4,b3, ,c1,c2	<ul style="list-style-type: none"> - Definition of Breast cancer? - Pathophysiology of Breast cancer? - Criteria use for diagnosis of Breast cancer? - Pharmacology and Non pharmacology of Breast cancer Algorithm Treatment of Breast cancer - Evaluation of treatment. 	1	3

8	Colorectal Cancer	a2,a3 b2,b4,b3, ,c1,c2	<ul style="list-style-type: none"> - Definition of Colorectal Cancer? - Pathophysiology of Colorectal Cancer? - Criteria use for diagnosis of Colorectal Cancer? - Pharmacology and Non pharmacology of Colorectal Cancer - Algorithm Treatment of Colorectal Cancer - Evaluation of treatment. 	1	3
9	Prostate Cancer	a2,a3 b2,b4,b3, ,c1,c2	<ul style="list-style-type: none"> - Definition of Prostate Cancer? - Pathophysiology of Prostate Cancer? - Criteria use for diagnosis of Prostate Cancer? - Pharmacology and Non pharmacology of Prostate Cancer - Algorithm Treatment of Prostate Cancer - Evaluation of treatment. 	1	3
10	Acute Leukemia's/ Lymphomas	a2,a3 b2,b4,b3, ,c1,c2	<ul style="list-style-type: none"> - Acute Myelogenous Leukemia - Acute Promyelocytic Leukemia - Acute Lymphocytic Leukemia 	1	3
11	Chronic Leukemia's/ Lymphomas	a2,a3 b2,b4,b3, ,c1,c2	<ul style="list-style-type: none"> - Chronic Myelogenous Leukemia - Chronic Lymphocytic Leukemia 	1	2
12	Sickle cell disease	a2,a3 b2,b4,b3, ,c1,c2	<ul style="list-style-type: none"> - Definition of Sickle cell disease? - Pathophysiology of Sickle cell disease? - Criteria use for diagnosis of Sickle cell disease? - Pharmacology and Non pharmacology of Sickle cell disease - Algorithm Treatment of Sickle cell disease - Evaluation of treatment 	1	1

13	Group Case Discussions	a2,a3 b2,b4,b3, ,c1,c2	- All chapters	2	2
15	Final exam	a2,a3 b2,b4,b3, ,c1,c2	- All	1	2
Number of Weeks /and Units Per Semester				14	36

B - Practical Aspect: (if any)				
Order	Tasks/ Experiments	Number of Weeks	contact hours	Learning Outcomes
1				
Number of Weeks /and Units Per Semester				

III. Teaching strategies of the course:				
<ul style="list-style-type: none"> - LECTURES - CASE DISCUSSIONS 				

IV. Assignments:				
No	Assignments	Aligned CILOs (symbols)	Week Due	Mark
1				

V. Schedule of Assessment Tasks for Students During the Semester:					
No.	Assessment Method	Week Due	Mark	Proportion of Final Assessment	Aligned Course Learning Outcomes
1	Attendance	All	10	10 %	
2	Test 1	2-4	10	10%	a1,a2,
3	Midterm One	6-8	20	20%	a2,a3b2,b4,b3,,c1,c2
4	Test 2	10	10	10 %	a2,a3b2,b4,b3,,c1,c2
5	Presentation and case study	12	10	10 %	a2,a3b2,b4,b3,,c1,c2
5	Final exam	14	40	40%	All

VI. Learning Resources:	
Author, (Year), Book Title, Edition, Publisher, Country of publishing	
1- Required Textbook(s) (maximum two).	
<ul style="list-style-type: none"> • Dipiro, J. T. et al. (2021). <i>Pharmacotherapy, A pathophysiologic approach</i>, 11th edition. USA: McGraw Hill • Koda-Kimble Mary Anne et al. (2018) <i>Applied Therapeutics: the clinical use of drugs</i>. 11th edition. Maryland: LIPPINCOTT WILLIAMS & WILKINS, 	
2- Essential References.	
<ul style="list-style-type: none"> • Anderson PO, et al.(2001.) <i>Handbook of Clinical Drug Data</i>: McGraw-Hill Education; • Helms RA,et al.(2006.)<i>Textbook of Therapeutics: Drug and Disease Management</i>: Lippincott Williams & Wilkins. 	
3- Electronic Materials and Web Sites etc.	
<ul style="list-style-type: none"> • www.Dynamed.com • WWW.PUBMED.COM 	

II. Course Policies:	
1	<p>Class Attendance:</p> <ol style="list-style-type: none"> 1. Attendance in all classes is required. There are no exceptions to this policy. 2. Roll will be called in the very beginning of each class. If you arrive after roll has been called, you may be marked as absent. 3. In any regular semester or summer term, students may miss no more than the equivalent of one third of class sessions scheduled. Students who exceed the above limits are automatically given an (AW) grade in the course by the UMS, and consequently not be allowed to attend class any longer.
2	<p>Tardy:</p> <ol style="list-style-type: none"> 1. All students are expected to conduct themselves in a professional manner. Unprofessional behavior such as, but not limited to, repeated disruption of class (including habitually walking in after class has started), sleeping in class, doing other course work in class, reading a newspaper in class, a ringing cell phone, frequent side conversations with other students and/or rudeness toward any person will be considered a serious violation of this standard and will lower your grade accordingly. Please be sure to turn off your cell phone before the start of class. 2. Attention to detail entails being prepared for class. This would include, but is not limited to; having a pencil/pen, note pad, calculator; reading and following the course syllabus, etc. All students are expected to conduct themselves in a professional manner. Unprofessional behavior such as, but not limited to, repeated disruption of class (including habitually walking in after class has started), sleeping in class, doing other course work in class, reading a newspaper in class, a ringing cell phone, frequent side conversations with other students and/or rudeness toward any person will be considered a serious violation of this standard and will lower your grade accordingly. Please be sure to turn off your cell phone before the start of class.

	<p>3. Attention to detail entails being prepared for class. This would include, but is not limited to; having a pencil/pen, note pad, calculator; reading and following the course syllabus, etc.</p>
3	<p>Exam Attendance/Punctuality: As per university council decision, a student is eligible for a Quizzes, Midterm or Final examination make-up if and only if he/she had the following incidents:</p> <ol style="list-style-type: none"> 1. Sickness; proved by hospitalization report; that is; a discharge summary is necessary. 2. Death in the family proved by a death certificate or equivalent and personal identification. 3. Accidents proved by an expert report. 4. Military/Official engagement.
4	<p>Assignments & Projects: Homework should be clearly presented i.e.:</p> <ol style="list-style-type: none"> 1. It should be written on A4 paper. 2. It should include a title page (Course Name, Semester, Date, Name...). 3. Your instructor will ask you to submit your homework online or as a hard copy. In the latter case, it should be stapled together.
5	<p>Cheating:</p> <ul style="list-style-type: none"> • Cheating is strictly prohibited behavior. • University regulations will be pursued and enforced on any cheating student.
6	<p>Plagiarism:</p> <ul style="list-style-type: none"> • Plagiarism is defined as “copying or stealing someone else’s words or ideas and claiming or presenting them as if they were your own.” • University regulations will be pursued and enforced on any plagiarism attempt.
7	<p>Other policies: Please refer to the university policy.</p>

Lebanese International University
The School of Pharmacy and Medical Sciences
Department: CLINICAL PHARMACY
Title of the Program: Bachelor of Clinical Pharmacy



**Course Specification of PHAR 620-Therapeutics VI:
Hematology/Oncology**

I. - Information about Faculty Member Responsible for the Course:							
Name of Faculty Member	Dr Abdallah Aldahbaly	Office Hours					
Location & Telephone No.	773800168	SAT	SUN	MON	TUE	WED	THU
E-mail	abdallah.dahbaly@ye.liu.edu.lb	√	√	√	√	√	
II. Course Identification and General Information:							
1	Course Title:	Therapeutics VI: Hematology/Oncology					
2	Course Number & Code:	PHAR 620					
3	Credit hours:	C.H				Total	
		Theory	Seminars, exercises.	Practical	Field training		
		3				3	
4	Study level/year at which this course is offered:	Fourth /Spring					
5	Pre –requisite (if any):	PHAR575					
6	Co –requisite (if any):						
7	Program (s) in which the course is offered	Bachelor of Clinical Pharmacy					
8	Language of teaching the course:	English					
9	System of study:	Credits Hours System					
10	Mode of delivery:	Lectures					
11	Location of teaching the course:	LIU Sana'a					

III. Course Description:
This course is the sixth of a series of 7 courses of therapeutics that focus in pathophysiology of the most common cancer diseases, risk factors, prevention, and treatment approaches based on updated guidelines. An emphasis is placed on assessment, indications for drug therapy, selection of rational and safe Chemotherapy, identification of alternatives to drug therapy and patient monitoring. The student will apply problem-solving strategies to patient cases and develop patient care plans.

IV. Intended learning outcomes (ILOs) of the course:

Upon successful completion of the course, students would be able to:

1. Review pharmaceutical calculations necessary for accurate dosing of chemotherapeutics.
2. Describe the pathophysiology of cancer including the hallmarks, metastatic process, tumor markers, and mechanisms of resistance.
3. Explain patient's signs and symptoms based on whether the cancer is solid tumor or hematologic (leukemias vs lymphomas) and its stage.
4. Relate chemotherapeutic toxicities (acute, delayed, chronic, general and organ-specific) and their severity to the phase affected in cell cycle and organ uptake.
5. Consider improving the patient's quality of life when designing the pharmaceutical care plan.
6. Explore risk factors that predispose the patient to ADR of chemotherapeutics.
7. Design prevention and management strategies for common hematologic, gastrointestinal, and organ toxicities induced by anticancer treatments, as well as for oncological emergencies.
8. Propose target values of hematologic indices to be achieved before administering chemotherapeutics.
9. Inspect the IV bags and lines of chemotherapeutics being administered to the patient.
10. Assure the patient on the preventability and the reversibility of chemotherapy ADRs.

V. Course Content:

Distribution of Semester Weekly Plan Of course Topics/Items and Activities.

A – Theoretical Aspect:

Order	Topics List	Week Due	Contact Hours
1	Principles of cancer treatment	1	3
2	Prevention and treatment of chemotherapy related ADR	2	3
3	Prevention and treatment of chemotherapy related ADR	3	3
4	Prevention and treatment of chemotherapy related ADR	4	3
5	Antiemetic treatment	5	3
6	Pain management in cancer patient	6	3
7	Breast cancer	7	3
8	Colorectal Cancer	8	3
9	Prostate Cancer	9	3
10	Acute Leukemia's/ Lymphomas	10	3

11	Chronic Leukemia's/ Lymphomas	11	3	
12	Sickle cell disease	12	3	
13	Presentation and Case study	Presentation and case study	13	3
14	Final exam	14	2	
Number of Weeks /and Units Per Semester		14	36	

VI. Teaching strategies of the course:

- Lecturer as power point Presentation
- Group Case Discussions

VII. Assignments:

No	Assignments	Week Due	Mark
1			

VIII. Schedule of Assessment Tasks for Students During the Semester:

Assessment	Type of Assessment Tasks	Week Due	Mark	Proportion of Final Assessment
1	Attendance	All	10	10%
2	Test 1	2-4	10	10%
3	Midterm One	6-8	20	20%
4	Test 2	10	10	10%
5	Presentation and Case study	12	10	10%
5	Final exam	14	40	40%

IX. Learning Resources:

Author, (Year), Book Title, Edition, Publisher, Country of publishing

1- Required Textbook(s) (maximum two).

- Dipiro, J. T. et al. (2021). *Pharmacotherapy, A pathophysiologic approach*, 11th edition. USA: McGraw Hill
- Koda-Kimble Mary Anne et al. (2018) *Applied Therapeutics: the clinical use of drugs*. 11th edition. Maryland: LIPPINCOTT WILLIAMS & WILKINS,

2- Essential References.

