Republic of Yemen

Ministry of Higher Education and Scientific Research

University of Modern Sciences

Faculty of Pharmacy

Department of Pharmacy

الجمهورية اليمنية

وزارة التعليم العالي والبحث العلمي

جـــامعة العلوم الحـديـثة

كلية الصيدلة

قسم الصيدلة

جامعة العلوم الحـديثة

University of Modern Sciences

مقررات الخطة الدراسية

لبرنامج بكالوريوس الصيدلة

2014-2015

Program and Course Specification	
Program	**Bachelor of Pharmaceutical Sciences**
Length and Mode	**5 years/ 10 semesters**
Degree Award	**Bachelor of Pharmaceutical Sciences** **(B. Pharm. Sci.)**
Total Credit hours	**161 hrs.**

الرؤية

التميز والابتكار في التعليم الصيدلي والبحث العلمي محلياً وإقليمياً.

الرسالة

يسعي قسم الصيدلة بجامعة العلوم الحديثة لتوفير بيئة تعليمية متميزة وبرامج اكاديمية حديثة ومعامل متطورة لتخريج صيادلة قادرين على مزاولة المهنة بامتياز بما يخدم سوق العمل ومطابقته للمعايير الاكاديمية.

أهداف القسم

- تخريج صيادلة على مستوى عالي من الكفاءة قادرين على المنافسة .
- تدريب الطلاب التدريب الأمثل و الذي سيساعدهم على تطوير قدراتهم في المستقبل
- تحسين و تطوير مناهج الكلية بصورة مستمرة للوصول بها إلى أعلى المستويات العلمية.
- المساهمة في مجال البحوث و تطويرها وخاصة الأبحاث التي تتناول المشاكل الصحية والصيدلانية في المجتمع اليمني و الارتقاء بمستوى التعليم و خدمة المجتمع.
- مواكبة تطورات التعليم الحديث من خلال بناء علاقات تعاون مع المؤسسات الأكاديمية المحلية و العربية و الدولية لتطوير العملية التعليمية.
- التطوير الدائم والمستمر للمهارات والمعارف العلمية والمهنية للتعامل بالشكل الأمثل مـــع كل ما يطرأ من تحديات في المجال الطبي محلياً وعالمياً.

الفرص الوظيفية

إن مهنة الصيدلة لا تقتصر على صرف الدواء حيث تمر مهنة الصيدلة بمرحلة تغيرات جذرية، إذ يقوم الصيدلي بدور واسع في تقديم الخدمات الصيدلانية وتوفر مهنة الصيدلة واسعة التنوع واتصالاً مباشراً مع المرضى.

إن الدور التقليدي للصيدلي هو صرف الوصفات الطبية ،ويعتبر الصيدلي مسئولا عن مراجعة نوع و كمية وجرعة الدواء وضمان أن الأدوية الموصوفة لا تتداخل مع بعضها أو مع الأدوية أو الأغذية التي يتناولها المريض. وبالإضافة إلى ذلك، فإن الصيدلي هو المسئول عن تقديم النصائح للمرضى عن أدويتهم والإجابة عن الأسئلة التي قد تدور في أذهانهم والمتعلقة

بالعلاج الدوائي (سواءً كان دواء بوصفة طبية أو بدون وصفة طبية) ، كذلك الإشراف على تحضير الأدوية في المحاليل الوريدية في المستشفيات . ومع ذلك ، فإن دور الصيدلي يزداد اتساعاً مما يتيح فرصاً إضافية في مواقع العمل الإكلينيكية، والمستشفيات، وشركات الدواء، وشركات التكنولوجيا الحيوية.

ورغم أن معظمنا على دراية بدور الصيدلي في الصيدليات الأهلية، فإن الكثير منا ليسوا على دراية بالفرص الوظيفية الأخرى في حقل الصيدلة مثل :

- **صيدلة المستشفيات – مدير صيدلية.**
- **الصيدلة الإكلينيكية (السريرية)**
- **الصناعة الصيدلانية – الأبحاث والتطوير، والتصنيع، وحركية الدواء، والصيدلة الحيوية.**
- **الدوائر الحكومية – التموين الطبي بوزارة الصحة، والمستشفيات والعيادات الحكومية، والمنشآت الصحية الحكومية الأخرى.**
- **الكليات والجامعات – عضو هيئة تدريس – محاضر.**
- **الصيدلة النووية – صيدلي للعلاج الكيماوي.**
- **الطب البديل وطب الأعشاب.**

Program goals:

The faculty of pharmacy undergraduate program is a five years pharmacy education offering a Bachelor's degree in pharmaceutical sciences. The educational Program of The Faculty of Pharmacy aims at providing students with knowledge, skills and abilities needed to practice the pharmacy profession effectively in various settings including community pharmacies, hospitals, Academic institutions, research centers, pharmaceutical firms and governmental health departments.

For that purpose, students receive basic practical training to make them eligible for licensure as pharmacists and clinical training to qualify them to serve as pharmacy practitioners involved in medicine use and pharmaceutical care through reviewing and monitoring patients' medication regimen. Students are also taught to acquire the necessary knowledge in areas related to the extraction, synthesis, design, formulation, production, use, quality control, approval, management and marketing of pharmaceutical products.

The educational aims of bachelor of pharmaceutical Program are summarized as follows:

1. To graduate pharmacists having a substantial body of knowledge, moral values and skills based on international academic reference standards.
1. To promote a well understanding of the pharmacy profession and the role of pharmacist in various pharmaceutical settings, including community and hospital practices as well as pharmaceutical firms.
2. To help acquire certain skills that help in performing various qualitative and quantitative analytical techniques; fulfill criteria of GLP and GPMP to assure the quality of raw materials, procedures and pharmaceutical products.
3. To help acquire the necessary knowledge and skills in areas related to the extraction, synthesis, design, formulation, production, use, quality control, approval, management, promotion, and marketing of pharmaceutical products.
4. To develop the capability of communication skills, time management, critical thinking, problem solving, decision making, team working and the ability of retrieving and using

modern information technology, from original sources, to benefit patients also, perform responsibilities in compliance with legal, ethical and professional rules.

5. To implement the sense of curiosity and enthusiasm for further knowledge and skills which allow the graduate to accept the new trends for long-life learning and continuing professional development.

A-Basic Information

1- Programme Title: Bachelor of Pharmaceutical Sciences.

2- Programme Type: Single √

3- Departments:

- Department of Pharmaceutics and Pharmaceutical Technology
- Department of Pharmaceutical Chemistry
- Department of Pharmacognosy
- Department of Pharmacology and Toxicology
- Department of clinical pharmacy & Pharmacy Practice

4- Coordinator: Prof. Dr. Ahmed Mohamed Al-Sabati

B- Professional Information

I- Programme Aims

1. To develop and extend the graduates of pharmacy with the detailed knowledge and understanding with high quality education and training required for professional practice in pharmacy.
2. To equip of pharmacy graduate students with fundamental knowledge and skills to enhance career opportunities within the pharmaceutical or biotechnology industries, academic pharmaceutical research, or pharmaceutical regulatory organizations.
3. To provide the thorough, high quality education and training required for professional practice in Pharmacy world; and
4. To develop intellectual and professional skills of use to graduates irrespective of their career choice after graduation.

2-Intended Learning Outcomes (ILOs)

Program Intended Learning Outcomes (PILOs):

❖ PILOs of Knowledge and Understanding Skills:

A1. Show understanding of fundamentals of biomedical sciences, physics, mathematics and chemistry and organization of human body.

A2. Explain the fundamental of social and behavioral sciences.

A3. Explain physicochemical properties of materials and products

A4. Describe analytical methods, principles, design and development techniques

A5. Identify actions of medicines on human body.

A6. Explain the basis of complementary and alternative medicines

A7. Identify types of poisons and mechanisms and actions of poisoning

A8. Describe Biopharmaceutics and pharmacokinetics of medicines

A9. Define the basis of health policy, Pharmacoeconomics, pharmacoepidemology , pharmaceutical marketing and administration.

A10. Describe the pharmacists role in different pharmacy practices.

A11. Identify the properties of dosage forms and novel drug delivery systems.

A12. Describe the methods of biostatistics and pharmaceutical calculations

❖ PILOs of Intellectual Skills:

B1. Collect interpret and assess information and data relevant to pharmacy practice

B2. Classify drugs, approaches and other information relevant to pharmacy based on scientific classification system.

B3. Design an evaluate different types of safe and effective drugs , pharmaceutical dosage forms and cosmetic preparations

B4. Select appropriate standard operation procedures to conduct qualitative and quantitative analysis.

B5. Plan a modern system for administration of foundations and merge ethics to business in drug marketing.

B6. Develop and design suitable methods for extraction of active medicinal agents from various sources.

B7. Formulate and evaluate patient care plan about rational drug use of medications.

B8. Use appropriate research methods including experimental, observational and electronic to collect data and solve problems.

B9. Apply mathematical equations to calculate data relevant to pharmacy practices.

❖ PILOs of Professional Skills and Practices:

C1. Handle safely the chemicals, biological samples and pharmaceutical ingredients and products.

C2. Operate different instruments and use emerge technologies for preformulation, formulation and analysis of materials according to standard guidelines.

C3. Screen for drugs from different sources and carry out pharmacy relevant experiments successfully.

C4. Advice patients and healthcare professionals to optimize medicines use.

C5. Employ the relevant ways to produce extemporaneous preparations including TPN and IV admixtures.

C6. Apply administrative and Pharmacoeconomics rules in pharmacy and ethically use marketing skills for drug promotion.

C7. Conduct research and utilize the results in different pharmaceutical fields.

❖ PILOs of General and Transferable Skills:

D1. Interact and communicate effectively and behave in disciplines with colleagues, patients and healthcare professionals effectively in team-activities.

D2. Develop and demonstrate skills of time managements, self-learning and decision making.

D3. Participate collaboratively in team work with colleagues and healthcare professionals.

D4. Take the responsibility for adaption to change needs in pharmacy practice.

D5. Retrieve essential references of evidence-based to achieve maximal clinical effectiveness

3-Graduate attributes

Upon successful completion of an undergraduate Pharmacy program, graduates will be able to:

1. Demonstrate knowledge of basic and biomedical sciences and their applications in pharmacy.
2. Demonstrate a sound understanding of a substantial body of knowledge in pharmaceutical sciences.
3. Apply current good manufacturing practices (cGMP)criteria in formulating and preparing pharmaceutical/cosmetic products from different sources (including raw materials) and contribute to the distribution and storage system.
4. Utilize analysis methods (qualitative and quantitative) in testing raw materials and pharmaceutical products.
5. Deal safely and effectively with chemicals, natural materials and pharmaceutical products and participate in optimizing medicines uses.
6. Practice and perform responsibilities and authorities ethically, legally, professionally and respect patient`s rights.
7. Educate patients and members of health care team in rational use of medicines based on updated drug information.
8. Apply evidence-based decision making skills and search in solving problems related to pharmacy profession.
9. Demonstrate effective communication, leadership, marketing and business management skills.
10. Plan, design, conduct and participate in research to improve healthcare system performance.
11. Apply self-dependence , life-long and collaborative learning skills in updating their knowledge.

4-Curriculum Structure and Contents

a- Programme duration*:* ***5 years (10 semesters)***

b- Programme structure

b.i- No. of credit hours per 5 years:

Lectures	**124 Credit- hours**
Laboratory	**37 Credit- hours**
Total	**161 Credit- hours**

Each semester is 14 weeks.

b.ii- No of credit hours: Compulsory: **161**

Lecture: **124**

Practical: **3 7**

b.iii- No of credit hours of basic sciences courses: **55**

b.iv- No of credit hours of courses of social and humanities: **6**

b.v- No of credit hours of specialized courses: **94**

b.vi- No of credit hours of other courses: **6**

b.vii- **Professional Practice Experience**: **600** hours

Key to Course Abbreviations and Numbers used in the Curriculum Structure

Abbreviations

PHT- Pharmaceutics

PHG- Pharmacognosy

PHL- Pharmacology

PHC- Pharmaceutical Chemistry

PHCL- Clinical Pharmacy

Course Numbers

The first digit of the three digits course number refers to the level of study

Courses numbered 100-199 are appropriate for First- Year students

Courses numbered 200-299 are appropriate for Second- Year students

Courses numbered 300-399 are appropriate for Third- Year students

Courses numbered 400-499 are appropriate for Fourth- Year students

Courses numbered 500-599 are appropriate for Fifth- Year students

5- Program Courses :-

FIRST YEAR- FIRST SEMESTER

CODE	*SUBJECT*	*CREDIT HOURS*			Prerequisites
		TOTAL	*L*	*P*	
BIOL 111	General Biology	3	2	1	-
CHEM 121	General Chemistry	3	2	1	-
PHYS 131	Physics for Pharmacy Students	2	2	-	-
PHCL 141	Pharmacy Orientation	2	2	-	-
COMP 151	Introduction to Computer science	2	1	1	-
ARAB 161	Arabic language 101	2	2	-	-
ENGL 171	Medical English I	2	2	-	-
TOTAL CREDIT HOURS		16			

FIRST YEAR- SECOND SEMESTER

CODE	*SUBJECT*	*CREDIT HOURS*			Prerequisites
		TOTAL	*L*	*P*	
MATH 112	Mathematics for Pharmacy	2	2	-	-
PHT 122	Pharmaceutical Calculation	2	2	-	-
ENGL 132	Medical English II	2	2	-	-
PHT 142	Physical Pharmacy	3	2	1	-
ANAT 182	Anatomy & Histology	2	2	-	BIOL 111
PHG 162	Botany and medicinal plants	3	2	1	-
PHCL 172	First Aid	2	2		-
IC 152	Islamic Culture	2	2	-	-
TOTAL CREDIT HOURS		18			

SECOND YEAR- FIRST SEMESTER

CODE	*SUBJECT*	*CREDIT HOURS*			Prerequisites
		TOTAL	*L*	*P*	
PHT 211	Pharmaceutics I	3	2	1	PHT 122
PHC 251	Pharmaceutical Analytical Chemistry I	3	2	1	CHEM 121
PSL 231	Physiology I	3	2	1	ANAT 182
PHC 241	Pharmaceutical Organic Chemistry I	3	2	1	CHEM 121
PHG221	Pharmacognosy & Phytochemistry I	4	3	1	PHG 162
PHCL 261	Pharmacy Public Health	2	2	-	-
TOTAL CREDIT HOURS		18			

SECOND YEAR- SECOND SEMESTER

CODE	*SUBJECT*	*CREDIT HOURS*			Prerequisites
		TOTAL	*L*	*P*	
PHT 212	Pharmaceutics II	3	2	1	PHT 211
PHG 222	Pharmacognosy & Phytochemistry II	4	3	1	PHG221
PHC 232	Pharmaceutical Organic chemistry II	3	2	1	PHC 241
PHC 242	Pharmaceutical Analytical Chemistry II	3	2	1	PHC 251
BCH 252	Introduction to Biochemistry & Molecular Biology	3	2	1	CHEM 121
PSL 262	Physiology II	2	2	-	PSL 231
TOTAL CREDIT HOURS		18			

THIRD YEAR- FIRST SEMESTER

CODE	*SUBJECT*	*CREDIT HOURS*			Prerequisites
		TOTAL	*L*	*P*	
PHT 311	Pharmaceutics III	3	2	1	PHT 211 PHT 212
PHL 321	Pharmacology I	3	2	1	BCH 252
PHT 331	General Microbiology	3	2	1	-
PHL 341	Metabolic Biochemistry	3	2	1	BCH 252
PHT 351	Pharmaceutical Drug discovery & development	2	2	-	PHT 211 PHT 212 PHT 311
PHT 361	Dermatological & Cosmetic preparations	3	2	1	PHT 212
TOTAL CREDIT HOURS		17			

THIRD YEAR- SECOND SEMESTER

CODE	*SUBJECT*	*CREDIT HOURS*			Prerequisites
		TOTAL	*L*	*P*	
PHL 312	General Toxicology	3	2	1	PHL 321
PHL 322	Pharmacology II	3	2	1	PHL 321
PHT 332	Pharmaceutical Microbiology	3	2	1	PHT 331
PHCL 342	Biostatistics & pharmacy literature	2	2	-	3th level
PHC 352	Medicinal Chemistry I	3	2	1	PHC 241 PHC 232
PATH 362	Pathology	3	2	1	PSL 231 PSL 262
TOTAL CREDIT HOURS		17			

FOURTH YEAR- FIRST SEMESTER

CODE	*SUBJECT*	*CREDIT HOURS*			Prerequisites
		TOTAL	*L*	*P*	
PHLC 411	Community Pharmacy I	3	2	1	PHL 321 PHL 322
PHL 421	Pharmacology III	2	2	-	PHL 322
PHC 431	Medicinal Chemistry II	3	2	1	PHC 352
PHT 441	Industrial pharmacy	2	2	-	4th level
PHCL 451	Biopharmaceutics & Pharmacokinetics I	2	2	-	PHT 122
PHT 461	Pharmaceutical Biotechnology	2	2	-	4th level
PHCL 471	Pathophysiology	2	2	-	PATH 362
TOTAL CREDIT HOURS		16			

FOURTH YEAR- SECOND SEMESTER

CODE	*SUBJECT*	*CREDIT HOURS*			Prerequisites
		TOTAL	*L*	*P*	
PHLC 412	Community Pharmacy II	3	2	1	PHLC 411
PHG 422	Applied Pharmacognosy	3	2	1	PHG 221 PHG 222
PHC 432	Medicinal Chemistry III	3	2	1	PHC 431
PHCL 442	Physical assessment skills	2	1	1	PHLC 411
PHCL 452	Biopharmaceutics & Pharmacokinetics II	2	2	-	PHCL 451
PHCL 462	Principles of Pharmacy practice	3	2	1	PHLC 411
TOTAL CREDIT HOURS		16			

FIFTH YEAR- FIRST SEMESTER

CODE	*SUBJECT*	*CREDIT HOURS*			Prerequisites
		TOTAL	*L*	*P*	
PHCL 511	Clinical Pharmacy I	3	2	1	5th level
PHC 521	Pharmaceutical instrumental analysis	3	2	1	PHT 441
PHT 531	Pharmaceutical Quality Control and Good Manufacturing Practice (GMP)	3	3	-	5th level
PHLC 541	Pharmacy Regulation and ethics	2	2	-	PHLC 411 PHCL 412
PHT 551	Nuclear Pharmacy	2	2	-	5th level
PHLC 561	Pharmacy administration	2	2	-	5th level
PHP 571	Professional Practice Experience	0	0	0	5th level
TOTAL CREDIT HOURS		15			

FIFTH YEAR- SECOND SEMESTER

CODE	*SUBJECT*	*CREDIT HOURS*			Prerequisites
		TOTAL	*L*	*P*	
PHCL 512	Clinical pharmacy II	3	2	1	PHCL 511
PHCL 522	Hospital pharmacy practice	2	2	-	PHLC 411 PHCL 412
PHCL 532	Communication skills in pharmacy	2	2	-	PHLC 411 PHCL 412
PHCL 542	Pharmaceutical Marketing & promotion	2	2	-	5th level
PHI 562	Pharmacy research project	4	-	4	5th level
PHTR 572	Professional Practice Experience	0	0	0	5th level
TOTAL CREDIT HOURS		13			

6- Programme Admission Requirements

A- Admission criteria:

The faculty accepts the following:

1- The student with secondary certificate –science section graduated from any licensed school.

2- Who fulfill the requirements and pass the interview and the written admission exam.

Assessment:

Written examinations, practical assessments, essay assignment, laboratory and other written reports

B- Degree classification:

Evaluation of successful students will be according to the following standards:

A^+: from 95% to over from total marks.

A: from 90% to less than 95% from total marks.

B^+: from 85% to less than 90% from total marks.

B: from 80% to less than 85% from total marks.

C^+: from 75% to less than 80% from total marks.

C: from 65% to less than 70% from total marks.

D^+: from 60% to less than 65% from total marks.

D: from 50% to less than 60% from total marks.

F: from 30% to less than 50% from total marks.

7- Regulations for Progression and Programme Completion

- For the students to be transferred from one academic year to the next, he is required to have successfully passed in all subjects in the final or in the complementary exams in October of the same year.

- However, the student may still be transferred if he has failed in not more than two subjects. In such cases, students " carrying" subjects from one year to the next should re-sit for their "failed" subjects in their proper respective semesters.
- Final year students who have failed in October exam also, he has to re-sit for his exams in those subjects in their proper respective semesters thereafter as many times as necessary until he succeeds

First Year/Level/Semester 1:

Automatically moved to second Semester

First Year/Level/Semester 2:

Pass in all subjects or fail in not more than two subjects.

Second Year/Level/Semester 1:

Automatically moved to second semester

Second Year/Level/Semester 2:

Pass in all subjects or fail in not more than two subjects.

Third Year/Level/Semester 1:

Pass in all subjects or fail in not more than two subjects.

Third Year/Level/Semester 2:

Pass in all subjects or fail in not more than two subjects.

Fourth Year/Level/Semester 1:

Automatically moved to second Semester

Fourth Year/Level/Semester 2:

Pass in all subjects or fail in not more than two subjects.

Fifth Year/Level/Semester 1:

Automatically moved to second Semester

Fifth Year/Level/Semester 2:

Pass in all subjects

8: Regulations for Undergraduate Students

By laws, every student has only two opportunities for every level to succeed, once the student exhausts the number of opportunities he will be excluded from the department and can change to another one.

Level One

Course Specification

GENERAL BIOLOGY

Course Identification and General Information:							
1.	**Course Title:**	**GENERALBIOLOGY**					
2.	**Course Code &Number:**	**BIOL 111**					
3.	**Credit hours:**	**C.H**					**TOTAL**
		L.	**Tut.**	**S.**	**P.**	**Tr.**	
		2	**-**	**-**	**1**	**-**	**3**
4.	**Study level/ semester at which this course is offered:**	**(first) Year – (1st) semester**					
5.	**Pre –requisite (if any):**	**None**					
6.	**Co –requisite (if any):**	**None**					
7.	**Program (s) in which the course is offered:**	**Faculty of Medical Science**					
8.	**Language of teaching the course:**	**ENGLISH**					
9.	**Location of teaching the course:**	**IN THE UNIVERSITY**					

L: lecturing ; Tut: Tutorial , S: seminar ; P: practical ; Tr.: training

Course Description:
This course introduces students to the scientific study of living organisms. Students will investigate biological concepts including the chemical basis of life, cell structure and function, metabolism, reproduction, genetics, evolution, biological diversity and classification, plant structure and function, animal structure and function and ecology.

Intended learning outcomes of the course(CILOs) and their alignment to Program Intended learning outcomes (PILOs)		
NO.	**PILOs**	**CILOS**
1	**A1**	**a1.** Identify the biological structures of living organisms, the common features of Life process& the common genera & species of animal kingdom.
2		**a2.** Describe the functions & components of the cell as the basic unit of life.
3		**a3.** Determine the basic processes in the cell and its life cycle.
4		**a4.** Explicit the Energy sources in living organisms
5		**a5.** Explain the role of enzymes &the Chemical constituents of the protoplasm in the cell.
6		**a6.** Discuss Mendel experiments and the molecular basis of inheritance : chromosome, DNA, genes
7	**B1**	**b1.** Classify living organisms into kingdoms, genera and species
8		**b2.** Differentiate between living organisms & non-living things and between animal cell and plant cell.
9		**b3.** Relate hereditary to genetic factors**.**
10	**C1**	**c1.** Handle efficiently and safely different biological samples in the biology lab.
11	**C2**	**c2.** Operate successfully the light microscope and other instruments used in the biology lab.
12	**D1**	**d1.** Communicate effectively and behave in discipline with colleagues and teachers.
13	**D2**	**d2.** Demonstrate the ability of time management, self-learning and problem-solving skills**.**
14	**D3**	**d3.**Work successfully in team-work in the biology lab

(a) Alignment Course Intended Learning Outcomes (CILOs) of knowledge & understanding to Teaching Strategies and Assessment Strategies		
Course Intended Learning Outcomes	**Teaching strategies**	**Assessment Strategies**
a1, a2, a3	Active Lecture Tutorials Seminar Self-Study Video-clips Map concepts Tutorials	written exam , Practical assessment (Lab accomplishments, Lab. Reporting , practical exam)
a4, a5		written exam, assignment
a6		written exam , assignment
(b) Alignment Course Intended Learning Outcomes (CILOs) of Intellectual Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	**Teaching strategies**	**Assessment Strategies**
b1, b2	Active Lecture Tutorials Seminar Self-Study Video-clips Map concepts Tutorials	written exam , quizzes
b3		written exam, quizzes
(c)Alignment Course Intended Learning Outcomes (CILOs) of Professional and Practical Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	**Teaching strategies**	**Assessment Strategies**
c1, c2	Lab. Practice	Lab. term works, final practical exam
(d) Alignment Course Intended Learning Outcomes (CILOs) of Transferable Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	**Teaching strategies**	**Assessment Strategies**
d1, d3	Lab. Practice , Group-project	Lab. term works, final practical exam , assignment
d2.	Lab. Practice, feed-back learning	Lab. term works, final practical exam , assignment

Course Content:					
A – Theoretical Aspect:					
Order	**Units/ Topics List**	**Learning Outcomes**	**Sub Topics List**	**No. of Weeks**	**contact hours**
1	**Scope of Biology**	a1, a2, b2	• Definitions and brief history of biology • Living organisms and Non-Living things • Chemical context of life • Common features of Life process . • Biological structures of living organisms: cell, tissue, organ, system. • Energy sources in living organisms	4	8
2	**The cell : the basic unit of life**	a3, a4, a5, b2	• Structure and components of the cell: cell membranes : types, Functions and properties, cytoplasm, Micro and macro molecules of cell • Function of enzymes &Chemical constituents of the protoplasm • basic process in the cell (respiration, nutrition, etc.) • life cycle of the cell • differences between animal and plant cell.	4	8
			MID-TERM EXAM	1	2
3	**animal kingdom**	a1, b1	• classification of living organisms into kingdoms, genera and species. • Animal kingdoms classification : Genera and	3	6

			species; common features, diversity &reproduction. • Examples of common species of general of animal kingdoms and their anatomical features.		
4	**Inheritance**	a6, b3	• Mendel Experiments and the Gene Idea • Molecular basis of inheritance : chromosome, DNA, genes	2	4
Course Review and discussion session				1	2
FINAL - EXAM				1	2
TOTAL				16	32
Number of Weeks /and Units Per Semester				16	4

Practical Aspect:				
Order	**Tasks/ Experiments**	**Number of Weeks**	**contact hours**	**Aligned Course Learning Outcomes**
1.	Introduction to biology lab: safety, tools, instruments, scope of experiments and reporting assignments.	1	2	c1, c2, c3, c4, d3, d1, d2,
2.	Structure & components of the cells: using illustrative models	1	2	a2, c1, c2, c3, c4, d3, d1, d2
3.	Light microscope: sample preparations, operation	2	4	c1, c2, c3, c4, d3, d1, d2
4.	Differentiation between animal and plant cells.	1	2	b2, c1, c2, c3, c4, d3, d1, d2
5.	Common species of animal genera: morphological and microscopical features	4	2	a1, b1, c1, c2, c3, c4, d3, d1, d2

6.	Molecular basis of hereditary using illustrative models.	1	2	a6, b3, c1, c2, c3, c4, d3, d1, d2
7.	Mendel experimentation of hereditary	1	2	a6, b3, c1, c2, c3, c4, d3, d1, d2
PRACTICAL EXAM		1	2	c1, c2, c3, c4, d3, d1, d2
Total		**12**	24 equivalent to 12 credit hours	

Teaching strategies of the course:
Active Lecture It is the most frequently employed teaching method to convey knowledge and explain theories to students in large groups (50-200) or in sessions, which consist of more than one group gathered in one classroom. The efficiency of lecturing can be enhanced by using techniques such as **Brain-storming**: It depends on stimulation of the student`s brain through a group of questions &/or **Concepts map**: which depends on sequencing of thoughts in the form of maps with horizontal or vertical relations & by using **learning aids** such as Data show projector
Laboratory practice: students doing experiments in labs individually or in small groups
Feed-back learning: students are individually asked to do perform quick tests (quiz) or to do certain assignments such lab. experiments, problems solving, homework, topics summarizing or internet search. The teacher will provide them feed-back correction & evaluation
Group projects: students work on a project in groups of 2 to 3 students. Important for learning by doing ,using the results in practical manner &for promoting team work skills
One Minute Paper is based on a concept called retrieval learning. Just fill out a small questionnaire within 15 minutes after taking a class, reading a chapter, watching a documentary, or learning in another way.
Demonstration is a teaching method used to communicate an idea with the aid of visuals such as flip charts, posters, power point, etc. A demonstration is the process of teaching someone how to make or do something in a step-by-step process. As you show how, you "tell" what you are doing.
Video clips can bring a subject to students in a completely new way and help them comprehend the material they're reading or working with.
Role-play is a technique that allows students to explore realistic situations by interacting with other people in a managed way in order to develop experience and trial different strategies in a supported environment.
A concept map is a visual representation of a topic that students can create using words, phrases, lines, arrows, space on the page, and perhaps color to help organize their ideas and show their understanding of an idea, vocabulary term, or essential question.

Assignments:				
No	**Assignments**	**Aligned CILOs(symbols)**	**Week Due**	**Mark**
1	**Individual**: every student is assigned to do a search report of an enzyme/ chemical constituent in the cell	d2	4-13	3
2	**Group** : each group of students will be assigned to do a search- report about genetic elements	d1, d3	14	2

Schedule of Assessment Tasks for Students During the Semester						
Theoretical part assessment						
No.	**Assessment Method**		**Week Due**	**Mark**	**Proportion of Total course Assessment**	**Aligned Course Learning Outcomes (CILOs)**
1	Term Works	Quizzes	4-13, 14	5	5	b1, b2, b3, b4, b5, b6, b7
		Assignments	7, 12	5	5	d1, d2, d3
2	Mid-semester exam of theoretical part (written exam		7	10	10	a1, a2, a5, b2, b3
3	Final exam of theoretical part (written exam)		16	50	50	a1, a2, a3, a4, a5, b1, b2, b3, b4, b5, b6, b7
TOTAL				70	70 %	70

Practical part assessment						
No.	**Assessment Method**		**Week Due**	**Mark**	**Proportion of Total course Assessment**	**Aligned Course Learning Outcomes(CILOs)**
1	Lab. Term works	Attitude	1-12	5	10	c1, c2, d1, d2, d3
2		Accomplishments		5	10	
	Final exam (practical)		12	20	20	c1, c2, d1, d2
Total				30	30 %	

Learning Resources:
1- Required Textbook(s) (maximum two).
1. Sardana. A text book of pharmaceutical biology
2- Essential References
1. Parthasarathi. Molecular biology of the cell
3-Electronic References
1-Home | International Journal of Biology | CCSE (ccsenet.org) 2-International Journal of Biological Sciences (ijbs.com) 3-www.biologyjournal.in

Course Policies:	
1	**Class Attendance:** At least 75 % of the course hours should be attended by the student. Otherwise, he/she will not be allowed to attend the final exam
2	**Tardy:** any student who is late for more than 15 minutes from starting the lecture will not be allowed to attend the lecture and will be considered absent.
3	**Exam Attendance/Punctuality:** any student who is late for more than 30 minutes from starting the exam will not be allowed to attend the exam and will be considered absent.
4	**Assignments & Projects:** Assignments and projects will be assessed individually unless the teacher request for group work
5	**Cheating**: Cheating by any means will cause the student failure and he/she must re-study the course

6	**Plagiarism**: Plagiarism by any means will cause the student failure in the course . Other disciplinary procedures will be according to the college rules.

GENERAL CHEMISTRY

Course Identification and General Information:								
1	Course Title:	General chemistry						
2	Course Code &Number:	CHEM 121						
3	Credit hours:	C.H						TOTAL
		Theoretical			P.	Tr.		
		L.	Tut.	S.				
		2	-	-	1	-		3
4	Study level/ semester at which this course is offered:	(FIRST) Year – (FIRST) semester						
5	Pre –requisite (if any):	NONE						
6	Co –requisite (if any):	NONE						
7	Program (s) in which the course is offered:	Faculty of Medical Science						
8	Language of teaching the course:	ENGLISH						
9	Location of teaching the course:	IN THE UNIVERSITY						

L: lecturing ; Tut: Tutorial , S: seminar ; P: practical ; Tr.: training

Course Description:

The course concerns with study of basic concepts of chemistry as an introduction to specific pharmaceutical and medicinal chemistry courses. It covers the qualitative and quantitative aspects of scientific measurement, the nature of matter, gases, liquids and solids, energy, atomic theory, properties of elements, chemical bonding, molecular structure and properties, stoichiometry, thermochemistry, and solutions.

Intended learning outcomes of the course: (CILOs) and their alignment to Program Intended learning outcomes (PILOs), teaching strategies and assessment strategies		
1. Alignment CILOs to PILOs		
No	**PILOs**	**Intended learning outcomes of the course (CILOs)**
1	**A1** Show understanding of the fundamentals of the basic and biomedical sciences including physics, mathematics, chemistry, structure of human body, normal and abnormal body functions, basis of genomes and different biochemical path ways and their relations with different diseases.	**a1.** Understand the roles of chemistry in modern sciences.
2		**a2.** Explicit the chemical structures of matters and their chemical properties.
3	**A3** Explain the physicochemical properties of pharmaceutical products and their relationship to molecular structure and the design of medicinal agents	**a3.** Discuss the principles and types of chemical reactions
4	**B1** Collect, interpret and asses relevant pharmaceutical and biomedical sciences to construct the pharmacophores of the structure and their effect on the stability, pharmacokinetic and pharmacodynamics profile of the drug.	**b1.** Interpret the type of chemical compound based on bond formed between atoms
5		**b2 .**Solve chemical problems related to chemical formula, electronic configuration , quantum (molecular weight, molarity, normality), pH, ionization constant and pKa.
6		**b3.** Interpret the electronic configuration and transition in atoms
7		**b4.** Compare between the different types of chemistry disciplines and also between inorganic and organic compounds.
8		**b5 .**Express the chemical compounds and elements using abbreviate letters.

9		**b6.** Relate the atom reactivity to electronic configuration to.
10		**b7.** Predict the outcomes of a chemical reaction between two chemical entities.
11	**C1.** Handle safely the chemicals, biological samples and pharmaceutical ingredients and products.	**c1.** Handle efficiently and safely the chemical materials and tools used in the chemistry lab.
12	**C2.** Operate different instruments and use emerge technologies for preformulation, formulation and analysis of materials according to standard guidelines.	**c2.** Operate the instruments and perform experiments successfully in the chemistry lab.
13	**D1.** Interact and communicate effectively and behave in disciplines with colleagues, patients and healthcare professionals effectively in team-activities.	**d1.** Communicate effectively and behave in discipline with colleagues and in teacher in the lab..
14	**D2.** Develop and demonstrate skills of time managements, self-learning and decision making.	**d2.** Demonstrate the ability of time management, self-learning and problem-solving skills.
15	**D3.** Participate collaboratively in team work with colleagues and healthcare professionals.	**d3.** Work successfully in team-work during performing experiments in chemistry lab.

2. Alignment CILOs to teaching strategies and assessment strategies		
(a) Alignment Course Intended Learning Outcomes of knowledge & understanding to Teaching Strategies and Assessment Strategies		
Course Intended Learning Outcomes	**Teaching strategies**	**Assessment Strategies**
a1, a2,a3	**Active Lecture**	**written 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,b2,b3, b5, b6, b7	**Lectures, feed-back learning**	**Written exams , assignment, quizzes**
b4	**Lectures**	**Written 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, c2	**Lab. Practice**	**Lab. term works, final practical 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	**Lab. Practice**	**Lab. term works, final practical exam**
d2	**Lab. Practice works, feed-back learning**	**Lab. practical works, individual assignment**
d3	**Lab. practice, group project**	**Lab. term works, group-assignment**

Course Content:

A – Theoretical Aspect:

Order	Units/ Topics List	Aligned Course Learning Outcomes	Sub Topics List	No. of Weeks	contact hours
1	**Introduction to Chemistry**	a1, b4	• Matter: Classification, States, Physical, and Chemical Properties	1	2
2	**Atoms, Molecules, and Ions**	a2, b1, b2, b3, b6	The Atomic Theory The Structure of the Atom Atomic Number, Mass Number, Isotopes The Periodic Table	3	6

			Molecules and Ions Chemical Formulas Naming Compounds		
3	**Mass Relationships in Chemical Reaction**	a2, b2	Atomic Mass Molar Mass of an Element and Avogadro's Number Molecular Mass Percent Composition of Compounds Chemical Reactions and Chemical Equations Amounts of Reactants and Products Limiting Reagents Reaction Yield	2	4
MID-TERM EXAM				1	2
4	**Gases**	b2	Substances That Exist as Gases Pressure of a Gas The Gas Laws The Ideal Gas Equation Gas Stoichiometry 4Dalton's Law of Partial Pressure The Kinetic Molecular Theory of Gases Deviation from Ideal Behavior	2	4
5	**Thermochemistry**	a3, b7, c2	Energy Changes in Chemical Reactions Introduction to Thermodynamics Enthalpy	1	6
6	**Quantum Theory and the Electronic Structure of Atoms**	b4, c2	From Classical Physics to Quantum Theory Bohr's Theory of the Hydrogen Atom The Dual Nature of the Electron Quantum Mechanics Quantum Numbers	1	6

			Atomic Orbitals Electron Configuration The Building-Up Principle		
7	**Periodic Relationships Among the Elements**		Periodic Classification of the Elements Periodic Variation in Physical Properties Ionization Energy Electron Affinity	1	
8	**Chemical Bonding: Basic Concepts**		Lewis Dot Structure The Ionic Bond The Covalent Bond Electronegativity Writing Lewis Structure The Concept of Resonance Bond Energy	1	
9	**Chemical Bonding: Molecular Geometry and Hybridization**		Molecular Geometry Dipole Moments The Valence Bond Theory Hybridization of Atomic Orbitals Hybridization in Molecules Containing Double and Triple Bonds	1	
10	**Intermolecular Forces in Liquids and Solids**		The KMT of Liquids and Solids Intermolecular Forces Properties of Liquids Crystalline vs. Amorphous Solids Phase Changes Phase Diagrams	1	
Course Review and discussion session				1	2
FINAL - EXAM				1	2
TOTAL				16	32
Number of Weeks /and Units Per Semester				16 weeks	6 Units

Practical Aspect:				
Order	**Tasks/ Experiments**	**Number of Weeks**	**contact hours**	**Aligned Course Learning Outcomes**
1	Introduction to chemistry lab: safety, td3ls, instruments, scope of experiments and reporting assignments. Chemical structures (atoms, molecules, bonds) using models	**1**	**2**	c1, c2 a2
2	pH- meter principle and standard operation procedure: determination of pH of water, weak acids / bases determination of pH of strong acids/bases, salts	**1**	**2**	c1, c2, , d3, , d1, d2
3	Preparation of buffers phosphate , citrate , acetate	**1**	**2**	c1, c2, , d3, , d1, d2
4	Oxidation reactions using potassium permanganate & Decomposition reaction of sodium bicarbonate in water.	**1**	**2**	c1, c2, , d3, , d1, d2
5	Acid/base reaction s e.g : HCl and NaOH	**1**	**2**	c1, c2, d3, , d1, d2
6	Scheme Identification of cationic inorganic radicals	**3**	**6**	c1, c2, d3, , d1, d2
7	Scheme Identification of anionic inorganic radicals	**3**	**6**	c1, c2, , d3, , d1, d2
PRACTICAL EXAM		**1**	**2**	a2, c1, c2,

Total	**12**	**24 equivalent to 12 credit hours**	

Teaching strategies of the course:
Active Lecture It is the most frequently employed teaching method to convey knowledge and explain theories to students in large groups (50-200) or in sessions, which consist of more than one group gathered in one classroom. The efficiency of lecturing can be enhanced by using techniques such as **Brain-storming**: It depends on stimulation of the student`s brain through a group of questions &/or **Concepts map**: which depends on sequencing of thoughts in the form of maps with horizontal or vertical relations & by using **learning aids** such as Data show projector
Laboratory practice: students doing experiments in labs individually or in small groups
Feed-back learning: students are individually asked to do perform quick tests (quiz) or to do certain assignments such lab. experiments, problems solving, homework, topics summarizing or internet search. The teacher will provide them feed-back correction & evaluation
Group projects: students work on a project in groups of 2 to 3 students. Important for learning by doing ,using the results in practical manner &for promoting team work skills
One Minute Paper is based on a concept called retrieval learning. Just fill out a small questionnaire within 15 minutes after taking a class, reading a chapter, watching a documentary, or learning in another way.
Demonstration is a teaching method used to communicate an idea with the aid of visuals such as flip charts, posters, power point, etc. A demonstration is the process of teaching someone how to make or do something in a step-by-step process. As you show how, you "tell" what you are doing.
Video clips can bring a subject to students in a completely new way and help them comprehend the material they're reading or working with.
Role-play is a technique that allows students to explore realistic situations by interacting with other people in a managed way in order to develop experience and trial different strategies in a supported environment.
A concept map is a visual representation of a topic that students can create using words, phrases, lines, arrows, space on the page, and perhaps color to help organize their ideas and show their understanding of an idea, vocabulary term, or essential question.
Self-studying is a learning method where students direct their own studying—outside the classroom and without direct supervision. Since students are able to take control of what (and how) they are learning, self-study can be a very valuable way for many students to learn.

Assignments:				
No	**Assignments**	**Aligned CILOs(symbols)**	**Week Due**	**Mark**
1	**Individual**: every student is assigned to solve problems presented by the teacher on chemical formula, electronic configuration , quantum (molecular weight, molarity, normality), pH, ionization constant and pKa	d2	4-13	3
2	**Group** : each group of students will be assigned to do a search-report about one type of chemical reactions	d1, d3	14	2

Schedule of Assessment Tasks for Students During the Semester						
Theoretical part assessment						
No.	**Assessment Method**		**Week Due**	**Mark**	**Proportion to Total course Assessment**	**Aligned Course Learning Outcomes (CILOs)**
1	Term Works	Quizzes	4-13, 14	5	5	b1, b2, b3, b4, b5, b6, b7
		Assignments	7, 12	5	5	b2, a3, d1, d2
2	Mid-semester exam of theoretical part (written exam		7	10	10	a1, a2, a5, b2, b3
3	Final exam of theoretical part (written exam)		16	50	50	a1, a2, a3, a4, a5, b1, b2, b3, b4, b5, b6, b7
TOTAL				70	70 %	70

Practical part assessment						
No.	**Assessment Method**		**Week Due**	**Mark**	**Proportion to Total course Assessment**	**Aligned Course Learning Outcomes(CILOs)**
1	Lab. Term works	Attitude	1-12	5	5	c1, c2, d1, d2, d3
2		Accomplishments		5	5	
	Final exam (practical)		12	20	20	c1, c2,d1, d2
Total				30	30 %	

Learning Resources:
1- Required Textbd3k(s) (maximum two)
Cotton . Basic inorganic chemistry
2- Essential References
1. Bothara. inorganic pharmaceutical chemistry 2.Richard E. Beleil , General chemistry Lab. Manual, 2005, Dakota State university 3.British pharmacopeia, 2013
3-Electronic References
1-Home | International Journal of Chemistry | CCSE (ccsenet.org) 2-International Journal of Chemistry Research (ijcr.info) 3-International Journal of Chemistry, Material and Environmental Research (IJCMER) 4-International Journal of New Chemistry (ijnc.ir)

Course Policies:	
1	**Attendance:** At least 75 % of the course hours should be attended by the student. Otherwise, he/she will not be allowed to attend the final exam
2	**Tardy:** any student who is late for more than 15 minutes from starting the lecture will not be allowed to attend the lecture and will be considered absent.
3	**Exam Attendance/Punctuality:** any student who is late for more than 30 minutes from starting the exam will not be allowed to attend the exam and will be considered absent.

4	**Assignments & Projects:** Assignments and projects will be assessed individually unless the teacher request for group work
5	**Cheating**: Cheating by any means will cause the student failure and he/she must re-study the course
6	**Plagiarism**: Plagiarism by any means will cause the student failure in the course . Other disciplinary procedures will be according to the faculty rules.

PHYSICS FOR PHARMACY

I. Course Identification and General Information:								
1	**Course Title:**	**Physics for pharmacy**						
2	**Course Code &Number:**	**PHYS 131**						
3	**Credit hours:**	**C.H**						**TOTAL**
		Theoretical			**P.**	**Tr.**		
		L.	**Tut.**	**S.**				
		1	1	-	-	-		**2**
4	**Study level/ semester at which this course is offered:**	(FIRST) Year – (1st) semester						
5	**Pre –requisite (if any):**	**None**						
6	**Co –requisite (if any):**	**None**						
7	**Program (s) in which the course is offered:**	**Faculty of Medical Science**						
8	**Language of teaching the course:**	**ENGLISH**						
9	**Location of teaching the course:**	**IN THE UNIVERSITY**						

L: lecturing ; Tut: Tutorial , S: seminar ; P: practical ; Tr.: training

II. Course Description:

This course deals with the study of basic physics concepts as an introduction to physical pharmacy and pharmaceutics disciplines. Students will study Kinematics and Newtonian`s laws, Work and Energy, pressure, electricity, optical physics and sonic physics.

III. Intended learning outcomes of the course (CILOs) and their alignment to Program Intended learning outcomes (PILOs), teaching strategies and assessment strategies		
1. Alignment CILOs to PILOs		
No.	**PILOs**	**CILOs**
1	**A1**	**a1.** Show understanding of the basics physics concepts associated with motion, electricity, light and sound.
2	**B1**	**b1.** Interpret physical phenomena.
3	**B9**	**b2 .** Apply equations to calculate physical parameters
4	**C1**	**c1.** Handle efficiently and safely the chemical materials and tools used in the laboratory
5	**C2**	**c2.** Operate the instruments and perform experiments successfully in the laboratory
6	**D1**	**d1.** Communicate effectively and behave in discipline with colleagues and teacher in the laboratory
7	**D2**	**d2.** Demonstrate the skills of time management and self-learning.
8	**D3**	**d3.** Participate efficiently with his colleagues in a team work.

2. Alignment CILOs to teaching strategies and assessment strategies		
(a) Alignment Course Intended Learning Outcomes (CILOs) of knowledge & understanding to Teaching Strategies and Assessment Strategies		
Course Intended Learning Outcomes	**Teaching strategies**	**Assessment Strategies**
a1	**Lecture-discussion**	**Written exams**
(b) Alignment Course Intended Learning Outcomes (CILOs) of Intellectual Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	**Teaching strategies**	**Assessment Strategies**
b1, b2	**Lecture, Lab practice**	**Written exams, Lab. term works, quizzes, assignments**

(c)Alignment Course Intended Learning Outcomes (CILOs) of Professional and Practical Skill of Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	**Teaching strategies**	**Assessment Strategies**
c1, c2	**Lab. Practice**	**Lab. term works, final practical exam**
(d) Alignment Course Intended Learning Outcomes (CILOs) of Transferable Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	**Teaching strategies**	**Assessment Strategies**
d1	**Lab. Practice**	**Lab. term works, final practical exam**
d2	**Lab. Practice works, feed-back learning**	**Lab. practical works, assignment**
d3	**Lab. practice, group project**	**Lab. term works, assignment**

Course Content:

A – Theoretical Aspect:

Order	Units/ Topics List	CILOs	Sub Topics List	No. of Weeks	contact hours
1	**Introduction to physics**	a1, b1	• Definition, brief history; relation & applications of physics to modern sciences especially medical sciences	1	2
2	**Kinematics and Newtonian`s laws**	a1, b1, b2	• definition, parameters, Newtonian`s law of motion, factors affecting including force, gravity, mass, etc. • Applications in medical/pharmaceutical sciences. • Exercise Problems	2	4

3	**Work and Energy**	a1, b1, b2	• Definitions • differences between energy, work and Power& Laws governing • Forms and sources of energy (electric, optical, chemical, thermal, etc.) • Applications in medical/pharmaceutical sciences.	3	8
			MID-TERM EXAM	1	2
4	**Pressure**	a1, b1, b2	• Definitions, types • Applications in medical/pharmaceutical sciences. • Exercise Problems	1	
5	**Electricity**	a1, b1, b2	• definition, brief history • electromagnetic field electrical resistance, potential and current • generation techniques • Applications in medical/pharmaceutical sciences. • Exercise Problems	3	6
6	**Optical physics**	a1, b1, b2	• photons, light waves, wave length, wave number, frequency. • Light spectrum (visible, UV, IR, ..,etc.), light absorbance, light refraction, light scattering • Applications in medical/pharmaceutical sciences. • Exercise Problems	2	4
7	**Sonic (sound) physics**	a1, b1, b2	• Sonic waves • ultrasonic waves • Echo	1	2

			• Applications in medical/pharmaceutical sciences. • Exercise Problems		
Course Review		a1, b1, b2	Review of the course topics by discussion session.	1	2
FINAL - EXAM				1	2
TOTAL				16	32
Number of Weeks /and Units Per Semester				16 weeks	7 Units

Teaching strategies of the course:
Active Lecture It is the most frequently employed teaching method to convey knowledge and explain theories to students in large groups (50-200) or in sessions, which consist of more than one group gathered in one classroom. The efficiency of lecturing can be enhanced by using techniques such as **Brain-storming**: It depends on stimulation of the student`s brain through a group of questions &/or **Concepts map**: which depends on sequencing of thoughts in the form of maps with horizontal or vertical relations & by using **learning aids** such as Data show projector
Laboratory practice: students doing experiments in labs individually or in small groups
Feed-back learning: students are individually asked to do perform quick tests (quiz) or to do certain assignments such lab. experiments, problems solving, homework, topics summarizing or internet search. The teacher will provide them feed-back correction & evaluation
Group projects: students work on a project in groups of 2 to 3 students. Important for learning by doing ,using the results in practical manner &for promoting team work skills
One Minute Paper is based on a concept called retrieval learning. Just fill out a small questionnaire within 15 minutes after taking a class, reading a chapter, watching a documentary, or learning in another way.
Demonstration is a teaching method used to communicate an idea with the aid of visuals such as flip charts, posters, power point, etc. A demonstration is the process of teaching someone how to make or do something in a step-by-step process. As you show how, you "tell" what you are doing.
Video clips can bring a subject to students in a completely new way and help them comprehend the material they're reading or working with.

Role-play is a technique that allows students to explore realistic situations by interacting with other people in a managed way in order to develop experience and trial different strategies in a supported environment.
A concept map is a visual representation of a topic that students can create using words, phrases, lines, arrows, space on the page, and perhaps color to help organize their ideas and show their understanding of an idea, vocabulary term, or essential question.
Self-studying is a learning method where students direct their own studying—outside the classroom and without direct supervision. Since students are able to take control of what (and how) they are learning, self-study can be a very valuable way for many students to learn.

Assignments				
No	**Assignments**	**Aligned CILOs**	**Week Due**	**Mark**
1	**Individual**: every student is assigned to solve physical problems related to course topics.	b2, d2	4-13	3
2	**Group** : each group of students will be assigned to do a search-based report on one of the physical phenomena in the course topics.	b2, d1, d3	14	2

Schedule of Assessment Tasks for Students During the Semester						
Theoretical part assessment						
No.	**Assessment Method**		**Week Due**	**Mark**	**Proportion to Total course Assessment**	**Aligned Course Learning Outcomes (CILOs)**
1	Term Works	Quizzes	4-13, 14	5	5	b2
		Assignments	7, 12	5	5	b2, d1, d2, d3

2	Mid-semester exam of theoretical part (written exam	7	10	10	a1, b1
3	Final exam of theoretical part (written exam)	16	50	50	a1, b1, b2
TOTAL			70	70 %	70

Learning Resources:
1- Required Textbook(s) (maximum two)
1. Zemansky.M.W "Heat and Thermodynamics, 6th edition" McGraw-hill , 1995. 2. Greenwood,M.E" An Illustrated Approach To medical physics" Davis Company, 1998. 3. Christman. fundamentals of physics
2- Essential References
1. Parkash. An introduction to medical biophysics 2. Cameron, John R. and James G. Skofronick; Medical Physics. A Wiley-Interscience publication.
3-Electronic References
1- International Journal of Physics (sciepub.com) 2- International Journal of Physics and Applications (physicsjournal.in) 3- Physics Journals | International Journal of Physics (arcjournals.org)

Course Policies:	
1.	**Class Attendance:** At least 75 % of the course hours should be attended by the student. Otherwise, he/she will not be allowed to attend the final exam
2.	**Tardy:** any student who is late for more than 15 minutes from starting the lecture will not be allowed to attend the lecture and will be considered absent.
3.	**Exam Attendance/Punctuality:** any student who is late for more than 30 minutes from starting the exam will not be allowed to attend the exam and will be considered absent.
4.	**Assignments & Projects:** Assignments and projects will be assessed individually unless the teacher request for group work
5	**Cheating**:

	Cheating by any means will cause the student failure and he/she must re-study the course
6	**Plagiarism**: Plagiarism by any means will cause the student failure in the course . Other disciplinary procedures will be according to the college rules.

Pharmacy Orientation

Course Identification and General Information:							
1	**Course Title:**	**Pharmacy Orientation**					
2	**Course Code &Number:**	**PHCL 141**					
3	**Credit hours:**	**C.H**					**TOTAL**
		L.	**Tut.**	**S.**	**P.**	**Tr.**	
		2	-	-		-	**2**
4	**Study level/ semester at which this course is offered:**	(First) Year – (1st) semester					
5	**Pre –requisite (if any):**	**None**					
6	**Co –requisite (if any):**	**None**					
7	**Program (s) in which the course is offered:**	**Faculty of Medical Science**					
8	**Language of teaching the course:**	**ENGLISH**					
9	**Location of teaching the course:**	**IN THE UNIVERSITY**					

Course Description:
The course provides essential introduction to pharmacy as profession, its past, current and future carriers and orientations. This course provides a study of and introduction to pharmacy and the role of pharmacist in providing patient care services. It also introduces pharmacy practice and the technician's role in a variety of pharmacy settings.

Intended learning outcomes of the course (CILOs) and their alignment to Program Intended learning outcomes (PILOs), teaching strategies and assessment strategies.		
3. Alignment CILOs to PILOs		
No.	**PILOs**	**CILOs**
1	**A10**	**a1.** Enumerate the current missions of pharmacy profession and the duties of pharmacists as drug experts.
2		**a2.** Identify the basic pharmacy sciences, academic programs and the foundations that control pharmacy laws
3		**a3 .** Discuss the progress of pharmacy throughout history and its current and future development and fields.
4		**a4.** Describe the current carriers of pharmacy profession and the new
5	**B2**	**b1.** Classify drug risks benefits.
6	**C6**	**c1.** Use the media technologies to communicate, search and present thoughts
7	**D3**	**D1.** Demonstrate the ability to work effectively within a team.
8	**D4**	**d2.** Demonstrate the ability to community and patients serving through understanding of his/her mission as drug experts.

4. Alignment CILOs to teaching strategies and assessment strategies		
(a) Alignment Course Intended Learning Outcomes (CILOs) of knowledge & understanding to Teaching Strategies and Assessment Strategies		
Course Intended Learning Outcomes	**Teaching strategies**	**Assessment Strategies**
a1, a2, a3, a4	**Lecture, Lecture-discussion**	**written exam , assignment**
(b) Alignment Course Intended Learning Outcomes (CILOs) of Intellectual Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	**Teaching strategies**	**Assessment Strategies**
b1	**Lecture, Lecture-discussion , feed-back learning**	**written exam , quizzes**
(c)Alignment Course Intended Learning Outcomes (CILOs) of Professional and Practical Skills to Teaching Strategies and Assessment Strategies:		

Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
c1	Feed-back learning , Group-project.	Assignment, Written-exam
(d) Alignment Course Intended Learning Outcomes (CILOs) of Transferable Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	**Teaching strategies**	**Assessment Strategies**
d1	Active Lecture-discussion	Written exam
d2	Active Lecture-discussion	Group Assignment

Course Content:

Order	Units/ Topics List	CILOs	Sub Topics List	No. of Weeks	contact hours
1	**Pharmacy and pharmacists**	a1, a2, d2	• definitions (pharmacy, pharmacist, drugs, medications, drug products) • pharmacy motto • Pharmacy profession missions • foundations of pharmacy (world , Asian, Arabic and Yemeni) • Relation of pharmacists with other health care professionals.	2	4
2	**Current pharmacy practices**	a4, a2	• Pharmacy career opportunities (academic, industrial, researcher , developer, hospital, clinical and community pharmacists)	2	4
3	**Education of pharmacy**	a2	• basic pharmacy sciences • academic Baccalaureate programs, higher programs.	1	2
4	**Pharmacists as drug experts**	b1, a1	• drugs benefits • drugs risks • Role of pharmacists as drug experts	1	2

			• sources of information (primary, secondary, tertiary).		
MID-TERM EXAM				1	2
5	**History of pharmacy**	a1	History of pharmacy in : o in Sumerian, o Egyptian o Chinese, Indian, o Roman, Greek o Arabic and Islamic o Western civilization	5	10
6	**Future aspects of pharmacy**	a2, a3	• factors influencing future of pharmacy • current development of pharmacy profession • newer pharmacy disciplines e.g. Complementary and alternative therapy, gene therapy and radiopharmacy	2	4
Course Review		a1, a2, a3, a4, b1, c1, d1, d2	Review of the course topics by discussion session	1	2
FINAL - EXAM				1	2
TOTAL				16	32
Number of Weeks /and Units Per Semester				16	6 units

Teaching strategies of the course:
Active Lecture It is the most frequently employed teaching method to convey knowledge and explain theories to students in large groups (50-200) or in sessions, which consist of more than one group gathered in one classroom. The efficiency of lecturing can be enhanced by using techniques such as **Brain-storming**: It depends on stimulation of the student`s brain through a group of questions &/or **Concepts map**: which depends on sequencing of thoughts in the form of maps with horizontal or vertical relations & by using **learning aids** such as Data show projector

Laboratory practice: students doing experiments in labs individually or in small groups
Feed-back learning: students are individually asked to do perform quick tests (quiz) or to do certain assignments such lab. experiments, problems solving, homework, topics summarizing or internet search. The teacher will provide them feed-back correction & evaluation
Group projects: students work on a project in groups of 2 to 3 students. Important for learning by doing ,using the results in practical manner &for promoting team work skills
One Minute Paper is based on a concept called retrieval learning. Just fill out a small questionnaire within 15 minutes after taking a class, reading a chapter, watching a documentary, or learning in another way.
Demonstration is a teaching method used to communicate an idea with the aid of visuals such as flip charts, posters, power point, etc. A demonstration is the process of teaching someone how to make or do something in a step-by-step process. As you show how, you "tell" what you are doing.
Video clips can bring a subject to students in a completely new way and help them comprehend the material they're reading or working with.
Role-play is a technique that allows students to explore realistic situations by interacting with other people in a managed way in order to develop experience and trial different strategies in a supported environment.
A concept map is a visual representation of a topic that students can create using words, phrases, lines, arrows, space on the page, and perhaps color to help organize their ideas and show their understanding of an idea, vocabulary term, or essential question.

Assignments:				
No	**Assignments**	**Aligned CILOs**	**Week Due**	**Mark**
1	**Individual**: every student is assigned to do a search-report on one of the newer pharmacy disciplines.	c1,	4-13	6
2	**Group** : each group of students will be assigned to do a search report on one of the famous ancient Muslim Pharmacist	c1, d2	14	4

Schedule of Assessment Tasks for Students During the Semester						
No.	**Assessment Method**		**Week Due**	**Mark**	**Proportion of Total course Assessment**	**Aligned Course Learning Outcomes (CILOs)**
1	Attendance		1 - 15	10	10	a1, a2, a3, a4, b1, c1, d1, d2
2	Term Works	Quizzes	4-13, 14	5	5	b1
		Assignments	7, 12	5	5	c1, d2
3	Mid-semester exam of theoretical part (written exam		7	20	20	a1, a2, a4,b1, d2, d4
4	Final exam of theoretical part (written exam)		16	60	60	a1, a2, a3, a4, b1, c1, d1, d2
TOTAL				100	100 %	

Learning Resources:
1- Required Textbook(s) (maximum two).
2. Lillian M. Azzorpardi . Lecture notes in pharmacy practice, 2010, pharmaceutical press
2- Essential References.
1. Howard C. Ansel. Ansel's Pharmaceutical Dosage Forms and Drug Delivery Systems, , 2011, Lippincott Williams & Wilkins 2. Kevin M.G.Taylor. Pharmacy Practice, 2001, Taylor & Francis
3-Electronic References
1- International Journal of Pharmacy (pharmascholars.com) 2- academic.oup.com 3- International Journal of Pharmacy and Pharmaceutical Sciences (innovareacademics.in)

مواصفات مقرر (اللغة العربية Arabic language 101)

معلومات عامة عن المقرر:						
.1	اسم المقرر:	اللغة العربية 101 Arabic language				
.2	رمز المقرر ورقمه:	UMS 02				
.3	الساعات المعتمدة:	محاضرة	سمنار	عملي	تدريب	الإجمالي
		2	-	-	-	2
.4	المستوى والفصل الدراسي:	المستوى (الأول) – الفصل (الأول)				
.5	المتطلبات السابقة لدراسة المقرر(إن وجدت):	-------				
.6	المتطلبات المصاحبة (إن وجدت):	------				
.7	البرنامج الذي يدرس له المقرر:	كافة البرامج في الجامعة				
.8	لغة تدريس المقرر:	اللغة العربية				
.9	نظام الدراسة:	فصلي				

وصف المقرر:
يهدف هذا المقرر الى غرس روح الاعتزاز باللغة العربية لدى الطالب و مساعدته على الالتزام بأصولها نحوا وصرفا و قراءة وكتابة.

مخرجات تعلم المقرر
بعد الانتهاء من هذا المقرر سيكون الطالب قادرا على أن :
مخرجات المعرفة والفهم
a1 . يحدد طرق إعراب الكلمات نحويا و يوزنها صرفيا . **a2** .يصف محتويات المعجم العربي و طرق البحث عن معاني الكلمات.
المهارات الذهنية
b1 .يميز بين أنواع الكلمات ويعرب الكلمات حسب قواعد النحو.

المهارات العملية و المهنية
لا يوجد
المهارات العامة
d1 .يطور مهارة الذائقة الأدبية للنص الأدبي .

ربط مخرجات التعلم باستراتيجيات التدريس والتقييم		
أولا: ربط مخرجات تعلم المقرر (المعارف والفهم) باستراتيجية التدريس والتقييم:		
مخرجات المقرر / المعرفة والفهم	**استراتيجية التدريس**	**استراتيجية التقويم**
a1	**المحاضرة و النقاش**	**اختبارات تحريرية**
a2	**المحاضرة و النقاش ـ التعلم عن طريق التغذية الراجعة**	**اختبارات تحريرية – اختبارات مفاجئة**
ربط مخرجات تعلم المقرر (المهارات الذهنية) باستراتيجية التدريس والتقييم:		
مخرجات المقرر/ المهارات الذهنية	**استراتيجية التدريس**	**استراتيجية التقويم**
b1	**المحاضرة والنقاش ـالتعلم عن طريق التغذية الراجعة**	**اختبارات تحريرية ـ تكاليف**
ثالثا: ربط مخرجات تعلم المقرر (المهارات المهنية والعملية) باستراتيجية التدريس والتقييم:		
مخرجات المقرر/ المهارات المهنية والعملية	**استراتيجية التدريس**	**استراتيجية التقويم**
رابعا: ربط مخرجات تعلم المقرر (المهارات العامة) باستراتيجية التدريس والتقييم:		
مخرجات المقرر	**استراتيجية التدريس**	**استراتيجية التقويم**
d1	**التعلم عن طريق التغذية الراجعة**	**تكاليف**

مواضيع المقرر					
الرقم	وحدات/ موضوعات المقرر	المواضيع التفصيلية	عدد الأسابيع	الساعات الفعلية	مخرجات تعلم المقرر
1	النحو	– الكلمة و أقسامها – الاسم أقسامه وعلاماته و اعرابه – الفعل أقسامه وعلاماته و اعرابه – الحرف أقسامه وعلاماته و اعرابه – صور ائتلاف الكلام – الاعراب	5	10	a1,a2, b1
2	الصرف	– مقدمة – الميزان الصرفي – المجرد و المزيد	2	2	a1,a2, b1
		اختبار نصف الفصل	1	2	a1,a2, b1
2	المعجم	-مقدمة في تعريف أهم معاجم اللغة العربية - دراسة معجم الصحاح - دراسة معجم العين	2	4	a1,a2, b1
3	النصوص	– دراسة أجزاء من خطبة الرسول (صلى الله عليه وسلم) في حجة الوداع – دراسة قصيدة كعب بن زهير (بانت سعاد) – نقد النص الأدبي – التعبير	5	10	a1,a2, b1
		اختبار نهاية الفصل	1	2	
		إجمالي الأسابيع والساعات	**16**	**32**	

استراتيجية التدريس:
1- المحاضرة و النقاش
2- التعلم عن طريق التغذية الراجعة

الأنشطة والتكليفات:				
الرقم	النشاط / التكليف	مخرجات التعلم	الأسبوع	الدرجة
1	تكليف منزلي(فردي) في قواعد النحو و الصرف	**b1**	**1-8**	**5**
2	تكليف كتابي تعبيري (فردي)	**d1**	**14**	**5**

تقييم التعلم:					
الرقم	أنشطة التقييم	الأسبوع	الدرجة	نسبة الدرجة إلى درجة التقويم النهائي	المخرجات التي يحققها
1	**امتحانات مفاجئة**	----	10	10	a2
2	**التكاليف**	5, 12	10	10	b1, d1
3	**اختبار نصف الفصل**	7	20	20	a1,a2, b1
5	**الاختبار النهائي**	17	60	60	a1,a2, b1

مصادر التعلم:
1- اللغة العربية (نصوص أدبيه وتطبيقات نحويه-متطلبات الجامعه101-102) المؤلفون(د/الحميري,د/الحذيفي,د/الزمر,د/الخربي،د/العبيدي) 2- قواعد اللغة العربية المؤلف: فواد نعمه
المراجع الرئيسة: (لا تزيد عن مرجعين)
1. الإعراب الميسر في قواعد اللغة العربية- محمد يوسف خضر 2. شرح قطر الندى وبل الصدى ،ابن هشام
المراجع المساعدة
1. شذا العرف في فن الصرف للأستاذ أحمد الحملاوي. 2. المعجم العربِّي للدكتور حسَّن نصار.
الضوابط والسياسات المتبعة في المقرر.
بعد الرجوع للوائح الجامعة يتم كتابة السياسة العامة للمقرر فيما يتعلق بالآتي:

1.	**سياسة حضور الفعاليات التعليمية:** تحدد سياسة الحضور ومتى يعتمد الغياب وكيفيته ونسبته، ومتى يعد الطالب محروماً من المقرر
2.	**الحضور المتأخر :** يتم تحديد السياسة المتبعة في حالات تكرار تأخر الطالب عن حضور الفعاليات التعليمية
3.	**ضوابط الامتحان:** تحديد السياسات المتبعة في حالات الغياب عن الامتحان و توصيف السياسة المتبعة في حالات تأخر الطالب عن الامتحان.
4.	**التعيينات والمشاريع:** تحديد السياسات المتبعة في حالات تأخير تسليم التكاليف والمشاريع ومتى يجب أن تسلم إلى الأستاذ.
5.	**الغش:** تحدد هنا السياسات المتبعة في حالات الغش إما في الامتحانات أو في التكاليف بأي طريقة من طرائق الغش.
6.	**الانتحال:** يحدد تعريف الانتحال وحالاته والإجراءات المتبعة في حالة حدوثه.
7.	**سياسات أخرى:** أي سياسات أخرى مثل استخدام الموبايل أو مواعيد تسليم التكليفات ..... الخ

MEDICAL ENGLISH (I)

	Course Identification and General Information:							
1	**Course Title:**	**Medical English (I)**						
2	**Course Code &Number:**	**ENGL 171**						
3	**Credit hours:**	**C.H**					**TOTAL**	
		L.	**Tu.**	**S.**	**P**	**Tr.**		
		1	**1**	**-**	**-**	**-**	**2**	
4	**Study level/ semester at which this course is offered:**	First Year – 1ST semester						
5	**Pre –requisite (if any):**	**none**						
6	**Co –requisite (if any):**	**none**						
7	**Program (s) in which the course is offered:**	**Faculty of Medical Science**						
8	**Language of teaching the course:**	**ENGLISH**						
9	**Location of teaching the course:**	**IN THE UNIVERSITY**						

Course Description:
This course provides the student with basic structure and grammars in English language. The course covers medical terminology, practice in specialist vocabulary and a review of basic grammatical structures.

Program Intended learning outcomes (PILOs) & the Course Intended learning outcomes (CILOs) and their alignment to teaching and assessment strategies			
A) Alignment Course Intended Learning Outcomes of Intellectual Skills to Teaching Strategies and Assessment Strategies:			
PILOs	**CILOs**	**Teaching strategies**	**Assessment Strategies**
A3	**a1-** comprehend the basic grammars and rule of basic English	**lecture, Tutorial**	**written exam , assignments, quizzes**
(B) Alignment Course Intended Learning Outcomes of Intellectual Skills to Teaching Strategies and Assessment Strategies:			
PILOs	**CILOs**	**Teaching strategies**	**Assessment Strategies**
B1	**b1-** Differentiate between various English words & phrases	**lecture, Tutorial**	**written exam , assignments, quizzes**
(C)Alignment Course Intended Learning Outcomes of Professional and Practical Skills to Teaching Strategies and Assessment Strategies:			
C7	**c1-** Effectively & correctly use language grammars & fundamental skills (reading, writing and speech) to present thoughts/ideas.	**lecture, Tutorial**	**written exam , assignments, quizzes**
(D) Alignment Course Intended Learning Outcomes of Transferable Skills to Teaching Strategies and Assessment Strategies:			
	Course Intended Learning Outcomes	**Teaching strategies**	**Assessment Strategies**
D2	**d1-**demonstrate self-learning and time management skills.	**lecture, Tutorial**	**assignments**

Course Content:					
A – Theoretical Aspect:					
Order	**Units/Topics List**	**Learning Outcomes**	**Sub Topics List**	**Number of Weeks**	**contact hours**

1	**Basic English**	b1, c1, d1	• English letters : A to Z, capitals, small letters
			• Classification of words
			  ○ Nouns
			  ○ Articles
			  ○ Pronouns
			  ○ Quantity
			  ○ Adjective
			  ○ Adverbs
			  ○ Prepositions
			• verbs : Be, have, do , Modal auxiliaries and related verbs
				4	16

2	**The sentence**	b1, c1, d1	• Simple, compound, complex • Passive and causative • Questions, answers, negatives • Conditional sentences • Direct and indirect speech • The infinitive and the "ing" form	3	12
			MID-SEMESTER EXAM	1/2	2
3	**Tenses**	b1, c1, d1	• Past simple	1/2	2
			• Past perfect • Past continuous (progressive) • Present simple • Present perfect • Present continuous(progressive) • Future simple • Future perfect	7	28

			• Future continuous (progressive)		
			Total	15	60
Number of Weeks /and Units Per Semester				**15**	**3**

Teaching strategies of the course:
Active Lecture It is the most frequently employed teaching method to convey knowledge and explain theories to students in large groups (50-200) or in sessions, which consist of more than one group gathered in one classroom. The efficiency of lecturing can be enhanced by using techniques such as **Brain-storming**: It depends on stimulation of the student`s brain through a group of questions &/or **Concepts map**: which depends on sequencing of thoughts in the form of maps with horizontal or vertical relations & by using **learning aids** such as Data show projector
Laboratory practice: students doing experiments in labs individually or in small groups
Feed-back learning: students are individually asked to do perform quick tests (quiz) or to do certain assignments such lab. experiments, problems solving, homework, topics summarizing or internet search. The teacher will provide them feed-back correction & evaluation
Group projects: students work on a project in groups of 2 to 3 students. Important for learning by doing ,using the results in practical manner &for promoting team work skills
One Minute Paper is based on a concept called retrieval learning. Just fill out a small questionnaire within 15 minutes after taking a class, reading a chapter, watching a documentary, or learning in another way.
Demonstration is a teaching method used to communicate an idea with the aid of visuals such as flip charts, posters, power point, etc. A demonstration is the process of teaching someone how to make or do something in a step-by-step process. As you show how, you "tell" what you are doing.
Video clips can bring a subject to students in a completely new way and help them comprehend the material they're reading or working with.
Role-play is a technique that allows students to explore realistic situations by interacting with other people in a managed way in order to develop experience and trial different strategies in a supported environment.

A concept map is a visual representation of a topic that students can create using words, phrases, lines, arrows, space on the page, and perhaps color to help organize their ideas and show their understanding of an idea, vocabulary term, or essential question.
Self-studying is a learning method where students direct their own studying—outside the classroom and without direct supervision. Since students are able to take control of what (and how) they are learning, self-study can be a very valuable way for many students to learn.

Assignments:				
No	**Assignments**	**Aligned CILOs(symbols)**	**Week Due**	
1	Tutorial exercises	a1, b1, c1, d1	3	
2	Homework Exercises	a1, b1, c1, d1	7	

Schedule of Assessment Tasks for Students During the Semester						
No.	**Assessment Method**		**Week Due**	**Mark**	**Proportion of Total course Assessment**	**Aligned Course Learning Outcomes (CILOs)**
2	Term Works	Quizzes	4-13, 14	10	10	a1, b1, c1, d1
		Assignments	7, 12	10	10	a1, b1, c1, d1
3	Mid-semester exam of theoretical part (written exam		7	20	20	b1, c1, d1
4	Final exam of theoretical part (written exam)		16	60	60	b1, c1, d1
TOTAL				100	100 %	

Note: Minimum marks to pass the course: The student must gain at least 75% of the total estimation of the course to pass this course**.**

Learning Resources:
1- Required Textbook(s) (maximum two).
L.G. Alexander, 2007, Longman English grammar practice, , Longman Group, UK

2- Essential References
Mary Lou, 2011, The English Teacher's Survival Guide: Ready-To-Use Techniques & Materials for Grades 7-12 , 2nd Edition, Jossey-Bass teachers, USA
3-Electronic References
1-literacyworldwide.org 2- World English Institute - Free English Lessons 3- Medical English Online Course

	Course Policies:
1	**Class Attendance:** At least 75 % of the course hours should be attended by the student. Otherwise, he/she will not be allowed to attend the final exam
2	**Tardy:** any student who is late for more than 15 minutes from starting the lecture will not be allowed to attend the lecture and will be considered absent.
3	**Exam Attendance/Punctuality:** any student who is late for more than 30 minutes from starting the exam will not be allowed to attend the exam and will be considered absent.
4	**Assignments & Projects:** Assignments and projects will be assessed individually unless the teacher request for group work
5	**Cheating**: Cheating by any means will cause the student failure and he/she must re-study the course
6	**Plagiarism**: Plagiarism by any means will cause the student failure in the course . Other disciplinary procedures will be according to the college rules.

Introduction to computer Science

Course Identification and General Information:							
1	**Course Title:**	**Introduction to Computer Science**					
2	**Course Code &Number:**	**COMP 151**					
3	**Credit hours:**	C.H					TOTAL
		L.	Tut.	S.	P.	Tr.	
		1	-	-	1	-	**2**
4	**Study level/ semester at which this course is offered:**	(First) Year – (1st) semester					
5	**Pre –requisite (if any):**	**None**					
6	**Co –requisite (if any):**	**None**					
7	**Program (s) in which the course is offered:**	**Faculty of Medical Science**					
8	**Language of teaching the course:**	**ENGLISH**					
9	**Location of teaching the course:**	**IN THE UNIVERSITY**					

Course Description:
This course is designed for students to develop basic understanding of uses of computer and its applications in scientific studies. It introduces the students to computer concepts, including fundamental functions and operations of the computer. Topics include identification of hardware components, basic computer operations, security issues, and use of software applications.

(A) Alignment Course Intended Learning Outcomes of Knowledge and Understanding to Teaching Strategies and Assessment Strategies:			
PILO	**Course Intended Learning Outcomes**	**Teaching strategies**	**Assessment Strategies**
A1	**a1.** Discuss various concepts used in computer and the disk operating system.	Lecture Discussion IT Practice Session	Written exam

(B) Alignment Course Intended Learning Outcomes of Intellectual Skills to Teaching Strategies and Assessment Strategies:			
PILO	**Course Intended Learning Outcomes**	**Teaching strategies**	**Assessment Strategies**
B1	**b1**. Interpret data of computer aided teaching and testing.	Lecture Discussion IT Practice Session	Written exam practical exam

C. Alignment Course Intended Learning Outcomes of Professional and Practical Skills to Teaching Strategies and Assessment Strategies:			
PILO	**Course Intended Learning Outcomes**	**Teaching strategies**	**Assessment Strategies**
C7	**c1.** Use operating system, MS Office, multi-media, internet and Email.	Lecture Discussion IT Practice Session	Written exam , practical assessment

(D) Alignment Course Intended Learning Outcomes of General and Transferable Skills to Teaching Strategies and Assessment Strategies:			
PILO	**Course Intended Learning Outcomes**	**Teaching strategies**	**Assessment Strategies**
D1	**d1**. Behave in discipline in the computer lab.	Lab. practice	Lab. term works
D2	**d2.** Demonstrate the ability of time management, self-learning and problem-solving.	Lecture-discussion and Lab. practice	Written exam , lab. term works, final practical exams

Course Content:

Theoretical and practical Aspect:
1 hour theoretical followed by 1 hour practical; Teaching is performed in the computer Lab.

Order	Units/Topics List	Sub Topics List	No. of Weeks	Contact hours	Learning Outcomes
1	Introduction	▪ Concepts of Computers ▪ Hardware and software; trends and technology	2	4	a1, b1
2	Introduction to disk-operating system	▪ DOS ▪ Windows (all version) ▪ Introduction to MS-Word ▪ MS-Excel with pictorial presentation ▪ MS-Access ▪ MS-Power point	6	12	a1, b1
3	Midterm exam		1	2	a1, b1
4	Multimedia	▪ Types & uses ▪ Computer aided teaching & testing.	2	4	a1, b1
5	Internet and e-mail	▪ Internet ▪ e-mail	2	4	a1, b1
7	Final exam		1	2	a1, b1
Number of Weeks /and Units Per Semester			**15**	**30**	

Teaching strategies of the course:

Active Lecture It is the most frequently employed teaching method to convey knowledge and explain theories to students in large groups (50-200) or in sessions, which consist of more than one group gathered in one classroom.