- Anderson PO, et al.(2001.) *Handbook of Clinical Drug Data*: McGraw-Hill Education;

	<ul style="list-style-type: none"> • Helms RA,et al.(2006.)Textbook of Therapeutics: Drug and Disease Management: Lippincott Williams & Wilkins.
3- Electronic Materials and Web Sites etc.	
	<ul style="list-style-type: none"> • WWW.Dynamed.com • WWW.PUBMED.COM
X. Course Policies:	
Unless otherwise stated, the normal course administration policies and rules of the School of Business apply.	
1	<p>Class Attendance:</p> <ol style="list-style-type: none"> 1. Attendance in all classes is required. There are no exceptions to this policy. 2. Roll will be called in the very beginning of each class. If you arrive after roll has been called, you may be marked as absent. 3. In any regular semester or summer term, students may miss no more than the equivalent of one third of class sessions scheduled. Students who exceed the above limits are automatically given an (AW) grade in the course by the UMS, and consequently not be allowed to attend class any longer.
2	<p>Tardy:</p> <ol style="list-style-type: none"> 1. All students are expected to conduct themselves in a professional manner. Unprofessional behavior such as, but not limited to, repeated disruption of class (including habitually walking in after class has started), sleeping in class, doing other course work in class, reading a newspaper in class, a ringing cell phone, frequent side conversations with other students and/or rudeness toward any person will be considered a serious violation of this standard and will lower your grade accordingly. Please be sure to turn off your cell phone before the start of class. 2. Attention to detail entails being prepared for class. This would include, but is not limited to; having a pencil/pen, note pad, calculator; reading and following the course syllabus, etc. All students are expected to conduct themselves in a professional manner. Unprofessional behavior such as, but not limited to, repeated disruption of class (including habitually walking in after class has started), sleeping in class, doing other course work in class, reading a newspaper in class, a ringing cell phone, frequent side conversations with other students and/or rudeness toward any person will be considered a serious violation of this standard and will lower your grade accordingly. Please be sure to turn off your cell phone before the start of class. 3. Attention to detail entails being prepared for class. This would include, but is not limited to; having a pencil/pen, note pad, calculator; reading and following the course syllabus, etc.
3	<p>Exam Attendance/Punctuality:</p> <p>As per university council decision, a student is eligible for a Quizzes, Midterm or Final examination make-up if and only if he/she had the following incidents:</p> <ol style="list-style-type: none"> 1. Sickness; proved by hospitalization report; that is; a discharge summary is necessary. 2. Death in the family proved by a death certificate or equivalent and personal identification. 3. Accidents proved by an expert report. 4. Military/Official engagement.
4	Assignments & Projects:

	<p>Homework should be clearly presented i.e.:</p> <ol style="list-style-type: none"> 1. It should be written on A4 paper. 2. It should include a title page (Course Name, Semester, Date, Name...). 3. Your instructor will ask you to submit your homework online or as a hard copy. In the latter case, it should be stapled together.
5	<p>Cheating:</p> <ul style="list-style-type: none"> • Cheating is strictly prohibited behavior. • University regulations will be pursued and enforced on any cheating student.
6	<p>Plagiarism:</p> <ul style="list-style-type: none"> • Plagiarism is defined as “copying or stealing someone else’s words or ideas and claiming or presenting them as if they were your own.” • University regulations will be pursued and enforced on any plagiarism attempt.
7	<p>Other policies: Please refer to the university policy.</p>



**Course Specification of
PHAR625-Pharmacoeconomics**

I. Course Identification and General Information:						
1	Course Title:	Pharmacoeconomics				
2	Course Code & Number:	PHAR 625				
3	Credit hours:	C.H				
		Theory	Seminars, exercises	Practical	Field training	TOTAL
		3				3
4	Study level/ semester at which this course is offered:	Fifth Year				
5	Pre –requisite (if any):	PHAR400, PHAR450, PHAR460				
6	Co –requisite (if any):	PHAR580				
8	Program (s) in which the course is offered:	Bachelor degree of clinical Pharmacy				
9	Language of teaching the course:	English				
10	Location of teaching the course:	LIU Sana'a				
11	Prepared by:	Prof Dr/ Mahmoud Mahyoob Alburyhi				
12	Reviewed by:	DrLKhaled Al-Tahami				
13	Date of approval:					

II. Course Description:	
<p>The pharmacoeconomics course provides the study of the economic aspects of pharmaceutical products, services, and interventions. It involves the evaluation of the cost-effectiveness of drugs and other healthcare interventions, as well as the analysis of their impact on healthcare systems, patients, and society. Students will learn about multidisciplinary field that combines elements of economics, health policy, and clinical research. It is an important area of study for pharmaceutical industry professionals who are involved in the development, pricing, and reimbursement of drugs and other healthcare interventions.</p>	

III. Course Intended Learning Outcomes (CILOs):	
(A) Knowledge and Understanding:	
Alignment of CILOs (Course Intended Learning Outcomes) to PILOs (Program Intended Learning Outcomes)	
Knowledge and Understanding PILOs	Knowledge and Understanding CILOs
After completing this program, graduates would be able to:	After completing this course, students would be able to:
A1. Review the knowledge facts and principles of both basic and medical sciences	a1. identify the basic concepts of basic knowledge about pharmacoeconomic principles and the various types of pharmacoeconomic models
A2 Identify the role of each of the pharmaceutical sciences in the development and use of pharmaceutical products.	a2.describe the methods used in pharmacoeconomic analysis, including the types of costs, outcomes, and analyses used in pharmaceutical research.

(B) Intellectual Skills:	
Alignment of CILOs (Course Intended Learning Outcomes) to PILOs (Program Intended Learning Outcomes)	
Intellectual Skills PILOs	Intellectual Skills CILOs
After completing this program, graduates would be able to:	After completing this course, students would be able to:
B3. Compare alternative therapeutic plans for each drug-related problem based on evidence of effectiveness, safety, and cost.	b1. Analyze the economic value of drugs and other healthcare interventions, including cost-benefit analysis, cost-effectiveness analysis, and cost-utility analysis
B3. Compare alternative therapeutic plans for each drug-related problem based on evidence of effectiveness, safety, and cost..	b2.Design a pharmacoeconomic based on evidence of effectiveness, safety, and cost.

(C) Professional and Practical Skills	
Alignment of CILOs (Course Intended Learning Outcomes) to PILOs (Program Intended Learning Outcomes)	
Professional and Practical Skills PILOs	Professional and Practical Skills CILOs
After completing this program, graduates would be able to:	After completing this course, students would be able to:

C3. Contribute in developing, implementing and monitoring pharmaceutical care plan.	c1. Apply pharmacoeconomic methods and tools to analyze and compare the costs and outcomes of different pharmaceutical interventions

(D) Transferable (General) Skills:	
Alignment of CILOs (Course Intended Learning Outcomes) to PILOs (Program Intended Learning Outcomes)	
Transferable (General) Skills PILOs	Transferable (General) Skills CILOs
After completing this program, graduates would be able to:	After completing this course, students would be able to:
D3. Capability of time management, critical thinking, problem solving, decision-making and team-working.	d1. Value the skills and knowledge required to problem solving, decision-making, team-working

IV. Alignment of CILOs to Teaching and Assessment Strategies		
(A) Alignment Course Intended Learning Outcomes of Knowledge and Understanding to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
a1. identify the basic concepts of basic knowledge about pharmacoeconomic principles and the various types of pharmacoeconomic models	- Lectures. - Seminars - Presentations and discussions in class	- Written examinations - Quizzes, - Midterm - Home work
a2. describe the methods used in pharmacoeconomic analysis, including the types of costs, outcomes, and analyses used in pharmaceutical research.	- Lectures. - Seminars - Presentations and discussions in class	▪ Written examinations ▪ Quizzes, ▪ Midterm - Home work

(B) Alignment Course Intended Learning Outcomes of Intellectual Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
b1. Analyze the economic value of drugs and other healthcare interventions, including cost-benefit analysis, cost-effectiveness analysis, and cost-utility analysis	- Lectures, Discussions.	- Exam, homework, report, Quizzes
b2. Design a pharmacoeconomic based on evidence of effectiveness, safety, and cost.	- Lectures, Discussions.	- Exam, homework, report, Quizzes

(C) Alignment Course Intended Learning Outcomes of Professional and Practical Skills to Teaching Strategies and Assessment Strategies:

Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
. c1. Apply pharmacoeconomic methods and tools to analyze and compare the costs and outcomes of different pharmaceutical interventions	- Group learning and Problem-based learning.	- report, quiz

(D) Alignment Course Intended Learning Outcomes of Transferable Skills to Teaching Strategies and Assessment Strategies:

Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
d1. Value the skills and knowledge required to problem solving, decision-making ,team-working	<ul style="list-style-type: none"> ▪ Tutorials/ seminars. ▪ Group work and problem-solving learning. 	<ul style="list-style-type: none"> ▪ Discussion. - Homework,

V. Course Content:					
A – Theoretical Aspect:					
Order	Units/Topics List	Learning Outcomes	Sub Topics List	Number of Weeks	Contact hours
1	Introduction to Pharmacoeconomics	a1,a2,b1,b2	- Overview of pharmacoeconomics and its importance in healthcare decision-making Basic concepts and definitions in pharmacoeconomics	1	1.5
2	Types of Costs	a1,a2,b1,b2	- Direct and indirect costs Opportunity costs Marginal costs	1	1.5
3	Effectiveness Measures	a1,a2,b1,b2	- Clinical outcomes measures Quality of life measures Patient-reported outcomes	1	1.5

4	Study Designs in Pharmacoeconomics	a1,a2,b1,b2	Economic evaluations (cost-effectiveness analysis, cost-utility analysis, cost-benefit analysis) Study design and data sources	1	1.5
5	Decision Analysis	a1,a2,b1,b2,c1	- Decision trees and Markov models Sensitivity analysis and uncertainty	1	3
6	Discounting Time preference and discount rates	a1,a2,b1,b2,c1	- Discounting and its role in pharmacoeconomic analysis	1	3
7	Health Technology Assessment	b1,b2,c1,d1	- Overview of health technology assessment Appraisal of health technologies	1	3
8	Midterm	a1,a2,b1,b2,c1	-	1	
9	Economic Evaluation in Clinical Trials	a1,a2,b1,b2,c1	- Economic evaluation alongside clinical trials Challenges and limitations	1	3
10	Drug Pricing and Reimbursement	a1,a2,b1,b2,c1	- Pricing and reimbursement policies Pharmaceutical pricing and reimbursement systems	1	3
11	Formulary Management Drug formulary	a1,a2,b1,b2,c1	- Formulary Management Drug formulary role in healthcare Formulary decision-making process	1	3

12	Data Sources for Pharmacoeconomic	a1,a2,b1,b2,c1	- Analysis Primary and secondary data sources Clinical databases and registries	1	3
13	Interpretation and Communication of Pharmacoeconomic	b1,b2,c1,d1	- Results Interpreting and presenting pharmacoeconomic results Communication strategies for different stakeholders	1	3
14	Ethical and Social Implications of Pharmacoeconomic	b1,b2,c1,d1	- Decisions Ethical principles in pharmacoeconomics Social implications of pharmacoeconomic decisions	1	3
15	Challenges and Limitations of Pharmacoeconomic &	b1,b2,c1,d1	- Analysis Limitations of pharmacoeconomic methods Emerging challenges in pharmacoeconomic analysis	1	3
16	Final Exam	All	-	13-14	
					36

B - Practical Aspect: (if any)

Order	Tasks/ Experiments	Number of Weeks	contact hours	Learning Outcomes
1				
Number of Weeks /and Units Per Semester				

VI. Teaching strategies of the course:

- Lectures, Discussions, Group learning and Problem-based learning. Group work and problem-solving learning. Tutorials/ seminars.
- Presentations and discussions in class

VII. Assignments:

No	Assignments	Aligned CILOs (symbols)	Week Due	Mark
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1	Assignment 1: Homeworks	12 th		d1
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VIII. Schedule of Assessment Tasks for Students During the Semester:

No.	Assessment Method	Week Due	Mark	Proportion of Final Assessment	Aligned Course Learning Outcomes
1	Assignments	12 th	10	10%	a1,a2,b1,b2
2	Quizzes	4-10 th	15	20%	a1,a2,b1,b2,
3	Mid-Term Theoretical Exam	8 th	40	30%	a1,a2,b1,b2,c1, d1
4	Final Exam	13-14	35%	35%	a1,a2,b1,b2,c1, d1

IX. Learning Resources:

Author, (Year), Book Title, Edition, Publisher, Country of publishing

1- Required Textbook(s) (maximum two).

DiPiro et al, 2020. Pharmacotherapy: A Pathophysiological Approach, ed.: Pharmaeconomic Chapter, 11th edition

2- Essential References.

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1. Renee J. G. Arnold, 2016. Pharmacoeconomics: From Theory to Practice, 1st Edition, <https://doi.org/10.1201/9781420084405>

2. J. Lyle Bootman, Raymond J. Townsend, William F. McGhan, 2004. Principles of Pharmacoeconomics, 3 edition, 978-0929375274

Yi Yang, Donna West-Strum, 2011. Understanding Pharmacoepidemiology. 978-0-07-163500

3- Electronic Materials and Web Sites etc.