1. The efficiency of lecturing can be enhanced by using techniques such as **Brain-storming**: It depends on stimulation of the student`s brain through a group of questions &/or **Concepts map**: which depends on sequencing of thoughts in the form of maps with horizontal or vertical relations & by using **learning aids** such as Data show projector

2. **Laboratory practice**: students doing experiments in labs individually or in small groups
3. **Feed-back learning:** students are individually asked to do perform quick tests (quiz) or to do certain assignments such lab. experiments, problems solving, homework, topics summarizing or internet search. The teacher will provide them feed-back correction & evaluation
4. **Group projects:** students work on a project in groups of 2 to 3 students. Important for learning by doing ,using the results in practical manner &for promoting team work skills
5. **One Minute Paper** is based on a concept called retrieval learning. Just fill out a small questionnaire within 15 minutes after taking a class, reading a chapter, watching a documentary, or learning in another way.
6. **Demonstration** is a teaching method used to communicate an idea with the aid of visuals such as flip charts, posters, power point, etc. A demonstration is the process of teaching someone how to make or do something in a step-by-step process. As you show how, you "tell" what you are doing.
7. **Video clips** can bring a subject to students in a completely new way and help them comprehend the material they're reading or working with.
8. **Role-play** is a technique that allows students to explore realistic situations by interacting with other people in a managed way in order to develop experience and trial different strategies in a supported environment.
9. **A concept map** is a visual representation of a topic that students can create using words, phrases, lines, arrows, space on the page, and perhaps color to help organize their ideas and show their understanding of an idea, vocabulary term, or essential question.

Assignments:

No	Assignments	Aligned CILOs(symbols)	Week Due	Mark
1	medical Application of computers .	a1, b1, c1, d1	2-10	5

Schedule of Assessment Tasks for Students During the Semester

Theoretical part assessment

No.	Assessment Method		Week Due	Mark	Proportion to Total course Assessment	Aligned Course Learning Outcomes (CILOs)
1	Term Works	Quizzes	4-13, 14	5	5	b1
		Assignments	7, 12	10	5	a1, b1, c1, d1
2	Mid-semester exam of theoretical part (written exam		7	10	10	a1, b1
3	Final exam of theoretical part (written exam)		16	50	50	a1, b1
TOTAL				70	70 %	70

Practical part assessment						
No.	Assessment Method		Week Due	Mark	Proportion to Total course Assessment	Aligned Course Learning Outcomes(CILOs)
1	Lab. Term works	Attitude	1-12	5	5	c1, d1, d2
2		Accomplishments		5	5	
	Final exam (practical)		12	20	20	c1, d1, d2
Total				30	30 %	

Learning Resources	
1- Required Textbook(s) (maximum two).	
	1. N.K. Anand & ShikhaGoel (2009). Computers for Nurses, A.I.T.B.S. Publishers ,India.
2- Essential References.	
	2. Thacker N (2009). Computers for Nurses, India.

Course Policies	
1.	**Class Attendance:** At least 75 % of the course hours should be attended by the student. Otherwise, he/she will not be allowed to attend the final exam
2.	**Tardy:** any student who is late for more than 15 minutes from starting the lecture will not be allowed to attend the lecture and will be considered absent.
3.	**Exam Attendance/Punctuality:** Any student who is late for more than 30 minutes from starting the exam will not be allowed to attend the exam and will be considered absent.
4.	**Assignments & Projects:** Assignments and projects will be assessed individually unless the teacher request for group work
5.	**Cheating**: Cheating by any means will cause the student failure and he/she must re-study the course
6.	**Plagiarism**: Plagiarism by any means will cause the student failure in the course. Other disciplinary procedures will be according to the college rules.

Mathematics for Pharmacy

Course Identification and General Information:								
1	**Course Title:**	**Mathematics for Pharmacy**						
2	**Course Code &Number:**	**MATH 112**						
3	**Credit hours:**	**C.H**						**TOTAL**
		Theoretical			**P.**	**Tr.**		
		L.	**Tut.**	**S.**				
		1	1	-	-	-		**2**
4	**Study level/ semester at which this course is offered:**	(FIRST) Year – (2st) semester						
5	**Pre –requisite (if any):**	**NONE**						
6	**Co –requisite (if any):**	**None**						
7	**Program (s) in which the course is offered:**	**Faculty of Medical Science**						
8	**Language of teaching the course:**	**ENGLISH**						
9	**Location of teaching the course:**	**IN THE UNIVERSITY**						

L: lecturing ; Tut: Tutorial , S: seminar ; P: practical ; Tr.: training

Course Description:
This course provides basic knowledge& skills of solving mathematical processes encountered in pharmacy. Topics include ratio and proportion, percentage, dilution and concentration, milliequivalents, units, intravenous flow rates, solving dosage problems and TPN calculations and using business math in the pharmacy.

Intended learning outcomes of the course (CILOs) and their alignment to Program Intended learning outcomes (PILOs), teaching strategies and assessment strategies		
Alignment CILOs to PILOs		
No.	**PILOs**	**CILOs**
1	**A1**	**a1.** Discuss the basic mathematical principles commonly encountered during his/her pharmacy study and at practicing the profession.
2	**B1**	**b1.** Interpret the linearity and other graphical parameters.
3	**C2**	**c1.** Operate and use scientific calculator correctly.
4	**D2**	**d1.** Demonstrate the ability of time management, self-learning and problem-solving skills
5	**D3**	**d2.** Work successfully in team-work.

Alignment CILOs to teaching strategies and assessment strategies		
(a) Alignment Course Intended Learning Outcomes (CILOs) of knowledge & understanding to Teaching Strategies and Assessment Strategies		
Course Intended Learning Outcomes	**Teaching strategies**	**Assessment Strategies**
a1	**Lecture-discussion,, feed-back learning,**	**written exam**
(b) Alignment Course Intended Learning Outcomes (CILOs) of Intellectual Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	**Teaching strategies**	**Assessment Strategies**
b1	**feed-back learning, Group-project.**	**Written exam**
(c)Alignment Course Intended Learning Outcomes (CILOs) of Professional and Practical Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	**Teaching strategies**	**Assessment Strategies**
c1	**Active Lecture-discussion**	**Written exam**
(d) Alignment Course Intended Learning Outcomes (CILOs) of Transferable Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies

d1	**Lecture-discussion**	**Quiz**
d2	**Lecture-discussion**	**Assignment**

Course Content					
Order	**Units/ Topics List**	**CILOs**	**Sub Topics List**	**No. of Weeks**	**contact hours**
1	**Graphs and Gradients**	a1, b1, , c1,	• Rectangular Co-ordinates. Curve fitting using first-degree equation in both variables. • Determination of slope and intercept and point of intersection • Equation of first degree in both x and y (circle, ellipse, rectangular hyperbola etc. • Exponential and logarithmic curves, graphical solution of equation, graphical solution of • simultaneous equations • Arithmetic progression, geometric progression, permutation-combination, binomial theorem, exponential theorem • Application of curve fitting method in expressing degradation of drugs	6	12
			MID-TERM EXAM	1	2
2	**Calculus**	a1, c1	• Rate process, rules of differentiation, successive and partial differentiation, differentiation of a function, relation between the derivatives of inverse functions • Rules of integration, integration as a summation, area under curve, integration by partial fraction, graphical integration, indefinite and definite integrals.	3	6

3	**Matrices**	a1, c1	• Addition. Subtraction and multiplication of matrices • unit matrix, row transformation, determinants, inverse of matrix and solution of equations by matrix	4	8
Course Review		a1, c1	Review of the course topics by discussion session.	1	2
FINAL - EXAM				1	2
TOTAL				16	32
Number of Weeks /and Units Per Semester				16 weeks	3 Units

Teaching strategies of the course
Active Lecture It is the most frequently employed teaching method to convey knowledge and explain theories to students in large groups (50-200) or in sessions, which consist of more than one group gathered in one classroom. The efficiency of lecturing can be enhanced by using techniques such as **Brain-storming**: It depends on stimulation of the student`s brain through a group of questions &/or **Concepts map**: which depends on sequencing of thoughts in the form of maps with horizontal or vertical relations & by using **learning aids** such as Data show projector
Laboratory practice: students doing experiments in labs individually or in small groups
Feed-back learning: students are individually asked to do perform quick tests (quiz) or to do certain assignments such lab. experiments, problems solving, homework, topics summarizing or internet search. The teacher will provide them feed-back correction & evaluation
Group projects: students work on a project in groups of 2 to 3 students. Important for learning by doing ,using the results in practical manner &for promoting team work skills
One Minute Paper is based on a concept called retrieval learning. Just fill out a small questionnaire within 15 minutes after taking a class, reading a chapter, watching a documentary, or learning in another way.
Demonstration is a teaching method used to communicate an idea with the aid of visuals such as flip charts, posters, power point, etc. A demonstration is the process of teaching someone how to make or do something in a step-by-step process. As you show how, you “tell” what you are doing.

Video clips can bring a subject to students in a completely new way and help them comprehend the material they're reading or working with.
Role-play is a technique that allows students to explore realistic situations by interacting with other people in a managed way in order to develop experience and trial different strategies in a supported environment.
A concept map is a visual representation of a topic that students can create using words, phrases, lines, arrows, space on the page, and perhaps color to help organize their ideas and show their understanding of an idea, vocabulary term, or essential question.

Assignments				
No	**Assignments**	**Aligned CILOs**	**Week Due**	**Mark**
1	**Individual**: every student is assigned to solve mathematical problems during Tutorial at the class .	a1, c1, d2	4-13	6
2	**Group** : each group of students will be assigned to solve mathematical problems during as homework	a1, c1, d1	14	4

Schedule of Assessment Tasks for Students During the Semester						
No.	**Assessment Method**		**Week Due**	**Mark**	**Proportion of Total course Assessment**	**Aligned Course Learning Outcomes (CILOs)**
2	Term Works	Quizzes	4-13, 14	10	10	c1,
		Assignments	7, 12	10	10	a1, c1, d1, d2
3	Mid-semester exam (written exam)		7	20	20	a1, b1, c1
4	Final exam (written exam)		16	60	60	a1, c1

TOTAL	100	100 %	

Learning Resources:
1- Required Textbook(s) (maximum two).
Rao. A text book of mathematics
2- Essential References
Indra K. Reddy Mansoor a. khan, Essential Math and calculations for pharmacy, CRC Press Shahidulla , Bhattacharjee : A text book on Coordinate Geometry and Vector Analysis

Course Policies	
1	**Class Attendance:** At least 75 % of the course hours should be attended by the student. Otherwise, he/she will not be allowed to attend the final exam
2	**Tardy:** any student who is late for more than 15 minutes from starting the lecture will not be allowed to attend the lecture and will be considered absent.
3	**Exam Attendance/Punctuality:** any student who is late for more than 30 minutes from starting the exam will not be allowed to attend the exam and will be considered absent.
4	**Assignments & Projects:** Assignments and projects will be assessed individually unless the teacher request for group work
5	**Cheating**: Cheating by any means will cause the student failure and he/she must re-study the course
6	**Plagiarism**: Plagiarism by any means will cause the student failure in the course . Other disciplinary procedures will be according to the college rules.

PHARMACEUTICAL CALCULATION

Course Identification and General Information:								
1	**Course Title:**	**PHARMACEUTICAL CALCULATION**						
2	**Course Code &Number:**	**PHT 122**						
3	**Credit hours:**	**C.H**						**TOTAL**
		Theoretical			**P.**	**Tr.**		
		L.	**Tut.**	**S.**				
		1	1	-	-	-		**2**
4	**Study level/ semester at which this course is offered:**	(first) Year – (2^{nd}) semester						
5	**Pre –requisite (if any):**	• **Introduction to pharmacy** • **Mathematics**						
6	**Co –requisite (if any):**	**Mathematics**						
7	**Program (s) in which the course is offered:**	**Faculty of Medical Science**						
8	**Language of teaching the course:**	**ENGLISH**						
9	**Location of teaching the course:**	**IN THE UNIVERSITY**						

L: lecturing ; Tut: Tutorial , S: seminar ; P: practical ; Tr.: training

Course Description
The course deals with study of essential mathematical calculations related to drug formulation, dispensing and dosing. This course focuses on quantitative and qualitative principles encompassing calculations performed by pharmacists in various practice settings.

Intended learning outcomes of the course (CILOs) and their alignment to Program Intended learning outcomes (PILOs), teaching strategies and assessment strategies.		
5. Alignment CILOs to PILOs		
No.	**PILOs**	**CILOs**
1	**A11**	**a1.** Describe the methods of pharmaceutical calculations.
2	**B1**	**b1.** Interpret abbreviations employed in pharmaceutical prescriptions.
3	**B9**	**b2.** Apply pharmaceutical calculations in preparation of medications and dispensing of prescriptions
4	**C2**	**c1.** Operate calculator correctly during formulation of pharmaceutical preparations
5	**D2**	**d1.** Demonstrate the skill of time management and self-learning
6	**D3.**	**d2.** Participate efficiently with his colleagues in a team work.

Alignment CILOs to teaching strategies and assessment strategies		
(a) Alignment Course Intended Learning Outcomes (CILOs) of knowledge & understanding to Teaching Strategies and Assessment Strategies		
Course Intended Learning Outcomes	**Teaching strategies**	**Assessment Strategies**
a1	**Active Lecture**	**Written exam**
(b) Alignment Course Intended Learning Outcomes (CILOs) of Intellectual Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
b1	**lecture, Lecture-discussion, feed-back learning**	**Written exam , quizzes,**
b2	**lecture, Lecture-discussion, feed-back learning**	**Written exam , quizzes, assignment**
(c)Alignment Course Intended Learning Outcomes (CILOs) of Professional and Practical Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	**Teaching strategies**	**Assessment Strategies**
c1	**Lecture-discussion, Feed-back learning**	**written exam , Quizzes**
(d) Alignment Course Intended Learning Outcomes (CILOs) of Transferable Skills to Teaching Strategies and Assessment Strategies:		

Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
d1	**Feed-back learning**	**Assignment**
d2	**Group-project**	**assignment**
d3	**Group project**	**assignment**

Course Content:

Order	Units/ Topics List	CILOs	Sub Topics List	No. of Weeks	contact hours
1	**Introduction**	a1	basic mathematical processing, calculators , source of errors, Roman and Arabic Numerals	1	2
2	**Pharmaceutical measurement systems of weights**	a1, b2,c1	: • Apothecary and avoird. systems • metric system. • Equivalent weight and milliequivalent weight	2	4
3	**Pharmaceutical measurement systems of volumes**	a1, b2, c1	• Apothecary • Metric system • house-hold systems	2	4
4	**Expressions of concentrations**	a1, b2,c1	percentage, ratio, quantity/quantity, PPM, PPB, molarity	1	2
5	**Dilution &Allegation**	a1, b2,c1	• Dilution of conc. Solutions • dilution of potent solids	1	2
MID-TERM EXAM				1	2

6	**Isotonicity**	a1, b2,c1	• definition & significance • determination	1	2
7	**Density & Gravity**	a1, b2,c1	• definition & significance • determination	1	2
8	**Medical prescriptions**	a1,b1, b2,c1	• ideal prescription, • components of the prescriptions • common symbols and abbreviations	2	4
9	**Enlarging and reducing prescription formulas**	a1,b1, b2,c1	• definition • determination	1	2
10	**Pediatric Dose**	a1,b1, b2,c1	• definitions of doses • Expression of doses • Rules for calculation the child`s dose based on age, weight and body surface area	2	4
Course Review		a1, , , , c1	Review of the course topics by discussion session.	1	2
FINAL - EXAM				1	2
TOTAL				16	32
Number of Weeks /and Units Per Semester				16 weeks	10 Units

Teaching strategies of the course:
Active Lecture It is the most frequently employed teaching method to convey knowledge and explain theories to students in large groups (50-200) or in sessions, which consist of more than one group gathered in one classroom. The efficiency of lecturing can be enhanced by using techniques such as **Brain-storming**: It depends on stimulation of the student`s brain through a group of questions &/or **Concepts map**: which depends on sequencing of thoughts in the form of maps with horizontal or vertical relations & by using **learning aids** such as Data show projector
Laboratory practice: students doing experiments in labs individually or in small groups
Feed-back learning: students are individually asked to do perform quick tests (quiz) or to do certain assignments such lab. experiments, problems solving, homework, topics summarizing or internet search. The teacher will provide them feed-back correction & evaluation
Group projects: students work on a project in groups of 2 to 3 students. Important for learning by doing ,using the results in practical manner &for promoting team work skills
One Minute Paper is based on a concept called retrieval learning. Just fill out a small questionnaire within 15 minutes after taking a class, reading a chapter, watching a documentary, or learning in another way.
Demonstration is a teaching method used to communicate an idea with the aid of visuals such as flip charts, posters, power point, etc. A demonstration is the process of teaching someone how to make or do something in a step-by-step process. As you show how, you "tell" what you are doing.
Video clips can bring a subject to students in a completely new way and help them comprehend the material they're reading or working with.
Role-play is a technique that allows students to explore realistic situations by interacting with other people in a managed way in order to develop experience and trial different strategies in a supported environment.
A concept map is a visual representation of a topic that students can create using words, phrases, lines, arrows, space on the page, and perhaps color to help organize their ideas and show their understanding of an idea, vocabulary term, or essential question.

Assignments:				
No	**Assignments**	**Aligned CILOs**	**Week Due**	**Mark**
1	**Individual**: the teacher provide the students with mathematical problems after each unit. Every student is assigned to solve some of those problems individually.	B2, d2	4-13	6
2	**Group** : each group of students will be assigned to present a report of typical answers of problems of one unit with assessing the correction of answers.	B2, d1, d3	14	4

Schedule of Assessment Tasks for Students During the Semester						
No.	**Assessment Method**		**Week Due**	**Mark**	**Proportion of Total course Assessment**	**Aligned Course Learning Outcomes (CILOs)**
2	Term Works	Quizzes	4-13, 14	10	10	c1, b1
		Assignments	7, 12	10	10	d1, d2, d3, b2
3	Mid-semester exam of theoretical part (written exam		7	20	20	a1, b2, c1
4	Final exam of theoretical part (written exam)		16	60	60	a1, b1, b2, c1
TOTAL				100	100 %	

Learning Resources:
1- Required Textbook(s) (maximum two)
3. Howard C. Ansel, Pharmaceutical Calculations, 2010, Lippincott Williams & Wilkins .
2- Essential References

1. Winfield. Calculations for pharmaceutical practice
2. Ryan F Donnelly, Johanne Barry, MCQs in Pharmaceutical Calculations, 2009, pharmaceutical press

3-Electronic References

1-International Journal of Pharmaceutical Compounding – A pharmacy journal focused on compounding pharmacy practice. (ijpc.com)
2-repository.akfarmahadhika.ac.id/E-BOOK/%40MedicalBooksStore_2017_Pharmaceutical.pdf
3-https://de.cdn-website.com/dcd39678c7e140728c4783df708ba9c9/files/uploaded/6_NvtQuTrSES9YIDVxESVM.pdf
3- academic.oup.com
5- Pharmaceutical calculations | Oxford Handbook of Clinical Pharmacy | Oxford Academic (oup.com)

	Course Policies:
1	**Class Attendance:** At least 75 % of the course hours should be attended by the student. Otherwise, he/she will not be allowed to attend the final exam
2	**Tardy:** any student who is late for more than 15 minutes from starting the lecture will not be allowed to attend the lecture and will be considered absent.
3	**Exam Attendance/Punctuality:** any student who is late for more than 30 minutes from starting the exam will not be allowed to attend the exam and will be considered absent.
4	**Assignments & Projects:** Assignments and projects will be assessed individually unless the teacher request for group work
5	**Cheating**: Cheating by any means will cause the student failure and he/she must re-study the course
6	**Plagiarism**: Plagiarism by any means will cause the student failure in the course . Other disciplinary procedures will be according to the college rules.

MEDICAL ENGLISH II

Course Identification and General Information:							
1	**Course Title:**	**Medical English (II)**					
2	**Course Code &Number:**	**ENGL 132**					
3	**Credit hours:**	**C.H**					**TOTAL**
		L.	**Tu.**	**S.**	**P**	**Tr.**	
		1	**1**	**-**	**-**	**-**	**2**
4	**Study level/ semester at which this course is offered:**	First Year –2nd semester					
5	**Pre –requisite (if any):**	**Medical English (I)**					
6	**Co –requisite (if any):**	**none**					
7	**Program (s) in which the course is offered:**	**Faculty of Medical Science**					
8	**Language of teaching the course:**	**ENGLISH**					
9	**Location of teaching the course:**	**IN THE UNIVERSITY**					

Course Description:
This course provides the students with the four skills of English language in the medical context. The course covers medical terminology, practice in specialist vocabulary and a review of basic grammatical structures.

Program Intended learning outcomes (PILOs) & the Course Intended learning outcomes (CILOs) and their alignment to teaching and assessment strategies			
A) Alignment Course Intended Learning Outcomes of Intellectual Skills to Teaching Strategies and Assessment Strategies:			
PILOs	**CILOs**	**Teaching strategies**	**Assessment Strategies**
A3	**a1-** comprehend the basic grammars and rule of basic English	**lecture, Tutorial**	**written exam , assignments, quizzes**
(B) Alignment Course Intended Learning Outcomes of Intellectual Skills to Teaching Strategies and Assessment Strategies:			
PILOs	**CILOs**	**Teaching strategies**	**Assessment Strategies**
B1	**b1-** Differentiate between various English words & phrases	**lecture, Tutorial**	**written exam , assignments, quizzes**
©Alignment Course Intended Learning Outcomes of Professional and Practical Skills to Teaching Strategies and Assessment Strategies:			
C7	**c1-** Effectively & correctly use language grammars & fundamental skills (reading, writing and speech) to present thoughts/ideas.	**Lecture, Tutorial**	**written exam , assignments, quizzes**
(D) Alignment Course Intended Learning Outcomes of Transferable Skills to Teaching Strategies and Assessment Strategies:			
	Course Intended Learning Outcomes	**Teaching strategies**	**Assessment Strategies**
D2	**d1-**demonstrate self-learning and time management skills.	**Lecture, Tutorial**	**assignments**

Course Content:					
A – Theoretical Aspect:					
Order	**Units/Topics List**	**Learning Outcomes**	**Sub Topics List**	**Number of Weeks**	**contact hours**
1	**Reading**	b1, c1, d1	○ Pharmaceutical dosage forms ○ Herbal medicine • Drug misuse	4	16
2	**Grammar**	b1, c1, d1	▪ Punctuation ▪ Articles ▪ Phrases ▪ Conditionals ▪ Prepositions	3	12
			MID-SEMESTER EXAM	½	2
3	**Writing**	b1, c1, d1	b. Report writing c. Letter Writing: d. Applications / communications such as business correspondences • Official communications and acknowledgements.	½ 7	2 28
4	**Listening**		**2.** Anemia **3.** Losing weight • Safe water and foods		
	• **Pharmacological**		**4.** Classification of drug actions, pharmacokinetics, and		

	Terminology:		systemic classification of drugs. **5.** Autonomic, CNS, cardiovascular, and renal system. **6.** Chemotherapy, locally acting, vitamins and hormones.		
			7. Infectious diseases. **8.** Rheumatic diseases. **9.** Peptic ulcers. **10.** Skin diseases. **11.** Gynecological diseases. **12.** Laboratory investigational terms. **13.** Other familiar medical terms and abbreviations		
			Total	16	60
Number of Weeks /and Units Per Semester				**16**	**3**

Teaching strategies of the course:
Active Lecture It is the most frequently employed teaching method to convey knowledge and explain theories to students in large groups (50-200) or in sessions, which consist of more than one group gathered in one classroom. The efficiency of lecturing can be enhanced by using techniques such as **Brain-storming**: It depends on stimulation of the student`s brain through a group of questions &/or **Concepts map**: which depends on sequencing of thoughts in the form of maps with horizontal or vertical relations & by using **learning aids** such as Data show projector
Laboratory practice: students doing experiments in labs individually or in small groups

Feed-back learning: students are individually asked to do perform quick tests (quiz) or to do certain assignments such lab. Experiments, problems solving, homework, topics summarizing or internet search. The teacher will provide them feed-back correction & evaluation
Group projects: students work on a project in groups of 2 to 3 students. Important for learning by doing ,using the results in practical manner &for promoting team work skills
One Minute Paper is based on a concept called retrieval learning. Just fill out a small questionnaire within 15 minutes after taking a class, reading a chapter, watching a documentary, or learning in another way.
Demonstration is a teaching method used to communicate an idea with the aid of visuals such as flip charts, posters, power point, etc. A demonstration is the process of teaching someone how to make or do something in a step-by-step process. As you show how, you "tell" what you are doing.
Video clips can bring a subject to students in a completely new way and help them comprehend the material they're reading or working with.
Role-play is a technique that allows students to explore realistic situations by interacting with other people in a managed way in order to develop experience and trial different strategies in a supported environment.
A concept map is a visual representation of a topic that students can create using words, phrases, lines, arrows, space on the page, and perhaps color to help organize their ideas and show their understanding of an idea, vocabulary term, or essential question.
Self-studying is a learning method where students direct their own studying—outside the classroom and without direct supervision. Since students are able to take control of what (and how) they are learning, self-study can be a very valuable way for many students to learn.

Assignments:

No	Assignments	Aligned CILOs(symbols)	Week Due	
1	Tutorial exercises	a1, b1, c1, d1	3	
2	Homework Exercises	a1, b1, c1, d1	7	

Schedule of Assessment Tasks for Students During the Semester

No.	Assessment Method		Week Due	Mark	Proportion of Total course Assessment	Aligned Course Learning Outcomes (CILOs)
2	Term Works	Quizzes	4-13, 14	10	10	a1, b1, c1, d1
		Assignments	7, 12	10	10	a1, b1, c1, d1

3	Mid-semester exam of theoretical part (written exam	7	20	20	b1, c1, d1
4	Final exam of theoretical part (written exam)	16	60	60	b1, c1, d1
TOTAL			100	100 %	

Note: Minimum marks to pass the course: The student must gain at least 75% of the total estimation of the course to pass this course**.**

Learning Resources:
1- Required Textbook(s) (maximum two).
L.G. Alexander, 2007, Longman English grammar practice, , Longman Group, UK
2- Essential References
Mary Lou, 2011, The English Teacher's Survival Guide: Ready-To-Use Techniques & Materials for Grades 7-12 , 2nd Edition, Jossey-Bass teachers, USA
3-Electronic References
1-literacyworldwide.org 4- World English Institute – Free English Lessons 3- Medical English Online Course

Course Policies:	
1	**Class Attendance:** At least 75 % of the course hours should be attended by the student. Otherwise, he/she will not be allowed to attend the final exam
2	**Tardy:** any student who is late for more than 15 minutes from starting the lecture will not be allowed to attend the lecture and will be considered absent.
3	**Exam Attendance/Punctuality:** any student who is late for more than 30 minutes from starting the exam will not be allowed to attend the exam and will be considered absent.
4	**Assignments & Projects:** Assignments and projects will be assessed individually unless the teacher request for group work
5	**Cheating**: Cheating by any means will cause the student failure and he/she must re-study the course
6	**Plagiarism**: Plagiarism by any means will cause the student failure in the course . Other disciplinary procedures will be according to the college rules.

PHYSICAL PHARMACY

I. Course Identification and General Information:								
1	**Course Title:**	**PHYSICAL PHARMACY**						
2	**Course Code**	**PHT 142**						
3	**Credit hours:**	**C.H**						**TOTAL**
		Theoretical			**P.**	**Tr.**		
		L.	**Tut.**	**S.**				
		1	1	-	1	-		**3**
4	**Study level/ semester at which this course is offered:**	(First) Year – (2ND) semester						
5	**Pre –requisite (if any):**	• **Physics for pharmacy**						
6	**Co –requisite (if any):**	-						
7	**Program (s) in which the course is offered:**	**Faculty of Medical Science**						
8	**Language of teaching the course:**	**ENGLISH**						
9	**Location of teaching the course:**	**IN THE UNIVERSITY**						

L: lecturing ; Tut: Tutorial , S: seminar ; P: practical ; Tr.: training

Course Description:
This course deals with study of the various physical phenomena applied or observed in pharmacy in particular pharmaceutical dosage forms design and formulation. Therefore, this course can be referred so as to introduction to "pharmaceutics" courses.

Intended learning outcomes of the course (CILOs) and their alignment to Program Intended learning outcomes (PILOs), teaching strategies and assessment strategies		
Alignment CILOs to PILOs		
No.	**PILOs**	**CILOs**
1	**A3**	**a1.** Show sound understanding of physical properties and phenomena that influence the design of pharmaceutical preparations
2	**B9**	**b1.** Apply relevant equations to calculate physical measurements related to formulation and stability of pharmaceutical preparations
3	**C1**	**c1.** Handle efficiently and safely the chemical materials and tools used in the laboratory.
4	**C2**	**c2.** Operate the instruments and measure physical properties successfully in the laboratory.
5	**D1**	**d1.** Communicate effectively and behave in discipline with colleagues and in teacher in the lab..
6	**D2**	**d2.** Demonstrate the skills of time management and self-learning.
7	**D3**	**d3.** Participate efficiently with his colleagues in a team work.

Alignment CILOs to teaching strategies and assessment strategies		
(a) Alignment Course Intended Learning Outcomes (CILOs) of knowledge & understanding to Teaching Strategies and Assessment Strategies		
Course Intended Learning Outcomes	**Teaching strategies**	**Assessment Strategies**
a1	**Lecture-discussion**	**written exams**
(b) Alignment Course Intended Learning Outcomes (CILOs) of Intellectual Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	**Teaching strategies**	**Assessment Strategies**
b1	**Lecture-discussion, feed-back learning**	**Written exam, Quizzes, assignment**
©Alignment Course Intended Learning Outcomes (CILOs) of Professional and Practical Skills to Teaching Strategies and Assessment Strategies:		

Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
c1, c2	Lab. Practice	Lab. Term works, final practical exam

(d) Alignment Course Intended Learning Outcomes (CILOs) of Transferable Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	**Teaching strategies**	**Assessment Strategies**
d1	Lab. Practice, feed-back learning	Lab. Term works, assignment
d2.	Lab. Practice ,feed-back learning	Lab. Term works, assignment
d3	Lab. Practice , Group-project	Lab. Term works, assignment

Course Content:

A – Theoretical Aspect:

Order	Units/ Topics List	CILOs	Sub Topics List	No. of Weeks	contact hours
1	**Introduction to physical pharmacy**	a1,	• Scope and purposes of physical pharmacy • State of matters : factors affecting (intermolecular forces, vapor pressure, atmospheric pressure, thermal energy) • Circle of inter-conversion of a matter from a state of state ; name of processes, factors affecting	2	4

			• Pharmaceutical Application of inter-conversion of matters in pharmacy		
2	**solid state physical properties**	a1, b1	• Melting points of solids • Liquefaction of mixed solids • Crystallization : principles and applications • Amorphous and crystalline forms • Polymorphism, hydrates, anhydrous • Micrometrics : particle size definition, analysis • Tapped and bulk density • porosity, flowability and Carr`s index • Mathematical problems related to the studied topics • summary of Pharmaceutical Applications of solid state properties.	3	6
	liquid states physical properties	a1, b1	• evaporation, boiling, vaporization and volatilization • Viscosity and types of flow of fluids • Mathematical problems related to the studied topics • Pharmaceutical Applications of liquid state properties.	2	4
			MID-TERM EXAM	1	2
4	**Gas state physical properties**	a1, b1	• Ideal gases and Real gases • Laws and equations of ideal and real gases • Aerosols :principles and applications	1	2

5	**Physical interactions between matters**	a1, b1	Principles, equations, factors and problems of the following physical matters interactions: • solubility , miscibility and dissolution • insolubility and immiscibility • dispersion and surface tensions (Solid dispersion in liquids , Liquid dispersion in liquids) • Sedimentation • Coalescences • partition coefficient: hydrophilicity and lipophilicity • Adsorption • Complexation • Mathematical problems related to the studied topics • Summary of pharmaceutical applications of the	3	6
6	**Stability and degradation kinetics**	a1, b1	• Degradation of matters : definition and types of degradation, definition of stability, factors enhancing degradation, approaches to reduce or limit degradation • Orders of degradation (zero,first, second) • Degradation parameters: degradation rate constant, half-life($t_{1/2}$) , shelf life (t_{90}) • Mathematical problems related to degradation order kinetics	3	6
Course Review		a1, b1	Review of the course topics by discussion session.	1	2

FINAL – EXAM	1	2
TOTAL	16	32
Number of Weeks /and Units Per Semester	16 weeks	6 Units

B – Practical Aspect:				
Order	**Tasks/ Experiments**	**Number of Weeks**	**contact hours**	**Aligned Course Intended Learning Outcomes CILOs**
1.	**introduction to Lab.: safety requirements, list of experiments, How to report, etc + liquefaction of solids**	**1**	**2**	**c1, c2, d1, d2, d3**
2.	**Tapped and bulk density porosity and Carr`s index of flowability description ..**	**1**	**2**	**c1, c2, d1, d2, d3**
3.	**Crystallization phenomena**	**1**	**2**	**c1, c2, d1, d2, d3**
4.	**Density of l liquids**	**1**	**2**	**c1, c2, d1, d2, d3**
5.	**Viscosity determination**	**1**	**2**	**c1, c2, d1, d2, d3**
6.	**Particle size determination (sedimentation method)**	**1**	**2**	**c1, c2, d1, d2, d3**
7.	**Surface tension determination (Drop weight method)**	**1**	**2**	**c1, c2, d1, d2, d3**
8.	**Solubility description**	**1**	**2**	**c1, c2, d1, d2, d3**
9.	**Adsorption phenomenon**	**1**	**2**	**c1, c2, d1, d2, d3**
10.	**Partition coefficient determination**	**1**	**2**	**c1, c2, d1, d2, d3**
11.	**Review**	**1**	**2**	**c1, c2, d1, d2, d3**

PRACTICAL EXAM	**1**	**2**	**c1, c2, d1, d2**
Total	**12**	**24 equivalent to 12 credit hours**	
Number of Weeks		**12**	

Teaching strategies of the course:

Active Lecture It is the most frequently employed teaching method to convey knowledge and explain theories to students in large groups (50-200) or in sessions, which consist of more than one group gathered in one classroom.

The efficiency of lecturing can be enhanced by using techniques such as **Brain-storming**: It depends on stimulation of the student`s brain through a group of questions &/or **Concepts map**: which depends on sequencing of thoughts in the form of maps with horizontal or vertical relations & by using **learning aids** such as Data show projector

Laboratory practice: students doing experiments in labs individually or in small groups

Feed-back learning: students are individually asked to do perform quick tests (quiz) or to do certain assignments such lab. Experiments, problems solving, homework, topics summarizing or internet search. The teacher will provide them feed-back correction & evaluation

Group projects: students work on a project in groups of 2 to 3 students. Important for learning by doing ,using the results in practical manner &for promoting team work skills

One Minute Paper is based on a concept called retrieval learning. Just fill out a small questionnaire within 15 minutes after taking a class, reading a chapter, watching a documentary, or learning in another way.

Demonstration is a teaching method used to communicate an idea with the aid of visuals such as flip charts, posters, power point, etc. A demonstration is the process of teaching someone how to make or do something in a step-by-step process. As you show how, you "tell" what you are doing.

Video clips can bring a subject to students in a completely new way and help them comprehend the material they're reading or working with.

Role-play is a technique that allows students to explore realistic situations by interacting with other people in a managed way in order to develop experience and trial different strategies in a supported environment.

A concept map is a visual representation of a topic that students can create using words, phrases, lines, arrows, space on the page, and perhaps color to help organize their ideas and show their understanding of an idea, vocabulary term, or essential question.

Self-studying is a learning method where students direct their own studying—outside the classroom and without direct supervision. Since students are able to take control of what (and how) they are learning, self-study can be a very valuable way for many students to learn.

Assignments:

No	Assignments	Aligned CILOs	Week Due	Mark
1	**Individual**: the teacher provide the students with mathematical problems related to the studied topics. Every student is assigned to solve some of those problems individually.	B1, d2	4-13	3
2	**Group** : each group of students will be assigned to make a search-report supported by illustrating videos on one of the studied physical phenomenon.	D1, d1, d3	14	2

Schedule of Assessment Tasks for Students During the Semester

Theoretical part assessment

No.	Assessment Method		Week Due	Mark	Proportion to Total course Assessment	Aligned Course Learning Outcomes (CILOs)
1	Term Works	Quizzes	4-13, 14	5	5	b1
		Assignments	7, 12	5	5	b1, d1, d2, d3
2	Mid-semester exam of theoretical part (written exam		7	10	10	a1, b1
3	Final exam of theoretical part (written exam)		16	50	50	a1, b1
TOTAL				70	70 %	70

Practical part assessment						
No.	**Assessment Method**		**Week Due**	**Mark**	**Proportion to Total course Assessment**	**Aligned Course Learning Outcomes(CILOs)**
1	Lab. Term works	Attitude	1-12	5	5	c1, c2, d1, d2, d3
2		Accomplishments		5	5	
	Final exam (practical)		12	20	20	c1, c2,d1, d2
Total				30	30 %	

Learning Resources:
1- Required Textbook(s) (maximum two)
1. Martin`s : Physical pharmacy and pharmaceutical sciences, 2011, Lippincott Williams & Wilkins, UK
2- Essential References
1. Aulton M.E., Pharmaceutics: the science of dosage form design, 2002, Churchill Livingstone, UK 2. Subrahmanyam. A text book of physical pharmaceutics, 2015, VallabhPrakashan, India 3. R.S. Gaud G.T. Gupta practical physical pharmacy, 2012, CBS, USA
3-Electronic References
1- International Journal of Pharmaceutics | ScienceDirect.com by Elsevier 2- www.pharmacyjournal.info 3- Pharmacy journal | International Journal of Pharmaceutical Sciences and Drug Analysis 4- https://edwiserinternational.com/news.php?id=Mjg= 5- Physical Pharmacy | List of High Impact Articles | PPts | Journals | Videos (longdom.org)

Course Policies:	
1.	**Class Attendance:** At least 75 % of the course hours should be attended by the student. Otherwise, he/she will not be allowed to attend the final exam

2.	**Tardy:** any student who is late for more than 15 minutes from starting the lecture will not be allowed to attend the lecture and will be considered absent.
3.	**Exam Attendance/Punctuality:** any student who is late for more than 30 minutes from starting the exam will not be allowed to attend the exam and will be considered absent.
4.	**Assignments & Projects:** Assignments and projects will be assessed individually unless the teacher request for group work
5	**Cheating**: Cheating by any means will cause the student failure and he/she must re-study the course
6	**Plagiarism**: Plagiarism by any means will cause the student failure in the course . Other disciplinary procedures will be according to the college rules.

ANATOMY & HISTOLOGY

Course Identification and General Information:						
1	**Course Title:**	**Anatomy and Histology**				
2	**Course Code &Number:**	**ANAT 182**				
3	**Credit hours:**	**C.H**				**TOTAL**
		Th.	**Seminar**	**P.**	**Tr.**	
		2	-	-		2
4	**Study level/ semester at which this course is offered:**	1st year/Second semester				
5	**Pre –requisite:**	General biology **BIOL111**				
6	**Co –requisite :**	-				
7	**Program (s) in which the course is offered:**	**Faculty of Medical Science**				
8	**Language of teaching the course:**	English				
9	**Location of teaching the course:**	In the University				

Course Description:
The course focuses on the components of the main anatomical structure and functioning of the body and its systems and organs. The course includes the structure and function of the human body & organs tissues, their different types, location, distribution and function in human body and of the different organ system and their prospective roles and function in the organization of the body. Gross anatomy is treated in its broadest aspects and includes the human skill and the different system: Skeletal, muscular, nervous, sensory and circulatory and lymphatic.

Intended learning outcomes of the course(CILOs) and their alignment to Program Intended learning outcomes (PILOs)		
NO.	**PILOs**	**CILOS**
1	**A1**	**a1.** Show understanding of the basic concepts of anatomy and organization of human body.
2		**a2.** Describe the types of tissues from which human body organs are formed
3	**B2**	**b1.** Classify human body into systems and organs
4		**b2.** Differentiate between different types of tissues in human body.
5		**b3.** Relate anatomical/histological structure with functions of organs and tissues in human body
6	**C1**	**c1.** Handle efficiently and safely different biological samples and chemicals in the laboratory
7	**C2**	**c2.** Operate successfully the light microscope and other instruments used in the laboratory.
8	**D1**	**d1.** Communicate effectively and behave in discipline with colleagues and teachers.
9	**D2**	**d2.** Demonstrate time management and self-learning skills**.**
10	**D3**	**d3.** Work successfully in team-work in the biology lab

(a) Alignment Course Intended Learning Outcomes (CILOs) of knowledge & understanding to Teaching Strategies and Assessment Strategies		
Course Intended Learning Outcomes	**Teaching strategies**	**Assessment Strategies**
a1, a2	**Active Lecture**	**Written exams**
(b) Alignment Course Intended Learning Outcomes (CILOs) of Intellectual Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	**Teaching strategies**	**Assessment Strategies**
b1	**Active Lecture**	**Written exams**
b2	**Lecture, lab. practice**	**written exam, lab. term works, final practical exam**

b3	**Lecture, Feed-back learning**	**Written exams, assignment**
(c)Alignment Course Intended Learning Outcomes (CILOs) of Professional and Practical Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	**Teaching strategies**	**Assessment Strategies**
c1, c2	**Lab. Practice, Feed-back learning, group-project**	**lab. term works, final practical exam, assignment**
(d) Alignment Course Intended Learning Outcomes (CILOs) of Transferable Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	**Teaching strategies**	**Assessment Strategies**
d1, d3	**Lab. Practice , Group-project**	**lab. term works, final practical exam, assignment**
d2.	**Lab. Practice, feed-back learning**	**Lab. attitude, individual assignment**

Course Content:

A – Theoretical Aspect:

Order	Units/Topics List	Sub Topics List	No. of Weeks	Contact hours	Learning Outcomes
1	Histology	▪ Definitions ▪ Human Cell structure ▪ Tissues -Definition, Types, characteristics, classification, location, functions and formation ▪ General Histology, study of the basic tissues of the body ▪ Microscope, Cell, Epithelium, Connective Tissue, Cartilage, Bone, Muscular tissue, Nerve,	4	8	a1, a2, b1, b3

		Tissue – TS & LS, Circulatory system – large sized artery, medium sized artery, large sized vein, lymphoid tissue, Skin and its appendages.			
2	The Skeletal System	▪ Bones- types, structure, Axial & Appendicular Skeleton, ▪ Bone formation and growth ▪ Description of bones ▪ Joints - classification and structure	1	2	a1, a2, b1, b3
3	The Muscular System	▪ Types and structure of muscles ▪ Muscle groups Alterations in disease Applications and implications in nursing	1	2	a1, a2, b1, b3
4	Midterm exam		1	2	
5	The Nervous System	▪ Structure of neurologia& neurons ▪ Somatic Nervous system - Structure of brain, spinal cord, cranial nerves, spinal nerves, peripheral nerves ▪ Autonomic Nervous System - sympathetic, parasympathetic - Structure, location	1	2	a1, a2, b1, b3
7	Circulatory and lymphatic system	▪ The Circulatory System - Blood-Microscopic: structure - Structure of Heart - Structure of blood vessels-Arterial & Venous System,	2	4	a1, a2, b1, b3

		- Circulation: systemic, pulmonary, coronary ▪ Lymphatic system: - Lymphatic vessels and lymph - Lymphatic tissues - Thymus gland - Lymph nodes o Lymphatic nodules			
8	The Respiratory System	▪ Structure of the organs of respiration ▪ Muscles of respiration: Intercostal and Diaphragm	1	2	a1, a2, b1, b3
9	The Digestive System	▪ Structure of Alimentary tract and accessory organs of digestion	1	2	a1, a2, b1, b3
10	The Excretory System (Urinary)	▪ Structure of organs of urinary ▪ System: Kidney, ureters, urinary bladder, urethra, structure of skin	1	2	a1, a2, b1, b3
11	The Endocrine System	▪ Structure of Pituitary, Pancreas, thyroid, Parathyroid, thymus and adrenal glands	1	2	a1, a2, b1, b3
12	The Reproductive system including breast	▪ Structure of female reproductive organs ▪ Structure of male reproductive organs. ▪ Structure of breast	1	2	a1, a2, b1, b3
13	Final exam		1	2	a1, a2, b1, b3
Number of Weeks /and Units Per Semester			**16**	**32**	

Teaching strategies of the course:
Active Lecture It is the most frequently employed teaching method to convey knowledge and explain theories to students in large groups (50-200) or in sessions, which consist of more than one group gathered in one classroom. The efficiency of lecturing can be enhanced by using techniques such as **Brain-storming**: It depends on stimulation of the student`s brain through a group of questions &/or **Concepts map**: which depends on sequencing of thoughts in the form of maps with horizontal or vertical relations & by using **learning aids** such as Data show projector
1. **Laboratory practice**: students doing experiments in labs individually or in small groups
2. **Feed-back learning:** students are individually asked to do perform quick tests (quiz) or to do certain assignments such lab. experiments, problems solving, homework, topics summarizing or internet search. The teacher will provide them feed-back correction & evaluation
3. **Group projects:** students work on a project in groups of 2 to 3 students. Important for learning by doing ,using the results in practical manner &for promoting team work skills
4. **One Minute Paper** is based on a concept called retrieval learning. Just fill out a small questionnaire within 15 minutes after taking a class, reading a chapter, watching a documentary, or learning in another way.
5. **Demonstration** is a teaching method used to communicate an idea with the aid of visuals such as flip charts, posters, power point, etc. A demonstration is the process of teaching someone how to make or do something in a step-by-step process. As you show how, you "tell" what you are doing.
6. **Video clips** can bring a subject to students in a completely new way and help them comprehend the material they're reading or working with.
7. **Role-play** is a technique that allows students to explore realistic situations by interacting with other people in a managed way in order to develop experience and trial different strategies in a supported environment.

Assignments:

No	Assignments	Aligned CILOs(symbols)	Week Due	Mark
1	Each student is assigned to draw anatomical features of an organ/system in the body	d1	4-10	5

Schedule of Assessment Tasks for Students During the Semester						
Theoretical part assessment						
No.	**Assessment Method**		**Week Due**	**Mark**	**Proportion to Total course Assessment**	**Aligned Course Learning Outcomes (CILOs)**
1	Term Works	Quizzes	4-13, 14	5	5	b3
		Assignments	7, 12	5	5	d1
2	Mid-semester exam (written exam)		7	10	10	a1, a2, b1, b3
3	Final exam (written exam)		16	50	50	a1, a2, b1, b3
			TOTAL	70	70 %	

Learning Resources:
1- Required Textbook(s)
1. Cohen : Memmler's Structure & Function of Human Body, LWW. 2. Tortora, G.J. : Introduction to the human body. Harper and Row Publisher, New York.
2- Essential References
1. Alexander P. : Human anatomy and physiology. Benjamin/Cummings Pub. California. 2. Waugh: Ross & Wilson Anatomy & Physiology, Elsevier
3-Electronic References
1- International Journal of Human Anatomy | About | Open Access Pub 2- IJAR | Anatomy | International Journal of Anatomy and Research | Int J Anat Res (ijmhr.org) 3- Italian Journal of Anatomy and Embryology (fupress.net) 4- Anatomical Science International | Home (springer.com)

Course Policies:	
1.	**Class Attendance:** At least 75 % of the course hours should be attended by the student. Otherwise, he/she will not be allowed to attend the final exam
2.	**Tardy:** any student who is late for more than 15 minutes from starting the lecture will not be allowed to attend the lecture and will be considered absent.
3.	**Exam Attendance/Punctuality:** Any student who is late for more than 30 minutes from starting the exam will not be allowed to attend the exam and will be considered absent.
4.	**Assignments &Projects:** Assignments and projects will be assessed individually unless the teacher request for group work

5.	**Cheating**: Cheating by any means will cause the student failure and he/she must re-study the course
6.	**Plagiarism**: Plagiarism by any means will cause the student failure in the course. Other disciplinary procedures will be according to the college rules.

Botany & Medicinal Plants

Course Identification and General Information:								
1	**Course Title:**	**BOTANY & Medicinal Plant**						
2	**Course Code &Number:**	**PHG 162**						
3	**Credit hours:**	C.H						TOTAL
		Theoretical			P.	Tr.		
		L.	Tut.	S.				
		2	-	-	-	-		**2**
4	**Study level/ semester at which this course is offered:**	(1ST) Year – (SECOND) semester						
5	**Pre –requisite (if any):**	• **General biology**						
6	**Co –requisite (if any):**	**----**						
7	**Program (s) in which the course is offered:**	**Faculty of Medical Science**						
8	**Language of teaching the course:**	**ENGLISH**						
9	**Location of teaching the course:**	**IN THE UNIVERSITY**						

L: lecturing ; Tut: Tutorial , S: seminar ; P: practical ; Tr.: training

Course Description:
The course provides essential knowledge and skills in plants as an introduction to pharmacognosy and phytochemistry courses. This course is designed in order to help the student in the identification of natural drugs from plant kingdom as well as their proper collection, storage, marketing according to pharmacopoeias and methods of drug adulteration.

Intended learning outcomes of the course (CILOs) and their alignment to Program Intended learning outcomes (PILOs), teaching strategies and assessment strategies		
1. Alignment CILOs to PILOs		
No.	**PILOs**	**CILOs**
1	**A6**	**a1.** Identify the general characters, life cycles and nutritional sources of the common orders, families, genera and species of the plant kingdom
2		**a2.** Describe the types morphological and microscopical features of plant seeds, roots, leaves, stems , barks, flowers and fruits
3		**a3.** Determine the structural/functional components and biological processes of plant cell and the anatomical and physiological features of tissues and systems in common plant species.
4		**a4.** Explicit the economic and medical uses of common plant genera and species in particular plants belonging to Angiosperm .
5	**B6**	**b1.** Differentiate between various plant species based on their morphological and microscopical features.
6		**b2 .** Classify plant kingdom into orders, families, genera and species.
7		**b3.** Compare between animal cell and plant cell.
8	**C1**	**c1.** Handle efficiently and safely the chemical materials and tools used in the chemistry lab.
9	**C2**	**c2.** Operate the instruments and perform experiments successfully in the chemistry lab.
10	**D1**	**d1.** Communicate effectively and behave in discipline with colleagues and in teacher in the lab..
11	**D2**	**d2.** Demonstrate the ability of time management, self-learning and problem-solving skills.
12	**D3**	**d3.** Work successfully within a team.

Alignment CILOs to teaching strategies and assessment strategies		
(a) Alignment Course Intended Learning Outcomes of knowledge & understanding to Teaching Strategies and Assessment Strategies		
Course Intended Learning Outcomes	**Teaching strategies**	**Assessment Strategies**
a1, a2, a3 , a4	**Active Lecture**	**written 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,b2,b3	**Lectures, feed-back learning**	**Written exams , assignment, quizzes**
Course Intended Learning Outcomes	**Teaching strategies**	**Assessment Strategies**
c1, c2	**Lab. Practice**	**Lab. term works, final practical 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	**Lab. Practice**	**Lab. term works, final practical exam**
d2	**Lab. Practice works, feed-back learning**	**Lab. practical works, individual assignment**
d3	**Lab. practice, group project**	**Lab. term works, group-assignment**

Course Content:

A – Theoretical Aspect:

Order	Units/ Topics List	CILOs	Sub Topics List	No. of Weeks	contact hours
1	**Introduction to botany**	a1, a3, a4,b1, b2,b3,	• Definition and Brief history of botany	2	

			• Basis of plant structures: plant cell and plant cellular contents , types of plant tissues and plant organs • Differences between plant kingdom and animal kingdom • Nutrition, metabolism and growth of plant • Plant taxonomy : basis of classification of plant kingdom intoorders, families,, suborders, genera, species.		4
2	**Plant Order (1) THALLOPHYTES (Thallophyta)**	a1, a3, a4,b1, b2,	• General characters • **Algae**e.g. Pleurococcus, Spirogyra, Vaucheria, Diatoms.), economic use of algae • **Fungi :** differences from algae, types phycomycetes (oomycetes e.g. saprolegnia), (zygomycetes e.g. black mold) eumycetes (ascomycetes e.g. yeasts: Ergot fungi) (Basidiomycetes edible mushroom, amanita) economic use of fungi • **lichens** types and examples • **Bacteria** (only brief study on general characters and differences from fungi, algae and lichens. • **Viruses** : general characters, examples	2	4
3	**Plant order (2) ARCHEGONIATES (Archegoniatae)**	a1, a3, a4,b1, b2,	• General characters • Bryophytes e.g. Hepaticae, mosses	2	4

			• Pteridophytes e.g. Ferns, club mosses		
4	**Plant order (3) SPERMOPHYTES (seeding plants)**	a1, a3, a4,b1, b2,	• Gymnosperms , characters, differences, examples of plants • Angiosperms: characters, differences, economically and medically valuable families.	1	2
			MID-TERM EXAM	1	2
5	**Plant parts in Angiosperms**	a1, a2, a3, a4, b1,b2,	(morphology, anatomy and physiology) of : • The roots • The stems • The bark • The leaf • The flower • The fruit • The seed	3	6
6	**classification of angiosperms yielding vegetable drugs**.	a1, a3, a4,b1, b2,	• **Monocotyledons :** general characters, classification, examples of plants and their yielding drugs • **Dicotyledons :** **(**Archichlamydeae or Choripetalae, Metachlamydeas or Sympetalas): general characters, classification, examples of plants and their yielding drugs	3	9
Course Review		a1, a2, a3, a4, b1,b2,	Review of the course topics by discussion session.	1	2

FINAL - EXAM	1	2
TOTAL	16	32
Number of Weeks /and Units Per Semester	16 weeks	6 Units

B - Practical Aspect:				
Order	**Tasks/ Experiments**	**Number of Weeks**	**contact hours**	**Aligned Couse Intended Learning Outcomes CILOs**
1.	**introduction to pharmaceutical organic chemistry Lab.: safety requirements, list of experiments, How to report, etc.**	**1**	**2**	**a1, a2, c1, c2, , d3, d1, d2,**
2.	**Algea: microscopical slides**	**1**	**2**	**a1, a2, c1, c2,, d3, d1, d2,**
3.	**Fungi: microscopical and morphological features of different fungi species**	**2**	**4**	**a1, a2, c1, c2, d3, d1, d2,**
4.	**Plant leaves: morphology and microscopy**	**2**	**4**	**a1, a2, c1, c2, d3, d1, d2,**
5.	**Plant barks: morphology and microscopy**	**1**	**2**	**a1, a2, c1, c2, d3, d1, d2,**
6.	**Plant roots and rhizomes: morphology and microscopy**	**1**	**2**	**a1, a2, c1, c2,, d3, d1, d2,**
7.	**Plant flowers: morphology and microscopy**	**1**	**2**	**a1, a2, c1, c2,, d3, d1, d2,**

8.	**Plant fruits: morphology and microscopy**	**1**	**2**	**a1, a2, c1, c2 , d3, d1, d2,**
9.	**Differentiation between** Monocotyledons Dicotyledons : **morphology and microscopy**	**1**	**2**	**a1, a2, c1, c2,, d3, d1, d2,**
PRACTICAL EXAM		**1**	**2**	**a1, a2, b2, c1, c2, d1, d2,**
Total		**12**	**24 equivalent to 12 credit hours**	
Number of Weeks			**12**	

Teaching strategies of the course:
Active Lecture It is the most frequently employed teaching method to convey knowledge and explain theories to students in large groups (50-200) or in sessions, which consist of more than one group gathered in one classroom. The efficiency of lecturing can be enhanced by using techniques such as **Brain-storming**: It depends on stimulation of the student`s brain through a group of questions &/or **Concepts map**: which depends on sequencing of thoughts in the form of maps with horizontal or vertical relations & by using **learning aids** such as Data show projector
Laboratory practice: students doing experiments in labs individually or in small groups
Feed-back learning: students are individually asked to do perform quick tests (quiz) or to do certain assignments such lab. experiments, problems solving, homework, topics summarizing or internet search. The teacher will provide them feed-back correction & evaluation
Group projects: students work on a project in groups of 2 to 3 students. Important for learning by doing ,using the results in practical manner &for promoting team work skills
One Minute Paper is based on a concept called retrieval learning. Just fill out a small questionnaire within 15 minutes after taking a class, reading a chapter, watching a documentary, or learning in another way.

Demonstration is a teaching method used to communicate an idea with the aid of visuals such as flip charts, posters, power point, etc. A demonstration is the process of teaching someone how to make or do something in a step-by-step process. As you show how, you "tell" what you are doing.
Video clips can bring a subject to students in a completely new way and help them comprehend the material they're reading or working with.
Role-play is a technique that allows students to explore realistic situations by interacting with other people in a managed way in order to develop experience and trial different strategies in a supported environment.
A concept map is a visual representation of a topic that students can create using words, phrases, lines, arrows, space on the page, and perhaps color to help organize their ideas and show their understanding of an idea, vocabulary term, or essential question.

Assignments:

No	Assignments	Aligned CILOs	Week Due	Mark
1	**Individual**: every student is assigned to do a search report on one species of one medically valuable plant family.	d2	4-13	3
2	**Group** : each group of students will be assigned to do a search report supported with illustrating videos on one of the followings|: • Plant taxonomy • Plant cell • Algae • phycomycetes	d1, d3	14	2

Schedule of Assessment Tasks for Students During the Semester
Theoretical part assessment

No.	Assessment Method		Week Due	Mark	Proportion to Total course Assessment	Aligned Course Learning Outcomes (CILOs)
1	Term Works	Quizzes	4-13, 14	5	5	b1, b2, b3
		Assignments	7, 12	5	5	d1, d2, d3
2	Mid-semester exam of theoretical part (written exam		7	10	10	a1, a2, a4, b1, b2, b3
3	Final exam of theoretical part (written exam)		16	50	50	a1, a2, a3, a4, b1, b2, b3
TOTAL				70	70 %	70

Practical part assessment						
No.	Assessment Method		Week Due	Mark	Proportion To Total course Assessment	Aligned Course Learning Outcomes(CILOs)
1	Lab. Term works	Attitude	1-12	5	5	c1, c2, d1, d2, d3
2		Accomplishments		5	5	
	Final exam (practical)		12	20	20	c1, c2,d1, d2
Total				30	30 %	

Learning Resources:
1- Required Textbook(s) (maximum two)
1. MesSchooley , introduction to botany, 1997, Delmar publisher
2- Essential References
1. W.C. Evans, Trease and Evans pharmacognosy, 2009, W.B.Saunders 2. Stern. Introductory plant biology
3-Electronic References
1- International Journal of Botany - Home (scialert.net) 2- International Journal of Botany Studies	Web of Science (botanyjournals.com)

3- International Journal of Botany (ansinet.com)
4- International Journal of Botany (scimagojr.com)

Course Policies:	
1	**Class Attendance:** At least 75 % of the course hours should be attended by the student. Otherwise, he/she will not be allowed to attend the final exam
2	**Tardy:** any student who is late for more than 15 minutes from starting the lecture will not be allowed to attend the lecture and will be considered absent.
3	**Exam Attendance/Punctuality:** any student who is late for more than 30 minutes from starting the exam will not be allowed to attend the exam and will be considered absent.
4	**Assignments & Projects:** Assignments and projects will be assessed individually unless the teacher request for group work
5	**Cheating**: Cheating by any means will cause the student failure and he/she must re-study the course
6	**Plagiarism**: Plagiarism by any means will cause the student failure in the course . Other disciplinary procedures will be according to the college rules.

FIRST AID

Course Identification and General Information:								
1	**Course Title:**	**FIRST AID**						
2	**Course Code &Number:**	**PHCL 172**						
3	**Credit hours:**	C.H						TOTAL
		Theoretical			P.	Tr.		
		L.	Tut.	S.				
		2	-	-	-	-		**2**
4	**Study level/ semester at which this course is offered:**	(1st) Year – (2nd) semester						
5	**Pre –requisite (if any):**	**NONE**						
6	**Co –requisite (if any):**	**Anatomy and histology**						
7	**Program (s) in which the course is offered:**	**Faculty of Medical Science**						
8	**Language of teaching the course:**	**ENGLISH**						
9	**Location of teaching the course:**	**IN THE UNIVERSITY**						

L: lecturing ; Tut: Tutorial , S: seminar ; P: practical ; Tr.: training

Course Description:
The course provides necessary knowledge of how to provide first aid to people who got injured , hit by accidents or have serious life-threatening conditions. Besides, the course is alongside with general chemistry and physical pharmacy courses in which the student should have knowledge to diminish risks of accidents and injuries in the laboratories.

Intended learning outcomes of the course (CILOs) and their alignment to Program Intended learning outcomes (PILOs), teaching strategies and assessment strategies		
Alignment CILOs to PILOs		
No.	**PILOs**	**CILOs**
1	**A1**	**a1.** Define first aid and its objectives and significance.
2		**a2.** Discuss the principles of first aid in various emergency situations
3		**a3.** Identify the steps to be carried out in first aid of different types of accidents and injuries.
4	**A10**	**a4.** Comprehend his/her role as a pharmacist to implement and participate in primary health care and epidemic-diseases control programs and in assisting health care team to provide first aid services.
5	**B1**	**b1.** Interpret signs of mild and sever accidents and injuries.
6	**C7**	**c1 .** Search efficiently for information using documented and electronic sources of information.
7		**c2.** Present and report his/her works correctly using appropriate writing rules and technologies media.
8	**D2**	**d1.** Demonstrate the skills of time management and self-learning.
9	**D3**	**d2.** Participate efficiently with his colleagues in a team work.

Alignment CILOs to teaching strategies and assessment strategies		
(a) Alignment Course Intended Learning Outcomes (CILOs) of knowledge & understanding to Teaching Strategies and Assessment Strategies		
Course Intended Learning Outcomes	**Teaching strategies**	**Assessment Strategies**
a1, a2, a3 , a4	**Active Lecture**	**Written exams**
(b) Alignment Course Intended Learning Outcomes (CILOs) of Intellectual Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	**Teaching strategies**	**Assessment Strategies**
b1	**Lecture, feed-back learning**	**Written exam , quizzes**
(c)Alignment Course Intended Learning Outcomes (CILOs) of Professional and Practical Skills to Teaching Strategies and Assessment Strategies:		

Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
c1, c2	group project	Assignments
(d) Alignment Course Intended Learning Outcomes (CILOs) of Transferable Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	**Teaching strategies**	**Assessment Strategies**
d1, d2	group project	Assignments

Course Content					
Order	**Units/ Topics List**	**CILOs**	**Sub Topics List**	**No. of Weeks**	**contact hours**
1	**Introduction to first-aid**	a1, a2, a3, a4	• Definition, concept and history of fist aid • objectives and responsibilities of first aid • role of pharmacist in assisting health care team in providing first-aid to patients. • General principles of first-aid	2	4
2	**First aid of injuries , bleeding, burn , bites**	a1, a2, a3, a4, b1	• Handling of chemicals • First aid of poisoning • First aid of cuts: injuries, bleeding • first-aid of burns & sunburn & frost • first-aid of animal bites, stings • First aid Hit accident	5	10
Mid-term exam				1	2

3	**First aid of conditions affecting, respiratory systems and CVS and CNS**	a1, a2, a3, a4, b1	• First aid of asphyxia • first aid of hypotension & shock • first aid of cardiac arrest • First aid of seizure • First aid of coma	7	14
Course Review		a1, a2, a3, a4, b1	Review of the course topics by discussion session.	1	2
FINAL - EXAM				1	2
TOTAL				16	32
Number of Weeks /and Units Per Semester				16 weeks	3 Units

Teaching strategies of the course:
Active Lecture It is the most frequently employed teaching method to convey knowledge and explain theories to students in large groups (50-200) or in sessions, which consist of more than one group gathered in one classroom. The efficiency of lecturing can be enhanced by using techniques such as **Brain-storming**: It depends on stimulation of the student`s brain through a group of questions &/or **Concepts map**: which depends on sequencing of thoughts in the form of maps with horizontal or vertical relations & by using **learning aids** such as Data show projector
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Video clips can bring a subject to students in a completely new way and help them comprehend the material they're reading or working with.
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A concept map is a visual representation of a topic that students can create using words, phrases, lines, arrows, space on the page, and perhaps color to help organize their ideas and show their understanding of an idea, vocabulary term, or essential question.

Assignments:

No	Assignments	Aligned CILOs	Week Due	Mark
1	**Group** : each group of students will be assigned to provide a search-based report for comparison of first-aid procedures of cases not included in the theoretical part of the course.	c1, c2 , d1, d2	14	10

Schedule of Assessment Tasks for Students During the Semester

No.	Assessment Method		Week Due	Mark	Proportion to Total course Assessment	Aligned Course Learning Outcomes (CILOs)
1	Term Works	Quizzes	4-13, 14	10	10	b1
		Assignments	7, 12	10	10	c1, c2, d1, d2
2	Mid-semester exam of theoretical part (written exam		7	20	20	a1, a2, a3, a4, b1

3	Final exam of theoretical part (written exam)	16	60	60	a1, a2, a3, a4, b1
TOTAL			100	100 %	

Learning Resources:	
1- Required Textbook(s) (maximum two).	
David Pencheon. Oxford handbook of First aid	
Essential References.	
القواعد العامة للإسعافات الاولية / د/ محمد ابراهيم شلبي	
Course Policies:	
1	**Class Attendance:** At least 75 % of the course hours should be attended by the student. Otherwise, he/she will not be allowed to attend the final exam
2	**Tardy:** any student who is late for more than 15 minutes from starting the lecture will not be allowed to attend the lecture and will be considered absent.
3	**Exam Attendance/Punctuality:** Any student who is late for more than 30 minutes from starting the exam will not be allowed to attend the exam and will be considered absent.
4	**Assignments & Projects:** Assignments and projects will be assessed individually unless the teacher request for group work
5	**Cheating**: Cheating by any means will cause the student failure and he/she must re-study the course
6	**Plagiarism**: Plagiarism by any means will cause the student failure in the course. Other disciplinary procedures will be according to the college rules.

مواصفات مقرر (ثقافة اسلامية Islamic culture)

معلومات عامة عن المقرر:						
1.	اسم المقرر:	ثقافة إسلامية Islamic culture				
2.	رمز المقرر ورقمه:	IC 152				
3.	الساعات المعتمدة:	محاضرة	سمنار	عملي	تدريب	الإجمالي
		2	-	-	-	2
4.	المستوى والفصل الدراسي:	الأول				
5.	المتطلبات السابقة لدراسة المقرر(إن وجدت):	-------				
6.	المتطلبات المصاحبة (إن وجدت):	------				
7.	البرنامج الذي يدرس له المقرر:	كافة البرامج في الجامعة				
8.	لغة تدريس المقرر:	اللغة العربية				
9.	نظام الدراسة:	فصلي				

وصف المقرر:
يتناول هذا المقرر مفهوم الثقافة الإسلامية وأسس العقيدة الاسلامية و التحديات و القضايا المعاصرة التي تواجههما و يمد الطالب بحصيلة مناسبة من المعارف المتعلقة بالإسلام عقيدة وشريعة ومنهج حياة

III – **مخرجات تعلم المقرر** بعد الانتهاء من هذا المقرر سيكون الطالب قادرا على أن : **مخرجات المعرفة والفهم**
a1 . يبين مدى تميز الأمة الإسلامية بثقافة عريقة بين الثقافات البشرية في مقوماتها وعناصرها وخصائصها. **a2** .يصف موقف الإسلام من قضايا العصر في مجالات العلوم النظرية والتطبيقية المختلفة ويناقشها من المنظور الإسلامي.
المهارات الذهنية
b1 .يفرق بين الثقافة الإسلامية وغيرها من الثقافات و يستنتج مساوئ الثقافات الأخرى.
المهارات العملية و المهنية
لا يوجد
المهارات العامة
d1 .يطور مهارة النقد الهادف والبناء والحوار والمناقشة مع الآخرين .

ربط مخرجات التعلم باستراتيجيات التدريس والتقييم		
أولا: ربط مخرجات تعلم المقرر (المعارف والفهم) باستراتيجية التدريس والتقييم:		
مخرجات المقرر / المعرفة والفهم	**استراتيجية التدريس**	**استراتيجية التقويم**
a1	**المحاضرة و النقاش**	**اختبارات تحريرية**
a2	**المحاضرة و النقاش ـ التعلم عن طريق التغذية الراجعة**	**اختبارات تحريرية – اختبارات مفاجئة**
ثانيا: ربط مخرجات تعلم المقرر (المهارات الذهنية) باستراتيجية التدريس والتقييم:		
مخرجات المقرر/ المهارات الذهنية	**استراتيجية التدريس**	**استراتيجية التقويم**
b1	**المحاضرة والنقاش ـالتعلم عن طريق التغذية الراجعة**	**اختبارات تحريرية ـ تكاليف**

ثالثا: ربط مخرجات تعلم المقرر (المهارات المهنية والعملية) باستراتيجية التدريس والتقييم:		
مخرجات المقرر/ المهارات المهنية والعملية	استراتيجية التدريس	استراتيجية التقويم
رابعا: ربط مخرجات تعلم المقرر (المهارات العامة) باستراتيجية التدريس والتقييم:		
مخرجات المقرر	استراتيجية التدريس	استراتيجية التقويم
d1	التعلم عن طريق التغذية الراجعة	تكاليف

مواضيع المقرر الرئيسة والفرعية

كتابة وحدات /مواضيع محتوى المقرر				
الرقم	وحدات/ موضوعات المقرر	المواضيع التفصيلية	عدد الأسابيع	الساعات الفعلية	مخرجات تعلم المقرر
1	الإسلام عقيدة و منهج حياه	– تعريفات و مفاهيم – أسس العقيدة الاسلامية – الاسلام منهج حياة	3	6	a1,a2, b1
2	الثقافة الإسلامية	– تعريفات و مفاهيم – الأهمية – أهم المصادر – مقارنة بالثقافات الأخرى	3	6	a1,a2, b1
	اختبار نصف الفصل		1	2	a1,a2, b1
2	الثقافة الإسلامية	-وعي المسلم و دوره للدفاع عن الاسلام	3	6	a1,a2, b1
3	قضايا معاصرة	رأي الاسلام في عدد من القضايا و المسائل الانسانية و العلمية و الثقافية	5	10	a1,a2, b1
	اختبار نهاية الفصل		1	2	
	إجمالي الأسابيع والساعات		**16**	**32**	

استراتيجية التدريس:				
1- المحاضرة و النقاش				
2- التعلم عن طريق التغذية الراجعة				
الأنشطة والتكليفات:				
الرقم	**النشاط / التكليف**	**مخرجات التعلم**	الأسبوع	**الدرجة**
1	تكليف بحثي : الفرق بين الثقافة الاسلامية و غيرها في أحدى القضايا المعاصرة	**b1**	**5**	**5**
	تكليف كتابي تعبيري : نقد لقصور المسلمين في مواجهة الثقافات الاخرى	**d1**	**12**	**5**

تقييم التعلم:					
الرقم	**أنشطة التقييم**	**الأسبوع**	**الدرجة**	**نسبة الدرجة إلى درجة التقويم النهائي**	**المخرجات التي يحققها**
1	**امتحانات مفاجئة**	----	10	10	a2
2	**التكاليف**	5, 12	10	10	b1, d1
3	**اختبار نصف الفصل**	7	20	20	a1,a2, b1
5	**الاختبار النهائي**	17	60	60	a1,a2, b1

مصادر التعلم:
نحو ثقافة إسلامية أصيلة : د. عمر الأشقر ، الطبعة الثانية عشرة ، 1413هـ ، دار النفائس ، الأردن
المراجع الرئيسة: (لا تزيد عن مرجعين)
1. المدخل إلى الثقافة الإسلامية : د . محمد رشاد سالم ، دار القلم ، الكويت ، الطبعة التاسعة ، 1407هـ . 2.
المراجع المساعدة
1. أضواء على الثقافة الإسلامية: نادية شريف العمري.

الضوابط والسياسات المتبعة في المقرر.	
بعد الرجوع للوائح الجامعة يتم كتابة السياسة العامة للمقرر فيما يتعلق بالآتي:	
1.	**سياسة حضور الفعاليات التعليمية:** تحدد سياسة الحضور ومتى يعتمد الغياب وكيفيته ونسبته، ومتى يعد الطالب محروماً من المقرر
2.	**الحضور المتأخر :** يتم تحديد السياسة المتبعة في حالات تكرار تأخر الطالب عن حضور الفعاليات التعليمية

3.	**ضوابط الامتحان:** تحديد السياسات المتبعة في حالات الغياب عن الامتحان و توصيف السياسة المتبعة في حالات تأخر الطالب عن الامتحان.
4.	**التعيينات والمشاريع:** تحديد السياسات المتبعة في حالات تأخير تسليم التكاليف والمشاريع ومتى يجب أن تسلم إلى الأستاذ.
5.	**الغش:** تحدد هنا السياسات المتبعة في حالات الغش إما في الامتحانات أو في التكاليف بأي طريقة من طرائق الغش.
6.	**الانتحال:** يحدد تعريف الانتحال وحالاته والإجراءات المتبعة في حالة حدوثه.
7.	**سياسات أخرى:** أي سياسات أخرى مثل استخدام الموبايل أو مواعيد تسليم التكليفات ..... الخ

Level Two

Course Specification

PHARMACEUTICS I

Course Identification and General Information:							
1	**Course Title:**	**PHARMACEUTICS I**					
2	**Course Code &Number:**	**PHT 211**					
3	**Credit hours:**	**C.H**					**TOTAL**
		Theoretical			**P.**	**Tr.**	
		L.	**Tut.**	**S.**			
		2	-	-	1	-	**3**
4	**Study level/ semester at which this course is offered:**	(2nd) Year – (first) semester					
5	**Pre –requisite (if any):**	• **Physical pharmacy** • **Pharmaceutical calculations**					
6	**Co –requisite (if any):**	**None**					
7	**Program (s) in which the course is offered:**	**Faculty of Medical Science**					
8	**Language of teaching the course:**	**ENGLISH**					
9	**Location of teaching the course:**	**IN THE UNIVERSITY**					

Course Description:
The first topics in this course provides an introduction to the science and art of pharmaceutical dosage form design in particular knowledge in roles and types of excipients and also in the subsequent stages of design including preformulation, formulation and development. Then, the next topics of the course provides essential knowledge and skills for preparation of liquid dosage forms. The course is preceded by the course (Physical pharmacy) and (Pharmaceutical calculations) which are critical in comprehending the concepts in (Pharmaceutics courses)

Intended learning outcomes of the course (CILOs) and their alignment to Program Intended learning outcomes (PILOs), teaching strategies and assessment strategies		
Alignment CILOs to PILOs		
No.	**PILOs**	**CILOs**
1	**A4**	**a1.** Describe the significance of pharmaceutics as art and science of dosage form design
2		**a2.** Explicit the types and roles of excipients included in different types of pharmaceutical liquid dosage forms.
3		**a3.** Describe the stages of designing a pharmaceutical dosage form
4	**A10**	**a4.** Describe the role of pharmacist in formulation of pharmaceutical dosage forms
5	**A11**	**a5.** Explicit the general properties, advantages and disadvantages of pharmaceutical liquid dosage forms.
6		**a6**. Discuss the principles, pharmacopeial requirements, methods of preparation, of various types pharmaceutical liquid dosage forms.
7	**B2**	**b1.** Classify pharmaceutical dosage forms and categorize liquid dosage forms.
8		**b2.** Compare between various types of pharmaceutical liquid dosage forms in particular between old and current dosage forms and between solutions and dispersion liquids.
9	**B3**	**b3.** Design liquid pharmaceutical dosage forms
.10	**C1**	**c1.** Handle efficiently and safely the chemical materials and tools used in the laboratory
.11	**C2**	**c2.** Operate the instruments and perform experiments successfully in the laboratory
.12	**C5**	**c3.** Employ the relevant way to prepare liquid extemporaneous pharmaceutical dosage forms.
.13	**C7**	**c4 .**Search efficiently for information using documented and electronic sources of information.
.14		**c5.** Present and report his/her works correctly using appropriate writing rules and technologies media.
.15	**D1**	**d1.** Communicate effectively and behave in discipline with colleagues.

.16	**D2**	**d2.** Demonstrate the skills of time management and self-learning.
.17	**D3**	**d3.** Participate efficiently with colleagues in a team work.