- ISPOR, Health care cost, quality, and outcomes (ISPOR book of terms). 2003. ISBN-13: 978-0974328904

www.en.wikipedia.org/

X.	
XI. Course Policies:	
1	<p>Class Attendance:</p> <ol style="list-style-type: none"> Attendance in all classes is required. There are no exceptions to this policy. Roll will be called in the very beginning of each class. If you arrive after roll has been called, you may be marked as absent. In any regular semester or summer term, students may miss no more than the equivalent of one third of class sessions scheduled. Students who exceed the above limits are automatically given an (AW) grade in the course by the UMS, and consequently not be allowed to attend class any longer.
2	<p>Tardy:</p> <ol style="list-style-type: none"> All students are expected to conduct themselves in a professional manner. Unprofessional behavior such as, but not limited to, repeated disruption of class (including habitually walking in after class has started), sleeping in class, doing other course work in class, reading a newspaper in class, a ringing cell phone, frequent side conversations with other students and/or rudeness toward any person will be considered a serious violation of this standard and will lower your grade accordingly. Please be sure to turn off your cell phone before the start of class. Attention to detail entails being prepared for class. This would include, but is not limited to; having a pencil/pen, note pad, calculator; reading and following the course syllabus, etc. All students are expected to conduct themselves in a professional manner. Unprofessional behavior such as, but not limited to, repeated disruption of class (including habitually walking in after class has started), sleeping in class, doing other course work in class, reading a newspaper in class, a ringing cell phone, frequent side conversations with other students and/or rudeness toward any person will be considered a serious violation of this standard and will lower your grade accordingly. Please be sure to turn off your cell phone before the start of class. Attention to detail entails being prepared for class. This would include, but is not limited to; having a pencil/pen, note pad, calculator; reading and following the course syllabus, etc.
3	<p>Exam Attendance/Punctuality: As per university council decision, a student is eligible for a Quizzes, Midterm or Final examination make-up if and only if he/she had the following incidents:</p> <ol style="list-style-type: none"> Sickness; proved by hospitalization report; that is; a discharge summary is necessary. Death in the family proved by a death certificate or equivalent and personal identification. Accidents proved by an expert report. Military/Official engagement.
4	<p>Assignments & Projects: Homework should be clearly presented i.e.:</p> <ol style="list-style-type: none"> It should be written on A4 paper. It should include a title page (Course Name, Semester, Date, Name...). Your instructor will ask you to submit your homework online or as a hard copy. In the latter case, it should be stapled together.

5	Cheating: <ul style="list-style-type: none">• Cheating is strictly prohibited behavior.• University regulations will be pursued and enforced on any cheating student.
6	Plagiarism: <ul style="list-style-type: none">• Plagiarism is defined as “copying or stealing someone else’s words or ideas and claiming or presenting them as if they were your own.”• University regulations will be pursued and enforced on any plagiarism attempt.
7	Other policies: Please refer to the university policy.

**Course Specification of
 PHAR625- Pharmacoeconomics**

I. - Information about Faculty Member Responsible for the Course:							
Name of Faculty Member	Prof Dr/ Mahmoud Mahyoob Alburyhi	Office Hours					
Location & Telephone No.	737005574	SAT	SUN	MON	TUE	WED	THU
E-mail	Alburyhi2020@gmail.com	√				√	

II. Course Identification and General Information:						
1	Course Title:	Pharmacoeconomics				
2	Course Number & Code:	PHAR 625				
3	Credit hours:	C.H				TOTAL
		Theory	Seminars, exercises	Practical	Field training	
		3				
4	Study level/year at which this course is offered:	Fifth Year				
5	Pre –requisite (if any):	PHAR400, PHAR450, PHAR460				
6	Co –requisite (if any):	PHAR580				
7	Program (s) in which the course is offered	Bachelor degree of clinical Pharmacy				
8	Language of teaching the course:	English				
9	System of study:	Credits Hours System				
10	Mode of delivery:	Lectures				
11	Location of teaching the course:	LIU Sana'a				

III. Course Description:

The pharmacoeconomics course provides the study of the economic aspects of pharmaceutical products, services, and interventions. It involves the evaluation of the cost-effectiveness of drugs and other healthcare interventions, as well as the analysis of their impact on healthcare systems, patients, and society. Students will learn about multidisciplinary field that combines elements of economics, health policy, and clinical research. It is an important area of study for pharmaceutical industry professionals who are involved in the development, pricing, and reimbursement of drugs and other healthcare interventions.

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IV. Intended learning outcomes (ILOs) of the course:	
1.	Identify the basic concepts of basic knowledge about pharmacoeconomic principles and the various types of pharmacoeconomic models
2.	Describe the methods used in pharmacoeconomic analysis, including the types of costs, outcomes, and analyses used in pharmaceutical research.
3.	Analyze the economic value of drugs and other healthcare interventions, including cost-benefit analysis, cost-effectiveness analysis, and cost-utility analysis.
4.	Design a pharmacoeconomic based on evidence of effectiveness, safety, and cost.
5.	Apply pharmacoeconomic methods and tools to analyze and compare the costs and outcomes of different pharmaceutical interventions.
6.	Value the skills and knowledge required to problem solving, decision-making ,team-working

XII. Course Content:				
A – Theoretical Aspect:				
Order	Units/Topics List	Sub Topics List	Number of Weeks	Contact hours
1	Introduction to Pharmacoeconomics	- Overview of pharmacoeconomics and its importance in healthcare decision-making Basic concepts and definitions in pharmacoeconomics	1	1.5
2	Types of Costs	- Direct and indirect costs Opportunity costs Marginal costs	1	1.5
3	Effectiveness Measures	- Clinical outcomes measures Quality of life measures Patient-reported outcomes	1	1.5
4	Study Designs in Pharmacoeconomics	Economic evaluations (cost-effectiveness analysis, cost-utility analysis, cost-benefit analysis) Study design and data sources	1	1.5

5	Decision Analysis	- Decision trees and Markov models Sensitivity analysis and uncertainty	1	3	
6	Discounting Time preference and discount rates	- Discounting and its role in pharmacoeconomic analysis	1	3	
7	Health Technology Assessment	- Overview of health technology assessment Appraisal of health technologies	1	3	
8	Midterm	-	1		
9	Economic Evaluation in Clinical Trials	- Economic evaluation alongside clinical trials Challenges and limitations	1	3	
10	Drug Pricing and Reimbursement	- Pricing and reimbursement policies Pharmaceutical pricing and reimbursement systems	1	3	
11	Formulary Management Drug formulary	- Formulary Management Drug formulary role in healthcare Formulary decision-making process	1	3	
12	Data Sources for Pharmacoeconomic	- Analysis Primary and secondary data sources Clinical databases and registries	1	3	
13	Interpretation and Communication of Pharmacoeconomic	- Results Interpreting and presenting pharmacoeconomic results Communication strategies for different stakeholders	1	3	
14	Ethical and Social Implications of Pharmacoeconomic	- Decisions Ethical principles in pharmacoeconomics Social implications of pharmacoeconomic decisions	1	3	
15	Challenges and Limitations of Pharmacoeconomic	- Analysis Limitations of pharmacoeconomic methods Emerging challenges in pharmacoeconomic analysis	1	3	
16	Final Exam	-	13-14		
				14	36

B – Practical Aspect: (if any)			
Order	Topics List	Week Due	Contact Hours
1	None		
Number of Weeks /and Units Per Semester			

V. Teaching strategies of the course:
<ul style="list-style-type: none"> - Lectures, Discussions, Group learning and Problem-based learning. Group work and problem-solving learning. Tutorials/ seminars. - Presentations and discussions in class

VI. Assignments:			
No	Assignments	Week Due	Mark
1	Assignment 1: Homeworks	12 th	

VII. Schedule of Assessment Tasks for Students During the Semester:				
Assessment	Type of Assessment Tasks	Week Due	Mark	Proportion of Final Assessment
1	Assignments	12 th	10	10%
2	Quizzes	4-10 th	20	20%
3	Mid-Term Theoretical Exam	8 th	30	30%
4	Final Exam	16	40%	40%

VIII. Learning Resources:	
Author, (Year), Book Title, Edition, Publisher, Country of publishing	
1- Required Textbook(s) (maximum two).	
Rascati, K. (2009).Essentials of pharmacoconomics. Wolters Kluwer: Lippincott Williams & Wilkins	
2- Essential References.	
<ol style="list-style-type: none"> 1. Renee J. G. Arnold, 2016. Pharmacoconomics: From Theory to Practice, 1st Edition, https://doi.org/10.1201/9781420084405 2. J. Lyle Bootman, Raymond J. Townsend, William F. McGhan, 2004. Principles of Pharmacoconomics, edition, 978-0929375274 3. Boland, A., Haycox, A., & Walley, T. (2004). Pharmacoconomics. Churchill Livingstone 4. Bootman, L., McGhan, W., & Townsend, R. (1996). Principles of pharmacoconomics. Harvey Whitney Books Company 	
3- Electronic Materials and Web Sites etc.	
- ISPOR, Health care cost, quality, and outcomes (ISPOR book of terms). 2003. ISBN-13: 978-097432890 www.en.wikipedia.org/	

IX. Course Policies:	
Unless otherwise stated, the normal course administration policies and rules of the School of Business apply.	
1	Class Attendance: <ol style="list-style-type: none"> 1. Attendance in all classes is required. There are no exceptions to this policy. 2. Roll will be called in the very beginning of each class. If you arrive after roll has been called, you may be marked as absent. 3. In any regular semester or summer term, students may miss no more than the equivalent of one third of class sessions scheduled. Students who exceed the above limits are automatically given an (AW) grade in the course by the UMS, and consequently not be allowed to attend class any longer.
2	Tardy: <ol style="list-style-type: none"> 1. All students are expected to conduct themselves in a professional manner. Unprofessional behavior such as, but not limited to, repeated disruption of class (including habitually walking in after class has started), sleeping in class, doing other course work in class, reading a newspaper in class, a ringing cell phone, frequent side conversations with other students and/or rudeness toward any person will be considered a serious violation of this standard and will lower your grade accordingly. Please be sure to turn off your cell phone before the start of class. 2. Attention to detail entails being prepared for class. This would include, but is not limited to; having a pencil/pen, note pad, calculator; reading and following the course syllabus, etc. All students are expected to conduct themselves in a professional manner. Unprofessional behavior such as, but not limited to, repeated disruption of class (including habitually walking in after class has started), sleeping in class, doing other course work in class, reading a newspaper in class, a ringing cell phone, frequent side conversations with other students and/or rudeness toward any person will be considered a

	<p>serious violation of this standard and will lower your grade accordingly. Please be sure to turn off your cell phone before the start of class.</p> <p>3. Attention to detail entails being prepared for class. This would include, but is not limited to; having a pencil/pen, note pad, calculator; reading and following the course syllabus, etc.</p>
3	<p>Exam Attendance/Punctuality: As per university council decision, a student is eligible for a Quizzes, Midterm or Final examination make-up if and only if he/she had the following incidents:</p> <ol style="list-style-type: none"> 1. Sickness; proved by hospitalization report; that is; a discharge summary is necessary. 2. Death in the family proved by a death certificate or equivalent and personal identification. 3. Accidents proved by an expert report. 4. Military/Official engagement.
4	<p>Assignments & Projects: Homework should be clearly presented i.e.:</p> <ol style="list-style-type: none"> 1. It should be written on A4 paper. 2. It should include a title page (Course Name, Semester, Date, Name...). 3. Your instructor will ask you to submit your homework online or as a hard copy. In the latter case, it should be stapled together.
5	<p>Cheating:</p> <ul style="list-style-type: none"> • Cheating is strictly prohibited behavior. • University regulations will be pursued and enforced on any cheating student.
6	<p>Plagiarism:</p> <ul style="list-style-type: none"> • Plagiarism is defined as “copying or stealing someone else’s words or ideas and claiming or presenting them as if they were your own.” • University regulations will be pursued and enforced on any plagiarism attempt.
7	<p>Other policies: Please refer to the university policy.</p>



Course Specification of PHAR630 Pharmacotherapeutics
 VII: Selected Topics in Therapeutics

I. Course Identification and General Information:						
1	Course Title:	Pharmacotherapeutics VII: Selected Topics in Therapeutics				
2	Course Code & Number:	PHAR630				
3	Credit hours:	C.H				
		Theory	Seminars, exercises	Practical	Field training	TOTAL
		3				3
4	Study level/ semester at which this course is offered:	Fourth/ Summer				
5	Pre –requisite (if any):	PHAR505, PHAR575				
6	Co –requisite (if any):	PHAR555				
8	Program (s) in which the course is offered:	Bachelor of Clinical Pharmacy				
9	Language of teaching the course:	English				
10	Location of teaching the course:	LIU Sana'a				
11	Prepared by:	Dr Khaled Alakhali				
12	Reviewed by:	Dr Abdallah Aldhabi				
13	Date of approval:					

II. Course Description:	
<p>This course identifies the pathophysiology, etiology, risk factors and signs and symptoms of selected diseases. It provides the non-pharmacologic and pharmacologic treatment options according to evidence-based guidelines. It introduces the students to the application of pharmacologic and pharmacokinetic parameters, and description of factors that would guide the selection of the best treatment options. It also familiarizes the students with how to evaluate the treatment therapy for selected diseases through highlighting on the monitoring parameters and important medications adverse effects. The student will apply problem-solving strategies to patient-oriented cases and will develop patient treatment plan.</p>	

III. Course Intended Learning Outcomes (CILOs):	
(A) Knowledge and Understanding:	
Alignment of CILOs (Course Intended Learning Outcomes) to PILOs (Program Intended Learning Outcomes)	
Knowledge and Understanding PILOs	Knowledge and Understanding CILOs
After completing this program, graduates would be able to:	After completing this course, students would be able to:
A2 Identify the role of each of the pharmaceutical sciences in the development and use of pharmaceutical products.	a1. Review some synthetic drugs that mimic and modify the biological roles of indigenous substances.
A3 Discuss disease pathophysiology and patient's clinical presentation.	a2. Explain how the pathophysiology of a disease is related to the disease signs and symptoms.
A4 Relate the biologic effects of medicinal substances to their physicochemical properties and their interactions with the living systems.	a3. Detail the pharmacological bases of the clinical value and the adverse reactions drugs used in the treatment of selected diseases.