Alignment CILOs to teaching strategies and assessment strategies		
(a) Alignment Course Intended Learning Outcomes (CILOs) of knowledge & understanding to Teaching Strategies and Assessment Strategies		
Course Intended Learning Outcomes	**Teaching strategies**	**Assessment Strategies**
a1, a2, a3	**Active Lecture**	**Written exams**
(b) Alignment Course Intended Learning Outcomes (CILOs) of Intellectual Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	**Teaching strategies**	**Assessment Strategies**
b1, b2, b3, b4	**Active Lecture-discussion, Feed-back learning**	**Written exams, quizzes**
(c)Alignment Course Intended Learning Outcomes (CILOs) of Professional and Practical Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	**Teaching strategies**	**Assessment Strategies**
c1, c2, c3	**laboratory practice**	**Lab. term works, final practical exam**
c4, c5	**feed-back learning, Group-project**	**Assignments**
(d) Alignment Course Intended Learning Outcomes (CILOs) of Transferable Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	**Teaching strategies**	**Assessment Strategies**
d1, d3	**laboratory practice, group-project**	**Practical assessment (Lab. attendance, attitude, practical exam), Assignments**

d2	**Lab. practice, group-project, feed-back learning**	**Practical assessment (Lab. attendance, attitude, practical exam), Assignments**

Course Content:

A – Theoretical Aspect:

Order	Units/ Topics List	CILOs	Sub Topics List	No. of Weeks	contact hours
1	**Introduction**	a1, a4	Definitions and brief history of pharmaceutics, dosage forms, pharmacopeia, active ingredients, excipients.	1	2
2	**Types of Pharmaceutical dosage form**	a1, a2, a4, b1, b2	Definition of dosage form, the components, the need to dosage forms, classification of dosage forms	1	
3	**Pharmaceutical excipients**	a1, a2, a4	Roles, types with examples	1	2
4	**Design of dosage form: Preformulation, Formulation and development**	a1, a2, a3, a4, b3	• Preformulation stage: physicochemical properties and analytical data required. Scheme of preformulation, Problems of incompatibilities: types and reasons, avoidance. • Formulation: general rules, sources of raw materials, economic impact • Development and improvement: recognition, palatability	2	4

5	**Compounded (extemporaneous) prescriptions**	a1, a2, a3, a4, b3	formula, incompatibilities, general operations (maceration, percolation, filtration, mixing, size-reducing, etc)	2	
6	**Old pharmaceutical dosage forms**	a1, a2, a3, a4, b3	Galenicals, mucilages, lozenges, cachets, pills, glycerites, etc.	1	2
Mid-semester exam				1	2
7	**Introduction to Non-sterile Pharmaceutical solutions**	a1, a2, a3, a4, a5, a6, b1, b2, b3	definition of solutions, types, advantages, disadvantages, general method of preparation, enhancement of dissolution, excipients, types of waters	1	2
8	**Aqueous Pharmaceutical solutions**	a1, a2, a3, a4, a5, a6, b1, b2, b3	(aromatic waters, douches, mouthwashes, syrups, linctuses, non-syrup oral solutions, and enemas**) :**general characters advantages, disadvantages, method of preparation, purpose of each type.	1	2
9	**Non-Aqueous Pharmaceutical solutions**	a1, a2, a3, a4, a5, a6, b1, b2, b3	(concentrated water, spirits, elixirs, collodions, liniments, sprays, fluidextracts, tinctures), , method of preparation, purpose of each type, general characters	1	2

10	**Non-sterile liquid Dispersion systems**	a1, a2, a3, a4, a5, a6, b1, b2, b3	definition, difference from solutions, advantages,disadvantages. • **Colloidals**: types, advantages, disadvantages, properties , examples. • **suspensions** definition, types, advantages, disadvantages, physical properties (sedimentation, stability, flocculated, deflocculated, zeta-potential), excipients, method of preparation, examples • **emulsions** definition, types, advantages, disadvantages, physical stability, excipients, method of preparation, examples • **Microemulsions and nanoemulsion:** definition, types, advantages, disadvantages, physical stability, excipients, method of preparation, examples	3	6
11	**Non-sterile Drops**	a3, a4, a5, b1, b2, b3,	e.g. oral drops, definition, types, formulation requirements,	1	2
Course Review		a3, a4, a5, b1, b2, b3,	Review of the course topics by discussion session.	1	2
FINAL - EXAM				1	2
TOTAL				16	32

B - Practical Aspect:				
Order	**Tasks/ Experiments**	**Number of Weeks**	**contact hours**	**Aligned Couse Intended Learning Outcomes CILOs**
1	**introduction to the Lab.: safety requirements, list of experiments, How to report, etc.**	**1**	**2**	**b3, c1,c2, c3, d1, d2, d3**
2	**Preparation of aqueous solutions : aromatic water (Peppermint water)**	**1**	**2**	**b3, c1,c2, c3, d1, d2, d3**
3	**Preparation of aqueous solutions : mouthwash (boric acid M.W.)**	**1**	**2**	**b3, c1,c2, c3, d1, d2, d3**
4	**Preparation of aqueous solutions : Syrups (simplesyrup.)**	**1**	**2**	**b3, c1,c2, c3, d1, d2, d3**
5	**Preparation of aqueous solutions : cough Syrup (linctuses : ammonium chloride syrup.)**	**1**	**2**	**b3, c1,c2, c3, d1, d2, d3**
6	**Preparation of non-aqueous solutions : Elixirs (Aromatic elixir)**	**1**	**2**	**b3, c1,c2, c3, d1, d2, d3**
7	**Preparation of non-aqueous solutions : liniments (camphor liniment)**	**1**	**2**	**b3, c1,c2, c3, d1, d2, d3**
8	**Preparation of liquid dispersion systems : emulsions (castor oil emulsion)**	**1**	**2**	**b3, c1,c2, c3, d1, d2, d3**
9	**Preparation of liquid dispersion systems : emulsions (liquid paraffin emulsion)**	**1**	**2**	**b3, c1,c2, c3, d1, d2, d3**

10	**Preparation of liquid dispersion systems : suspensions (calamine lotion)**	**1**	**2**	**b3, c1,c2, c3, d1, d2, d3**
11	**Preparation of paracetamol oral suspension**	**1**	**2**	**b3, c1,c2, c3, d1, d2, d3**
12	**Review**	**1**	**2**	**b3, c1,c2, c3, d1, d2, d3**
PRACTICAL EXAM		**1**	**2**	**b3, c1,c2, c3, d1, d2, d3**
Total		**11**	**22 equivalent to 12 credit hours**	

Teaching strategies of the course:
Active Lecture It is the most frequently employed teaching method to convey knowledge and explain theories to students in large groups (50-200) or in sessions, which consist of more than one group gathered in one classroom. The efficiency of lecturing can be enhanced by using techniques such as **Brain-storming**: It depends on stimulation of the student`s brain through a group of questions &/or **Concepts map**: which depends on sequencing of thoughts in the form of maps with horizontal or vertical relations & by using **learning aids** such as Data show projector
Laboratory practice: students doing experiments in labs individually or in small groups
Feed-back learning: students are individually asked to do perform quick tests (quiz) or to do certain assignments such lab. experiments, problems solving, homework, topics summarizing or internet search. The teacher will provide them feed-back correction & evaluation
Group projects: students work on a project in groups of 2 to 3 students. Important for learning by doing ,using the results in practical manner &for promoting team work skills
One Minute Paper is based on a concept called retrieval learning. Just fill out a small questionnaire within 15 minutes after taking a class, reading a chapter, watching a documentary, or learning in another way.
Demonstration is a teaching method used to communicate an idea with the aid of visuals such as flip charts, posters, power point, etc. A demonstration is the process of teaching someone how to make or do something in a step-by-step process. As you show how, you "tell" what you are doing.

Video clips can bring a subject to students in a completely new way and help them comprehend the material they're reading or working with.
Role-play is a technique that allows students to explore realistic situations by interacting with other people in a managed way in order to develop experience and trial different strategies in a supported environment.
A concept map is a visual representation of a topic that students can create using words, phrases, lines, arrows, space on the page, and perhaps color to help organize their ideas and show their understanding of an idea, vocabulary term, or essential question.

Assignments:				
No	**Assignments**	**Aligned CILOs**	**Week Due**	**Mark**
1	**Individual**: every student is assigned to present a search report supported with images on 5 trade names (commercial preparations) of the studied dosage forms	c4, c5, d2	4-13	3
2	**Group** :every group is assigned to present an illustrating videos on lab. And industrial preparation of 3 types of studies dosage forms.	c4, c5, d1, d2, d3	14	2

Schedule of Assessment Tasks for Students During the Semester						
Theoretical part assessment						
No.	**Assessment Method**		**Week Due**	**Mark**	**Proportion to Total course Assessment**	**Aligned Course Learning Outcomes (CILOs)**
1	Term Works	Quizzes	4-13, 14	5	5	b1, b2, b3
		Assignments	7, 12	5	5	c4, c5, d1, d2, d3

2	Mid-semester exam of theoretical part (written exam	7	10	10	a1, a2, a3, b1
3	Final exam of theoretical part (written exam)	16	50	50	a1, a2, a3, a4, a5, a6, b1, b2, b3
TOTAL			70	70 %	70

Practical part assessment						
No.	**Assessment Method**		**Week Due**	**Mark**	**Proportion to Total course Assessment**	**Aligned Course Learning Outcomes(CILOs)**
1	Lab. Term works	Attitude	1-12	5	5	c1, c2, c3, d1, d2, d3
2		Accomplishments		5	5	
	Final exam (practical)		12	20	20	c1, c2, c3, d1, d2, d3
Total				30	30 %	

Learning Resources
1- Required Textbook(s) (maximum two).
1.Aulton M.E., Pharmaceutics: the science of dosage form design, 2002, Churchill Livingstone, UK 2.Ansel`s Pharmaceutical dosage forms and drug delivery system, 2011, Lippincott Williams and Wilkins, USA
2- Essential References
1. Rawlins. Bentley s of text book of pharmaceutics 2. Kasture pharmaceutics
3- Electronic References
1-International Journal of Pharmaceutics and Drug Analysis (ijpda.com) 2-0378-5173 (elsevier.com) 3-International Journal of Pharmaceutics (researchgate.net)

4-Ovid - International Journal of Pharmaceutics | Wolters Kluwer

Course Policies:	
1	**Class Attendance:** At least 75 % of the course hours should be attended by the student. Otherwise, he/she will not be allowed to attend the final exam
2	**Tardy:** any student who is late for more than 15 minutes from starting the lecture will not be allowed to attend the lecture and will be considered absent.
3	**Exam Attendance/Punctuality:** any student who is late for more than 30 minutes from starting the exam will not be allowed to attend the exam and will be considered absent.
4	**Assignments & Projects:** Assignments and projects will be assessed individually unless the teacher request for group work
5	**Cheating**: Cheating by any means will cause the student failure and he/she must re-study the course
6	**Plagiarism**: Plagiarism by any means will cause the student failure in the course . Other disciplinary procedures will be according to the faculty rules.

PHARMACEUTICAL ANALYTICAL CHEMISTRY I

Course Identification and General Information:							
1	**Course Title:**	**PHARMACEUTICAL ANALYTICAL CHEMISTRY I**					
2	**Course Code &Number:**	**PHC 251**					
3	**Credit hours:**	**C.H**					**TOTAL**
		Theoretical			**P.**	**Tr.**	
		L.	**Tut.**	**S.**			
		1	1	-	1	-	**3**
4	**Study level/ semester at which this course is offered:**	(SECOND) Year – (1ST) semester					
5	**Pre –requisite (if any):**	**General chemistry**					
6	**Co –requisite (if any):**	**Pharm. Organic chemistry 1**					
7	**Program (s) in which the course is offered:**	**Faculty of Medical Science**					
8	**Language of teaching the course:**	**ENGLISH**					
9	**Location of teaching the course:**	**IN THE UNIVERSITY**					

L: lecturing ; Tut: Tutorial , S: seminar ; P: practical ; Tr.: training

Course Description:
The course deals with the study of basic principles of pharmaceutical analytical chemistry including titrimetric and electrochemical analysis. The course accompanied the phar. organic chemistry to provide link between analysis and the chemical nature of compounds. Topics discussed include introduction to qualitative and quantitative analysis, role of analytical chemistry in pharmacy and medicine, methods of expression of concentrations, Neutralization reactions; acid-base titrations, titration curve, factors affecting and theory of indicators, etc.

Intended learning outcomes of the course (CILOs) and their alignment to Program Intended learning outcomes (PILOs), teaching strategies and assessment strategies		
Alignment CILOs to PILOs		
No.	**PILOs**	**CILOs**
1	**A3**	**a1**. Explain the physicochemical properties of substances that can be utilized for their qualitative and quantitative analysis
2	**A4**	**a2**. Describe the principles of titrimetric and electrochemical analysis.
3	**A10**	**a3.** Describe the role of pharmacist to perform accurate and precise quantitative and qualitative analysis.
4	**B1**	**b1.** Interpret data obtained by titrimetric and electrochemical analysis.
5	**B2**	**b2.** Design a suitable titrimetric and electrochemical analysis. based on the substance physicochemical properties.
6	**B3**	**b3.** Select appropriate standard operating procedure for titrimetric and electrochemical analysis.
7	**B9**	**b4.** Calculate the content % of a material in a sample using titrimetric and electrochemical analysis.
8	**C1**	**c1.** Handle efficiently and safely the chemical materials and tools used in the laboratory
9	**C2**	**c2.** Operate the instruments and perform experiments successfully in the laboratory
10	**C7**	**c3 .**Search efficiently for information using documented and electronic sources of information.
11		**c4.** Present and report his/her works correctly using appropriate writing rules and technologies media.
12	**D1**	**d1.** Communicate effectively and behave in discipline with colleagues.
13	**D2**	**d2.** Demonstrate the skills of time management and self-learning.
14	**D3**	**d3.** Participate efficiently with his colleagues in a team work.

Alignment CILOs to teaching strategies and assessment strategies		
(a) Alignment Course Intended Learning Outcomes (CILOs) of knowledge& understanding to Teaching Strategies and Assessment Strategies		
Course Intended Learning Outcomes	**Teaching strategies**	**Assessment Strategies**
a1, a2, a3	**Active Lecture**	**Written exams**
(b) Alignment Course Intended Learning Outcomes (CILOs) of Intellectual Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	**Teaching strategies**	**Assessment Strategies**
b1, b2, b3, b4	**Lecture-discussion laboratory practice, Feed-back learning**	**Written exams, quizzes, lab. term work, practical final exam**
(c)Alignment Course Intended Learning Outcomes (CILOs) of Professional and Practical Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	**Teaching strategies**	**Assessment Strategies**
c1, c2,	**laboratory practice**	**Lab. term works, final practical exam**
c3, c4	**feed-back learning, Group-project**	**Assignments**
(d) Alignment Course Intended Learning Outcomes (CILOs) of Transferable Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	**Teaching strategies**	**Assessment Strategies**
d1, d3	**laboratory practice, group-project**	**Practical assessment (Lab. attendance, attitude, practical exam), Assignments**
d2	**Lab. practice, group-project, feed-back learning**	**Practical assessment (Lab. attendance, attitude, practical exam), Assignments**

Course Content:					
A – Theoretical Aspect:					
Order	**Units/ Topics List**	**CILOs**	**Sub Topics List**	**No. of Weeks**	**contact hours**
1	**Topic 1**	a1,a2, a3, b1, b2, b3, b4	Course introduction; qualitative and quantitative analysis, role of analytical chemistry in pharmacy and medicine	1	3
2	**Topic 2**	a1,a2, a3, b1, b2, b3, b4	Method of expression of concentrations (part1)	1	3
	Topic 3	a1,a2, a3, b1, b2, b3, b4	Method of expression of concentrations (part2)	1	3
3	**Topic 4**	a1,a2, a3, b1, b2, b3, b4	• Principle of volumetric analysis.	1	3
	Topic 5	a1,a2, a3, b1, b2, b3, b4	• Applications involving molarity, normality and weight percent calculations.	1	3
MID-TERM EXAM				1	3
4	**Topic 6**	a1,a2, a3, b1, b2, b3, b4	• Acid-base Equilibria in aqueous solution and pX concept(x: H^+, OH^-)	1	3

					3
5	**Topic 7**	a1,a2, a3, b1, b2, b3, b4	PH calculations.	1	3
6	**Topic 8**	a1,a2, a3, b1, b2, b3, b4	Buffer solutions and physiological buffers.	1	3
7	**Topic 9**	a1,a2, a3, b1, b2, b3, b4	Neutralization reactions; acid-base titrations, titration curve, factors affecting and theory of indicators.	1	3
8	**Topic 10**	a1,a2, a3, b1, b2, b3, b4	Calculation involving applications.	1	3
9	**Topic 11**	a1,a2, a3, b1, b2, b3, b4	Titration of polyprotic acids and polyequivalent bases.	1	3
10	**Topic 12**	a1,a2, a3, b1, b2, b3, b4	Applications involving determinations of mixtures of acids and mixtures of bases.	1	3
11	**Topic 13**	a1,a2, a3, b1, b2, b3, b4	Acid-base equilibria in non-aqueous solution.	1	3
12	**Topic 14**	a1,a2, a3, b1, b2, b3, b4	Titration curves and equivalent point determination.	1	3

13	**Topic 15**	a1,a2, a3, b1, b2, b3, b4	Application involving; carboxylic acids phenols and amines determinations.	1	3
Course Review		a1,a2, a3, b1, b2, b3, b4	Review	1	3
FINAL – EXAM				1	3
TOTAL				16	32
Number of Weeks /and Units Per Semester				16 weeks	15 Topics

B - Practical Aspect:

Order	Tasks/ Experiments	Number of Weeks	contact hours	Aligned Couse Intended Learning Outcomes CILOs
1	**introduction to the Lab.: safety requirements, list of experiments, How to report, source of errors, etc**	**1**	**2**	c1, c2, d1, d2, d3
2	**aqueous titration of weak acids e.g. acetic acid**	**1**	**2**	b1, b2, b3, b4, c1, c2, d1, d2, d3
3	**aqueous titration of weak bases e.g. ammonium chloride**	**1**	**2**	b1, b2, b3, b4, c1, c2, d1, d2, d3
4	**non-aqueous titration of weak acids e.g. salicylic acid**	**1**	**2**	b1, b2, b3, b4, c1, c2, d1, d2, d3
5	**Oxidation/reduction titration (iodometry) ; titration of H_2O_2 using iodine**	**1**	**2**	b1, b2, b3, b4, c1, c2, d1, d2, d3
6	**Complexiметric titration of calcium salt**	**1**	**2**	b1, b2, b3, b4, c1, c2, d1, d2, d3
7	**Potentiometric titration of drugs : diclofenac sodium**	**2**	**2**	b1, b2, b3, b4, c1, c2, d1, d2, d3
9	**Review**	**1**	**2**	b1, b2, b3, b4, c1, c2, d1, d2, d3

PRACTICAL EXAM	**1**	**2**	b1, b2, b3, b4, c1, c2, d1, d2, d3
Total	**10**	**20 equivalent to 10 credit hours**	
Number of Weeks		**12**	

Teaching strategies of the course:
Active Lecture It is the most frequently employed teaching method to convey knowledge and explain theories to students in large groups (50-200) or in sessions, which consist of more than one group gathered in one classroom. The efficiency of lecturing can be enhanced by using techniques such as **Brain-storming**: It depends on stimulation of the student`s brain through a group of questions &/or **Concepts map**: which depends on sequencing of thoughts in the form of maps with horizontal or vertical relations & by using **learning aids** such as Data show projector
Laboratory practice: students doing experiments in labs individually or in small groups
Feed-back learning: students are individually asked to do perform quick tests (quiz) or to do certain assignments such lab. experiments, problems solving, homework, topics summarizing or internet search. The teacher will provide them feed-back correction & evaluation
Group projects: students work on a project in groups of 2 to 3 students. Important for learning by doing ,using the results in practical manner &for promoting team work skills
One Minute Paper is based on a concept called retrieval learning. Just fill out a small questionnaire within 15 minutes after taking a class, reading a chapter, watching a documentary, or learning in another way.
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Video clips can bring a subject to students in a completely new way and help them comprehend the material they're reading or working with.

Role-play is a technique that allows students to explore realistic situations by interacting with other people in a managed way in order to develop experience and trial different strategies in a supported environment.

Assignments:

No	Assignments	Aligned CILOs	Week Due	Mark
1	**Individual**: the teacher provides the students with problems related to the studied topics. Every student is assigned to solve some of those problems individually.	c3, c4, d1, d2	4-13	3
2	**Group** : each group of students will be assigned to do a search report on pharmaceutical applications of one method of the studied titrimetric analysis.	c3, c4, d1, d2, d3	14	2

Schedule of Assessment Tasks for Students During the Semester

Theoretical part assessment

No.	Assessment Method		Week Due	Mark	Proportion to Total course Assessment	Aligned Course Learning Outcomes (CILOs)
1	Term Works	Quizzes	4-13, 14	5	5	b1, b2, b3, b4, b5, b6, b7
		Assignments	7, 12	5	5	c3, c4, d1, d2, d3
2	Mid-semester exam of theoretical part (written exam		7	10	10	a1, a2, a3, b1, b2, b3, b4
3	Final exam of theoretical part (written exam)		16	50	50	a1, a2, a3, b1, b2, b3, b4
TOTAL				70	70 %	70

Practical part assessment						
No.	**Assessment Method**		**Week Due**	**Mark**	**Proportion to Total course Assessment**	**Aligned Course Learning Outcomes(CILOs)**
1	Lab. Term works	Attitude	1-12	5	5	b1, b2, b3, b4, c1, c2, d1, d2,d3
2		Accomplishments		5	5	
	Final exam (practical)		12	20	20	b1, b2, b3, b4, c1, c2, d1, d2,d3
Total				30	30 %	

Learning Resources:
1- Required Textbook(s) (maximum two).
• Gary G. Christian, analytical chemistry, 2004, John Wiley & sons • Dean's Analytical Chemistry Handbook by Pradyot Patnaik, 2004. • Basic Tables for Chemical Analysis by Thomas J. Bruno; Paris D. N. Svoronos, 2011 • Encyclopedia of Analytical Chemistry by R. A. Meyers, 2011.
2- Essential References.
1. Leslie G Chatten: Deans analytical chemistry handbook, 2003, McGraw Hill 2. Verma. Analytical chemistry. 3. Ewing's Analytical Instrumentation Handbook by Nelu Grinberg (Editor); Sonia Rodriguez (Editor), 2003. 4. Handbook of Food Analytical Chemistry by Ronald E. Wrolstad (Editor); Eric A. Decker (Editor); Steven J. Schwartz (Editor); Peter Sporns (Editor); Terry E. Acree (Editor); Michael H. Penner (Editor); David S. Reid (Editor); Charles F. Shoemaker (Editor); Denise M. Smith (Editor).
3- Electronic References
Volume 33, Issue 1 (2019) | Society for Scientific Exploration Technium Social Sciences Journal (techniumscience.com) Free Pharma Journals | Pharmaceutical Research Journals List (omicsonline.org)

	Course Policies:
1	**Class Attendance:** At least 75 % of the course hours should be attended by the student. Otherwise, he/she will not be allowed to attend the final exam
2	**Tardy:** any student who is late for more than 15 minutes from starting the lecture will not be allowed to attend the lecture and will be considered absent.
3	**Exam Attendance/Punctuality:** any student who is late for more than 30 minutes from starting the exam will not be allowed to attend the exam and will be considered absent.
4	**Assignments & Projects:** Assignments and projects will be assessed individually unless the teacher request for group work
5	**Cheating**: Cheating by any means will cause the student failure and he/she must re-study the course
6	**Plagiarism**: Plagiarism by any means will cause the student failure in the course . Other disciplinary procedures will be according to the college rules.

PHYSIOLOGY I

Course Identification and General Information:								
1	**Course Title:**	**PHYSIOLOGY I**						
2	**Course Code &Number:**	**PSL 231**						
3	**Credit hours:**	**C.H**						**TOTAL**
		Theoretical			**P.**	**Tr.**		
		L.	**Tut.**	**S.**				
		3	-	-	-	-		**3**
4	**Study level/ semester at which this course is offered:**	(2ND) Year – (FIRST) semester						
5	**Pre –requisite (if any):**	• **General biology**						
6	**Co –requisite (if any):**	• **Anatomy & histology**						
7	**Program (s) in which the course is offered:**	**Faculty of Medical Science**						
8	**Language of teaching the course:**	**ENGLISH**						
9	**Location of teaching the course:**	**IN THE UNIVERSITY**						

L: lecturing ; Tut: Tutorial , S: seminar ; P: practical ; Tr.: training

Course Description:
The course is designed to attain knowledge in the mechanism of normal body functions. It concerns with normal process in the cells such as cell repairing, transport of materials in and out the cell membrane. Moreover, the course also provides knowledge in functions and regulations of vital organs/systems in the body : nervous system, endocrine and muscles.

Intended learning outcomes of the course (CILOs) and their alignment to Program Intended learning outcomes (PILOs), teaching strategies and assessment strategies		
Alignment CILOs to PILOs		
No.	**PILOs**	**CILOs**
1	**A1**	**a1.** Discuss the concept of homeostasis and feedback mechanisms observed in normal functions of human body organs.
2		**a2. .** Identify the mechanisms of transport of material into and out of human cells.
3		**a3.** Determine the normal functions and regulation of nervous system, endocrine glands and muscles.
4		**a4.** Explain the biological role of certain endogenous substances in regulation the normal functions of nervous system, endocrine glands and muscles.
5	**B1**	**b1.** Identify the signs of normal functions of nervous system, endocrine glands and muscles.
6		**b2.** Interpret the outcomes of normal functions of nervous system, endocrine glands and muscles.
7	**C7**	**c1 .**Search efficiently for information using documented and electronic sources of information.
8		**c2.** Present and report his/her works correctly using appropriate writing rules and technologies media.
9	**D2**	**d1.** Demonstrate the skills of time management and self-learning.
10	**D3**	**d2.** Participate efficiently with his colleagues in a team work.

Alignment CILOs to teaching strategies and assessment strategies		
(a) Alignment Course Intended Learning Outcomes (CILOs) of knowledge& understanding to Teaching Strategies and Assessment Strategies		
Course Intended Learning Outcomes	**Teaching strategies**	**Assessment Strategies**
a1, a2, a3, a4	**Active Lecture**	**written exams**
(b) Alignment Course Intended Learning Outcomes (CILOs) of Intellectual Skills of Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	**Teaching strategies**	**Assessment Strategies**

b1, b2	**Lecture, Feed-back learning, Group-project.**	**Written exam, quizzes, assignments**
(c)Alignment Course Intended Learning Outcomes (CILOs) of Professional and Practical Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	**Teaching strategies**	**Assessment Strategies**
c1, c2	**Feed-back learning, Group-project**	**Assignments**
(d) Alignment Course Intended Learning Outcomes (CILOs) of Transferable Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	**Teaching strategies**	**Assessment Strategies**
d1, d2	**Group-project , feed-back learning**	**Assignments**

Course Content:

Order	Units/ Topics List	CILOs	Sub Topics List	No. of Weeks	contact hours
1	**Introduction**	a1, a2, a3, a4, b1, b2	physiology definition, the concept of homeostasis. Negative feedback.	1	2
2	**The Cell and body fluids physiology**	a1, a2, a3, a4, b1, b2	• structure, functions, membrane transport mechanisms: (passive diffusion , mediated transport, osmosis) • membrane potential(resting, action) • Cell repair : mechanisms. • Composition and regulations of Body fluids, electrolytes and acid-base balance	2	4
3	**The Nervous system**	a1, a2, a3, a4, b1, b2	• Classification of nervous system • classes of neurons • Synaptic transmission (chemical synapsis,	1	2

			summation, interconnection between neurons, factors affecting the transmission)		
4	**Central nervous system (CNS) Part (1)**	a1, a2, a3, a4, b1, b2	• Components of CNS • level of CNS functions • functions of brain composition (cerebrum, cerebral cortex, etc.), • blood brain barrier • spinal cord (function, composition, spinal reflex, cerebrospinal fluid)	2	4
			MID-TERM EXAM	1	2
4	**Central nervous system (CNS) Part (2)**	a1, a2, a3, a4, b1, b2	• Sensation: nociception, hyperalgesia, pain pathway, neurotransmitters of pain, types of pain (cutaneous, visceral, deep, , referred , phantom) , endogenous analgesic system • Regulating areas in brain (function, neurotransmitters) : nociceptionarea, psychic area, heat regulating center, area controlling muscles relaxation and contraction vasomotor center, Chemoreceptor trigger zone and other areas involved in diseases.	2	4
5	**Autonomic nervous system**	a1, a2, a3, a4, b1, b2	• definition and composition & regulation • sympathetic system (functions, neurotransmitters, receptors), adrenal medulla , • parasympathetic system (functions, neurotransmitters, receptors)	2	4

6	**Endocrine system**	a1, a2, a3, a4, b1, b2	• hormones (biochemical classification, transport, mechanism of actions) • functions and regulation of • hormones of (pituitary gland, thyroid gland, parathyroid gland, pancreas, sex organs)	2	4
7	**Muscles**	a1, a2, a3, a4, b1, b2	• types , functions • factors affecting contraction and relaxation	1	2
Course Review		a3, a4, , , ,d1, d2	Review of the course topics by discussion session.	1	2
FINAL - EXAM				1	2
TOTAL				16	32
Number of Weeks /and Units Per Semester				16 weeks	7 Units

Teaching strategies of the course:
Active Lecture It is the most frequently employed teaching method to convey knowledge and explain theories to students in large groups (50-200) or in sessions, which consist of more than one group gathered in one classroom. The efficiency of lecturing can be enhanced by using techniques such as **Brain-storming**: It depends on stimulation of the student`s brain through a group of questions &/or **Concepts map**: which depends on sequencing of thoughts in the form of maps with horizontal or vertical relations & by using **learning aids** such as Data show projector
Laboratory practice: students doing experiments in labs individually or in small groups
Feed-back learning: students are individually asked to do perform quick tests (quiz) or to do certain assignments such lab. experiments, problems solving, homework, topics summarizing or internet search. The teacher will provide them feed-back correction & evaluation
Group projects: students work on a project in groups of 2 to 3 students. Important for learning by doing ,using the results in practical manner &for promoting team work skills

One Minute Paper is based on a concept called retrieval learning. Just fill out a small questionnaire within 15 minutes after taking a class, reading a chapter, watching a documentary, or learning in another way.
Demonstration is a teaching method used to communicate an idea with the aid of visuals such as flip charts, posters, power point, etc. A demonstration is the process of teaching someone how to make or do something in a step-by-step process. As you show how, you "tell" what you are doing.
Video clips can bring a subject to students in a completely new way and help them comprehend the material they're reading or working with.

Assignments:				
No	**Assignments**	**Aligned CILOs**	**Week Due**	**Mark**
1	**Individual**: every student is assigned to do a search on one endogenous mediator that is involved in one of the physiological studied and provide a summary report on it.	b1, b2, c1, c2, d1, d2	4-13	6
2	**Group** : each group of students will be assigned to do a search on one of the physiological processes studied and make a summary report.	b1, b2, c1, c2, d1, d2	14	4

Schedule of Assessment Tasks for Students During the Semester						
No.	**Assessment Method**		**Week Due**	**Mark**	**Proportion to Total course Assessment**	**Aligned Course Learning Outcomes (CILOs)**
1	Term Works	Quizzes	4-13, 14	10	10	b1, b2
		Assignments	7, 12	10	10	b1, b2, c1, c2, d1, d2

2	Mid-semester exam (written exam)	7	20	20	a1, a2, a3, a4, b1, b2
3	Final exam of (written exam)	16	60	60	a1, a2, a3, a4, b1, b2
TOTAL			100	100 %	

Learning Resources:
1- Required Textbook(s) (maximum two).
2. C.C.Chatterjee. Human physiology 3. Laurie kelly . Essential of human physiology for pharmacy, 2004, CRC press
Essential References.
1. Hassan Hamdi, Fundamentals of human physiology 2. Salah Abu-Sitta , Synopsis of medical physiology 3. W. F. Ganong. Review of medical physiology 4. Guyton : Textbook of Medical Physiology 5. Ganong: Review of Medical Physiology.
Electronic References
1-International Journal of Physiology (ijop.net) 2-About the Journal | International Journal of Physiology (ijop.net) 3-Archive of "International Journal of Physiology, Pathophysiology and Pharmacology". - PMC (nih.gov) 4- International Journal of Physiology, Health and Physical Education (physiologyjournals.com)

Course Policies:	
1	**Class Attendance:** At least 75 % of the course hours should be attended by the student. Otherwise, he/she will not be allowed to attend the final exam
2	**Tardy:** any student who is late for more than 15 minutes from starting the lecture will not be allowed to attend the lecture and will be considered absent.
3	**Exam Attendance/Punctuality:** any student who is late for more than 30 minutes from starting the exam will not be allowed to attend the exam and will be considered absent.
4	**Assignments & Projects:** Assignments and projects will be assessed individually unless the teacher request for group work
5	**Cheating**: Cheating by any means will cause the student failure and he/she must re-study the course
6	**Plagiarism**: Plagiarism by any means will cause the student failure in the course . Other disciplinary procedures will be according to the college rules.

PHARMACEUTICAL ORGANIC CHEMISTRY I

Course Identification and General Information:								
1	**Course Title:**	**Pharmaceutical Organic chemistry I**						
2	**Course Code &Number:**	**PHC 241**						
3	**Credit hours:**	**C.H**						**TOTAL**
		Theoretical			**P.**	**Tr.**		
		L.	**Tut.**	**S.**				
		1	1	-	1	-		**3**
4	**Study level/ semester at which this course is offered:**	*(2ND) Year – (FIRST) semester*						
5	**Pre –requisite (if any):**	**General chemistry**						
6	**Co –requisite (if any):**	**Pharmaceutical Analytical Chemistry I**						
7	**Program (s) in which the course is offered:**	**Faculty of Medical Science**						
8	**Language of teaching the course:**	**ENGLISH**						
9	**Location of teaching the course:**	**IN THE UNIVERSITY**						

L: lecturing ; Tut: Tutorial , S: seminar ; P: practical ; Tr.: training

Course Description:
The course concerns with study of the chemistry of carbon from which all organic compounds are derived. It provides essential knowledge of fundamental functional groups in organic compounds as a threshold of more complicated compounds and drugs studied in the next semesters. Furthermore, the course is preceded by the course (General chemistry) and accompanied with the course (Ph. Analytical chemistry I) to provide a link between chemical nature of compounds and their analysis.

Intended learning outcomes of the course: (CILOs) and their alignment to Program Intended learning outcomes (PILOs), teaching strategies and assessment strategies		
Alignment CILOs to PILOs		
No	**PILOs**	**Intended learning outcomes of the course (CILOs)**
1	**A1**	**a1.** Explain the significance of organic chemistry in modern sciences.
2	**A3**	**a2.** Discuss the properties of Carbon atom, models of structural formula, specific properties and mechanisms of reactions of organic compounds.
3	**B1**	**b1.** Differentiate, name and draw the chemical structure of organic compounds.
4		**b2.** Relate functional group in organic compounds to the physical and chemical properties of the compounds.
5		**b3.** Predict the catalysts required and the outcomes of a reaction between an organic compound and other chemicals.
6	**B3**	**b4.** Design a sequence to synthesize an organic compound from a parent compound.
7	**C1**	**c1.** Handle efficiently and safely the chemical materials and tools used in the laboratory
8	**C2**	**c2.** Operate the instruments and perform experiments successfully in the laboratory
9	**C7**	**c3 .**Search efficiently for information using documented and electronic sources of information.
10		**c4.** Present and report his/her works correctly using appropriate writing rules and technologies media.
11	**D1**	**d1.** Communicate effectively and behave in discipline with colleagues.
12	**D2**	**d2.** Demonstrate the skills of time management and self-learning.
13	**D3**	**d3.** Participate efficiently with his colleagues in a team work.

Alignment CILOs to teaching strategies and assessment strategies		
(a) Alignment Course Intended Learning Outcomes (CILOs) of knowledge & understanding to Teaching Strategies and Assessment Strategies		
Course Intended Learning Outcomes	**Teaching strategies**	**Assessment Strategies**
a1, a2	**Active Lecture**	**Written exams**
(b) Alignment Course Intended Learning Outcomes (CILOs) of Intellectual Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	**Teaching strategies**	**Assessment Strategies**
b1, b4	**Lecture-discussion laboratory practice, Feed-back learning**	**Written exams, quizzes, lab. term work, practical final exam**
b2, b3	**Lecture-discussion Feed-back learning**	**Written exams, quizzes**
(c)Alignment Course Intended Learning Outcomes (CILOs) of Professional and Practical Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	**Teaching strategies**	**Assessment Strategies**
c1, c2,	**laboratory practice**	**Lab. term works, final practical exam**
c3, c4	**feed-back learning, Group-project**	**Assignments**
(d) Alignment Course Intended Learning Outcomes (CILOs) of Transferable Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	**Teaching strategies**	**Assessment Strategies**

d1, d3	**laboratory practice, group-project**	**Practical assessment (Lab. attendance, attitude, practical exam), Assignments**
d2	**Lab. practice, group-project, feed-back learning**	**Practical assessment (Lab. attendance, attitude, practical exam), Assignments**

Course Content:

A – Theoretical Aspect:

Order	Units/ Topics List	Aligned Course Learning Outcomes	Sub Topics List	No. of Weeks	contact hours
1	**Introduction to organic chemistry**	a1, a2	• definition, brief history • significance of organic chemistry in modern sciences • Carbon chemistry: carbon atomic structure, chemical bonds, atomic Orbitals and electron configuration; sp^3, $sp^{2,}$ sphybridization • Physical state • stereochemistryof organic compounds • isomerism • Resonance • dipole moment • structural theory • Models of Structural formula (all-stick formula, dot formula, dash formula, condensed formula, bond-line formula	2	4

2	**Functional groups & Classification of organic compounds**	a1, a2, b1, b2, b3, b4	• Definition and types of functional groups • classification into categories based on functional groups. • Role of functional group in physical & chemical properties of organic compounds. • Cod1on names Origin • IUPAC Nomenclature priority (which functional group is more important ?) • Differences between aliphatic & aromatic organic compounds	1	2
3	**Hydrocarbons**	a1, a2, b1, b2, b3, b4	**(1) Aliphatic (Alkanes, Alkenes, Alkynes, cycloalkanes, cycloalkenes)**: definitions, general formula, nomenclature, influence of functional group on physical and chemical properties, radical groups nomenclature, synthesis and reactions (including mechanisms of reactions). **(2) Aromatic hydrocarbon** (definitions, types, general formula, structural models, nomenclature, influence of functional group on physical and chemical properties, radical groups nomenclature, , synthesis and reactions (including mechanisms of reactions).	1	2
4	**Haloalkanes**	a1, a2, b1, b2, b3, b4	• **Aliphatic and aromatic Alkyl halides (Haloalkanes)** and organometallic compounds:	1	

			(definitions, types, general formula, nomenclature, influence of functional group on physical and chemical properties, radical groups nomenclature, physical properties, synthesis and reactions (including mechanisms of reactions).		2
	MID-TERM EXAM			1	2
5	**Aliphatic and aromatic Alcohols , ethers and thioethers**	a1, a2, b1, b2, b3, b4	• (definitions, types, general formula, nomenclature, influence of functional group on physical and chemical properties, radical groups nomenclature, synthesisreactions (including mechanisms of reactions).	2	4
6	**Aliphatic and aromatic Amines**	a1, a2, b1, b2, b3, b4	• (definitions, types, general formula, nomenclature, influence of functional group on physical and chemical properties, radical groups nomenclature, synthesis and reactions)	1	2
7	**Aliphatic and aromatic Nitro compounds**	a1, a2, b1, b2, b3, b4	• **:** (definitions, types, general formula, nomenclature, influence of functional group on physical and chemical properties, radical groups nomenclature, physical properties, synthesis and reactions (including mechanisms of reactions).	1	2
8	**Aliphatic and aromatic**	a1, a2, b1, b2, b3, b4	• **:** (definitions, types, general formula, nomenclature, influence of functional group on	2	4

	aldehydes and ketones		physical and chemical properties, radical groups nomenclature, physical properties, synthesis and reactions)		
9	**Aliphatic and aromatic carboxylic acids**	a1, a2, b1, b2, b3, b4	• **:** (definitions, types, general formula, nomenclature, influence of functional group on physical and chemical properties, radical groups nomenclature, physical properties, synthesis and reactions (including mechanisms of reactions).	2	4
10	**Aliphatic and aromatic derivatives of carboxylic acids**	a1, a2, b1, b2, b3, b4	**Esters, amides, acyl halides, acid anhydrides:** • **:** (definitions, types, general formula, nomenclature, influence of functional group on physical and chemical properties, radical groups nomenclature, physical properties, synthesis and reactions (including mechanisms of reactions).	1	2
Course Review and discussion session				1	2
FINAL - EXAM				1	2
TOTAL				16	32
Number of Weeks /and Units Per Semester				16 weeks	10 units

B - Practical Aspect:				
Order	**Tasks/ Experiments**	**Number of Weeks**	**contact hours**	**Aligned Course Learning Outcomes**
1	**Physical properties & Chemical identification of compounds belonging to the following aliphatic and aromatic organic groups:**			

2	**Hydrocarbons / Haloalkanes.**	**1**	**2**	b1, b4, c1, c2, d1, d2, d3
3	**Alcohols**	**1**	**2**	b1, b4, c1, c2, d1, d2, d3
4	**Ethers**	**1**	**2**	b1, b4, c1, c2, d1, d2, d3
5	**amines**	**1**	**2**	b1, b4, c1, c2, d1, d2, d3
6	**Aldehydes**	**1**	**2**	b1, b4, c1, c2, d1, d2, d3
7	**Ketones**	**1**	**2**	b1, b4, c1, c2, d1, d2, d3
8	**Carboxylic acids**	**1**	**2**	b1, b4, c1, c2, d1, d2, d3
9	**Esters**	**1**	**2**	b1, b4, c1, c2, d1, d2, d3
10	**Scheme of identification of organic compounds**	**2**	**2**	b1, b4, c1, c2, d1, d2, d3
PRACTICAL EXAM		**1**	**2**	b1, b4, c1, c2, d1, d2, d3
Total		**12**	**24 equivalent to 12 credit hours**	
Number of Weeks			**12**	

Teaching strategies of the course:
Active Lecture It is the most frequently employed teaching method to convey knowledge and explain theories to students in large groups (50-200) or in sessions, which consist of more than one group gathered in one classroom. The efficiency of lecturing can be enhanced by using techniques such as **Brain-storming**: It depends on stimulation of the student`s brain through a group of questions &/or **Concepts map**: which depends on sequencing of thoughts in the form of maps with horizontal or vertical relations & by using **learning aids** such as Data show projector
Laboratory practice: students doing experiments in labs individually or in small groups

Feed-back learning: students are individually asked to do perform quick tests (quiz) or to do certain assignments such lab. experiments, problems solving, homework, topics summarizing or internet search. The teacher will provide them feed-back correction & evaluation
Group projects: students work on a project in groups of 2 to 3 students. Important for learning by doing ,using the results in practical manner &for promoting team work skills
One Minute Paper is based on a concept called retrieval learning. Just fill out a small questionnaire within 15 minutes after taking a class, reading a chapter, watching a documentary, or learning in another way.
Demonstration is a teaching method used to communicate an idea with the aid of visuals such as flip charts, posters, power point, etc. A demonstration is the process of teaching someone how to make or do something in a step-by-step process. As you show how, you "tell" what you are doing.
Video clips can bring a subject to students in a completely new way and help them comprehend the material they're reading or working with.
Role-play is a technique that allows students to explore realistic situations by interacting with other people in a managed way in order to develop experience and trial different strategies in a supported environment.
A concept map is a visual representation of a topic that students can create using words, phrases, lines, arrows, space on the page, and perhaps color to help organize their ideas and show their understanding of an idea, vocabulary term, or essential question.

Assignments				
No	**Assignments**	**Aligned CILOs(symbols)**	**Week Due**	
1	**Individual**: every student is assigned to solve problems at home. The problems are provided by the teacher at the end of each unit. Problems are related to completion of a chemical reaction, nomenclature, draw structures, mechanisms of reactions and others. The student should deliver his/her work every second week in a specific homework booklet. The teacher may ask the student, either personally, or at the class to make sure that the student work belongs to his/her lonely effort.	d1, d2, c3, c4	7	

2	**Group** : each group of students will be assigned to do a search-report about one type the mechanism of a reaction.	d1, d2, d3, c3, c4	12	

Schedule of Assessment Tasks for Students During the Semester						
Theoretical part assessment						
No.	**Assessment Method**		**Week Due**	**Mark**	**Proportion to Total course Assessment**	**Aligned Course Learning Outcomes (CILOs)**
1	Term Works	Quizzes	4-13, 14	5	5	b1, b2, b3, b4
		Assignments	7, 12	5	5	d1, d2, d3, c3, c4
2	Mid-semester exam of theoretical part (written exam		7	10	10	a1, a2, b1, b2, b3, b4
3	Final exam of theoretical part (written exam)		16	50	50	a1, a2, b1, b2, b3, b4
TOTAL				70	70 %	70

Practical part assessment						
No.	**Assessment Method**		**Week Due**	**Mark**	**Proportion to Total course Assessment**	**Aligned Course Learning Outcomes(CILOs)**
1	Lab. Term works	Attitude	1-12	5	5	c1, c2, d1, d2, d3, b1, b4
2		Accomplishments		5	5	

	Final exam (practical)	12	20	20	c1, c2, d2, b1, b4
Total			30	30 %	

Learning Resources:
1- Required Textbook(s) (maximum two).
Cotton . Basic inorganic chemistry
2- Essential References.
1. Bothara. inorganic pharmaceutical chemistry 2. Richard E. Beleil , General chemistry Lab. Manual, 2005, Dakota State university
3-Electronic References
1- Articles - IJOC - Scientific Research Publishing (scirp.org) 2- International Journal of Organic Chemistry (researchgate.net) 3- The Journal of Organic Chemistry (acs.org)

Course Policies:	
1	**Class Attendance:** At least 75 % of the course hours should be attended by the student. Otherwise, he/she will not be allowed to attend the final exam
2	**Tardy:** any student who is late for more than 15 minutes from starting the lecture will not be allowed to attend the lecture and will be considered absent.
3	**Exam Attendance/Punctuality:** any student who is late for more than 30 minutes from starting the exam will not be allowed to attend the exam and will be considered absent.
4	**Assignments & Projects:** Assignments and projects will be assessed individually unless the teacher request for group work
5	**Cheating**: Cheating by any means will cause the student failure and he/she must re-study the course
6	**Plagiarism**: Plagiarism by any means will cause the student failure in the course . Other disciplinary procedures will be according to the college rules.

PHARMACOGNOSY & PHYTOCHEMISTRY I

Course Identification and General Information:								
1	**Course Title:**	**Pharmacognosy and Phytochemistry I**						
2	**Course Code**	**PHG 211**						
3	**Credit hours:**	**C.H**						**TOTAL**
		Theoretical			**P.**	**Tr.**		
		L.	**Tut.**	**S.**				
		2	-	-	2	-		**4**
4	**Study level/ semester at which this course is offered:**	(Second) Year – (first) semester						
5	**Pre –requisite (if any):**	**-**						
6	**Co –requisite (if any):**	Pharmacognosy and Phytochemistry II						
7	**Program (s) in which the course is offered:**	**Faculty of Medical Science**						
8	**Language of teaching the course:**	**ENGLISH**						
	Location of teaching the course:	**At the University**						

L: lecturing ; Tut: Tutorial , S: seminar ; P: practical ; Tr.: training

Course Description:
The course aims to cove the following: 1. Classification of active constituents of medicinal plants 2. Giving knowledge about the medicinal plants and natural products that contain the active constituents. 3. Nomenclature of the active constituents and each plant, description of the morphological and microscopical characters of the entire and powdered forms in addition to the adulteration, substitution and allied drugs. 4. Giving an idea about the names of the active constituents, detection of them, uses, new uses, abuses and toxic effects if any.

Intended learning outcomes of the course (CILOs) and their alignment to Program Intended learning outcomes (PILOs), teaching strategies and assessment strategies.		
1. Alignment CILOs to PILOs		
PILOs		**CILOs**
Knowledge & understanding : Upon successful completion of the course, students will be able to:		
A3	Explain physicochemical properties of materials and products	**a1.** acquire knowledge about herbal drugs and natural products concerning their identities, safety, optimum use in medication and contraindications.
A4	Describe analytical methods, principles, design and development techniques	**a2.** learn how to isolate, identify and estimate the active principles.
A10	Describe the pharmacists role in different pharmacy practices.	**a3.** get knowledge about recent researches, articles and advanced studies on drugs treating many diseases.
Intellectual skills : Upon successful completion of the course, students will be able to:		
B1	Collect interpret and assess information and data relevant to pharmacy practice	**b1.** get a skill in the art of compounding of two or more of the studied drugs to prepare a safe and cheap formulae for medication.
		b2. acquire knowledge about natural drugs causing addiction, c.n.s. stimulants, narcotics or hypnotics and how to identify them in any given sample.
B2	Classify drugs, approaches and other information relevant to pharmacy	**b3.** classify the groups of active constituents and know the medicinal used of each class.

	based on scientific classification system.	**b4 .**Can differentiate between toxic and safe drugs in addition to the precautions accompanying the use of herbal drugs.
B3	. Design an evaluate different types of safe and effective drugs , pharmaceutical dosage forms and cosmetic preparations	**b5.** Identity of each herbal drug and evaluation of its genuinety.

Professional & practical skills : Upon successful completion of the course, students will be able to:		
C1	Handle safely the chemicals, biological samples and pharmaceutical ingredients and products.	**c1.** acquire skills to identify medicinal and toxic plants.
C2	Operate different instruments and use emerge technologies for preformulation, formulation and analysis of materials according to standard guidelines.	**c2.** Skill to criticize any supplied natural drug assessing its validity for treatment purposes.
C7	Conduct research and utilize the results in different pharmaceutical fields.	**c3** Acquire skills to detect adulteration of any supplied natural drugs.
		c4 acquire skills in isolation and identification of the active constituents in natural product **c5.** Skill to compound herbal teas.
Transferable skills : Upon successful completion of the course, students will be able to:		
D1	Interact and communicate effectively and behave in disciplines with colleagues, patients and healthcare professionals effectively in team-activities.	**d1.** Communicate effectively and behave in discipline with colleagues.

D2	Develop and demonstrate skills of time managements, self-learning and decision making.	**d2.** Demonstrate the skills of time management and self-learning.
D3	Participate collaboratively in team work with colleagues and healthcare professionals.	**d3.** Participate efficiently with his colleagues in a team work.

Alignment CILOs to teaching strategies and assessment strategies		
(a) Alignment Course Intended Learning Outcomes (CILOs) of knowledge & understanding to Teaching Strategies and Assessment Strategies		
Course Intended Learning Outcomes	**Teaching strategies**	**Assessment Strategies**
a1. acquire knowledge about herbal drugs and natural products concerning their identities, safety, optimum use in medication and contraindications.	**Active Lecture** **Tutorials** **Seminar** **Self-Study** **One-minute paper** **Video-clips** **Role-playing** **Reading/discussing draft articles** **Map concepts**	**Written exams (Mid, Final)** **Quizzes** **Essays** **Reports** **Instructional activities**
a2. learn how to isolate, identify and estimate the active principles.		
a3. get knowledge about recent researches, articles and advanced studies on drugs treating many diseases.		
(b) Alignment Course Intended Learning Outcomes (CILOs) of Intellectual Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	**Teaching strategies**	**Assessment Strategies**

b1. get a skill in the art of compounding of two or more of the studied drugs to prepare a safe and cheap formulae for medication.	**Active Lecture Tutorials Seminar Self-Study One-minute paper Video-clips Reading/discussing draft articles Map concepts**	**Written exams (Mid, Final) Quizzes Essays Reports Instructional activities**
b2. acquire knowledge about natural drugs causing addiction, c.n.s. stimulants, narcotics or hypnotics and how to identify them in any given sample.	**Active Lecture Tutorials Seminar Self-Study One-minute paper Video-clips Reading/discussing draft articles Map concepts**	**Written exams (Mid, Final) Quizzes Essays Reports Instructional activities**
b3. classify the groups of active constituents and know the medicinal used of each class.		
b4 . Can differentiate between toxic and safe drugs in addition to the precautions accompanying the use of herbal drugs.		
b5. Identity of each herbal drug and evaluation of its genuinety.	**Group-project Demonstrations**	**Assignments**

(c)Alignment Course Intended Learning Outcomes (CILOs) of Professional and Practical Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	**Teaching strategies**	**Assessment Strategies**
c1. acquire skills to identify medicinal and toxic plants.	**laboratory practice Demonstrations**	**Lab. term works, final practical exam**
c2. Skill to criticize any supplied natural drug assessing its validity for treatment purposes.		

c3 Acquire skills to detect adulteration of any supplied natural drugs.	**Group-project** **Demonstrations**	**Assignments**
c4 acquire skills in isolation and identification of the active constituents in natural product		
c5. Skill to compound herbal teas.		

(d) Alignment Course Intended Learning Outcomes (CILOs) of Transferable Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	**Teaching strategies**	**Assessment Strategies**
d1. Communicate effectively and behave in discipline with colleagues.	**laboratory practice** **group-project** **Demonstrations**	**Lab. term works, assignment**
d3. Participate efficiently with his colleagues in a team work.		
d2. Demonstrate the skills of time management and self-learning.	**laboratory practice** **Demonstrations**	**Lab. term works, final practical exam**

Course Content:					
A – Theoretical Aspect:					
Order	**Units/ Topics List**	**CILOs**	**Sub Topics List**	**No. of Weeks**	**contact hours**
Part I: ***I- Alkaloids:***					

1	**Topic 1**	a1, a2, a3	• Definition, History, Nomenclature, Isolation, Classification, structures and pharmacology	1	4
2	**Topic 2**	a1, a2, a3	***Phenyl alkyl amine alkaloids***: • Ephedrine (Ephedra herb); Cathine (Cathe leaves); Capsaicine (Capsicum fruits)	1	4
3	**Topic 3**	a1, a2, a3	***Tropane alkaloids:*** • Atropine, Hyoscyamine, Hyoscine (Stramonium and Hyoscyamus herb, Belladonna leaves); Cocaine (Coca leaves)	1	4
Mid-term exam				1	2
4	**Topic 4**	a1, a2,a3 , b1, b2, b3, b4	***Phenanthrene alkaloids:*** • Morphine, codeine, thebaine, noscapine (Opium capsule)	1	4
		a1, a2,a3 , b1, b2, b3, b4	***Quinoline alkaloids:*** • Quinine, quinidine, cinchonine, cinchonidine (Cinchona bark)	1	4
5	**Topic 5**	a1, a2,a3 , b1, b2, b3, b4	***Isoquinoline alkaloids:*** • Papaverine (Opium capsule); Emetine (Ipecacuanha root)	1	4
6	**Topic 6**	a1, a2,a3 , b1, b2, b3, b4	***Pyridine and related alkaloids:*** Nicotine (Tobacco leaves); Piperine (Piper fruits); Lobeline and related alk. (Lobelia herb); Pelletierine and related alk. (Pomegranate bark); Trigonelline	1	4

			(Foenugreek seed); Ricine (Castor seed)		
7	**Topic 7**	a1, a2,a3 , b1, b2, b3, b4	***Indole alkaloids:*** Physostigmine (Calabar bean seed); Strychnine and brucine (Nux vomica seed); Reserpine (Rauwlfia root)Ergotamine and related alkaloids (Ergot fungi); Vincristine and related alk.(Vinca herb)	1	4
8	**Topic 8**	a1, a2,a3 , b1, b2, b3, b4	***Purine alkaloids:*** Caffeine, theobromine, theophylline (Tea leaves, Coffee bean, Cacao leaves)	1	4
9	**Topic 9**	a1, a2,a3 , b1, b2, b3, b4	***Tropolone alkaloids:*** Colchicine (Colchicum corm)	1	4
10	**Topic 10**	a1, a2,a3 , b1, b2, b3, b4	***Imidazole alkaloids:*** Pilocarpine (Jaborandi leaves)	1	4
11	**Topic 11**	a1, a2,a3 , b1, b2, b3, b4	***Diterpine alkaloids:*** Taxol (Taxus leaves)	1	4
Part II ***II- Volatile oils***					
12	**Topic 1**	4	Definition, Classification, Preparation	1	

13	**Topic 2**	4	***Drugs containing V.O. and their uses***		
14	**Topic 3**	4	Mentha and Thyme herbs		
15	**Topic 4**	4	Eucalyptus and Buchu leaves		
16	**Topic 5**	4	Clove, Lavender and Chamomile flowers	1	
17	**Topic 6**	4	Cardamom and Nutmeg seeds		
18	**Topic 7**	4	Umbelliferous fruits: fennel, anise, coriander, caraway, cumin		
19	**Topic 8**	4	Ginger rhizome		
20	**Topic 9**	4	Cinnamon and cassia bark	1	
21	**Topic 10**	4	Mentha and Thyme herbs		
22	**Topic 11**	4	Eucalyptus and Buchu leaves		
FINAL - EXAM				-	4
TOTAL				16	32

Number of Weeks /and Units Per Semester	16 weeks	6 Units

B - Practical Aspect:				
Order	**Tasks/ Experiments**	**Number of Weeks**	**contact hours**	**Aligned Couse Intended Learning Outcomes CILOs**
	A. TO KNOW YOUR PHARMACOGNOSY LABORATORY 1. To study the compound microscope. 2. To understand technique of Section Cutting, Staining and Mounting. 3. To study the Microchemical reagent.	**1**	**2**	c1, c2, d1, d2, d3
	B. GROSS ANATOMICAL STUDY OF CRUDE DRUGS. 4. To study the Morphological and Microscopical characteristics of Cinchona Bark. 5. To study the Morphological and Microscopical characteristics of Cinnamon Bark. 6. To study the Morphological and Microscopical characteristics of Clove Buds. 7. To study the Morphological and Microscopical characteristics of Coriander Fruit.. 8. To study the Morphological and Microscopical characteristics of Datura Leaf.	1	2	c1, c2, d1, d2, d3

	9. To study the Morphological and Microscopical characteristics of Fennel Fruit. 10. To study the Morphological and Microscopical characteristics of Ginger Rhizome. 11. To study the Morphological and Microscopical characteristics of Ipecacuanha Root. 12. To study the Morphological and Microscopical characteristics of Nux-Vomica Seed. 13. To study the Morphological and Microscopical characteristics of Senna Leaf.			
PRACTICAL EXAM		**1**	**2**	c1, c2, d1, d2, d3
Total		**11**	**22**	

Teaching strategies of the course:
Active Lecture It is the most frequently employed teaching method to convey knowledge and explain theories to students in large groups (50-200) or in sessions, which consist of more than one group gathered in one classroom. The efficiency of lecturing can be enhanced by using techniques such as **Brain-storming**: It depends on stimulation of the student`s brain through a group of questions &/or **Concepts map**: which depends on sequencing of thoughts in the form of maps with horizontal or vertical relations & by using **learning aids** such as Data show projector
Laboratory practice: students doing experiments in labs individually or in small groups
Feed-back learning: students are individually asked to do perform quick tests (quiz) or to do certain assignments such lab. experiments, problems solving, homework, topics summarizing or internet search. The teacher will provide them feed-back correction & evaluation

Group projects: students work on a project in groups of 2 to 3 students. Important for learning by doing ,using the results in practical manner &for promoting team work skills
One Minute Paper is based on a concept called retrieval learning. Just fill out a small questionnaire within 15 minutes after taking a class, reading a chapter, watching a documentary, or learning in another way.
Demonstration is a teaching method used to communicate an idea with the aid of visuals such as flip charts, posters, power point, etc. A demonstration is the process of teaching someone how to make or do something in a step-by-step process. As you show how, you "tell" what you are doing.
Video clips can bring a subject to students in a completely new way and help them comprehend the material they're reading or working with.
Role-play is a technique that allows students to explore realistic situations by interacting with other people in a managed way in order to develop experience and trial different strategies in a supported environment.

Assignments:

No	Assignments	Aligned CILOs	Week Due	
1	Written exam(s) **to assess** knowledge and understanding and intellectual skills. Practical exam(s) **to assess** practical skills. Periodic exam(s) **to assess** understanding and intellectual skills. Oral exam **to assess** knowledge and understanding and intellectual skills.	b5, c3, c4, d1, d3	8	

Schedule of Assessment Tasks for Students During the Semester						
Theoretical part assessment						
No.	**Assessment Method**		**Week Due**	**Mark**	**Proportion to Total course Assessment**	**Aligned Course Learning Outcomes (CILOs)**
1	Term Works	Quizzes	4-13, 14	5	5	b1
		Assignments	7, 12	5	5	b5, c3, c4, d1, d3
2	Mid-semester exam (written exam)		7	10	10	a1, a2,a3 , b1, b2, b3, b4
3	Final exam (written exam)		16	50	50	a1, a2,a3 , b1, b2, b3, b4
TOTAL				70	70 %	70

Practical part assessment						
No.	**Assessment Method**		**Week Due**	**Mark**	**Proportion to Total course Assessment**	**Aligned Course Learning Outcomes(CILOs)**
1	Lab. Term	Attitude	1-12	5	5	c1, c2, d1, d2, d3
2		Accomplishments		5	5	

	works					
	Final exam (practical)		12	20	20	c1, c2, d2
Total				30	30 %	

Learning Resources:
1- Required Textbook(s) (maximum two).
1. Trease, G.E.& Evans, W.C.; "Pharmacognosy", W.B. Saunders Publishers, Ltd, 15th ed., 2002. 2. Periodicals, Web sites, … etc
2- Essential References.
1- Jackson, B.P. and Snowdon D.W., Atlas of microscopy of medicinal plants, culinary herbs and spices (1990). **2-** Shafik B. Chemistry of crude drugs (1976)
3- Electronic Materials and Web Sites *etc*.
1-Pharmacognosy Journal | Journal of Pharmacognosy and Phytochemistry | Phytochemistry Journal (phytojournal.com) 2- International Journal of Pharmacognosy and Phytochemical Research | ICI Jou (indexcopernicus.com) 3- International Journal of Pharmacognosy and Phytochemical Research (scimagojr.com)

	Course Policies:
1	**Class Attendance:** At least 75 % of the course hours should be attended by the student. Otherwise, he/she will not be allowed to attend the final exam
2	**Tardy:** any student who is late for more than 15 minutes from starting the lecture will not be allowed to attend the lecture and will be considered absent.
3	**Exam Attendance/Punctuality:** any student who is late for more than 30 minutes from starting the exam will not be allowed to attend the exam and will be considered absent.
4	**Assignments & Projects:**

	Assignments and projects will be assessed individually unless the teacher request for group work
5	**Cheating**: Cheating by any means will cause the student failure and he/she must re-study the course
6	**Plagiarism**: Plagiarism by any means will cause the student failure in the course . Other disciplinary procedures will be according to the college rules.

PHARMACY PUBLIC HEALTH

Course Identification and General Information:								
1	**Course Title:**	**PHARMACY PUBLIC HEALTH**						
2	**Course Code &Number:**	**PHCL261**						
3	**Credit hours:**	**C.H**						**TOTAL**
		Theoretical			**P.**	**Tr.**		
		L.	**Tut.**	**S.**				
		2	-	-	-	-		**2**
4	**Study level/ semester at which this course is offered:**	*(SECOND) Year – (1st) semester*						
5	**Pre –requisite (if any):**	**----**						
6	**Co –requisite (if any):**	**---**						
7	**Program (s) in which the course is offered:**	**Faculty of Medical Science**						
8	**Language of teaching the course:**	**ENGLISH**						
9	**Location of teaching the course:**	**IN THE UNIVERSITY**						

L: lecturing ; Tut: Tutorial , S: seminar ; P: practical ; Tr.: training

Course Description:
The course deals with the study of basic issues relate to health of Yemeni community including primary health care and epidemic diseases. This course examines the concepts, methods, and practices for assessing the health of a community. Topics include measuring community health status, developing community health profiles, identifying the determinants of health, and the utilization of community health assessment in developing public health intervention.

Intended learning outcomes of the course (CILOs) and their alignment to Program Intended learning outcomes (PILOs), teaching strategies and assessment strategies		
Alignment CILOs to PILOs		
No.	**PILOs**	**CILOs**
1.	**A1**	**a1.** Define health, epidemiology, epidemic diseases and recognize the factors affecting personal and community health
2.		**a2.** Discuss the principles of prevention of epidemic diseases in a community.
3.		**a3**. Discuss the concept of primary health care.
4.	**A10**	**a4.** Describe the role pharmacist to implement and participate in primary health care.
5.	**B3**	**b1.** Classify principles of healthcare survey.
6.	**C7**	**c1 .** Search efficiently for information using documented and electronic sources of information.
7.		**c2.** Present and report his/her works correctly using appropriate writing rules and technologies media.
8.	**D2**	**d1.** Demonstrate time management and self-learning

Alignment CILOs to teaching strategies and assessment strategies		
(a) Alignment Course Intended Learning Outcomes (CILOs) of knowledge & understanding to Teaching Strategies and Assessment Strategies		
Course Intended Learning Outcomes	**Teaching strategies**	**Assessment Strategies**
a1, a2, a3	**Lecture-discussion**	**Written exams**
a4	**Feed-back learning**	**quizzes**
(b) Alignment Course Intended Learning Outcomes (CILOs) of Intellectual Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	**Teaching strategies**	**Assessment Strategies**
b1	**Lecture-discussion**	**Written exam**
(c)Alignment Course Intended Learning Outcomes (CILOs) of Professional and Practical Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	**Teaching strategies**	**Assessment Strategies**
c1, c2	**feed-back learning**	**Assignments**

(d) Alignment Course Intended Learning Outcomes (CILOs) of Transferable Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	**Teaching strategies**	**Assessment Strategies**
d1	**Feed-back learning**	**Assignments**

Course Content:					
Order	**Units/ Topics List**	**CILOs**	**Sub Topics List**	**No. of Weeks**	**contact hours**
1	**Introduction**	a1, a2, a3, b1	• Definitions : health , public health • Concept of health ,public health • Factors affecting personal and public health : (personal hygiene, hereditary ,environment ,life style ,socioeconomic condition)	3	6
2	**Primary health care**	a1, a2, a3, b1	• Objectives • Methods • programs	2	4
3	**Introduction to epidemiology**	a1, a2, a3, b1	• definition of Epidemiology, Epidemic diseases • Objectives of epidemiology studies and preventive programs • role of pharmacist in assisting health care team in preventive programs ○	1	2
Mid-term exam				1	2
4	**Epidemic diseases in Yemen (1)**		Study of epidemiology and public preventive programs of • Malaria	8	16

			• TB • Dengu fever • Rabies • Leprosy • Hepatitis • AIDS and other sexual transmitted disease		
Course Review		a1, a2, a3, b1	Review of the course topics by discussion session.	1	2
FINAL - EXAM				1	2
TOTAL				16	32

Teaching strategies of the course:
Active Lecture It is the most frequently employed teaching method to convey knowledge and explain theories to students in large groups (50-200) or in sessions, which consist of more than one group gathered in one classroom. The efficiency of lecturing can be enhanced by using techniques such as **Brain-storming**: It depends on stimulation of the student`s brain through a group of questions &/or **Concepts map**: which depends on sequencing of thoughts in the form of maps with horizontal or vertical relations & by using **learning aids** such as Data show projector
Laboratory practice: students doing experiments in labs individually or in small groups
Feed-back learning: students are individually asked to do perform quick tests (quiz) or to do certain assignments such lab. experiments, problems solving, homework, topics summarizing or internet search. The teacher will provide them feed-back correction & evaluation
Group projects: students work on a project in groups of 2 to 3 students. Important for learning by doing ,using the results in practical manner &for promoting team work skills
One Minute Paper is based on a concept called retrieval learning. Just fill out a small questionnaire within 15 minutes after taking a class, reading a chapter, watching a documentary, or learning in another way.
Demonstration is a teaching method used to communicate an idea with the aid of visuals such as flip charts, posters, power point, etc. A demonstration is the process of teaching someone how to make or do something in a step-by-step process. As you show how, you "tell" what you are doing.

Video clips can bring a subject to students in a completely new way and help them comprehend the material they're reading or working with.

Assignments:				
No	**Assignments**	**Aligned CILOs**	**Week Due**	
1	**Individual**: every student is assigned to provide a search-based report on a an epidemic diseases in Yemen.	c1, c2, d1	4-13	

Schedule of Assessment Tasks for Students During the Semester						
No.	**Assessment Method**		**Week Due**	**Mark**	**Proportion of Total course Assessment**	**Aligned Course Learning Outcomes (CILOs)**
1	Term Works	Quizzes	4-13, 14	10	10	a4
		Assignments	7, 12	10	10	c1, c2, d1
2	Mid-semester exam of theoretical part (written exam		7	20	20	a1, a2, a3, b1
3	Final exam of theoretical part (written exam)		16	60	60	a1, a2, a3, b1
TOTAL				100	100 %	

Learning Resources:
1- Required Textbook(s) (maximum two).
1. David Pencheon. Oxford handbook of public health Practice
2- Essential References
1. N. Murugesh Health Education and community pharmacy
3-Electronic References
1- International Journal of Public Health | Home (ssph-journal.org) 2- International Journal of Public Health | Home (springer.com) 3- International Journal of Public Health – International Journal of Public Health Blog (ssphplus.ch)

Course Policies:	
1.	**Class Attendance:** At least 75 % of the course hours should be attended by the student. Otherwise, he/she will not be allowed to attend the final exam
2.	**Tardy:** any student who is late for more than 15 minutes from starting the lecture will not be allowed to attend the lecture and will be considered absent.
3.	**Exam Attendance/Punctuality:** any student who is late for more than 30 minutes from starting the exam will not be allowed to attend the exam and will be considered absent.
4.	**Assignments & Projects:** Assignments and projects will be assessed individually unless the teacher request for group work
5	**Cheating**: Cheating by any means will cause the student failure and he/she must re-study the course
6	**Plagiarism**: Plagiarism by any means will cause the student failure in the course . Other disciplinary procedures will be according to the college rules.

PHARMACEUTICS II

Course Identification and General Information:								
1	**Course Title:**	**PHARMACEUTICS II**						
2	**Course Code &Number:**	**PHT 212**						
3	**Credit hours:**	**C.H**						**TOTAL**
		Theoretical			**P.**	**Tr.**		
		L.	**Tut.**	**S.**				
		2	**-**	**-**	**1**	**-**		**3**
4	**Study level/ semester at which this course is offered:**	(2ND) Year – (SECOND) semester						
5	**Pre –requisite (if any):**	**Pharmaceutics I**						
6	**Co –requisite (if any):**	**None**						
7	**Program (s) in which the course is offered:**	**Faculty of Medical Science**						
8	**Language of teaching the course:**	**ENGLISH**						
9	**Location of teaching the course:**	**IN THE UNIVERSITY**						

L: lecturing ; Tut: Tutorial , S: seminar ; P: practical ; Tr.: training

Course Description:
This course is the second part of "Pharmaceutics" courses that are intended to provide knowledge and skills in designing pharmaceutical dosage forms. It deals with designing of compressed gases (pharmaceutical aerosols), semisolid dosage forms and suppositories.

Intended learning outcomes of the course (CILOs) and their alignment to Program Intended learning outcomes (PILOs), teaching strategies and assessment strategies		
Alignment CILOs to PILOs		
No.	**PILOs**	**CILOs**
1	**A4**	**a1.** Describe the significance of pharmaceutics as art and science of dosage form design
2		**a2.** Explicit the types and roles of excipients included in aerosols, semisolid preparations and suppositories.
3		**a3.** Describe the stages of designing pharmaceutical aerosols, semisolid preparations and suppositories.
4	**A10**	**a4.** Describe the role of pharmacist in formulation of pharmaceutical aerosols, semisolid preparations and suppositories.
5	**A11**	**a5.** Explicit the general properties, advantages and disadvantages of pharmaceutical aerosols, semisolid preparations and suppositories.
6		**a6**. Discuss the principles, pharmacopeial requirements, methods of preparation, of various types of pharmaceutical aerosols, semisolid preparations and suppositories.
7	**B2**	**b1** Classify pharmaceutical aerosols, semisolid preparations and suppositories.
8		**b2.** Compare between various types of pharmaceutical aerosols, semisolid preparations and suppositories.
9	**B3**	**b3.** Design pharmaceutical aerosols, semisolid preparations and suppositories.
10	**C1**	**c1.** Handle efficiently and safely the chemical materials and tools used in the laboratory
11	**C2**	**c2.** Operate the instruments and perform experiments successfully in the laboratory
12	**C5**	**c3.** Employ the relevant way to prepare extemporaneous semisolid preparations and suppositories.
13	**C7**	**c4** Search efficiently for information using documented and electronic sources of information.
14		**c5** Present and report his/her works correctly using appropriate writing rules and technologies media.
15	**D1**	**d1.** Communicate effectively and behave in discipline with colleagues.
16	**D2**	**d2.** Demonstrate the skills of time management and self-learning.
17	**D3**	**d3.** Participate efficiently with colleagues in a team work.

Alignment CILOs to teaching strategies and assessment strategies		
(a) Alignment Course Intended Learning Outcomes (CILOs) of knowledge & understanding to Teaching Strategies and Assessment Strategies		
Course Intended Learning Outcomes	**Teaching strategies**	**Assessment Strategies**
a1, a2, a3	**Lecture**	**Written exams**
(b) Alignment Course Intended Learning Outcomes (CILOs) of Intellectual Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	**Teaching strategies**	**Assessment Strategies**
b1, b2, b3, b4	**Lecture-discussion, Feed-back learning**	**Written exams, quizzes**
(c)Alignment Course Intended Learning Outcomes (CILOs) of Professional and Practical Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	**Teaching strategies**	**Assessment Strategies**
c1, c2, c3	**laboratory practice**	**Lab. term works, final practical exam**
c4, c5	**feed-back learning, Group-project**	**Assignments**
(d) Alignment Course Intended Learning Outcomes (CILOs) of Transferable Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	**Teaching strategies**	**Assessment Strategies**
d1, d3	**laboratory practice, group-project**	**Practical assessment (Lab. attendance, attitude, practical exam), Assignments**
d2	**Lab. practice, group-project, feed-back learning**	**Practical assessment (Lab. attendance, attitude, practical exam), Assignments**

Course Content:					
A – Theoretical Aspect:					
Order	**Units/ Topics List**	**CILOs**	**Sub Topics List**	**No. of Weeks**	**contact hours**
1	**Pharmaceutical aerosols**	a1, a2, a3, a4, a5, a6, b1, b2, b3	Definition , advantages, disadvantages, types of aerosols, anatomical features of the bronchi, Pressurized packages (Type of propellants , Containers , Formulation aspects, Air-blast nebulizers), methods of preparation (pressurized filling, cold filling), quality control evaluation	3	6
2	**Semisolid dosage forms (1) Introduction**	a1, a2, a3, a4, a5, a6, b1, b2, b3	• **introduction:** definitions , advantages, disadvantages, types, anatomical features and targets of the skin, • Classification of semisolid preparation	1	2
	Semisolid dosage forms :(2)Ointments and pastes	a1, a2, a3, a4, a5, a6, b1, b2, b3	• **ointments** (definitions, advantages, advantages, disadvantages, classification based on type of ointment base, formulation considerations, method of preparation**)** • **Pastes:** (definitions, advantages, advantages, disadvantages, classification based on type of ointment base,	4	8

Mid-term exam				1	2
3	**Semisolid dosage forms (3) Creams and gels**	a1, a2, a3, a4, a5, a6, b1, b2, b3	• **Creams** (definitions, advantages, advantages, disadvantages, classification, formulation considerations, method of preparation • **Gels** (definitions, advantages, classification, formulation , considerations, method of preparation	3	6
3	**Suppositories**	a1, a2, a3, a4, a5, a6, b1, b2, b3	definitions, advantages, advantages, disadvantages, classification (rectal, vaginal) formulation, types of suppository bases, method of preparation	3	6
Course Review		a1, a2, a3, a4, a5, a6, b1, b2, b3	Review of the course topics : discussion session.	1	2
FINAL - EXAM				1	2
TOTAL				16	32
Number of Weeks /and Units Per Semester				16 weeks	3 Units

B - Practical Aspect:				
Order	**Tasks/ Experiments**	**Number of Weeks**	**contact hours**	**Aligned Couse Intended Learning Outcomes CILOs**

1	**Pharmaceutical aerosols: construction and use**	**1**	**2**	**b3, c1,c2, c3, d1, d2, d3**
2	**Preparation of salicylic acid 2 % ointment in simple ointment base**	**1**	**2**	**b3, c1,c2, c3, d1, d2, d3**
3	**Preparation of hydrophilic ointment USP**	**1**	**2**	**b3, c1,c2, c3, d1, d2, d3**
4	**Preparation of Polyethylene glycol ointment base.**	**1**	**2**	**b3, c1,c2, c3, d1, d2, d3**
5	**Preparation of o/ w creams: vanishing cream base**	**1**	**2**	**b3, c1,c2, c3, d1, d2, d3**
6	**Preparation of w/o creams: cold cream base**	**1**	**2**	**b3, c1,c2, c3, d1, d2, d3**
7	**Preparation of hydrophilic gel base : Carbomer or Carboxymethyl cellulose gel**	**1**	**2**	**b3, c1,c2, c3, d1, d2, d3**
8	**Preparation of Aspirin in cocoa butter base suppositories.**	**1**	**2**	**b3, c1,c2, c3, d1, d2, d3**
9	**Preparation of Glycerin suppositories.**	**1**	**2**	**b3, c1,c2, c3, d1, d2, d3**
10	**Preparation of Dusting powders**	**1**	**2**	**b3, c1,c2, c3, d1, d2, d3**
11	**Preparation of Effervescent base granules**	**1**	**2**	**b3, c1,c2, c3, d1, d2, d3**
PRACTICAL EXAM		**1**	**2**	**b3, c1,c2, c3, d1, d2, d3**
Total		**11**	**22**	

Teaching strategies of the course:
Active Lecture It is the most frequently employed teaching method to convey knowledge and explain theories to students in large groups (50-200) or in sessions, which consist of more than one group gathered in one classroom. The efficiency of lecturing can be enhanced by using techniques such as **Brain-storming**: It depends on stimulation of the student`s brain through a group of questions &/or **Concepts map**: which depends on sequencing of thoughts in the form of maps with horizontal or vertical relations & by using **learning aids** such as Data show projector
Laboratory practice: students doing experiments in labs individually or in small groups
Feed-back learning: students are individually asked to do perform quick tests (quiz) or to do certain assignments such lab. experiments, problems solving, homework, topics summarizing or internet search. The teacher will provide them feed-back correction & evaluation
Group projects: students work on a project in groups of 2 to 3 students. Important for learning by doing ,using the results in practical manner &for promoting team work skills
One Minute Paper is based on a concept called retrieval learning. Just fill out a small questionnaire within 15 minutes after taking a class, reading a chapter, watching a documentary, or learning in another way.
Demonstration is a teaching method used to communicate an idea with the aid of visuals such as flip charts, posters, power point, etc. A demonstration is the process of teaching someone how to make or do something in a step-by-step process. As you show how, you “tell” what you are doing.
Video clips can bring a subject to students in a completely new way and help them comprehend the material they’re reading or working with.
Role-play is a technique that allows students to explore realistic situations by interacting with other people in a managed way in order to develop experience and trial different strategies in a supported environment.

Assignments:				
No	**Assignments**	**Aligned CILOs**	**Week Due**	**Mark**

1	**Individual**: every student is assigned to present a search report supported with images on 5 trade names (commercial preparations) of the studied dosage forms	c4, c5, d2	4-13	3
2	**Group** :every group is assigned to present an illustrating videos on lab. And industrial preparation of 3 types of studies dosage forms.	c4, c5, d1, d2, d3	14	2

Schedule of Assessment Tasks for Students During the Semester

Theoretical part assessment

No.	Assessment Method		Week Due	Mark	Proportion to Total course Assessment	Aligned Course Learning Outcomes (CILOs)
1	Term Works	Quizzes	4-13, 14	5	5	b1, b2, b3
		Assignments	7, 12	5	5	c4, c5, d1, d2, d3
2	Mid-semester exam of theoretical part (written exam		7	10	10	a1, a2, a3, b1
3	Final exam of theoretical part (written exam)		16	50	50	a1, a2, a3, a4, a5, a6, b1, b2, b3
TOTAL				70	70 %	70

Practical part assessment

No.	Assessment Method	Week Due	Mark	Proportion to Total course Assessment	Aligned Course Learning Outcomes(CILOs)

1	Lab. Term works	Attitude	1-12	5	5	c1, c2, c3, d1, d2, d3
2		Accomplishments		5	5	
	Final exam (practical)		12	20	20	c1, c2, c3, d1, d2, d3
Total				30	30 %	

Learning Resources
1- Required Textbook(s) (maximum two)
Aulton M.E., Pharmaceutics: the science of dosage form design, 2002, Churchill Livingstone, UK Ansel`s Pharmaceutical dosage forms and drug delivery system, 2011, Lippincott Williams and Wilkins, USA
2- Essential References.
Rawlins. Bentley s of text book of pharmaceutics Kasture pharmaceutics Raje. pharmaceutics Raph. practical pharmaceutics
3-Electronic References
1--International Journal of Pharmaceutics and Drug Analysis (ijpda.com) 2-0378-5173 (elsevier.com) 3-International Journal of Pharmaceutics (researchgate.net) 4-Ovid - International Journal of Pharmaceutics | Wolters Kluwer

Course Policies:	
1	**Class Attendance:** At least 75 % of the course hours should be attended by the student. Otherwise, he/she will not be allowed to attend the final exam
2	**Tardy:** any student who is late for more than 15 minutes from starting the lecture will not be allowed to attend the lecture and will be considered absent.
3	**Exam Attendance/Punctuality:** any student who is late for more than 30 minutes from starting the exam will not be allowed to attend the exam and will be considered absent.