(B) Intellectual Skills:	
Alignment of CILOs (Course Intended Learning Outcomes) to PILOs (Program Intended Learning Outcomes)	
Intellectual Skills PILOs	Intellectual Skills CILOs
After completing this program, graduates would be able to:	After completing this course, students would be able to:
B1 Conceptualize pharmaceutical care as the standard framework of clinical pharmacy services in various healthcare settings.	b1. Propose changes in therapeutic regimens for patients with selected diseases.
B2 Integrate patient's demographic, social, and health data to discover drug-related problems.	b2. Propose changes of nutrients for patients with selected diseases.
B3 Compare alternative therapeutic plans for each drug-related problem based on evidence of effectiveness, safety, and cost.	b3. Evaluate drug therapy appropriateness for patients with selected diseases.

(C) Professional and Practical Skills	
Alignment of CILOs (Course Intended Learning Outcomes) to PILOs (Program Intended Learning Outcomes)	
Professional and Practical Skills PILOs	Professional and Practical Skills CILOs
After completing this program, graduates would be able to:	After completing this course, students would be able to:
C3 Contribute in developing, implementing and monitoring pharmaceutical care plan.	c1. create a problem list while select the proper therapy and monitoring plan to assess safety and efficacy. c2. Document recommendations of initiating, modifying, stopping, and monitoring drug therapy.
C4 Counsel patient on the purpose and expectations of drug therapy.	c3 Explore the multiple educational and counselling parts in management plans of selected diseases.

(D) Transferable (General) Skills:	
Alignment of CILOs (Course Intended Learning Outcomes) to PILOs (Program Intended Learning Outcomes)	
Transferable (General) Skills PILOs	Transferable (General) Skills CILOs
After completing this program, graduates would be able to:	After completing this course, students would be able to:

I. Alignment of CILOs to Teaching and Assessment Strategies		
(A) Alignment Course Intended Learning Outcomes of Knowledge and Understanding to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
a1. Review some synthetic drugs that mimic and modify the biological roles of indigenous substances.	- Lectures	- Test - Midterm exam - Assignments - Final exam
a2. Explain how the pathophysiology of a disease is related to the disease signs and symptoms.	- Lectures - Case studies	- Test - Midterm exam - Final exam - Case discussion

a3. Detail the pharmacological bases of the clinical value and the adverse reactions drugs used in the treatment of selected diseases.	- Lectures - Case studies	- Test - Midterm exam - Final exam - Case discussion - Assignment
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(B) Alignment Course Intended Learning Outcomes of Intellectual Skills to Teaching Strategies and Assessment Strategies:

Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
b1. Propose changes in therapeutic regimens for patients with selected diseases.	- Lectures Case studies	- Case discussion - Final exam
b2. Propose changes of nutrients for patients with selected diseases.	- Lectures - Case studies	- Test - Midterm exam - Final exam
b3. Evaluate drug therapy appropriateness for patients with selected diseases	- Lectures - Case studies	- Test - Midterm exam - Final exam
b4. Create a problem list while select the proper therapy and monitoring plan to assess safety and efficacy.	- Lectures - Case studies	- Test - Midterm exam - Final exam

(C) Alignment Course Intended Learning Outcomes of Professional and Practical Skills to Teaching Strategies and Assessment Strategies:

Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
c1. Document recommendations of initiating, modifying, stopping, and monitoring drug therapy.	- Lectures - Case studies	- Test - Midterm exam - Final exam - Case discussion
c2. Explore the multiple educational and counselling parts in management plans of selected diseases.	- Case studies	- Case discussion
c 3 Explore the multiple educational and counselling parts in management plans of selected diseases.	- Case studies	- Case discussion

II. Course Content:

A – Theoretical Aspect:

Order	Units/Topics List	Learning Outcomes	Sub Topics List	Number of Weeks	Contact hours
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1	-Course syllabus -acute kidney Injury part 1	a1,a2, a3,a4,b1, b2, b3,,c3,c4	- outline of course - Grade system - Introduction to renal function - Classification - Epidemiology - Renal pathophysiology causes (pre renal ,intrinsic ,post renal)	1	3
2	Acute kidney Injury part 2	a1,a2, a3,a4,b1, b2, b3,,c3,c4	- Clinical presentation - Laboratory findings -prevention according to guideline of renal disease. -Pharmacotherapy -Monitoring.	2	3
3	Chronic renal disease Part 1	a1,a2, a3,a4,b1, b2, b3,,c3,c4	- Estimation of GFR - Markers of kidney damage - Risk factors - Pathophysiology - Stages	3	3
4	Chronic renal disease Part 2	a1,a2, a3,a4,b1, b2, b3,,c3,c4	- Lab tests and diagnosis - Goals of treatment - Non-pharmacologic treatment -Pharmacological Therapy <ul style="list-style-type: none"> • Intensive insulin therapy (for diabetic nephropathy) • Optimization of hypertension control • Nutritional management • Treatment of complication 	4	3
5	Chronic renal part 3	a1,a2, a3,a4,b1, b2, b3,,c3,c4	- Treatment of complication - Anemia - Secondary hyperparathyroidism - Dialysis	5	3
6	Benign Prostatic Hyperplasia	a1,a2, a3,a4,b1, b2, b3,,c3,c4	- Pathophysiology - Clinical Presentation - Diagnosis of BPH - Treatment ALGORITHM	6	3

			<p>ACCORDING TO GUIDLINE</p> <ul style="list-style-type: none"> - Drugs used in treatment of BPH 		
7	Liver Cirrhosis PART 1	a1,a2, a3,a4,b1, b2, b3,,c3,c4	<ul style="list-style-type: none"> -Pathophysiology - Causes of Cirrhosis - Clinical Presentations - Diagnosis Child-Pugh Classification of Chronic Liver disease -Complications -Ascites 	6	3
8	Liver Cirrhosis Part 2	a1,a2, a3,a4,b1, b2, b3,,c3,c4	<ul style="list-style-type: none"> -Spontaneous Bacterial Peritonitis (SBP) - Portal hypertension and varices - Treatment of Acute Variceal Hemorrhage - Hepatic Encephalopathy - Coagulation Defects 	7	3
9	Viral Infections	a1,a2, a3,a4,b1, b2, b3,,c3,c4	<ul style="list-style-type: none"> • Herpes encephalitis • Oral-facial herpes • Varicella-Zoster infections: <ul style="list-style-type: none"> - Chickenpox - Shingles (Herpes Zoster) • Influenza • Cytomegalovirus disease 	9	3
10	Acne	a1,a2, a3,a4,b1, b2, b3,,c3,c4	<ul style="list-style-type: none"> - Pathophysiology And Clinical feature - Stage and diagnosis - Treatment - Drugs used in treatment of acne. 	10	3
11	Vaccines	a1,a2, a3,a4,b1, b2, b3,,c3,c4	<ul style="list-style-type: none"> - PRODUCTS USED TO IMMUNIZE - FACTORS AFFECTING RESPONSE TO IMMUNIZATIO - VACCINE ADMINISTRATION 	11	3

12	Case study Review	a1,a2, a3,a4,b1, b2, b3,,c3,c4	- All Chapters	12	3
13	Final exam	a1,a2, a3,a4,b1, b2, b3,,c3,c4	- All	13-14	
Number of Weeks /and Units Per Semester				14	36

B - Practical Aspect: (if any)				
Order	Tasks/ Experiments	Number of Weeks	contact hours	Learning Outcomes
1				
Number of Weeks /and Units Per Semester				

III. Teaching strategies of the course:
- LECTURE as power point presentation - CASE STUDY

IV. Assignments:				
No	Assignments	Aligned CILOs (symbols)	Week Due	Mark
1	Cases Discussion of chronic or acute renal	a1,a2, a3,a4,b1, b2, b3,,c3,c4	1	2
2	List of renal calculation equations	a1,a2, a3,a4,b1, b2, b3,,c3,c4	3	2
3	Pharmacology Comparison Chart of vaccines	a1,a2, a3,a4,b1, b2, b3,,c3,c4	7	2

V. Schedule of Assessment Tasks for Students During the Semester:

No.	Assessment Method	Week Due	Mark	Proportion of Final Assessment	Aligned Course Learning Outcomes
1	Attendance	All	10	10%	a1,a2, a3,a4,b1, b2, b3,,c3,c4
2	Test 1	2-4	10	10%	a1,a2, a3,a4,b1, b2, b3,,c3,c4
3	Midterm	6-8	20	20%	a1,a2, a3,a4,b1, b2, b3,,c3,c4
4	Test 2	10	10	10%	a1,a2, a3,a4,b1, b2, b3,,c3,c4
	Assignment and case discussion	11	10	10%	a1,a2, a3,a4,b1, b2, b3,,c3,c4
5	Final exam	14-15	40	40%	a1,a2, a3,a4,b1, b2, b3,,c3,c4

VI. Learning Resources:

Author, (Year), Book Title, Edition, Publisher, Country of publishing

1- Required Textbook(s) (maximum two).

- Dipiro, J. T. et al. (2021). *Pharmacotherapy, A pathophysiologic approach*, 11th edition. USA: McGraw Hill
- Koda-Kimble Mary Anne et al. (2018) *Applied Therapeutics: the clinical use of drugs*. 11th edition. Maryland: LIPPINCOTT WILLIAMS & WILKINS,

2- Essential References.

- Anderson PO, et al.(2001.) *Handbook of Clinical Drug Data*: McGraw-Hill Education;
- Helms RA,et al.(2006.)*Textbook of Therapeutics: Drug and Disease Management*: Lippincott Williams & Wilkins.

3- Electronic Materials and Web Sites etc.

- www.Lexi.com
- WWW.KDIGO.COM

II. Course Policies:

1 Class Attendance:

1. Attendance in all classes is required. There are no exceptions to this policy.
2. Roll will be called in the very beginning of each class. If you arrive after roll has been called, you may be marked as absent.
3. In any regular semester or summer term, students may miss no more than the equivalent of one third of class sessions scheduled. Students who exceed the above limits are

	<p>automatically given an (AW) grade in the course by the UMS, and consequently not be allowed to attend class any longer.</p>
2	<p>Tardy:</p> <ol style="list-style-type: none"> 1. All students are expected to conduct themselves in a professional manner. Unprofessional behavior such as, but not limited to, repeated disruption of class (including habitually walking in after class has started), sleeping in class, doing other course work in class, reading a newspaper in class, a ringing cell phone, frequent side conversations with other students and/or rudeness toward any person will be considered a serious violation of this standard and will lower your grade accordingly. Please be sure to turn off your cell phone before the start of class. 2. Attention to detail entails being prepared for class. This would include, but is not limited to; having a pencil/pen, note pad, calculator; reading and following the course syllabus, etc. All students are expected to conduct themselves in a professional manner. Unprofessional behavior such as, but not limited to, repeated disruption of class (including habitually walking in after class has started), sleeping in class, doing other course work in class, reading a newspaper in class, a ringing cell phone, frequent side conversations with other students and/or rudeness toward any person will be considered a serious violation of this standard and will lower your grade accordingly. Please be sure to turn off your cell phone before the start of class. 3. Attention to detail entails being prepared for class. This would include, but is not limited to; having a pencil/pen, note pad, calculator; reading and following the course syllabus, etc.
3	<p>Exam Attendance/Punctuality: As per university council decision, a student is eligible for a Quizzes, Midterm or Final examination make-up if and only if he/she had the following incidents:</p> <ol style="list-style-type: none"> 1. Sickness; proved by hospitalization report; that is; a discharge summary is necessary. 2. Death in the family proved by a death certificate or equivalent and personal identification. 3. Accidents proved by an expert report. 4. Military/Official engagement.
4	<p>Assignments & Projects: Homework should be clearly presented i.e.:</p> <ol style="list-style-type: none"> 1. It should be written on A4 paper. 2. It should include a title page (Course Name, Semester, Date, Name...). 3. Your instructor will ask you to submit your homework online or as a hard copy. In the latter case, it should be stapled together.
5	<p>Cheating:</p> <ul style="list-style-type: none"> • Cheating is strictly prohibited behavior. • University regulations will be pursued and enforced on any cheating student.
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7	<p>Other policies:</p>

	Please refer to the university policy.
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Lebanese International University
 The School of Pharmacy and Medical Sciences
 Department: CLINICAL PHARMACY
 Title of the Program: Bachelor of Clinical Pharmacy



**Course Specification of
 PHAR630 Pharmacotherapeutics VII: Selected Topics in
 Therapeutics**

I. - Information about Faculty Member Responsible for the Course:							
Name of Faculty Member	Dr Khaled Alakhali	Office Hours					
Location & Telephone No.	771625660	SAT	SUN	MON	TUE	WED	THU
E-mail		√	√	√	√	√	

II. Course Identification and General Information:						
1	Course Title:	Therapeutics VII:				
2	Course Number & Code:	PHAR630				
3	Credit hours:	C.H				Total
		Theory	Seminars, exercises.	Practical	Field training	
		3				
4	Study level/year at which this course is offered:	Fourth Years				
5	Pre –requisite (if any):	PHAR575, PHAR505				
6	Co –requisite (if any):	PHAR555				
7	Program (s) in which the course is offered	Bachelor of Clinical Pharmacy				
8	Language of teaching the course:	English				
9	System of study:	Credits Hours System				
10	Mode of delivery:	Lectures				
11	Location of teaching the course:	LIU Sana'a				

III. Course Description:	

IV. Intended learning outcomes (ILOs) of the course:**Upon successful completion of the course, students would be able to:**

1. Review some synthetic drugs that mimic and modify the biological roles of indigenous substances.
2. Explain how the pathophysiology of a disease is related to the disease signs and symptoms.
3. Detail the pharmacological bases of the clinical value and the adverse reactions drugs used in the treatment of selected diseases.
4. Propose changes in therapeutic regimens for patients with selected diseases.
5. Propose changes of nutrients for patients with selected diseases.
6. Evaluate drug therapy appropriateness for patients with selected diseases
7. Create a problem list while select the proper therapy and monitoring plan to assess safety and efficacy.
8. Document recommendations of initiating, modifying, stopping, and monitoring drug therapy.
9. Explore the multiple educational and counselling parts in management plans of selected diseases.

V. Course Content:**Distribution of Semester Weekly Plan Of course Topics/Items and Activities.****A – Theoretical Aspect:**

Order	Topics List	Week Due	Contact Hours
	Course syllabus Introduction of KIDNEY pathophysiology .	1	3
1	Acute kidney injury	2-3	6
2	Chronic kidney injury	4-5	6
3	Dialysis	6	3
4	Chronic liver disease	7-8	6
5	Acne Vulgarize	9	3
6	Viruses	10	3
7	Vaccines	11	3
8	Case study review	12	3
12	Final exam	13-14	
Number of Weeks /and Units Per Semester		13-14	36

B – Practical Aspect: (if any)			
Order	Topics List	Week Due	Contact Hours
1			
Number of Weeks /and Units Per Semester			

VI. Teaching strategies of the course:
- LECTURES AS POWER POINT PRESENTION - CASE STUDY

VII. Assignments:			
No	Assignments	Week Due	Mark

VIII. Schedule of Assessment Tasks for Students During the Semester:				
Assessment	Type of Assessment Tasks	Week Due	Mark	Proportion of Final Assessment
1	Attendance	ALL	10	10 %
2	Test 1	2-4	10	10 %
3	Midterm	6-8	20	20 %
4	Test 2	10	10	10 %
5	Assignment	11	10	10%
6	Final exam	13-15	40	40 %

IX. Learning Resources:
Author, (Year), Book Title, Edition, Publisher, Country of publishing
1- Required Textbook(s) (maximum two).
<ul style="list-style-type: none"> Dipiro, J. T. et al. (2021). <i>Pharmacotherapy, A pathophysiologic approach</i>, 11th edition. USA: McGraw Hill Koda-Kimble Mary Anne et al. (2018) <i>Applied Therapeutics: the clinical use of drugs</i>. 11th edition. Mary land: LIPPINCOTT WILLIAMS & WILKINS,

2- Essential References.
<ul style="list-style-type: none"> • Anderson PO, et al.(2001.) Handbook of Clinical Drug Data: McGraw-Hill Education; Helms RA,et al.(2006.)Textbook of Therapeutics: Drug and Disease Management: Lippincott Williams & Wilkins.
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X. Course Policies:	
Unless otherwise stated, the normal course administration policies and rules of the School of Business apply.	
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2	<p>Tardy:</p> <ol style="list-style-type: none"> 1. All students are expected to conduct themselves in a professional manner. Unprofessional behavior such as, but not limited to, repeated disruption of class (including habitually walking in after class has started), sleeping in class, doing other course work in class, reading a newspaper in class, a ringing cell phone, frequent side conversations with other students and/or rudeness toward any person will be considered a serious violation of this standard and will lower your grade accordingly. Please be sure to turn off your cell phone before the start of class. 2. Attention to detail entails being prepared for class. This would include, but is not limited to; having a pencil/pen, note pad, calculator; reading and following the course syllabus, etc. All students are expected to conduct themselves in a professional manner. Unprofessional behavior such as, but not limited to, repeated disruption of class (including habitually walking in after class has started), sleeping in class, doing other course work in class, reading a newspaper in class, a ringing cell phone, frequent side conversations with other students and/or rudeness toward any person will be considered a serious violation of this standard and will lower your grade accordingly. Please be sure to turn off your cell phone before the start of class. 3. Attention to detail entails being prepared for class. This would include, but is not limited to; having a pencil/pen, note pad, calculator; reading and following the course syllabus, etc.
3	<p>Exam Attendance/Punctuality:</p> <p>As per university council decision, a student is eligible for a Quizzes, Midterm or Final examination make-up if and only if he/she had the following incidents:</p>

	<ol style="list-style-type: none"> 1. Sickness; proved by hospitalization report; that is; a discharge summary is necessary. 2. Death in the family proved by a death certificate or equivalent and personal identification. 3. Accidents proved by an expert report. 4. Military/Official engagement.
4	<p>Assignments & Projects: Homework should be clearly presented i.e.:</p> <ol style="list-style-type: none"> 1. It should be written on A4 paper. 2. It should include a title page (Course Name, Semester, Date, Name...). 3. Your instructor will ask you to submit your homework online or as a hard copy. In the latter case, it should be stapled together.
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7	<p>Other policies: Please refer to the university policy.</p>



Course Specifications of Clinical Pharmacy

I. Course Identification and General Information						
1	Course Title:	Clinical Pharmacy				
2	Course Code & Number:	PHAR640				
3	Credit hours:	C.H			TOTAL	
		Theory	Seminars, exercises	Practical		Field training
		3				3
4	Study level/ semester at which this course is offered:	Fourth Year – Spring Semester				
5	Pre –requisite (if any):	PHAR630, PHAR480				
6	Co –requisite (if any):	PHAR 580				
8	Program (s) in which the course is offered:	Bachelor of Clinical Pharmacy				
9	Language of teaching the course:	English				
10	Location of teaching the course:	LIU-Yemen, Al-Khamseen St., Sana'a.				
11	Prepared by:	Dr. Mohammed Kubas				
12	Reviewed by:	Dr.Faiz Sakran				
13	Date of approval:					

II. Course Description:
<p>The aims of this course are to demonstrate, through learning environment, how to assess individual patient and population drug-related needs and develop a plan to meet those needs. The student will successfully perform a comprehensive patient assessment while being patient-centered and empathetic by identifying drug therapy problems and evaluating drugs for indication, effectiveness, safety, and convenience. The student will be able to develop individualized and clinically appropriate care plans for a patient and appropriately educate patients on their drug therapy and assess for patient understanding through effective communication.</p>

III. Course Intended Learning Outcomes (CILOs):	
(A) Knowledge and Understanding:	
Alignment of CILOs (Course Intended Learning Outcomes) to PILOs (Program Intended Learning Outcomes)	
Knowledge and Understanding PILOs	Knowledge and Understanding CILOs
After completing this program, graduates would be able to:	After completing this course, students would be able to:
A2. Identify the role of each of the pharmaceutical sciences in the development and use of pharmaceutical products.	a1. Define the pharmacological and the pharmaceutical properties of pharmaceutical products that are potentially useful for the patient illness.
A4. Relate the biologic effects of medicinal substances to their physicochemical properties and their interactions with the living systems.	a2. Describe the expected changes of body's organ functions, and the level and the time frame of the change as a result of exposure to medicinal substances in various pharmaceutical forms.

(B) Intellectual Skills:	
Alignment of CILOs (Course Intended Learning Outcomes) to PILOs (Program Intended Learning Outcomes)	
Intellectual Skills PILOs	Intellectual Skills CILOs
After completing this program, graduates would be able to:	After completing this course, students would be able to:
B1. Conceptualize pharmaceutical care as the standard framework of clinical pharmacy services in various healthcare settings.	b1. Assess the drug-related needs of individual patient and a defined population of patients.
B2. Integrate patient's demographic, social, and health data to discover drug-related problems.	b2. Identify relevant patient/population characteristics, laboratory values, and medication history to assess a patient's drug-related needs.
B3. Compare alternative therapeutic plans for each drug-related problem based on evidence of effectiveness, safety, and cost.	b3. Design therapeutic alternatives to resolve and prevent drug therapy problems.
B4. Create a patient-specific pharmaceutical care plan to achieve definite outcome for each drug-related problem.	b4. Develop an evidence-based, patient-centered care plan that includes cultural, religious, socioeconomic, and lifestyle considerations.
B5. Propose research ideas based on practice gaps and improvement opportunities.	b5. Prioritize drug classes in need to for drug utilization review.

(C) Professional and Practical Skills
Alignment of CILOs (Course Intended Learning Outcomes) to PILOs (Program Intended Learning Outcomes)

Professional and Practical Skills PILOs	Professional and Practical Skills CILOs
After completing this program, graduates would be able to:	After completing this course, students would be able to:
C3. Contribute in developing, implementing and monitoring pharmaceutical care plan.	c1. Make appropriate dosage adjustments based on age and level of organ dysfunctions.
C4. Counsel patient on the purpose and expectations of drug therapy.	c2. Communicate the pharmaceutical care plan to the patient, including information related to the effects of each drug, its therapeutic goals, and instructions for proper use and ADR reporting.

(D) Transferable (General) Skills:	
Alignment of CILOs (Course Intended Learning Outcomes) to PILOs (Program Intended Learning Outcomes)	
Transferable (General) Skills PILOs	Transferable (General) Skills CILOs
After completing this program, graduates would be able to:	After completing this course, students would be able to:
D3. Exercise time management, critical thinking, problem solving, decision-making and team-working.	d1. Start & end conversations in a timely manner.
D4. Communicate clearly by verbal and written means.	d4. Express self and ideas clearly and effectively.

IV. Alignment of CILOs to Teaching and Assessment Strategies		
(A) Alignment Course Intended Learning Outcomes of Knowledge and Understanding to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
a1. Define the pharmacological and the pharmaceutical properties of pharmaceutical products that are potentially useful for the patient illness.	-Interactive lectures -Problem based learning	-Written tests (mid & final)
a2. Describe the expected changes of body's organ functions, and the level and the time frame of the change as a result of exposure to medicinal substances in various pharmaceutical forms.	-Discussion -Brain storming -Problem based learning	-Written tests (mid & final)

(B) Alignment Course Intended Learning Outcomes of Intellectual Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
b1. Assess the drug-related needs of individual patient and a defined population of patients.	-Interactive lectures -Problem based learning	-Written tests (mid & final) -Quizzes

b2. Relate relevant patient/population symptoms, abnormal lab results, medical and medication history to identify each patient's specific drug-related need.	-Discussion -Directed self- study	-Written tests (mid & final) -Quizzes
b3. Design therapeutic alternatives to resolve and prevent drug therapy problems.	-Interactive lectures -Problem based learning	-Written tests (mid & final) -Quizzes
b4. Develop an evidence-based, patient-centered care plan that includes cultural, religious, socioeconomic, and lifestyle considerations.	-Interactive lectures -Problem based learning	-Written tests (mid & final) -Quizzes
b5. Prioritize drug classes in need to for drug utilization review.	-Discussion -Field activities	-Written tests (mid & final) -Presentation

(C) Alignment Course Intended Learning Outcomes of Professional and Practical Skills to Teaching Strategies and Assessment Strategies:

Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
c1. Make appropriate dosage adjustments based on age and level of organ dysfunctions.	-Interactive lectures -Problem based learning	-Written tests (mid & final) -Quizzes
c2. Communicate the pharmaceutical care plan to the patient, including information related to the effects of each drug, its therapeutic goals, and instructions for proper use and ADR reporting.	-Interactive lectures -Problem based learning	-Written tests (mid & final) -Presentation