4	**Assignments & Projects:** Assignments and projects will be assessed individually unless the teacher request for group work
5	**Cheating**: Cheating by any means will cause the student failure and he/she must re-study the course
6	**Plagiarism**: Plagiarism by any means will cause the student failure in the course . Other disciplinary procedures will be according to the college rules.

Pharmacognosy and Phytochemistry II

Course Identification and General Information:									
1	**Course Title:**	Pharmacognosy and Phytochemistry II							
2	**Course Code &Number:**	**PHG 222**							
3	**Credit hours:**	**C.H**						**TOTAL**	
		Theoretical			**P.**	**Tr.**			
		L.	**Tut.**	**S.**					
		2	-	-	2	-		**4**	
4	**Study level/ semester at which this course is offered:**	*(Second) Year – (Second) semester*							
5	**Pre –requisite (if any):**	Pharmacognosy and Phytochemistry I							
6	**Co –requisite (if any):**	-							
7	**Program (s) in which the course is offered:**	**Faculty of Medical Science**							
8	**Language of teaching the course:**	**ENGLISH**							
9	**Location of teaching the course:**	**At the faculty**							

L: lecturing ; Tut: Tutorial , S: seminar ; P: practical ; Tr.: training

Course Description:
The course aims to cover the following: 1. Classification of active constituents of medicinal plants 2. Giving knowledge about the medicinal plants and natural products that contain the active constituents. 3. Nomenclature of the active constituents and each plant, description of the morphological and microscopical characters of the entire and powdered forms in addition to the adulteration, substitution and allied drugs. 4. Giving an idea about the names of the active constituents, detection of them, uses, new uses, abuses and toxic effects if any.

Intended learning outcomes of the course (CILOs) and their alignment to Program Intended learning outcomes (PILOs), teaching strategies and assessment strategies.		
2. Alignment CILOs to PILOs		
PILOs		**CILOs**
Knowledge & understanding : Upon successful completion of the course, students will be able to:		
A3	Explain physicochemical properties of materials and products	**a1.** acquire knowledge about herbal drugs and natural products concerning their identities, safety, optimum use in medication and contraindications.
A4	Describe analytical methods, principles, design and development techniques	**a2.** learn how to isolate, identify and estimate the active principles.
A10	Describe the pharmacists role in different pharmacy practices.	**a3.** get knowledge about recent researches, articles and advanced studies on drugs treating many diseases.
Intellectual skills : Upon successful completion of the course, students will be able to:		
B1	Collect interpret and assess information and data relevant to pharmacy practice	**b1.** get a skill in the art of compounding of two or more of the studied drugs to prepare a safe and cheap formulae for medication.
		b2. acquire knowledge about natural drugs causing addiction, c.n.s. stimulants, narcotics or hypnotics and how to identify them in any given sample.
B2	Classify drugs, approaches and other information relevant to pharmacy	**b3.** classify the groups of active constituents and know the medicinal used of each class.

	based on scientific classification system.	**b4 .**Can differentiate between toxic and safe drugs in addition to the precautions accompanying the use of herbal drugs.
B3	. Design an evaluate different types of safe and effective drugs , pharmaceutical dosage forms and cosmetic preparations	**b5.** Identity of each herbal drug and evaluation of its genuinety.

Professional & practical skills : Upon successful completion of the course, students will be able to:		
C1	Handle safely the chemicals, biological samples and pharmaceutical ingredients and products.	**c1.** acquire skills to identify medicinal and toxic plants.
C2	Operate different instruments and use emerge technologies for preformulation, formulation and analysis of materials according to standard guidelines.	**c2.** Skill to criticize any supplied natural drug assessing its validity for treatment purposes.
C7	Conduct research and utilize the results in different pharmaceutical fields.	**c3** Acquire skills to detect adulteration of any supplied natural drugs.
		c4 acquire skills in isolation and identification of the active constituents in natural product **c5.** Skill to compound herbal teas.
Transferable skills : Upon successful completion of the course, students will be able to:		
D1	Interact and communicate effectively and behave in disciplines with colleagues, patients and healthcare professionals effectively in team-activities.	**d1.** Communicate effectively and behave in discipline with colleagues.

D2	Develop and demonstrate skills of time managements, self-learning and decision making.	**d2.** Demonstrate the skills of time management and self-learning.
D3	Participate collaboratively in team work with colleagues and healthcare professionals.	**d3.** Participate efficiently with his colleagues in a team work.

Alignment CILOs to teaching strategies and assessment strategies		
(a) Alignment Course Intended Learning Outcomes (CILOs) of knowledge & understanding to Teaching Strategies and Assessment Strategies		
Course Intended Learning Outcomes	**Teaching strategies**	**Assessment Strategies**
a1. acquire knowledge about herbal drugs and natural products concerning their identities, safety, optimum use in medication and contraindications.	**Active Lecture** **Tutorials** **Seminar** **Self-Study** **One-minute paper** **Video-clips** **Role-playing** **Reading/discussing draft articles** **Map concepts**	**Written exams (Mid, Final)** **Quizzes** **Essays** **Reports** **Instructional activities**
a2. learn how to isolate, identify and estimate the active principles.		
a3. get knowledge about recent researches, articles and advanced studies on drugs treating many diseases.		
(b) Alignment Course Intended Learning Outcomes (CILOs) of Intellectual Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	**Teaching strategies**	**Assessment Strategies**

b1. get a skill in the art of compounding of two or more of the studied drugs to prepare a safe and cheap formulae for medication.	**Active Lecture** **Tutorials** **Seminar** **Self-Study** **One-minute paper** **Video-clips** **Role-playing** **Reading/discussing draft articles** **Map concepts**	**Written exams (Mid, Final)** **Quizzes** **Essays** **Reports** **Instructional activities**
b2. acquire knowledge about natural drugs causing addiction, c.n.s. stimulants, narcotics or hypnotics and how to identify them in any given sample.	**Active Lecture** **Tutorials** **Self-Study** **Video-clips** **Role-playing** **Map concepts**	**Written exams (Mid, Final)** **Quizzes** **Essays** **Reports** **Instructional activities**
b3. classify the groups of active constituents and know the medicinal used of each class.		
b4 . Can differentiate between toxic and safe drugs in addition to the precautions accompanying the use of herbal drugs.		
b5. Identity of each herbal drug and evaluation of its genuinety.	**Group-project** **Demonstrations**	**Assignments**

(c)Alignment Course Intended Learning Outcomes (CILOs) of Professional and Practical Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	**Teaching strategies**	**Assessment Strategies**
c1. acquire skills to identify medicinal and toxic plants.	**laboratory practice** **Demonstrations**	**Lab. term works, final practical exam**
c2. Skill to criticize any supplied natural drug assessing its validity for treatment purposes.		
c3 Acquire skills to detect adulteration of any supplied natural drugs.	**Group-project** **Demonstrations**	**Assignments**
c4 acquire skills in isolation and identification of the active constituents in natural product		
c5. Skill to compound herbal teas.		
(d) Alignment Course Intended Learning Outcomes (CILOs) of Transferable Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	**Teaching strategies**	**Assessment Strategies**
d1. Communicate effectively and behave in discipline with colleagues.	**laboratory practice** **group-project** **Demonstrations**	**Lab. term works, assignment**
d3. Participate efficiently with his colleagues in a team work.		
d2. Demonstrate the skills of time management and self-learning.	**laboratory practice** **Demonstrations**	**Lab. term works, final practical exam**

Course Content:					
A – Theoretical Aspect:					
Order	**Units/ Topics List**	**CILOs**	**Sub Topics List**	**No. of Weeks**	**contact hours**
Part I: *I- Tannins*					
1	**Topic 1**	a1, a2, a3	Definition, Classification, Isolation	1	4
2	**Topic 2**	a1, a2, a3	Drugs containing tannins and their uses		4
3	**Topic 3**	a1, a2, a3	Galls		4
4	**Topic 4**	a1, a2, a3	Hamamelis leaves	1	4
5	**Topic 5**	a1, a2, a3	Rhubarb rhizome		4
6	**Topic 6**		Pomegranate bark		4
Mid-term exam				1	4

Part II: Glycosides					
4	**Topic 1**	a1, a2,a3 , b1,	• Definition, Classification, Preparation	1	4

		b2, b3, b4			4
		a1, a2,a3 , b1, b2, b3, b4	• Flavonoid glycosides: Buchu leaves, Ruta leaves, Citrus fruits	1	4
5	**Topic 2**	a1, a2,a3 , b1, b2, b3, b4	• Anthraquinone glycosides: Senna leaves, Cascara and Frangula bark, Rhubarb rhizome, Aloes	1	4
6	**Topic 3**	a1, a2,a3 , b1, b2, b3, b4	Cyanophore glycosides: Linseed	1	4
7	**Topic 4**	a1, a2,a3 , b1, b2, b3, b4	Thioglycosides: Black and White mustard	1	4

8	**Topic 5**	a1, a2,a3, b1, b2, b3, b4	Saponine glycosides: Quillaia bark, Liquorice root, Senega root	1	4
9	**Topic 6**	a1, a2,a3, b1, b2, b3, b4	Cardiac glycosides: Squill leaves, Digitalis leaves, Strophanthus seed	1	4
10	**Topic 7**	a1, a2,a3, b1, b2, b3, b4	***Imidazole alkaloids:*** Pilocarpine (Jaborandi leaves)	1	4
11	**Topic 8**	a1, a2,a3, b1, b2, b3, b4	***Diterpine alkaloids:*** Taxol (Taxus leaves)	1	4
Part III **Bitter principles**					
12	**Topic 1**	a1, a2,a3, b1, b2, b3, b4	Definition, Classification, Preparation	1	4

13	**Topic 2**	a1, a2,a3 , b1, b2, b3, b4	Khellin (Ammi visnaga fruits)		
14	**Topic 3**	a1, a2,a3 , b1, b2, b3, b4	Majudin (Ammi majus fruits)		4
15	**Topic 4**	a1, a2,a3 , b1, b2, b3, b4	Picrotoxin (Cocculus fruits)	1	4
16	**Topic 5**	a1, a2,a3 , b1, b2, b3, b4	Rotenone (Derris root)		4
17	**Topic 6**	a1, a2,a3 , b1, b2, b3, b4	Santonin (Santonica flower)		4
Part IV Lignans and lignins					

18	**Topic 7**		Definition, Classification, Preparation		
19	**Topic 8**		Cubebib (Cubeba fruits)		
20	**Topic 9**		Podophyllotoxin (Podophyllum rhizome)		
FINAL - EXAM				-	
TOTAL				16	64
Number of Weeks /and Units Per Semester				16 weeks	6 Units

B - Practical Aspect:

Order	**Tasks/ Experiments**	**Number of Weeks**	**contact hours**	**Aligned Couse Intended Learning Outcomes CILOs**
	To test the experimental skills in isolation, identification and estimation of the chemical constituents 1 To identify unknown unorganized powder drug with the help of physical and chemical tests. a. Carbohydrates : Acacia, Agar, Algin, b. Honey, Tragacanth. c. Protein : Gelatin.	**1**	**2**	c1, c2, d1, d2, d3

	2 To identify unknown unorganized powder drug with the help of physical and chemical tests. a. Tannins : Pale and Black Catechu. b. Mineral : Kaolin. 3 To identify unknown unorganized powder drug with the help of physical and chemical tests. a. Lipids : Bees wax. b. Resin : Benzoin myrrh. 4 To identify unknown organized powder drug with the help of Physical and chemical tests. a. Senna b. Starch c. Termeric			
PRACTICAL EXAM		**1**	**2**	c1, c2, d1, d2, d3
Total		**11**	**22**	

Teaching strategies of the course:
Active Lecture It is the most frequently employed teaching method to convey knowledge and explain theories to students in large groups (50-200) or in sessions, which consist of more than one group gathered in one classroom. The efficiency of lecturing can be enhanced by using techniques such as **Brain-storming**: It depends on stimulation of the student`s brain through a group of questions &/or **Concepts map**: which depends on sequencing of thoughts in the form of maps with horizontal or vertical relations & by using **learning aids** such as Data show projector
Laboratory practice: students doing experiments in labs individually or in small groups

Feed-back learning: students are individually asked to do perform quick tests (quiz) or to do certain assignments such lab. experiments, problems solving, homework, topics summarizing or internet search. The teacher will provide them feed-back correction & evaluation
Group projects: students work on a project in groups of 2 to 3 students. Important for learning by doing ,using the results in practical manner &for promoting team work skills
One Minute Paper is based on a concept called retrieval learning. Just fill out a small questionnaire within 15 minutes after taking a class, reading a chapter, watching a documentary, or learning in another way.
Demonstration is a teaching method used to communicate an idea with the aid of visuals such as flip charts, posters, power point, etc. A demonstration is the process of teaching someone how to make or do something in a step-by-step process. As you show how, you "tell" what you are doing.
Video clips can bring a subject to students in a completely new way and help them comprehend the material they're reading or working with.
Role-play is a technique that allows students to explore realistic situations by interacting with other people in a managed way in order to develop experience and trial different strategies in a supported environment.
A concept map is a visual representation of a topic that students can create using words, phrases, lines, arrows, space on the page, and perhaps color to help organize their ideas and show their understanding of an idea, vocabulary term, or essential question.

Assignments:

No	Assignments	Aligned CILOs	Week Due	
1	Written exam(s) **to assess** knowledge and understanding and intellectual skills. Practical exam(s) **to assess** practical skills.	b5, c3, c4, d1, d3	8	

	Periodic exam(s) **to assess** understanding and intellectual skills. Oral exam **to assess** knowledge and understanding and intellectual skills.			

Schedule of Assessment Tasks for Students During the Semester						
Theoretical part assessment						
No.	**Assessment Method**		**Week Due**	**Mark**	**Proportion to Total course Assessment**	**Aligned Course Learning Outcomes (CILOs)**
1	Term Works	Quizzes	4-13, 14	5	5	b1
		Assignments	7, 12	5	5	b5, c3, c4, d1, d3
2	Mid-semester exam (written exam)		7	10	10	a1, a2,a3 , b1, b2, b3, b4
3	Final exam (written exam)		16	50	50	a1, a2,a3 , b1, b2, b3, b4
TOTAL				70	70 %	70

Practical part assessment						
No.	**Assessment Method**		**Week Due**	**Mark**	**Proportion to Total course Assessment**	**Aligned Course Learning Outcomes(CILOs)**
1		Attitude	1-12	5	5	c1, c2, d1, d2, d3

2	Lab. Term works	Accomplishments		5	5	
	Final exam (practical)		12	20	20	c1, c2, d2
Total				30	30 %	

Learning Resources:
1- Required Textbook(s) (maximum two).
Trease, G.E. and Evans, W.C. "Pharmacognosy" (2002). Wallis, T.A. Textbook in Pharmacognosy (1967). Barnes, J., Anderson A.L. and Philipson J.D., "Herbal medicine" 2002 De Smet, P.A., Keller, K., Hausel, R. and Chandler, R.F., Adverse effects of herbal drugs (1993). Saber, A.H., Practical Pharmacognosy 4th Ed. (1966).
2- Essential References.
Jackson, B.P. and Snowdon D.W., Atlas of microscopy of medicinal plants, culinary herbs and spices (1990). Shafik B. Chemistry of crude drugs (1976)
3- Electronic Materials and Web Sites *etc*.
1-Pharmacognosy Journal | Journal of Pharmacognosy and Phytochemistry | Phytochemistry Journal (phytojournal.com) 2- International Journal of Pharmacognosy and Phytochemical Research | ICI Jou (indexcopernicus.com) 3- International Journal of Pharmacognosy and Phytochemical Research (scimagojr.com)

Course Policies:	
1	**Class Attendance:** At least 75 % of the course hours should be attended by the student. Otherwise, he/she will not be allowed to attend the final exam
2	**Tardy:** any student who is late for more than 15 minutes from starting the lecture will not be allowed to attend the lecture and will be considered absent.
3	**Exam Attendance/Punctuality:**

	any student who is late for more than 30 minutes from starting the exam will not be allowed to attend the exam and will be considered absent.
4	**Assignments & Projects:** Assignments and projects will be assessed individually unless the teacher request for group work
5	**Cheating**: Cheating by any means will cause the student failure and he/she must re-study the course
6	**Plagiarism**: Plagiarism by any means will cause the student failure in the course . Other disciplinary procedures will be according to the college rules.

PHARMACEUTICAL ORGANIC CHEMISTRY II

Course Identification and General Information:								
1	**Course Title:**	**PHARMACEUTICAL ORGANIC CHEMISTRY II**						
2	**Course Code &Number:**	**PHC 232**						
3	**Credit hours:**	**C.H**						**TOTAL**
		Theoretical			**P.**	**Tr.**		
		L.	**Tut.**	**S.**				
		1	1	-	1	-		**3**
4	**Study level/ semester at which this course is offered:**	(2ND) Year – (second) semester						
5	**Pre –requisite (if any):**	• **General chemistry** • **Pharmaceutical Organic chemistry I**						
6	**Co –requisite (if any):**	**None**						
7	**Program (s) in which the course is offered:**	**Faculty of Medical Science**						
8	**Language of teaching the course:**	**ENGLISH**						
9	**Location of teaching the course:**	**IN THE UNIVERSITY**						

L: lecturing ; Tut: Tutorial , S: seminar ; P: practical ; Tr.: training

Course Description:
The course is the complement of the previous course (Ph. Organic chemistry I). It deals with more complicated organic compounds including monocyclic, polycyclic, homocyclic and heterocyclic compounds. Similar to the previous course, this course is accompanied with the analytical course (ph. Analytical chemistry II) to link between chemical structure and analysis.

Intended learning outcomes of the course: (CILOs) and their alignment to Program Intended learning outcomes (PILOs), teaching strategies and assessment strategies		
Alignment CILOs to PILOs		
No	**PILOs**	**Intended learning outcomes of the course (CILOs)**
1	**A3**	**a1.** Discuss the physicochemical properties of monocyclic, polycyclic, homocyclic and heterocyclic organic compounds..
2	**B1**	**b1.** Differentiate, name and draw the chemical structure of monocyclic, polycyclic, homocyclic and heterocyclic compounds. organic compounds.
3		**b2.** Relate structures of monocyclic, polycyclic, homocyclic and heterocyclic compounds to their physical and chemical properties. .
4		**b3.** Predict the outcomes of a reaction of monocyclic, polycyclic, homocyclic and heterocyclic compounds. organic compound and other chemicals.
5	**B3**	**b4.** Design a sequence to synthesize monocyclic, polycyclic, homocyclic and heterocyclic organic compounds from a parent compound.
6	**C1**	**c1.** Handle efficiently and safely the chemical materials and tools used in the laboratory
7	**C2**	**c2.** Operate the instruments and perform experiments successfully in the laboratory
8	**C7**	**c3 .**Search efficiently for information using documented and electronic sources of information.
9		**c4.** Present and report his/her works correctly using appropriate writing rules and technologies media.
10	**D1**	**d1.** Communicate effectively and behave in discipline with colleagues.
11	**D2**	**d2.** Demonstrate the skills of time management and self-learning.
12	**D3**	**d3.** Participate efficiently with his colleagues in a team work.

Alignment CILOs to teaching strategies and assessment strategies		
(a) Alignment Course Intended Learning Outcomes (CILOs) of knowledge & understanding to Teaching Strategies and Assessment Strategies		
Course Intended Learning Outcomes	**Teaching strategies**	**Assessment Strategies**
a1	**Active Lecture**	**Written exams**

(b) Alignment Course Intended Learning Outcomes (CILOs) of Intellectual Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	**Teaching strategies**	**Assessment Strategies**
b1, b4	Lecture-discussion laboratory practice, Feed-back learning	Written exams, quizzes, lab. term work, practical final exam
b2, b3	Lecture-discussion Feed-back learning	Written exams, quizzes
(c)Alignment Course Intended Learning Outcomes (CILOs) of Professional and Practical Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	**Teaching strategies**	**Assessment Strategies**
c1, c2,	laboratory practice	Lab. term works, final practical exam
c3, c4	feed-back learning, Group-project	Assignments
(d) Alignment Course Intended Learning Outcomes (CILOs) of Transferable Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
d1, d3	laboratory practice, group-project	Practical assessment (Lab. attendance, attitude, practical exam), Assignments

Course Content:

A – Theoretical Aspect:

Order	**Units/ Topics List**	**CILOs**	**Sub Topics List**	**No. of Weeks**	**contact hours**
1	**Monocyclic Alicyclic compounds**	a1, b1, b2, b3, b4	Classification, physicochemical properties, preparation, reactions,	1	2

			examples of drugs and their medical uses.		
2	**Benzyl and Benzhydryl derivatives**	a1, b1, b2, b3, b4	Classification, physicochemical properties, preparation, reactions, examples of drugs and their medical uses.	1	2
3	**Phenethyl and Phenylpropylamines**	a1, b1, b2, b3, b4	Classification, physicochemical properties, preparation, reactions, examples of drugs and their medical uses.	2	4
4	**Arylacetic and Arylpropionic Acids**	a1, b1, b2, b3, b4	Classification, physicochemical properties, preparation, reactions, examples of drugs and their medical uses.	2	4
			MID-TERM EXAM	1	2
5	**Arylethylenes compounds**	a1, b1, b2, b3, b4	Classification, physicochemical properties, preparation, reactions, examples of drugs and their medical uses.	1	2
6	**Polycyclic Aromatic compounds**	a1, b1, b2, b3, b4	Classification, physicochemical properties, preparation, reactions, examples of drugs and their medical uses.	2	2
7	**Steroids**	a1, b1, b2, b3, b4	Classification, physicochemical properties, preparation, reactions, examples of drugs and their medical uses.	1	2
8	**Heterocyclic compounds: 5, 6, 7 –**	a1, b1, b2, b3, b4	Classification, physicochemical properties, preparation, reactions,	3	

	membered fused to one ring and two rings		examples of drugs and their medical uses.		6
Course Review		a1, b1, b2, b3, b4	Review of the course topics by discussion session.	1	2
FINAL - EXAM				1	2
TOTAL				16	32
Number of Weeks /and Units Per Semester				16 weeks	8 Units

B - Practical Aspect:				
Order	**Tasks/ Experiments**	**Number of Weeks**	**contact hours**	**Aligned Couse Intended Learning Outcomes CILOs**
General physicochemical properties of the chemical group. experiments of Chemical identification and synthesis of one-two drugs belonging to the following groups				
1	Monocyclic Alicyclic compounds e.g. Hyoscine	**1**	**2**	b1, b4, c1, c2, d1, d2, d3
2	Benzyl and Benzhydryl derivatives e.g. Orphenadine	**1**	**2**	b1, b4, c1, c2, d1, d2, d3
3	Phenethyl and Phenylpropylamines e.g. adrenaline	**1**	**2**	b1, b4, c1, c2, d1, d2, d3
4	Phenethyl and Phenylpropylamines e.g. methyldopa	**1**	**2**	b1, b4, c1, c2, d1, d2, d3
5	Arylacetic and Arylpropionic Acids e.g. Thyroxin	**2**	**4**	b1, b4, c1, c2, d1, d2, d3
6	Polycyclic Aromatic compounds e.g. Tetracycline	**1**	**2**	b1, b4, c1, c2, d1, d2, d3

7	Heterocyclic compounds e.g. Mebendazole	**1**	**2**	b1, b4, c1, c2, d1, d2, d3
8	Heterocyclic compounds e.g. indomethacin	**1**	**2**	b1, b4, c1, c2, d1, d2, d3
9	Heterocyclic compounds e.g. aminophylline	**1**	**2**	b1, b4, c1, c2, d1, d2, d3
10	Heterocyclic compounds e.g. ascorbic acid	**1**	**2**	b1, b4, c1, c2, d1, d2, d3
PRACTICAL EXAM		**1**	**2**	b1, b4, c1, c2, d1, d2, d3
Total		**12**	**24 equivalent to 12 credit hours**	
Number of Weeks			**12**	

Teaching strategies of the course:
Lecture It is the most frequently employed teaching method to convey knowledge and explain theories to students in large groups (50-200) or in sessions, which consist of more than one group gathered in one classroom. The efficiency of lecturing can be enhanced by using techniques such as **Brain-storming**: It depends on stimulation of the student`s brain through a group of questions &/or **Concepts map**: which depends on sequencing of thoughts in the form of maps with horizontal or vertical relations & by using **learning aids** such as Data show projector
Laboratory practice: students doing experiments in labs individually or in small groups
Feed-back learning: students are individually asked to do perform quick tests (quiz) or to do certain assignments such lab. experiments, problems solving, homework, topics summarizing or internet search. The teacher will provide them feed-back correction & evaluation
Group projects: students work on a project in groups of 2 to 3 students. Important for learning by doing ,using the results in practical manner &for promoting team work skills

Assignments:				
No	**Assignments**	**Aligned CILOs**	**Week Due**	

1	**Individual**: the teacher provide the students with chemical problems related to the studied topics. Every student is assigned to solve some of those problems individually.	d1, d2, c3, c4	7	
2	**Group** : each group of students will be assigned to do a search-report supported by illustrating figures for all drugs belonging to one of the studied homocyclic/hetrocyclic organic compounds.	d1, d2, d3, c3, c4	12	

Schedule of Assessment Tasks for Students During the Semester

Theoretical part assessment

No.	Assessment Method		Week Due	Mark	Proportion to Total course Assessment	Aligned Course Learning Outcomes (CILOs)
1	Term Works	Quizzes	4-13, 14	5	5	b1, b2, b3, b4
		Assignments	7, 12	5	5	d1, d2, d3, c3, c4
2	Mid-semester exam of theoretical part (written exam		7	10	10	a1, b1, b2, b3, b4
3	Final exam of theoretical part (written exam)		16	50	50	a1, b1, b2, b3, b4
TOTAL				70	70 %	70

Practical part assessment

No.	Assessment Method		Week Due	Mark	Proportion to Total course Assessment	Aligned Course Learning Outcomes(CILOs)
1	Lab. Term works	Attitude	1-12	5	5	c1, c2, d1, d2, d3, b1, b4
2		Accomplishments		5	5	
	Final exam (practical)		12	20	20	c1, c2, d2, b1, b4
Total				30	30 %	

Learning Resources:
1- Required Textbook(s) (maximum two).
Daniel Ledincer : Organic chemistry of drug synthesis, John Wiley & Sons
2- Essential References.
1. Saraf. The chemistry of heterocyclic compounds 2. Anil. A text book of pharmaceutical organic chemistry 3. British pharmacopeia BP, 2013 4. United states pharmacopeia USP, 31 5. Ali. A text book of pharmaceutical organic chemistry
3-Electronic References
1- Articles - IJOC - Scientific Research Publishing (scirp.org) 2- International Journal of Organic Chemistry (researchgate.net) 3- The Journal of Organic Chemistry (acs.org)

Course Policies:	
1	**Class Attendance:** At least 75 % of the course hours should be attended by the student. Otherwise, he/she will not be allowed to attend the final exam
2	**Tardy:** any student who is late for more than 15 minutes from starting the lecture will not be allowed to attend the lecture and will be considered absent.
3	**Exam Attendance/Punctuality:** any student who is late for more than 30 minutes from starting the exam will not be allowed to attend the exam and will be considered absent.

4	**Assignments & Projects:** Assignments and projects will be assessed individually unless the teacher request for group work
5	**Cheating**: Cheating by any means will cause the student failure and he/she must re-study the course
6	**Plagiarism**: Plagiarism by any means will cause the student failure in the course . Other disciplinary procedures will be according to the college rules.

Pharmaceutical Analytical Chemistry II

Course Identification and General Information:								
1	**Course Title:**	**ANALYTICAL CHEMISTRY II**						
2	**Course Code &Number:**	**PHC 242**						
3	**Credit hours:**	C.H						TOTAL
		Theoretical			P.	Tr.		
		L.	Tut.	S.				
		1	1	-	1	-		**3**
4	**Study level/ semester at which this course is offered:**	(2ND) Year – (2nd) semester						
5	**Pre –requisite (if any):**	• **General chemistry** • **Pharmaceutical Analytical chemistry I**						
6	**Co –requisite (if any):**	**none**						
7	**Program (s) in which the course is offered:**	**Faculty of Medical Science**						
8	**Language of teaching the course:**	**ENGLISH**						
9	**Location of teaching the course:**	**IN THE UNIVERSITY**						

L: lecturing ; Tut: Tutorial , S: seminar ; P: practical ; Tr.: training

Course Description:
The course is complementary to (Analytical chemistry I) and both deals with the study of principles, instrumentation and applications of basic analytical techniques. This course concerns with study of basic optical, thermal and UV-visible spectrophotometric analytical methods.

Intended learning outcomes of the course (CILOs) and their alignment to Program Intended learning outcomes (PILOs), teaching strategies and assessment strategies		
Alignment CILOs to PILOs		
No.	**PILOs**	**CILOs**
1	**A3**	**a1**. Explain the physicochemical properties of substances that can be utilized for their qualitative and quantitative analysis
2	**A4**	**a2**. Describe the principles of optical and thermal analysis and UV-visible spectrophotometry
3	**A10**	**a3.** Describe the role of pharmacist to perform accurate and precise quantitative and qualitative analysis.
4	**B1**	**b1.** Interpret data obtained by titrimetric and electrochemical analysis.
5	**B2**	**b2.** Design a suitable optical and thermal analysis and UV-visible spectrophotometry method based on the substance physicochemical properties.
6	**B3**	**b3.** Select appropriate standard operating procedure for optical and thermal analysis and UV-visible spectrophotometry method.
7	**B9**	**b4.** Calculate the content % of a material in a sample using UV-visible spectrophotometry method
8	**C1**	**c1.** Handle efficiently and safely the chemical materials and tools used in the laboratory
9	**C2**	**c2.** Operate the instruments and perform experiments successfully in the laboratory
10	**C7**	**c3 .**Search efficiently for information using documented and electronic sources of information.
11		**c4.** Present and report his/her works correctly using appropriate writing rules and technologies media.
12	**D1**	**d1.** Communicate effectively and behave in discipline with colleagues.
13	**D2**	**d2.** Demonstrate the skills of time management and self-learning.
14	**D3**	**d3.** Participate efficiently with his colleagues in a team work.

Alignment CILOs to teaching strategies and assessment strategies		
(a) Alignment Course Intended Learning Outcomes (CILOs) of knowledge& understanding to Teaching Strategies and Assessment Strategies		
Course Intended Learning Outcomes	**Teaching strategies**	**Assessment Strategies**
a1, a2, a3	**Active Lecture**	**Written exams**
(b) Alignment Course Intended Learning Outcomes (CILOs) of Intellectual Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	**Teaching strategies**	**Assessment Strategies**
b1, b2, b3, b4	**Lecture-discussion laboratory practice, Feed-back learning**	**Written exams, quizzes, lab. term work, practical final exam**
(c)Alignment Course Intended Learning Outcomes (CILOs) of Professional and Practical Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	**Teaching strategies**	**Assessment Strategies**
c1, c2,	**laboratory practice**	**Lab. term works, final practical exam**
c3, c4	**feed-back learning, Group-project**	**Assignments**
(d) Alignment Course Intended Learning Outcomes (CILOs) of Transferable Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	**Teaching strategies**	**Assessment Strategies**
d1, d3	**laboratory practice, group-project**	**Practical assessment (Lab. attendance, attitude, practical exam), Assignments**
d2	**Lab. practice, group-project, feed-back learning**	**Practical assessment (Lab. attendance, attitude, practical exam), Assignments**

Course Content:					
A – Theoretical Aspect:					
Order	**Units/ Topics List**	**CILOs**	**Sub Topics List**	**No. of Weeks**	**contact hours**
1	**Topic 1**	a1,a2, a3, b1, b2, b3, b4	Course introduction and refreshments for volumetric methods.	1	3
2	**Topic 2**	a1,a2, a3, b1, b2, b3, b4	• Precipitation Equilibria, factors affecting the solubility of the precipitate.	1	3
	Topic 3		• Applications involving calculations of sparingly soluble salts.	1	3
	Topic 4		• Deferent methods of titrations and their applications.	1	3
	Topic 5		• Titration curve determination.	1	3
	Topic 6		• Reduction – Oxidation Equilibria, types of electrochemical cells.	1	3
	Topic 7		• Electrode potential and types of electrodes.	1	3
Mid-term exam				1	2
3	**Topic 8**		Calculations concerning the application of Nernest equation.	1	3
4	**Topic 9**		• Redox – titration, titration curve and factors the titration curves.	1	3

5	**Topic 10**	a1,a2, a3, b1, b2, b3, b4	• Iodi and iodo metric titrations and applications for determination of reducing and oxidizing agents.	1	3
	Topic 11	a1,a2, a3, b1, b2, b3, b4	• Complexation Equilibria Complexation Equilibria complexing, types of agents and their conditions of applications.	1	3
	Topic 12	a1,a2, a3, b1, b2, b3, b4	• Complexometric titrations involving EDTA	1	3
	Topic 13	a1,a2, a3, b1, b2, b3, b4	• Applications of EDTA – titration methods	1	3
	Topic 14	a1,a2, a3, b1, b2, b3, b4	• Gravimetric methods of analysis.	1	3
	Topic 15	a1,a2, a3, b1, b2, b3, b4	• Application for the determination of deferent types of salts	1	3
Course Review		a1, a2 , a3, b1, b2, b3, b4, b5, b6, d2	Review of the course topics by discussion session.	1	3
FINAL - EXAM				1	3
TOTAL				16	32
Number of Weeks /and Units Per Semester				16 weeks	5 Units

B - Practical Aspect

Order	Tasks/ Experiments	Number of Weeks	contact hours	Aligned Couse Intended Learning Outcomes CILOs
1	Determination of acid content of vinegar	**1**	**2**	b1, b2, b3, b4, c1, c2, d1, d2, d3
2	Determination of purity of soda ash,	**1**	**2**	b1, b2, b3, b4, c1, c2, d1, d2, d3
3	Determination of water hardness by using edta	**1**	**2**	b1, b2, b3, b4, c1, c2, d1, d2, d3
4	Determination of iron ore content of a razor blade	**1**	**2**	b1, b2, b3, b4, c1, c2, d1, d2, d3
5	Determination of vitamin c in dehydrated juice or in tablets;	**1**	**2**	b1, b2, b3, b4, c1, c2, d1, d2, d3
6	Determination of sulphate by using absorption indicator	**1**	**2**	b1, b2, b3, b4, c1, c2, d1, d2, d3
7	Gravimetric determination of sulphate separation by paper chromatography,	**1**	**2**	b1, b2, b3, b4, c1, c2, d1, d2, d3
8	Spectrophotometric methods of analysis: analysis of commercial hypochlorite solution	**1**	**2**	b1, b2, b3, b4, c1, c2, d1, d2, d3
9	**Review**	**1**	**2**	b1, b2, b3, b4, c1, c2, d1, d2, d3
PRACTICAL EXAM		**10**	**20**	b1, b2, b3, b4, c1, c2, d1, d2, d3
Total		**10**	**20 equivalent to 10 credit hours**	
Number of Weeks			**12**	

Teaching strategies of the course:
Lecture It is the most frequently employed teaching method to convey knowledge and explain theories to students in large groups (50-200) or in sessions, which consist of more than one group gathered in one classroom.

The efficiency of lecturing can be enhanced by using techniques such as **Brain-storming**: It depends on stimulation of the student`s brain through a group of questions &/or **Concepts map**: which depends on sequencing of thoughts in the form of maps with horizontal or vertical relations & by using **learning aids** such as Data show projector
Laboratory practice: students doing experiments in labs individually or in small groups
Feed-back learning: students are individually asked to do perform quick tests (quiz) or to do certain assignments such lab. experiments, problems solving, homework, topics summarizing or internet search. The teacher will provide them feed-back correction & evaluation
Group projects: students work on a project in groups of 2 to 3 students. Important for learning by doing ,using the results in practical manner &for promoting team work skills

Assignments:

No	Assignments	Aligned CILOs	Week Due	Mark
1	**Individual**: the teacher provides the students with problems related to the studied topics.Every student is assigned to solve some of those problems individually.	c3, c4, d1, d2	4-13	3
2	**Group** : each group of students will be assigned to do a search report on pharmaceutical applications of one method of the studied titrimetric analysis.	c3, c4, d1, d2, d3	14	2

Schedule of Assessment Tasks for Students During the Semester

Theoretical part assessment

No.	Assessment Method		Week Due	Mark	Proportion to Total course Assessment	Aligned Course Learning Outcomes (CILOs)
1	Term Works	Quizzes	4-13, 14	5	5	b1, b2, b3, b4, b5, b6, b7

		Assignments	7, 12	5	5	c3, c4, d1, d2, d3
2	Mid-semester exam of theoretical part (written exam		7	10	10	a1, a2, a3, b1, b2, b3, b4
3	Final exam of theoretical part (written exam)		16	50	50	a1, a2, a3, b1, b2, b3, b4
TOTAL				70	70 %	70

Practical part assessment						
No.	**Assessment Method**		**Week Due**	**Mark**	**Proportion to Total course Assessment**	**Aligned Course Learning Outcomes(CILOs)**
1	Lab. Term works	Attitude	1-12	5	5	b1, b2, b3, b4, c1, c2, d1, d2,d3
2		Accomplishments		5	5	
	Final exam (practical)		12	20	20	b1, b2, b3, b4, c1, c2, d1, d2,d3
Total				30	30 %	

Learning Resources:

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

1. Analytical chemistry: principles and techniques.[FACSIMILE] publisher: prentice Hall College Div; Facsimile edition (January 1, 1988) ISBN: 013033507X
2. Analytical chemistry: principles and techniques. By Larry G. Hargis.(editors) (December 17, 1996), publisher: Pearson Education POD; Facsimile edition

2- Essential References.

1. Leslie G Chatten: Deans analytical chemistry handbook, McGraw Hill
2. Verma. Analytical chemistry
3. Analytical Chemistry by Gary D. Christian publisher: Wiley; 6edition (March7,2003)

4. Analytical chemistry (an introduction) by Skoog/West/Holler (edition)6th (1994), Saunders Golden SunBurst series, ISBN:0-03-097285.
5. Quantitative analysis by R.A-Day, JR, A.L-UNDERWOOD (editors) 6th edition (1991), prentice-Hall,
6. Quantitative analysis chemistry by James S. FRITZ, GOERG H. SCHENK (editors) 5th edition (1987), prentice-Hall, Englewood Clifts,
7. Analytical chemistry (principles) by john H. Kennedy (editor) 1st edition (1984), HARCORT BRACE JOANOVICH.

3-Electronic References

Volume 33, Issue 1 (2019) | Society for Scientific Exploration
Technium Social Sciences Journal (techniumscience.com)
Free Pharma Journals | Pharmaceutical Research Journals List (omicsonline.org)

Course Policies:	
1	**Class Attendance:** At least 75 % of the course hours should be attended by the student. Otherwise, he/she will not be allowed to attend the final exam
2	**Tardy:** any student who is late for more than 15 minutes from starting the lecture will not be allowed to attend the lecture and will be considered absent.
3	**Exam Attendance/Punctuality:** any student who is late for more than 30 minutes from starting the exam will not be allowed to attend the exam and will be considered absent.
4	**Assignments & Projects:** Assignments and projects will be assessed individually unless the teacher request for group work
5	**Cheating**: Cheating by any means will cause the student failure and he/she must re-study the course
6	**Plagiarism**: Plagiarism by any means will cause the student failure in the course . Other disciplinary procedures will be according to the college rules.