(D) Alignment Course Intended Learning Outcomes of Transferable Skills to Teaching Strategies and Assessment Strategies:

Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
d1. Start & end conversations in a timely manner.	-Role play -Discussion	-Quizzes -Presentation
d4. Express self and ideas clearly and effectively.	-Role play -Discussion	-Quizzes -Presentation

V. Course Content:

A – Theoretical Aspect:

Order	Units/Topics List	Learning Outcomes	Sub Topics List	Number of Weeks	Contact hours
1	Introduction to Clinical Pharmacy and	A1,a2	-History and evolution	1	3

	Pharmaceutical Care		-Differences between clinical pharmacy and pharmaceutical care -Definitions -Paradigm shift: requirements and consequences -Added values of pharmacist		
2	DRPs and DRMs		-	1	3
3	Pharmaceutical Care	B1,b2,b3,b4,b5	-Principles and practice -Process or system -Implementation steps	1	3
4	Clinical Pharmacy & Pharmaceutical Care Services	B1,b2,b3,b4,b5	-Hospital-based -Community-based -Ward-based	1	3
5	Clinical Pharmacy & Pharmaceutical Care Services	B1,b2,b3,b4,b5	-Hospital-based -Community-based -Ward-based	1	3
6	POMR & SOAP Notes	B1,b2,b3,b4,b5,c1,c2	-Definitions -Purposes -Components -Initial notes -Progress notes -Pharmacist workout	1	3
7	POMR & SOAP Notes	B1,b2,b3,b4,b5,c1,c2	-Examples -Case Discussions	1	3
8	Drug Information Sources	C1,c2,d1,d2	-Primary -Secondary -Tertiary	1	3
9	Drug Information Pharmacist	C1,c2,d1,d2	-Scope -Tasks -Service requirements	1	3
10	TDM Pharmacist	C1,c2,d1,d2	-Scope -Tasks -Service requirements	1	3
11	TPN Pharmacist	C1,c2,d1,d2	-Scope -Tasks -Service requirements	1	3
12	Community-Based	B1,b2,b3,b4,b5,c1,c2,d1,d2	-Scope -Tasks	1	3

	Pharmacist Clinics		-Service requirements		
13	Final Exams			13-14	
Number of Weeks /and Units Per Semester				14	36

B - Practical Aspect: (if any)				
Order	Tasks/ Experiments	Number of Weeks	contact hours	Learning Outcomes
1				
Number of Weeks /and Units Per Semester				

I. Teaching strategies of the course:				
<ul style="list-style-type: none"> -Interactive lectures -Problem based learning -Case discussion 				

II. Assignments:				
No	Assignments	Aligned CILOs (symbols)	Week Due	Mark
1				

I. Schedule of Assessment Tasks for Students During the Semester:					
No.	Assessment Method	Week Due	Mark	Proportion of Final Assessment	Aligned Course Learning Outcomes
1	Attendance	All	10	10%	all
2	Test 1	2-4	10	10%	a1,a2,
3	Midterm	6-8	20	20%	b1, b2, b3,b4,c1,c2
4	Presentation	12	10	10%	d1,d2
5	Test 2	10	10	10%	c1,c2
6	Final exam	13-14	40	40%	a1,a2,b1, b2, b3,b4,c1,c2

II. Learning Resources:	
Author, (Year), Book Title, Edition, Publisher, Country of publishing	
1- Required Textbook(s) (maximum two).	
Susan M. Stein (2014), Boh's Pharmacy Practice Manual: A Guide to the Clinical Experience, Fourth Edition, Wolters Kluwer/Lippincott Williams and Wilkins.	
2- Essential References.	
Robert Cipolle, Linda Strand, Peter Morley (2012), Pharmaceutical Care Practice: The Patient-Centered Approach to Medication Management, Third Edition, McGraw Hill / Medical.	
3- Electronic Materials and Web Sites etc.	
Distributed notes.	

III. Course Policies:	
1	<p>Class Attendance:</p> <ol style="list-style-type: none"> Attendance in all classes is required. There are no exceptions to this policy. Roll will be called in the very beginning of each class. If you arrive after roll has been called, you may be marked as absent. In any regular semester or summer term, students may miss no more than the equivalent of one third of class sessions scheduled. Students who exceed the above limits are automatically given an (AW) grade in the course by the UMS, and consequently not be allowed to attend class any longer.
2	<p>Tardy:</p> <ol style="list-style-type: none"> All students are expected to conduct themselves in a professional manner. Unprofessional behavior such as, but not limited to, repeated disruption of class (including habitually walking in after class has started), sleeping in class, doing other course work in class, reading a newspaper in class, a ringing cell phone, frequent side conversations with other students and/or rudeness toward any person will be considered a serious violation of this standard and will lower your grade accordingly. Please be sure to turn off your cell phone before the start of class. Attention to detail entails being prepared for class. This would include, but is not limited to; having a pencil/pen, note pad, calculator; reading and following the course syllabus, etc. All students are expected to conduct themselves in a professional manner. Unprofessional behavior such as, but not limited to, repeated disruption of class (including habitually walking in after class has started), sleeping in class, doing other course work in class, reading a newspaper in class, a ringing cell phone, frequent side conversations with other students and/or rudeness toward any person will be

	<p>considered a serious violation of this standard and will lower your grade accordingly. Please be sure to turn off your cell phone before the start of class.</p> <p>3. Attention to detail entails being prepared for class. This would include, but is not limited to; having a pencil/pen, note pad, calculator; reading and following the course syllabus, etc.</p>
3	<p>Exam Attendance/Punctuality: As per university council decision, a student is eligible for a Quizzes, Midterm or Final examination make-up if and only if he/she had the following incidents:</p> <ol style="list-style-type: none"> 1. Sickness; proved by hospitalization report; that is; a discharge summary is necessary. 2. Death in the family proved by a death certificate or equivalent and personal identification. 3. Accidents proved by an expert report. 4. Military/Official engagement.
4	<p>Assignments & Projects: Homework should be clearly presented i.e.:</p> <ol style="list-style-type: none"> 1. It should be written on A4 paper. 2. It should include a title page (Course Name, Semester, Date, Name...). 3. Your instructor will ask you to submit your homework online or as a hard copy. In the latter case, it should be stapled together.
5	<p>Cheating:</p> <ul style="list-style-type: none"> • Cheating is strictly prohibited behavior. • University regulations will be pursued and enforced on any cheating student.
6	<p>Plagiarism:</p> <ul style="list-style-type: none"> • Plagiarism is defined as “copying or stealing someone else’s words or ideas and claiming or presenting them as if they were your own.” • University regulations will be pursued and enforced on any plagiarism attempt.
7	<p>Other policies: Please refer to the university policy.</p>

Course Specifications of Clinical Pharmacy

I. - Information about Faculty Member Responsible for the Course:							
Name of Faculty Member	Dr. Mohammed Kubas	Office Hours					
Location & Telephone No.	LIU-Yemen, Building A, 4 th floor, Ext. 125	SAT	SUN	MON	TUE	WED	THU
E-mail	abdallah.dahbaly@ye.liu.edu.lb	9am-1pm			9am-3pm	9am-11am	

II. Course Identification and General Information:						
1	Course Title:	Clinical Pharmacy				
2	Course Number & Code:	PHAR640				
3	Credit hours:	C.H				Total
		Theory	Seminars, exercises.	Practical	Field training	
		3				
4	Study level/year at which this course is offered:	Fourth Year				
5	Pre –requisite (if any):	PHAR630, PHAR480				
6	Co –requisite (if any):	PHAR 580				
7	Program (s) in which the course is offered	Bachelor of Clinical Pharmacy				
8	Language of teaching the course:	English				
9	System of study:	Credit Hours System				
10	Mode of delivery:	Lectures				
11	Location of teaching the course:	LIU Sana'a				

III. Course Description:	
<p>The aims of this course are to demonstrate, through learning environment, how to assess individual patient and population drug-related needs and develop a plan to meet those needs. The student will successfully perform a comprehensive patient assessment while being patient-centered and empathetic by identifying drug therapy problems and evaluating drugs for indication, effectiveness, safety, and convenience. The student will be able to develop individualized and clinically appropriate care plans for a patient and appropriately educate patients on their drug therapy and assess for patient understanding through effective communication.</p>	

IV. Intended learning outcomes (ILOs) of the course:

Upon successful completion of the course, students would be able to:

1. Define the pharmacological and the pharmaceutical properties of pharmaceutical products that are potentially useful for the patient illness.
2. Describe the expected changes of body's organ functions, and the level and the time frame of the change as a result of exposure to medicinal substances in various pharmaceutical forms.
3. Assess the drug-related needs of individual patient and a defined population of patients.
4. Identify relevant patient/population characteristics, laboratory values, and medication history to assess a patient's drug-related needs.
5. Design therapeutic alternatives to resolve and prevent drug therapy problems .
6. Develop an evidence-based, patient-centered care plan that includes cultural, religious, socioeconomic, and lifestyle considerations .
7. Prioritize drug classes in need to for drug utilization review .
8. Make appropriate dosage adjustments based on age and level of organ dysfunctions .
9. Communicate the pharmaceutical care plan to the patient, including information related to the effects of each drug, its therapeutic goals, and instructions for proper use and ADR reporting.
10. Start & end conversations in a timely manner .
11. Express self and ideas clearly and effectively.

V. Course Content:

Distribution of Semester Weekly Plan Of course Topics/Items and Activities.

A – Theoretical Aspect:

Order	Topics List	Week Due	Contact Hours
1	Introduction to Clinical Pharmacy and Pharmaceutical Care	1	3
2	DRPs and DRMs	2	3
3	Pharmaceutical Care	3	3
4	Clinical Pharmacy & Pharmaceutical Care Services	4	3
5	Clinical Pharmacy & Pharmaceutical Care Services	5	3
6	POMR & SOAP Notes	6	3
7	POMR & SOAP Notes	7	3
8	Drug Information Sources	8	3
9	Drug Information Pharmacist	9	3
10	TDM Pharmacist	10	3
11	TPN Pharmacist	11	3

12	Community-Based Pharmacist Clinics	12	3
13	Exams	13	
14	Exams	14	
Number of Weeks /and Units Per Semester		12	36
B – Practical Aspect: (if any)			
Order	Topics List	Week Due	Contact Hours
1			
Number of Weeks /and Units Per Semester			

VI. Teaching strategies of the course:
- Lectures - Discussions - Presentations

V. Schedule of Assessment Tasks for Students During the Semester:				
No	Assignments		Week Due	Mark
Assessment	Type of Assessment Tasks	Week Due	Mark	Proportion of Final Assessment
1	Attendance	ALL	10	10 %
2	Test 1	3-4	10	10 %
3	Midterm	7-8	30	30 %
4	Presentation	10-11	10	10 %
6	Final exam	13-14	40	40 %

I. Learning Resources:
Author, (Year), Book Title, Edition, Publisher, Country of publishing
1- Required Textbook(s) (maximum two).
<ul style="list-style-type: none"> Dipiro, J. T. et al. (2021). <i>Pharmacotherapy, A pathophysiologic approach</i>, 11th edition. USA: McGraw Hill Koda-Kimble Mary Anne et al. (2018) <i>Applied Therapeutics: the clinical use of drugs</i>. 11th edition. Maryland: LIPPINCOTT WILLIAMS & WILKINS,

2- Essential References.
<ul style="list-style-type: none"> • Anderson PO, et al.(2001.) Handbook of Clinical Drug Data: McGraw-Hill Education; Helms RA,et al.(2006.)Textbook of Therapeutics: Drug and Disease Management: Lippincott Williams & Wilkins.
3- Electronic Materials and Web Sites etc.
<ul style="list-style-type: none"> • WWW.Dynamed.COM • WWW.PUBMED.COM

II. Learning Resources:
Author, (Year), Book Title, Edition, Publisher, Country of publishing
1- Required Textbook(s) (maximum two).
Susan M. Stein (2014), Boh's Pharmacy Practice Manual: A Guide to the Clinical Experience, Fourth Edition, Wolters Kluwer/Lippincott Williams and Wilkins.
2- Essential References.
Robert Cipolle, Linda Strand, Peter Morley (2012), Pharmaceutical Care Practice: The Patient-Centered Approach to Medication Management, Third Edition, McGraw Hill / Medical.
3- Electronic Materials and Web Sites etc.
Distributed notes.

III. Course Policies:	
Unless otherwise stated, the normal course administration policies and rules of the School of Business apply.	
1	Class Attendance: <ol style="list-style-type: none"> 1. Attendance in all classes is required. There are no exceptions to this policy. 2. Roll will be called in the very beginning of each class. If you arrive after roll has been called, you may be marked as absent. 3. In any regular semester or summer term, students may miss no more than the equivalent of one third of class sessions scheduled. Students who exceed the above limits are automatically given an (AW) grade in the course by the UMS, and consequently not be allowed to attend class any longer.
2	Tardy: <ol style="list-style-type: none"> 1. All students are expected to conduct themselves in a professional manner. Unprofessional behavior such as, but not limited to, repeated disruption of class (including habitually walking in after class has started), sleeping in class, doing other course work in class, reading a newspaper in class, a ringing cell phone, frequent side conversations with other students and/or rudeness toward any person will be considered a serious violation of this standard and will lower your grade accordingly. Please be sure to turn off your cell phone before the start of class. 2. Attention to detail entails being prepared for class. This would include, but is not limited to; having a pencil/pen, note pad, calculator; reading and following the course syllabus, etc. All students are expected to conduct themselves in a professional manner. Unprofessional behavior such as, but not limited to, repeated disruption of class (including habitually walking in after class has started), sleeping in class, doing other

	<p>course work in class, reading a newspaper in class, a ringing cell phone, frequent side conversations with other students and/or rudeness toward any person will be considered a serious violation of this standard and will lower your grade accordingly. Please be sure to turn off your cell phone before the start of class.</p> <p>3. Attention to detail entails being prepared for class. This would include, but is not limited to; having a pencil/pen, note pad, calculator; reading and following the course syllabus, etc.</p>
3	<p>Exam Attendance/Punctuality: As per university council decision, a student is eligible for a Quizzes, Midterm or Final examination make-up if and only if he/she had the following incidents:</p> <ol style="list-style-type: none"> 1. Sickness; proved by hospitalization report; that is; a discharge summary is necessary. 2. Death in the family proved by a death certificate or equivalent and personal identification. 3. Accidents proved by an expert report. 4. Military/Official engagement.
4	<p>Assignments & Projects: Homework should be clearly presented i.e.:</p> <ol style="list-style-type: none"> 1. It should be written on A4 paper. 2. It should include a title page (Course Name, Semester, Date, Name...). 3. Your instructor will ask you to submit your homework online or as a hard copy. In the latter case, it should be stapled together.
5	<p>Cheating:</p> <ul style="list-style-type: none"> • Cheating is strictly prohibited behavior. • University regulations will be pursued and enforced on any cheating student.
6	<p>Plagiarism:</p> <ul style="list-style-type: none"> • Plagiarism is defined as “copying or stealing someone else’s words or ideas and claiming or presenting them as if they were your own.” • University regulations will be pursued and enforced on any plagiarism attempt.
7	<p>Other policies: Please refer to the university policy.</p>

Lebanese International University
The School of Pharmacy and Medical Sciences
Department: CLINICAL PHARMACY
Title of the Program: Bachelor of Clinical Pharmacy



Course Specification of PHAR650:
Pharmacy Dispensing Practices

I. Course Identification and General Information:						
1	Course Title:	Pharmacy Dispensing Practices				
2	Course Code & Number:	PHAR650				
3	Credit hours:	C.H			TOTAL	
		Theory	Seminars, exercises	Practical		Field training
		2				2
4	Study level/ semester at which this course is offered:	Fourth/ Summer				
5	Pre –requisite (if any):	PHAR630				
6	Co –requisite (if any):	PHAR480-PHAR606				
8	Program (s) in which the course is offered:	Bachelor of Clinical Pharmacy				
9	Language of teaching the course:	English				
10	Location of teaching the course:	LIU Sana'a				
11	Prepared by:	Dr.Kubas Mohammed				
12	Reviewed by:	Dr .Zahraa Faissal				
13	Date of approval:					

II. Course Description:

The pharmacy dispensing practice course is a highly interactive laboratory session inside a virtual pharmacy (Simulation setting). This simulation lab aims to heighten students' knowledge about medications and patient education, and develop their communication skills. The student will learn to dispense over the counter (OTC) and prescription medications accurately and safely, counsel patients efficiently and properly, manage effectively any conflict that might arise between the pharmacist and the patient and between the pharmacist and other health care professionals (physicians, pharmacist), and acquire leadership skills.

III. Course Intended Learning Outcomes (CILOs):	
(A) Knowledge and Understanding:	
Alignment of CILOs (Course Intended Learning Outcomes) to PILOs (Program Intended Learning Outcomes)	
Knowledge and Understanding PILOs	Knowledge and Understanding CILOs
After completing this program, graduates would be able to:	After completing this course, students would be able to:
A2 Identify the role of each of the pharmaceutical sciences in the development and use of pharmaceutical products.	a1. Review the properties of each drug dosage form (oral solids, oral liquids, injectables, dermatologic systemic, dermatologic topical, nondermatologic topical, inhalation, ophthalmic, otic, ...etc.) in relation to its clinical utility.
A3 Discuss disease pathophysiology and patient's clinical presentation.	a2. Explain the linkage of the patient's signs and symptoms to the pathophysiology of the diagnosed disease in the prescription.
A4 Relate the biologic effects of medicinal substances to their physicochemical properties and their interactions with the living systems.	a3. Match the pharmacologic effects of prescription and nonprescription medications to the patient's drug-related needs (diagnoses and self-care).

(B) Intellectual Skills:	
Alignment of CILOs (Course Intended Learning Outcomes) to PILOs (Program Intended Learning Outcomes)	
Intellectual Skills PILOs	Intellectual Skills CILOs
After completing this program, graduates would be able to:	After completing this course, students would be able to:
B1 Conceptualize pharmaceutical care as the standard framework of clinical pharmacy services in various healthcare settings.	b1. Assess the individual's drug-related needs in the patient's prescription.
B2 Integrate patient's demographic, social, and health data to discover drug-related problems.	b2. Explore medical, medication, and social histories to solve/prevent drug related problems in the patient's prescription and self-care seeking.
B3 Compare alternative therapeutic plans for each drug-related problem based on evidence of effectiveness, safety, and cost.	b3. Consider generic products and therapeutically interchangeable drugs.
B4 Create a patient-specific pharmaceutical care plan to achieve definite outcome for each drug-related problem.	b4. Propose time frame for symptom resolution, and disease cure or control.

(C) Professional and Practical Skills	
Alignment of CILOs (Course Intended Learning Outcomes) to PILOs (Program Intended Learning Outcomes)	
Professional and Practical Skills PILOs	Professional and Practical Skills CILOs
After completing this program, graduates would be able to:	After completing this course, students would be able to:

C1 Provide pharmaceutical care professionally in various pharmacy practice setting.	c1. Gather and maintain patient information to prevent, identify, and resolve drug related problems.
C2 Communicate effectively with patients and other health care professionals.	c2. Translate instructions into a drug label that is apprehended by the patient.
C3 Contribute in developing, implementing and monitoring pharmaceutical care plan.	c3. Prescribe and dispense drugs according to rules and regulations.
C4 Counsel patient on the purpose and expectations of drug therapy.	c4. Apply the counselling techniques such as “Show & Tell” and the “Three Prime Questions”.
C6 Respond to drug information requests in systematic manners.	c5. Document information on the requester, request purpose, type, and the response formulated, and referenced.

(D) Transferable (General) Skills:	
Alignment of CILOs (Course Intended Learning Outcomes) to PILOs (Program Intended Learning Outcomes)	
Transferable (General) Skills PILOs	Transferable (General) Skills CILOs
After completing this program, graduates would be able to:	After completing this course, students would be able to:
D2 Develop presentation, promotion, marketing, business administration, numeric and computation skills.	d 1 Present the patient counselling and discuss supplement and cosmetics topics using PowerPoint presentations and brochures.

I. Alignment of CILOs to Teaching and Assessment Strategies		
(A) Alignment Course Intended Learning Outcomes of Knowledge and Understanding to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
a1. Review the properties of each drug dosage form (oral solids, oral liquids, injectables, dermatologic systemic, dermatologic topical, nondermatologic topical, inhalation, ophthalmic, otic, ...etc.) in relation to its clinical utility.	- Lectures	- Rx. Presentation
a2. Explain the linkage of the patient’s signs and symptoms to the pathophysiology of the diagnosed disease in the prescription.	- Lectures - Case studies	- Rx. Presentation
a3. Match the pharmacologic effects of prescription and nonprescription medications to the patient’s drug-related needs (diagnoses and self-care).	- Lectures - Case studies	- Rx. Presentation

(B) Alignment Course Intended Learning Outcomes of Intellectual Skills to Teaching Strategies and Assessment Strategies:

Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
b1. Assess the individual's drug-related needs.	- Prescription interpretation as presentation	- Rx. Presentation
b2. Explore medical, medication, and social histories to solve/prevent drug related problems in the patient's prescription and self-care seeking.	- Prescription interpretation as presentation	- Rx. Presentation
b3. Consider generic products and therapeutically interchangeable drugs.	- Prescription interpretation as presentation	- Rx. Presentation
b4. Propose time frame for symptom resolution, and disease cure or control.	- Prescription interpretation as presentation	- Rx. Presentation

© Alignment Course Intended Learning Outcomes of Professional and Practical Skills to Teaching Strategies and Assessment Strategies:

Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
c1. Gather and maintain patient information to prevent, identify, and resolve drug related problems.	- Prescription interpretation as presentation	- Rx. Presentation
c2. Translate instructions into a drug label that is apprehended by the patient.	- Counselling topics discussed	- Rx. Presentation
c3. Prescribe and dispense drugs according to rules and regulations.	- Prescription interpretation as presentation	- Rx. Presentation
c4. Apply the counselling techniques such as "Show & Tell" and the "Three Prime Questions".	- Prescription interpretation as presentation	- topic discussions
c5. Document information on the requester, request purpose, type, and the response formulated, and referenced.	- Prescription interpretation as presentation	- topic discussions

(D) Alignment Course Intended Learning Outcomes of Transferable (General) Skills to Teaching Strategies and Assessment Strategies:

Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
d1. Present the patient counselling and discuss supplement and cosmetics topics using PowerPoint presentations and brochures.	- Counselling topics discussed	- Rx. presentation

II. Course Content:					
A – Theoretical Aspect:					
Order	Units/Topics List	Learning Outcomes	Sub Topics List	Number of Weeks	Contact hours
1	lab session 1	a2, a3, a4,b2, b3, b4	- outline of course - Grade system - Introduction and orientation about the dispensing of prescription and interpretation	1	3
2	lab session 2	b2, b3, b4c.1,c2,c3,c4, c5,d1	- Distributes prescriptions to be filled during the current session. -Each student will have 1 prescription per session, for one patient profile that should be filled and discussed during the lab period. -45 minutes will be initially given for the students to study the patient files and dispense the prescriptions. -suggestions or corrections are to be written down on the prescription, and appropriate drugs should be selected and labeled. -Any changes are to be supported with relevant pharmaceutical/medical literature.	2	3
3	lab session 3	b2, b3, b4c.1, c2,c3,c4,c5,d1	Distributes prescriptions to be filled during the current session.	3	3

			<p>-Each student will have 1 prescription per session, for one patient profile that should be filled and discussed during the lab period.</p> <p>-45 minutes will be initially given for the students to study the patient files and dispense the prescriptions.</p> <p>-suggestions or corrections are to be written down on the prescription, and appropriate drugs should be selected and labeled.</p> <p>-Any changes are to be supported with relevant pharmaceutical/medical literature.</p>		
4	lab session 4	b2, b3, b4c.1, c2,c3,c4,c5,d1	<p>Distributes prescriptions to be filled during the current session.</p> <p>-Each student will have 1 prescription per session, for one patient profile that should be filled and discussed during the lab period.</p> <p>-45 minutes will be initially given for the students to study the patient files and dispense the prescriptions.</p> <p>-suggestions or corrections are to be written down on the prescription, and appropriate drugs should be selected and labeled.</p> <p>-Any changes are to be supported with relevant pharmaceutical/medical literature.</p>	4	3
5	lab session 5	b2, b3, b4c.1.c2,c3,c4, c5,d1	<p>Distributes prescriptions to be filled during the current session.</p> <p>-Each student will have 1 prescription per session, for</p>	5	3

			<p>one patient profile that should be filled and discussed during the lab period.</p> <p>-45 minutes will be initially given for the students to study the patient files and dispense the prescriptions.</p> <p>-suggestions or corrections are to be written down on the prescription, and appropriate drugs should be selected and labeled.</p> <p>-Any changes are to be supported with relevant pharmaceutical/medical literature.</p>		
6	lab session 6	b2, b3, b4c.1,c2,c3,c4, c5,d1	<p>Distributes prescriptions to be filled during the current session.</p> <p>-Each student will have 1 prescription per session, for one patient profile that should be filled and discussed during the lab period.</p> <p>-45 minutes will be initially given for the students to study the patient files and dispense the prescriptions.</p> <p>-suggestions or corrections are to be written down on the prescription, and appropriate drugs should be selected and labeled.</p> <p>-Any changes are to be supported with relevant pharmaceutical/medical literature.</p>	6	3
7	lab session 7	b2, b3, b4c.1, c2,c3,c4,c5,d1	<p>Distributes prescriptions to be filled during the current session.</p> <p>-Each student will have 1 prescription per session, for one patient profile that should be filled and</p>	7	3

			<p>discussed during the lab period.</p> <p>-45 minutes will be initially given for the students to study the patient files and dispense the prescriptions.</p> <p>-suggestions or corrections are to be written down on the prescription, and appropriate drugs should be selected and labeled.</p> <p>-Any changes are to be supported with relevant pharmaceutical/medical literature.</p>		
8	lab session 8	b2, b3, b4c.1, c2,c3,c4,c5,d1	<p>Distributes prescriptions to be filled during the current session.</p> <p>-Each student will have 1 prescription per session, for one patient profile that should be filled and discussed during the lab period.</p> <p>-45 minutes will be initially given for the students to study the patient files and dispense the prescriptions.</p> <p>-suggestions or corrections are to be written down on the prescription, and appropriate drugs should be selected and labeled.</p> <p>-Any changes are to be supported with relevant pharmaceutical/medical literature.</p>	8	3
9	Topic discussions(counselling)	c2,c3,c4,c5,d1	<p>1. - Discuss the counselling selected topics in a presentation including the methods of counselling</p>	9	3

10	Topic discussions(supplements)	c2,c3,c4,c5,d1	1. Discuss the use of herbals, vitamins, complementary and alternative therapies	10	3
11	Topic discussions(cosmetics)	c2,c3,c4,c5,d1	1. Discuss the use of sun -screen and blockers, also skin whitening agent in some trades in the market.	11	3
12	Review	a2.a3,a4, b2, b3, b4,c1,c2,c3,c4, c5	- For all 8 sessions	12	3
13	Final exam	a2.a3,a4, b2, b3, b4,c1,c2,c3,c4, c5b8, b9, c1	- All	13-14	
Number of Weeks /and Units Per Semester				13	36

B - Practical Aspect: (if any)				
Order	Tasks/ Experiments	Number of Weeks	contact hours	Learning Outcomes
1				
Number of Weeks /and Units Per Semester				

III. Teaching strategies of the course:
- Educate and orient of student power point presentation in every session - Topic discussions

IV. Assignments:				
No	Assignments	Aligned CILOs (symbols)	Week Due	Mark
1	Session's assignment		2-8	

V. Schedule of Assessment Tasks for Students During the Semester:

No.	Assessment Method	Week Due	Mark	Proportion of Final Assessment	Aligned Course Learning Outcomes
2	Assessment session	2-8	40	40%	b2, b3, b4, , c1,c2,c3,c4,c5,d1
3	Topic discussions(counselling)	8-9	10	10%	c2,c3,c4,c5,d1
4	Topic discussions(supplements)	10	10	10%	c2,c3,c4,c5,d1
	Topic discussions(cosmetics)	11	10	10%	c2,c3,c4,c5,d1
5	Final exam	14-15	30	30%	a2.a3,a4 , b2, b3, b4, , c1,c2,c3,c4,c5

VI. Learning Resources:

Author, (Year), Book Title, Edition, Publisher, Country of publishing

1- Required Textbook(s) (maximum two).

- Dipiro, J. T. et al. (2021). *Pharmacotherapy, A pathophysiologic approach*, 11th edition. USA: McGraw Hill
- Koda-Kimble Mary Anne et al. (2018) *Applied Therapeutics: the clinical use of drugs*. 11th edition. Maryland: LIPPINCOTT WILLIAMS & WILKINS,

2- Essential References.

- Anderson PO, et al.(2001.) *Handbook of Clinical Drug Data*: McGraw-Hill Education;
- Helms RA,et al.(2006.)*Textbook of Therapeutics: Drug and Disease Management*: Lippincott Williams & Wilkins.

3- Electronic Materials and Web Sites etc.

- www.CDC.com
- WWW.WHO.org
- www.NIH.com
- www.lexi.com
- WWW.PUBMED.COM

II. Course Policies:

1 Class Attendance:

1. Attendance in all classes is required. There are no exceptions to this policy.

	<ol style="list-style-type: none"> 2. Roll will be called in the very beginning of each class. If you arrive after roll has been called, you may be marked as absent. 3. In any regular semester or summer term, students may miss no more than the equivalent of one third of class sessions scheduled. Students who exceed the above limits are automatically given an (AW) grade in the course by the UMS, and consequently not be allowed to attend class any longer.
2	<p>Tardy:</p> <ol style="list-style-type: none"> 1. All students are expected to conduct themselves in a professional manner. Unprofessional behavior such as, but not limited to, repeated disruption of class (including habitually walking in after class has started), sleeping in class, doing other course work in class, reading a newspaper in class, a ringing cell phone, frequent side conversations with other students and/or rudeness toward any person will be considered a serious violation of this standard and will lower your grade accordingly. Please be sure to turn off your cell phone before the start of class. 2. Attention to detail entails being prepared for class. This would include, but is not limited to; having a pencil/pen, note pad, calculator; reading and following the course syllabus, etc. All students are expected to conduct themselves in a professional manner. Unprofessional behavior such as, but not limited to, repeated disruption of class (including habitually walking in after class has started), sleeping in class, doing other course work in class, reading a newspaper in class, a ringing cell phone, frequent side conversations with other students and/or rudeness toward any person will be considered a serious violation of this standard and will lower your grade accordingly. Please be sure to turn off your cell phone before the start of class. 3. Attention to detail entails being prepared for class. This would include, but is not limited to; having a pencil/pen, note pad, calculator; reading and following the course syllabus, etc.
3	<p>Exam Attendance/Punctuality: As per university council decision, a student is eligible for a Quizzes, Midterm or Final examination make-up if and only if he/she had the following incidents:</p> <ol style="list-style-type: none"> 1. Sickness; proved by hospitalization report; that is; a discharge summary is necessary. 2. Death in the family proved by a death certificate or equivalent and personal identification. 3. Accidents proved by an expert report. 4. Military/Official engagement.
4	<p>Assignments & Projects: Homework should be clearly presented i.e.:</p> <ol style="list-style-type: none"> 1. It should be written on A4 paper. 2. It should include a title page (Course Name, Semester, Date, Name...). 3. Your instructor will ask you to submit your homework online or as a hard copy. In the latter case, it should be stapled together.
5	<p>Cheating:</p> <ul style="list-style-type: none"> • Cheating is strictly prohibited behavior. • University regulations will be pursued and enforced on any cheating student.
6	<p>Plagiarism:</p>

	<ul style="list-style-type: none">• Plagiarism is defined as “copying or stealing someone else’s words or ideas and claiming or presenting them as if they were your own.”• University regulations will be pursued and enforced on any plagiarism attempt.
7	Other policies: Please refer to the university policy.

Lebanese International University
The School of Pharmacy and Medical Sciences
Department: CLINICAL PHARMACY
Title of the Program: Bachelor of Clinical Pharmacy



**Course Specification of
PHAR650 Pharmacy Dispensing Practices**

I. - Information about Faculty Member Responsible for the Course:							
Name of Faculty Member	Kubas Mohammed	Office Hours					
Location & Telephone No.	777484826	SAT	SUN	MON	TUE	WED	THU
E-mail	M7kubas_ph@yahoo.com	√	√	√	√	√	

II. Course Identification and General Information:						
1	Course Title:	Pharmacy Dispensing Practices				
2	Course Number & Code:	PHAR650				
3	Credit hours:	C.H				Total
		Theory	Seminars, exercises.	Practical	Field training	
		2		1		
4	Study level/year at which this course is offered:	Fourth Years				
5	Pre –requisite (if any):	PHAR630				
6	Co –requisite (if any):	PHAR480-PHAR606				
7	Program (s) in which the course is offered	Bachelor of Clinical Pharmacy				
8	Language of teaching the course:	English				
9	System of study:	Credits Hours System				
10	Mode of delivery:	Discussion				
11	Location of teaching the course:	LIU Sana'a				

III. Course Description:
The pharmacy dispensing practice course is a highly interactive laboratory session inside a virtual pharmacy (Simulation setting). This simulation lab aims to heighten students’ knowledge about medications and patient education, and develop their communication skills. The student will learn to dispense over the counter (OTC) and prescription medications accurately and safely, counsel patients efficiently and properly, manage effectively any conflict that might arise between the pharmacist and the patient between the pharmacist and other health care professionals (physicians, pharmacist) and acquire leadership skills.

IV. Intended learning outcomes (ILOs) of the course:**Upon successful completion of the course, students would be able to:**

1. Review the properties of each drug dosage form (oral solids, oral liquids, injectables, dermatologic systemic, dermatologic topical, nondermatologic topical, inhalation, ophthalmic, otic, ...etc.) in relation to its clinical utility.
2. Explain the linkage of the patient's signs and symptoms to the pathophysiology of the diagnosed disease in the prescription.
3. Match the pharmacologic effects of prescription and nonprescription medications to the patient's drug-related needs (diagnoses and self-care).
4. Assess the individual's drug-related needs in the patient's prescription.
5. Explore medical, medication, and social histories to solve/prevent drug related problems in the patient's prescription and self-care seeking.
6. Consider generic products and therapeutically interchangeable drugs.
7. Propose time frame for symptom resolution, and disease cure or control.
8. Gather and maintain patient information to prevent, identify, and resolve drug related problems.
9. Translate instructions into a drug label that is apprehended by the patient.
10. Prescribe and dispense drugs according to rules and regulations.
11. Apply the counselling techniques such as "Show & Tell" and the "Three Prime Questions".
12. Document information on the requester, request purpose, type, and the response formulated, and referenced.
13. Present the patient counselling and discuss supplement and cosmetics topics using PowerPoint presentations and brochures.

V. Course Content:**Distribution of Semester Weekly Plan Of course Topics/Items and Activities.****A – Theoretical Aspect:**

Order	Topics List	Week Due	Contact Hours
1	lab session 1	1	3
2	lab session 2	2	3
3	lab session 3	3	3
4	lab session 4	4	3
5	lab session 5	5	3
6	lab session 6	6	3
7	lab session 7	7	3
8	lab session 8	8	3
9	Topic discussions(counselling)	9	3
10	Topic discussions (supplement)	10	3
11	Topic discussions(cosmetics)	11	3
12	Review	12	3
13	Final exam	13-14	
Number of Weeks /and Units Per Semester		14	36

VIII. Teaching strategies of the course:	
-	Educate and orient of student power point presentation in every session
-	Topic discussions

IX. Assignments:				
No	Assignments	Aligned CILOs (symbols)	Week Due	Mark
1	Session's assignment		2-8	

X. Schedule of Assessment Tasks for Students During the Semester:					
No.	Type of Assessment Tasks	Week Due	Mark	Proportion of Final Assessment	
2	Assessment session	2-8	40	40%	
3	Topic discussions(counselling)	8-9	10	10%	
4	Topic discussions(supplements)	10	10	10%	
	Topic discussions(cosmetics)	11	10	10%	
5	Final exam	13-14	30	30%	

XI. Learning Resources:	
Author, (Year), Book Title, Edition, Publisher, Country of publishing	
1- Required Textbook(s) (maximum two).	
<ul style="list-style-type: none"> Dipiro, J. T. et al. (2021). <i>Pharmacotherapy, A pathophysiologic approach</i>, 11th edition. USA: McGraw Hill Koda-Kimble Mary Anne et al. (2018) <i>Applied Therapeutics: the clinical use of drugs</i>. 11th edition. Maryland: LIPPINCOTT WILLIAMS & WILKINS, 	
2- Essential References.	
<ul style="list-style-type: none"> Anderson PO, et al.(2001.) <i>Handbook of Clinical Drug Data</i>: McGraw-Hill Education; Helms RA,et al.(2006.)<i>Textbook of Therapeutics: Drug and Disease Management</i>: Lippincott Williams & Wilkins. 	
3- Electronic Materials and Web Sites etc.	
<ul style="list-style-type: none"> www.CDC.com WWW.WHO.org 	

- www.NIH.com
- www.lexi.com
- WWW.PUBMED.COM

VI. Course Policies:

Unless otherwise stated, the normal course administration policies and rules of the School of Business apply.

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3	<p>Exam Attendance/Punctuality:</p> <p>As per university council decision, a student is eligible for a Quizzes, Midterm or Final examination make-up if and only if he/she had the following incidents:</p> <ol style="list-style-type: none"> 1. Sickness; proved by hospitalization report; that is; a discharge summary is necessary. 2. Death in the family proved by a death certificate or equivalent and personal identification. 3. Accidents proved by an expert report. 4. Military/Official engagement.
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	<ol style="list-style-type: none"> 1. It should be written on A4 paper. 2. It should include a title page (Course Name, Semester, Date, Name...). 3. Your instructor will ask you to submit your homework online or as a hard copy. In the latter case, it should be stapled together.
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7	<p>Other policies: Please refer to the university policy.</p>