Introduction to Biochemistry & Molecular Biology

Course Identification and General Information:								
1	**Course Title:**	**Introduction to Biochemistry & Molecular Biology**						
2	**Course Code &Number:**	**BCH 252**						
3	**Credit hours:**	**C.H**						**TOTAL**
		Theoretical			**P.**	**Tr.**		
		L.	**Tut.**	**S.**				
		2	-	-	1	-		**3**
4	**Study level/ semester at which this course is offered:**	(2^{ND}) Year – (SECOND) semester						
5	**Pre –requisite (if any):**	• **General chemistry** • **Pharm. Organic chemistry I** • **General biology** • **Physiology I**						
6	**Co –requisite (if any):**	-						
7	**Program (s) in which the course is offered:**	**Faculty of Medical Science**						
8	**Language of teaching the course:**	**ENGLISH**						
9	**Location of teaching the course:**	**IN THE UNIVERSITY**						

L: lecturing ; Tut: Tutorial , S: seminar ; P: practical ; Tr.: training

Course Description:
The course deals with study of types, regulation, chemical structure, biosynthesis, metabolic pathways and physiological/pathological roles of essential biochemical compounds, including carbohydrates, lipids, proteins.

Intended learning outcomes of the course (CILOs) and their alignment to Program Intended learning outcomes (PILOs), teaching strategies and assessment strategies		
Alignment CILOs to PILOs		
No.	**PILOs**	**CILOs**
1.	**A1**	**a1.** Identify the roles of biochemical compounds in human body.
2.		**a2.** Explicit the physiological/pathological involvement of carbohydrates, lipids, proteins.
3.	**A3**	**a3**. Explain the physicochemical properties of carbohydrates, proteins and lipids..
4.	**B1**	**b1.** Interpret body diseases resulted from disturbances in levels of carbohydrate, proteins and lipids.
5.		**b2.** Predict the outcomes of biochemical reactions involving carbohydrate, proteins and lipids..
6.	**B2**	**B3 .** Classify carbohydrates, proteins, and lipids. .
7.		**b3.** Compare between metabolic reactions of carbohydrates, proteins and lipids.
8.	**B4**	**b4.** Select standard operation procedure for isolation of carbohydrates, proteins and lipids from blood.
9.		**b5.** Choose a method for identification of carbohydrates, proteins and lipids.
10.	**C1**	**c1.** Handle efficiently and safely the chemical materials and tools used in the laboratory
11.	**C2**	**c2.** Operate the instruments and perform experiments successfully in the laboratory.
12.	**C3**	**c3 .** Bioassay proteins, carbohydrates and lipids in blood
13.	**C7**	**c4 .**Search efficiently for information using documented and electronic sources of information.
14.		**c5.** Present and report his/her works correctly using appropriate writing rules and technologies media.
15.	**D1**	**d1.** Communicate effectively and behave in discipline with colleagues.
16.	**D2**	**d2.** Demonstrate the skills of time management and self-learning.
17.	**D3**	**d3.** Participate efficiently with his colleagues in a team work.

Alignment CILOs to teaching strategies and assessment strategies		
(a) Alignment Course Intended Learning Outcomes (CILOs) of knowledge & understanding to Teaching Strategies and Assessment Strategies		
Course Intended Learning Outcomes	**Teaching strategies**	**Assessment Strategies**
a1, a2, a3	**Lecture, laboratory practice**	**written exams , Lab. term work, final practical exam**
(b) Alignment Course Intended Learning Outcomes (CILOs) of Intellectual Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	**Teaching strategies**	**Assessment Strategies**
b1, b2, b3	**lecture, feed-back learning**	**Written exam, quizzes**
b4, b5	**Lecture, , feed-back learning, Lab. practice**	**written exam , quizzes, Lab. term work, final practical exam**
(c)Alignment Course Intended Learning Outcomes (CILOs) of Professional and Practical Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	**Teaching strategies**	**Assessment Strategies**
c1, c2, c3	**Lab. Practice**	**Lab. term work, final practical exam**
c4, c5	**Group-project, feed-back learning**	**Assignment**
(d) Alignment Course Intended Learning Outcomes (CILOs) of Transferable Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	**Teaching strategies**	**Assessment Strategies**
d1, d3	**Group-project , Lab. practice**	**Assignment s, Lab. term work, final practical exam**

d2	**Feed-back learning , Lab. practice**	**Assignment s, Lab. term work, final practical exam**

Course Content:					
A – Theoretical Aspect:					
Order	**Units/ Topics List**	**CILOs**	**Sub Topics List**	**No. of Weeks**	**contact hours**
1	**Introduction**	a1, a2, a3	• Definition and significance • General roles of biochemistry • Properties and classification of biochemicals	1	2
2	**Carbohydrates**	a1, a2, a3, b1, b2, b3, b4,b5	• Classifications and physiological roles • Glycolysis • Citric acid cycle • Glycogenesis and glycogenolysis • Hexose monophosphate shunt • Uronic acid pathway • Blood sugar and its regulation. • Pathological conditions related carbohydrates.	4	8
3	**Lipids (1)**	a1, a2, a3, b1, b2, b3, b4,b5	• Classifications and physiological roles • Biosynthesis of fats • Oxidation of fatty acids • Ketogenesis and ketosis • Metabolism of cholesterol • Essential fatty acid and eicosanodis phospholipids. • Sphingolipids. • Bile salts • Pathological conditions related to lipids.	2	4

MID-TERM EXAM				1	2
3	**Lipids (2)**	a1, a2, a3, b1, b2, b3, b4,b5	• Classifications and physiological roles • Biosynthesis of fats • Oxidation of fatty acids • Ketogenesis and ketosis • Metabolism of cholesterol • Essential fatty acid and eicosanodis phospholipids. • Sphingolipids. • Bile salts • Pathological conditions related to lipids.	2	4
4	**Proteins**	a1, a2, a3, b1, b2, b3, b4,b5	• Classification of aminoacides • General biochemical reaction of amino acids like • Transamination • Deamination • Decarboxylation • Peptides and polypeptides • Biosynthesis of proteins : role of DNA • Classifications and physiological roles of proteins • Metabolism of proteins • Urea cycle • Nitrogen balance • Pathological conditions related to proteins.	5	10 4
Course Review		a1, a2, a3, b1, b2, b3, b4,b5	Review of the course topics by discussion session.	1	2
FINAL - EXAM				1	2

TOTAL	16	32
Number of Weeks /and Units Per Semester	16 weeks	4 Units

B - Practical Aspect:				
Order	**Tasks/ Experiments**	**Number of Weeks**	**contact hours**	**Aligned Couse Intended Learning Outcomes CILOs**
1.	introduction to biochemistry chemistry Lab.: safety requirements, list of experiments, How to report, etc.	**1**	**2**	b4, b5, c1, c2, c3, d1, d2, d3
2.	**carbohydrates** monosaccharaides : physicochemical properties and in vitro identification & differentiation.	**2**	**4**	b4, b5, c1, c2, c3, d1, d2, d3
3.	**carbohydrates** disaccharides physicochemical properties and in vitro identification & differentiation.	**1**	**2**	b4, b5, c1, c2, c3, d1, d2, d3
4.	**carbohydrates** polysaccharides physicochemical properties and in vitro identification & differentiation.	**2**	**4**	b4, b5, c1, c2, c3, d1, d2, d3
5.	**Sampling and preserving of human samples : blood, urine**	**1**	**2**	b4, b5, c1, c2, c3, d1, d2, d3
6.	**Bioassay of blood glucose**	**1**	**2**	b4, b5, c1, c2, c3, d1, d2, d3
7.	**Lipids** physicochemical properties and in vitro identification of cholesterol.	**1**	**2**	b4, b5, c1, c2, c3, d1, d2, d3
8.	**Assay of cholesterol in human blood.**	**1**	**2**	b4, b5, c1, c2, c3, d1, d2, d3

9.	**Proteins:** physicochemical properties and in vitro identification of certain types of proteins	**1**	**2**	b4, b5, c1, c2, c3, d1, d2, d3
PRACTICAL EXAM		**1**	**2**	b4, b5, c1, c2, c3, d1, d2, d3
Total		**12**	**24 equivalent to 12 credit hours**	
Number of Weeks			**12**	

Teaching strategies of the course:
Lecture It is the most frequently employed teaching method to convey knowledge and explain theories to students in large groups (50-200) or in sessions, which consist of more than one group gathered in one classroom. The efficiency of lecturing can be enhanced by using techniques such as **Brain-storming**: It depends on stimulation of the student`s brain through a group of questions &/or **Concepts map**: which depends on sequencing of thoughts in the form of maps with horizontal or vertical relations & by using **learning aids** such as Data show projector
Laboratory practice: students doing experiments in labs individually or in small groups
Feed-back learning: students are individually asked to do perform quick tests (quiz) or to do certain assignments such lab. experiments, problems solving, homework, topics summarizing or internet search. The teacher will provide them feed-back correction & evaluation
Group projects: students work on a project in groups of 2 to 3 students. Important for learning by doing ,using the results in practical manner &for promoting team work skills

Assignments:				
No	**Assignments**	**Aligned CILOs**	**Week Due**	

1	**Individual**: the teacher provide the students with biochemical problems related to the studied topics. Every student is assigned to solve some of those problems individually.	d2, c4, c5	4-13	
2	**Group** : each group of students will be assigned to present a search report on one pathological condition related to disturbances in biochemical levels in the body.	d1, d2, d3, c4, c5	14	

Schedule of Assessment Tasks for Students During the Semester

Theoretical part assessment

No.	Assessment Method		Week Due	Mark	Proportion to Total course Assessment	Aligned Course Learning Outcomes (CILOs)
1	Term Works	Quizzes	4-13, 14	5	5	b1, b2, b3, b4, b5
		Assignments	7, 12	5	5	c3, c4, d1, d2, d3
2	Mid-semester exam (written exam)		7	10	10	a1, a2, a3, b1, b2, b3, b4, b5
3	Final exam (written exam)		16	50	50	a1, a2, a3, b1, b2, b3, b4, b5
TOTAL				70	70 %	70

Practical part assessment

No.	Assessment Method	Week Due	Mark	Proportion to Total	Aligned Course Learning Outcomes(CILOs)

					course Assessment	
1	Lab. Term works	Attitude	1-12	5	5	b4, b5, c1, c2,c3, d1, d2, d3
2		Accomplishments		5	5	
	Final exam (practical)		12	20	20	b4, b5, c1, c2,c3, d1, d2, d3
Total				30	30 %	

Learning Resources:
1- Required Textbook(s) (maximum two).
1. Pamela C. Champe, Lippincott's illustrated review in Biochemistry, 2010, Lippincott William & Wilkins
2- Essential References.
1. Hiram f. Gilbert , Basic concepts in biochemistry ; a student's survival guide, 2000, McGraw-Hill 2. Vyas . Pharmaceutical biochemistry
3-Electronic References
1- Archive of "International Journal of Biochemistry and Molecular Biology". - PMC (nih.gov) 2- International Journal of Biochemistry and Molecular Biology (scimagojr.com) 3- International Journal of Biochemistry and Molecular Biology - SCI Journal

Course Policies:	
1.	**Class Attendance:** At least 75 % of the course hours should be attended by the student. Otherwise, he/she will not be allowed to attend the final exam
2.	**Tardy:** any student who is late for more than 15 minutes from starting the lecture will not be allowed to attend the lecture and will be considered absent.
3.	**Exam Attendance/Punctuality:** any student who is late for more than 30 minutes from starting the exam will not be allowed to attend the exam and will be considered absent.
4.	**Assignments & Projects:**

	Assignments and projects will be assessed individually unless the teacher request for group work
5	**Cheating**: Cheating by any means will cause the student failure and he/she must re-study the course
6	**Plagiarism**: Plagiarism by any means will cause the student failure in the course . Other disciplinary procedures will be according to the college rules.

PHYSIOLOGY II

Course Identification and General Information:								
1	**Course Title:**	**PHYSIOLOGY II**						
2	**Course Code &Number:**	**PSL 262**						
3	**Credit hours:**	C.H						TOTAL
		Theoretical			P.	Tr.		
		L.	Tut.	S.				
		2	-	-	-	-		**2**
4	**Study level/ semester at which this course is offered:**	*(2ND) Year – (2ND) semester*						
5	**Pre –requisite (if any):**	• **General biology** • **Anatomy & histology** • **Physiology I**						
6	**Co –requisite (if any):**	**-**						
7	**Program (s) in which the course is offered:**	**Faculty of Medical Science**						
8	**Language of teaching the course:**	**ENGLISH**						
9	**Location of teaching the course:**	**IN THE UNIVERSITY**						

L: lecturing ; Tut: Tutorial , S: seminar ; P: practical ; Tr.: training

Course Description:
The course is complementary to the pre-requisite course (Physiology I) and both are designed to attain knowledge in the mechanism of normal body functions. It concerns with normal functions and regulations of blood, cardiovascular respiratory, alimentary, renal and immunity systems

Intended learning outcomes of the course (CILOs) and their alignment to Program Intended learning outcomes (PILOs), teaching strategies and assessment strategies		
Alignment CILOs to PILOs		
No.	**PILOs**	**CILOs**
1	**A1**	**a1.** Discuss the significance and normal functions of blood, cardiovascular respiratory, alimentary, renal and immunity systems
2		**a2. .** Identify the mechanisms and cells involved in functions of blood, cardiovascular respiratory, alimentary, renal and immunity systems
3		**a3.** Determine regulation of blood, cardiovascular respiratory, alimentary, renal and immunity systems
4		**a4.** Explain the biological role of certain endogenous substances in regulation blood, cardiovascular respiratory, alimentary, renal and immunity systems.
5	**B1**	**b1.** Identify the signs of normal functions of blood, cardiovascular respiratory, alimentary, renal and immunity systems
6		**b2.** Interpret the outcomes of normal functions of blood, cardiovascular respiratory, alimentary, renal and immunity systems
7	**C7**	**c1 .**Search efficiently for information using documented and electronic sources of information.
8		**c2.** Present and report his/her works correctly using appropriate writing rules and technologies media.
9	**D2**	**d1.** Demonstrate the skills of time management and self-learning.
10	**D3**	**d2.** Participate efficiently with his colleagues in a team work.

Alignment CILOs to teaching strategies and assessment strategies		
(a) Alignment Course Intended Learning Outcomes (CILOs) of knowledge& understanding to Teaching Strategies and Assessment Strategies		
Course Intended Learning Outcomes	**Teaching strategies**	**Assessment Strategies**
a1, a2, a3, a4	**Lecture**	**written exams**

(b) Alignment Course Intended Learning Outcomes (CILOs) of Intellectual Skills o Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	**Teaching strategies**	**Assessment Strategies**
b1, b2	**Lecture, Feed-back learning, Group-project.**	**Written exam, quizzes, assignments**
(c)Alignment Course Intended Learning Outcomes (CILOs) of Professional and Practical Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	**Teaching strategies**	**Assessment Strategies**
c1, c2	**Feed-back learning, Group-project**	**Assignments**
(d) Alignment Course Intended Learning Outcomes (CILOs) of Transferable Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	**Teaching strategies**	**Assessment Strategies**
d1, d2	**Group-project , feed-back learning**	**Assignment**

Course Content:					
Order	**Units/ Topics List**	**CILOs**	**Sub Topics List**	**No. of Weeks**	**contact hours**
1	**The Blood**	a1, a2, a3, a4, b1, b2	• Blood composition, functions and regulation of plasma, RBCs, WBCs and platelets. • Circulation: regulations and factors affecting venous return and blood flow.	2	4
2	**Cardiovascular system**	a1, a2, a3, a4, b1, b2	• the heart: functions and regulation of the heart work, physiologic parameters of the heart work: heart rate, cardiac output, heat rhythmicity, conductivity, contraction • Blood vessels: functions and regulation of the blood	3	6

			vessels (veins, arteries, capillaries), physiologic parameters of the blood vessels : blood pressure, peripheral vascular resistance.		
3	**Respiratory system**	a1, a2, b1, b2, b3, b4, b5, d2	• blood-gas interface, airways, the pleura, mechanism of breathing, Ventilation, Diffusion , Partial pressures of oxygen and carbon dioxide, Ventilation–perfusion matching, Gas transport in blood , Regulation of ventilation, Ventilator response to exercise.	2	4
				1	2
4	**Alimentary system**	a1, a2, a3, a4, b1, b2	• functions and regulations of the mouth, pharynx and the gastrointestinal tract (esophagus, stomach, small and large intestine • the digestive system associated – organs: the liver, gall bladder., spleen and pancreases	3	6
5	**Renal system**	a1, a2, a3, a4, b1, b2	• basic unit of the kidney • renal blood flow, glomerular filtration, active excretion tubular reabsorption, • regulation of plasma volume and plasma osmolality	2	4
6	**immune system**	a1, a2, a3, a4, b1, b2	• Definition , functions • Passive immunity and involved mechanisms and cells: naturally acquired,	3	6

			artificially acquired, transfer of activated T-cells • Active immunity and involved cells and mechanism naturally acquired, artificially acquired,		
FINAL - EXAM				1	2
TOTAL				16	32
Number of Weeks /and Units Per Semester				16 weeks	6 Units

Teaching strategies of the course:
Lecture It is the most frequently employed teaching method to convey knowledge and explain theories to students in large groups (50-200) or in sessions, which consist of more than one group gathered in one classroom. The efficiency of lecturing can be enhanced by using techniques such as **Brain-storming**: It depends on stimulation of the student`s brain through a group of questions &/or **Concepts map**: which depends on sequencing of thoughts in the form of maps with horizontal or vertical relations & by using **learning aids** such as Data show projector
Feed-back learning: students are individually asked to do perform quick tests (quiz) or to do certain assignments such lab. experiments, problems solving, homework, topics summarizing or internet search. The teacher will provide them feed-back correction & evaluation
Group projects: students work on a project in groups of 2 to 3 students. Important for learning by doing ,using the results in practical manner &for promoting team work skills

Assignments:				
No	**Assignments**	**Aligned CILOs**	**Week Due**	**Mark**

1	**Individual**: every student is assigned to do a search on one endogenous mediator that is involved in one of the physiological studied and provide a summary report on it.	b1, b2, c1, c2, d1, d2	4-13	6
2	**Group** : each group of students will be assigned to do a search on one of the physiological processes studied and make a summary report.	b1, b2, c1, c2, d1, d2	13	4

Schedule of Assessment Tasks for Students During the Semester

No.	Assessment Method		Week Due	Mark	Proportion to Total course Assessment	Aligned Course Learning Outcomes (CILOs)
1	Term Works	Quizzes	4-13, 14	10	10	b1, b2
		Assignments	7, 12	10	10	b1, b2, c1, c2, d1, d2
2	Mid-semester exam (written exam)		7	20	20	a1, a2, a3, a4, b1, b2
3	Final exam of (written exam)		16	60	60	a1, a2, a3, a4, b1, b2
TOTAL				100	100 %	

Learning Resources:

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

C.C.Chatterjee. Human physiology
Laurie kelly . Essential of human physiology for pharmacy, 2004, CRC press

2- Essential References

Hassan Hamdi, Fundamentals of human physiology
Salah Abu-Sitta , Synopsis of medical physiology
W. F. Ganong. Review of medical physiology

3-Electronic References
1-International Journal of Physiology (ijop.net) 2-About the Journal | International Journal of Physiology (ijop.net) 3-Archive of "International Journal of Physiology, Pathophysiology and Pharmacology". - PMC (nih.gov) 4- International Journal of Physiology, Health and Physical Education (physiologyjournals.com)

	Course Policies:
1	**Class Attendance:** At least 75 % of the course hours should be attended by the student. Otherwise, he/she will not be allowed to attend the final exam
2	**Tardy:** any student who is late for more than 15 minutes from starting the lecture will not be allowed to attend the lecture and will be considered absent.
3	**Exam Attendance/Punctuality:** any student who is late for more than 30 minutes from starting the exam will not be allowed to attend the exam and will be considered absent.
4	**Assignments & Projects:** Assignments and projects will be assessed individually unless the teacher request for group work
5	**Cheating**: Cheating by any means will cause the student failure and he/she must re-study the course
6	**Plagiarism**: Plagiarism by any means will cause the student failure in the course . Other disciplinary procedures will be according to the college rules.

Level Three

Course Specification

PHARMACEUTICS III

Course Identification and General Information:								
1	**Course Title:**	**PHARMACEUTICS III**						
2	**Course Code &Number:**	**PHT 311**						
3	**Credit hours:**	C.H						TOTAL
		Theoretical			P.	Tr.		
		L.	Tut.	S.				
		2	-	-	1	-		**3**
4	**Study level/ semester at which this course is offered:**	*(3RD) Year – (FIRST) semester*						
5	**Pre –requisite (if any):**	• **Pharmaceutics I & II**						
6	**Co –requisite (if any):**	**None**						
7	**Program (s) in which the course is offered:**	**Faculty of Medical Science**						
8	**Language of teaching the course:**	**ENGLISH**						
9	**Location of teaching the course:**	**IN THE UNIVERSITY**						

L: lecturing ; Tut: Tutorial , S: seminar ; P: practical ; Tr.: training

Course Description:
This course was designed as complimentary part of (Pharmaceutics I, II) courses. In contrast to the previous course which deal with liquid, semisolid or gaseous dosage form , this course provides knowledge and skills in designing solid pharmaceutical dosage, including powders, granules, tablets and capsules, which are globally the most widely manufactured dosage forms. In addition, The course covers sterile pharmaceutical products.

Intended learning outcomes of the course (CILOs) and their alignment to Program Intended learning outcomes (PILOs), teaching strategies and assessment strategies		
Alignment CILOs to PILOs		
No.	**PILOs**	**CILOs**
1	**A4**	**a1.** Describe the significance of pharmaceutics as art and science of dosage form design
2		**a2.** Explicit the types and roles of excipients included in solid and sterile dosage forms
3		**a3.** Describe the stages of designing pharmaceutical solid and sterile dosage forms
4	**A10**	**a4.** Describe the role of pharmacist in formulation of pharmaceutical solid and sterile dosage forms .
5	**A11**	**a5.** Explicit the general properties, advantages and disadvantages of pharmaceutical solid and sterile dosage forms .
6		**a6**. Discuss the principles, pharmacopeial requirements, methods of preparation, of various types of pharmaceutical solid and sterile dosage forms
7	**B2**	**b1 .** Classify pharmaceutical solid and sterile dosage forms
8		**b2.** Compare between various types of pharmaceutical solid and sterile dosage forms
9	**B3**	**b3.** Design pharmaceutical solid and sterile dosage forms
10	**C1**	**c1.** Handle efficiently and safely the chemical materials and tools used in the laboratory
11	**C2**	**c2.** Operate the instruments and perform experiments successfully in the laboratory
12	**C5**	**c3.** Employ the relevant way to prepare extemporaneous solid and sterile dosage forms
13	**C7**	**c4 .**Search efficiently for information using documented and electronic sources of information.
14		**c5** Present and report his/her works correctly using appropriate writing rules and technologies media.
15	**D1**	**d1.** Communicate effectively and behave in discipline with colleagues.
16	**D2**	**d2.** Demonstrate the skills of time management and self-learning.
17	**D3**	**d3.** Participate efficiently with colleagues in a team work.

Alignment CILOs to teaching strategies and assessment strategies		
(a) Alignment Course Intended Learning Outcomes (CILOs) of knowledge & understanding to Teaching Strategies and Assessment Strategies		
Course Intended Learning Outcomes	**Teaching strategies**	**Assessment Strategies**
a1, a2, a3	**Active Lecture**	**Written exams**
(b) Alignment Course Intended Learning Outcomes (CILOs) of Intellectual Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	**Teaching strategies**	**Assessment Strategies**
b1, b2, b3, b4	**Lecture-discussion, Feed-back learning**	**Written exams, quizzes**
(c)Alignment Course Intended Learning Outcomes (CILOs) of Professional and Practical Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	**Teaching strategies**	**Assessment Strategies**
c1, c2, c3	**laboratory practice**	**Lab. term works, final practical exam**
c4, c5	**feed-back learning, Group-project**	**Assignments**
(d) Alignment Course Intended Learning Outcomes (CILOs) of Transferable Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	**Teaching strategies**	**Assessment Strategies**
d1, d3	**laboratory practice, group-project**	**Practical assessment (Lab. attendance, attitude, practical exam), Assignments**
d2	**Lab. practice, group-project, feed-back learning**	**Practical assessment (Lab. attendance, attitude, practical exam), Assignments**

Course Content:					
A – Theoretical Aspect:					
No.	**Units/ Topics List**	**CILOs**	**Sub Topics List**	**No. of Weeks**	**contact hours**
1	**Solid dosage forms: (1) : Introduction & Powders**	a1, a2, a3, a4, a5, a6, b1, b2, b3	**Introduction** □ classifications of dosage forms □ Advantages and disadvantages □ Formulation consideration **Powders** □ Definitions, advantages, disadvantages □ classification (coarse, fine, microfine, etc; divided, bulk; compounded; medicated, cosmetic) □ Formulation considerations □Bulk powder, divided powder and Dusting powder:: formulation, examples □ Powders packaging □ Quality control evaluation	2	4
2	**Solid dosage forms: (2) Granules**	a1, a2, a3, a4, a5, a6, b1, b2, b3	□ Definition, advantages, disadvantages □ Method of preparation □ Formulation considerations **Effervescent granules** o Definition, composition o Method of preparation: dry (fusion) method, wet method o Determination of the required quantity of effervescent base in the formulation	1	2
3	**Solid dosage forms: (3) Tablets**	a1, a2, a3, a4, a5, a6,	□ Advantages and disadvantages. □ Types and Ideal properties of tablets □ Tablet excipients □ Tableting methods	5	

		b1, b2, b3	Steps, advantages and disadvantages (Direct compression, Dry granulation, Wet granulation) □ Tablet press machines □ Problems encountered during tablet formulation. □ Tablet coating Sugar coating , Film coating, Enteric coating, extended release coating : advantages, disadvantages, coating materials, process of coatings □ Quality evaluation		10
Mid-term exam				1	2
4	**Solid dosage forms: (4) Capsules**	a1, a2, a3, a4, a5, a6, b1, b2, b3	**(i) Hard gelatin capsules** • Advantages and disadvantages • Composition of capsule shell • types of capsule fill • Selection of capsule size. • Excipients used in hard gelatin capsule formulation. • Capsule filling process. • Storage of hard gelatin capsules. **(ii) Soft gelatin capsules** • Advantage and disadvantages. • Capsule shell composition. • types of capsule fill • Shapes and sizes. • Soft gelatin capsule formulation. • capsule filling process • specific properties:O2 impermeability, water content	3	6
5	**Sterile pharmaceutical dosage forms** (Introduction)	a1, a2, a3, a4, a5,	**Differences between sterile & non-sterile dosage forms :** • Definition : sterility, sterilization, preservation, pyrogenicity, pyrogen-free	1	

		a6, b1, b2, b3	• Review of sterilization methods and preservation of dosage forms • Aseptic techniques • Sources of contamination and methods of prevention • Design of aseptic area , Laminar flow benches services and maintenance) • Isotonicity of sterile preparations and methods of adjustment		2
6	**Sterile pharmaceutical dosage forms** (Parenteral preparations)	a1, a2, a3, a4, a5, a6, b1, b2, b3	• Preformulation factors o Route of administration of injection o Water for injection o Non-aqueous vehicles • Formulation consideration o Formulation of Infusion fluids • Prefilling , filling and package (small and large sacle) o Quality evaluation	2	4
7	**Sterile pharmaceutical dosage forms** (Ophthalmic preparations)	a1, a2, a3, a4, a5, a6, b1, b2, b3	• Anatomical features of the eye • Types of ophthalmic preparations • Formulation considerations • Sterilization and preservation. • Package • Quality evaluation	1	2
FINAL - EXAM				1	2
TOTAL				16	32
Number of Weeks /and Units Per Semester				16 weeks	7 Units

B - Practical Aspect:				
Order	Tasks/ Experiments	Number of Weeks	contact hours	Aligned Couse Intended Learning Outcomes CILOs
1	Preparation of tablets using wet granulation method : paracetamol tablets	1	2	b3, c1,c2, c3, d1, d2, d3
2	Preparation of tablets using wet granulation method : mefenamic acid tablets	1	2	b3, c1,c2, c3, d1, d2, d3
3	Preparation of tablets using direct compression method : aspirin tablets	1	2	b3, c1,c2, c3, d1, d2, d3
4	film-coating of tablets mefenamic acid	1	2	b3, c1,c2, c3, d1, d2, d3
5	Preparation of hard gelatin capsules (Manual): aspirin	1	2	b3, c1,c2, c3, d1, d2, d3
6	Preparation of hard gelatin capsules (Manual): paracetamol	1	2	b3, c1,c2, c3, d1, d2, d3
7	Preparation of I.V. admixtures : DNS + vitamin C + vitamin B complex	1	2	b3, c1,c2, c3, d1, d2, d3
8	Preparation of parenteral solutions from parenteral powders : reconstitution of cefuroxime sodium vial	1	2	b3, c1,c2, c3, d1, d2, d3
9	Preparation of Glycerin suppositories.	1	2	b3, c1,c2, c3, d1, d2, d3
10	Preparation of sterile NaCl eye wash.	1	2	b3, c1,c2, c3, d1, d2, d3
PRACTICAL EXAM		1	2	b3, c1,c2, c3, d1, d2, d3
Total		11	22	

Teaching strategies of the course:
Lecture It is the most frequently employed teaching method to convey knowledge and explain theories to students in large groups (50-200) or in sessions, which consist of more than one group gathered in one classroom. The efficiency of lecturing can be enhanced by using techniques such as **Brain-storming**: It depends on stimulation of the student`s brain through a group of questions &/or **Concepts map**: which depends on sequencing of thoughts in the form of maps with horizontal or vertical relations & by using **learning aids** such as Data show projector
Laboratory practice: students doing experiments in labs individually or in small groups
Feed-back learning: students are individually asked to do perform quick tests (quiz) or to do certain assignments such lab. experiments, problems solving, homework, topics summarizing or internet search. The teacher will provide them feed-back correction & evaluation
Group projects: students work on a project in groups of 2 to 3 students. Important for learning by doing ,using the results in practical manner &for promoting team work skills

Assignments:

No	Assignments	Aligned CILOs	Week Due	
1	**Individual**: every student is assigned to present a search report supported with images on 5 trade names (commercial preparations) of the studied dosage forms	c4, c5, d2	7	
2	**Group** :every group is assigned to present an illustrating videos on lab. And industrial preparation of 3 types of studies dosage forms.	c4, c5, d1, d2, d3	12	

Schedule of Assessment Tasks for Students During the Semester						
Theoretical part assessment						
No.	**Assessment Method**		**Week Due**	**Mark**	**Proportion to Total course Assessment**	**Aligned Course Learning Outcomes (CILOs)**
1	Term Works	Quizzes	4-13, 14	5	5	b1, b2, b3
		Assignments	7, 12	5	5	c4, c5, d1, d2, d3
2	Mid-semester exam of theoretical part (written exam		7	10	10	a1, a2, a3, b1
3	Final exam of theoretical part (written exam)		16	50	50	a1, a2, a3, a4, a5, a6, b1, b2, b3
TOTAL				70	70 %	70

Practical part assessment						
No.	**Assessment Method**		**Week Due**	**Mark**	**Proportion to Total course Assessment**	**Aligned Course Learning Outcomes(CILOs)**
1	Lab. Term works	Attitude	1-12	5	5	c1, c2, c3, d1, d2, d3
2		Accomplishments		5	5	
	Final exam (practical)		12	20	20	c1, c2, c3, d1, d2, d3
Total				30	30 %	

Learning Resources
1- Required Textbook(s) (maximum two).
1. Aulton M.E., Pharmaceutics: the science of dosage form design, 2002, Churchill Livingstone, UK 2. Ansel`s Pharmaceutical dosage forms and drug delivery system, 2011, Lippincott Williams and Wilkins, USA
2- Essential References.
Rawlins. Bentley s of text book of pharmaceutics Kasture pharmaceutics Raje. pharmaceutics Raph. practical pharmaceutics
3-Electronic References
1- https://www.jpharmsci.org 2- Journal of Pharmaceutical Sciences | ScienceDirect.com by Elsevier 3- Journal of Pharmaceutical Sciences - Wiley Online Library 4- Journal of Pharmaceutical Sciences: List of Issues - Wiley Online Library

Course Policies:	
1	**Class Attendance:** At least 75 % of the course hours should be attended by the student. Otherwise, he/she will not be allowed to attend the final exam
2	**Tardy:** any student who is late for more than 15 minutes from starting the lecture will not be allowed to attend the lecture and will be considered absent.
3	**Exam Attendance/Punctuality:** any student who is late for more than 30 minutes from starting the exam will not be allowed to attend the exam and will be considered absent.
4	**Assignments & Projects:** Assignments and projects will be assessed individually unless the teacher request for group work
5	**Cheating**: Cheating by any means will cause the student failure and he/she must re-study the course
6	**Plagiarism**: Plagiarism by any means will cause the student failure in the course . Other disciplinary procedures will be according to the college rules.

PHARMACOLOGY I

Course Identification and General Information:								
1	**Course Title:**	**PHARMACOLOGY I**						
2	**Course Code &Number:**	**PHL 321**						
3	**Credit hours:**	**C.H**						**TOTAL**
		Theoretical			**P.**	**Tr.**		
		L.	**Tut.**	**S.**				
		2	-	-	1	-		**3**
4	**Study level/ semester at which this course is offered:**	*(3RD) Year – (FIRST) semester*						
5	**Pre –requisite (if any):**	• **Physiology I, II**						
6	**Co –requisite (if any):**	**Medicinal Chemistry I**						
7	**Program (s) in which the course is offered:**	**Faculty of Medical Science**						
8	**Language of teaching the course:**	**ENGLISH**						
9	**Location of teaching the course:**	**IN THE UNIVERSITY**						

L: lecturing ; Tut: Tutorial , S: seminar ; P: practical ; Tr.: training

Course Description:
The course provides the students with knowledge of mechanisms of drugs on the body including drug-receptors interaction and effect of body on drugs. The course also deals with the study of pharmacodynamic and pharmacokinetics of drugs affecting autonomic nervous system, skeletal muscles and drugs used for eye and alimentary system disorders.

Intended learning outcomes of the course (CILOs) and their alignment to Program Intended learning outcomes (PILOs), teaching strategies and assessment strategies		
2. Alignment CILOs to PILOs		
No.	**PILOs**	**CILOs**
1	**A5**	**a1.** Identify the actions of medicines in human body, their therapeutic uses, adverse effects drug interactions and interactions
2	**A8**	**a2.** Describe the pharmacokinetics of drugs.
3	**A10**	**a3.** Describe the role of pharmacist in providing correct information on rational use of medications.
4	**B2**	**b1 .**Classify drugs used for disorders of drugs affecting autonomic nervous system, skeletal muscles and drugs used for eye and alimentary system disorders.
5		**b2.** Compare between therapeutically related drugs based on drug benefits (in particular efficacy and potency)and drug limitations.
6	**C7**	**c1 .** Advise the patient and healthcare professional to optimize medicine use
7	**D2**	**d1.** Demonstrate time management and decision making skills.

Alignment CILOs to teaching strategies and assessment strategies		
(a) Alignment Course Intended Learning Outcomes (CILOs) of knowledge & understanding to Teaching Strategies and Assessment Strategies		
Course Intended Learning Outcomes	**Teaching strategies**	**Assessment Strategies**
a1, a2, a3	**Active Lecture**	**Written exams**
(b) Alignment Course Intended Learning Outcomes (CILOs) of Intellectual Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	**Teaching strategies**	**Assessment Strategies**
b1	**Active Lecture**	**Written exams**
b2	**Lecture, feed-back learning**	**Written exam , quizzes, assignments**
(c)Alignment Course Intended Learning Outcomes (CILOs) of Professional and Practical Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	**Teaching strategies**	**Assessment Strategies**

c1	**feed-back learning**	**assignment**
(d) Alignment Course Intended Learning Outcomes (CILOs) of Transferable Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	**Teaching strategies**	**Assessment Strategies**
d1	**Feed-back learning**	**Assignments**

Course Content:

Order	Units/ Topics List	CILOs	Sub Topics List	No. of Weeks	contact hours
1	**Introduction to pharmacology** **(General pharmacology)**	a1, a2, a3, b1	• Definition, brief history • Divisions of pharmacology (pharmacokinetics, pharmacodynamics : definitions, field of concern) • Dose-Response curve • Types of dose (effective, lethal), therapeutic index • Drug efficacy and drug potency • Routes of Drug administration • Mechanisms of drug action : drug targets (receptors, enzymes, ion channels, etc). • receptor theory , types of receptors, affinity, specificity, selectivity, agonist, antagonist, competitive and non-competitive , reversible and irreversible. • Enzymes as drug targets : types, examples, mechanisms • Ion channels as drug target : types, examples, mechanisms • Types of drug adverse effects with examples	3	6

			• Types of drug interactions effects with examples • Pharmacokinetics (in brief) : drug absorption, distribution, metabolism, excretion		
2	**Drugs acting on the autonomics nervous system**	a1, a2, a3, b1	**Pharmacokinetics, Pharmacodynamics [drug benefits : MOA, therapeutic action, indications, efficacy and potency) and drug limitation (side effects, precautions, contraindications) and comparison of :** • Indirectly sympathomimetics • Direct symapthomimetics: adrenergic agonists • Indirectly sympatholytic drugs • Directly sympatholytic drugs : adrenergic blocking agents	2	4
	Drugs acting on the autonomics nervous system	a1, a2, a3, b1	**Pharmacokinetics, Pharmacodynamics [drug benefits : MOA, therapeutic action, indications, efficacy and potency) and drug limitation (side effects, precautions, contraindications) and comparison of :** • Indirectly parasympathomimetics • Direct parasympathomimetics : cholinergic agonists • Indirectly parasympatholytic drugs • Directly parasympatholytic drugs : cholinergic blocking agents • **Drugs affecting autonomic ganglia:** ganglia stimulants , ganglia blockers	2	4
MID-TERM EXAM				1	2

3	**Drugs affecting skeletal muscles**	a2, a3, a4, b1, b2, b3, b4, b5, c1, d2	**Pharmacokinetics, Pharmacodynamics [drug benefits : MOA, therapeutic action, indications, efficacy and potency) and drug limitation (side effects, precautions, contraindications) and comparison of :** • Neuromuscular blocking agents • Central muscles relaxants	1	2
4	**Eye pharmacology**	a2, a3, a4, b1, b2, b3, b4, b5, c1, d2	**Pharmacokinetics, Pharmacodynamics [drug benefits : MOA, therapeutic action, indications, efficacy and potency) and drug limitation (side effects, precautions, contraindications) and comparison of :** • Parasympathomimetic and parasympatholytics agents used for eye disorders. • Adrenergic agonists and antagonists used for eye disorders • Carbonic anhyrdase inhibitors • Prostaglandin analogues • Osmotic agents " ***Topics of Anti-inflammatory, antihistamins, antibiotics used for eye disorders will be discussed in next pharmacology courses"***	2	4
5	**Drugs for alimentary system disorders**	a1, a2, a3, b1	**Physicochemical properties, synthesis, chemical & common names, structure-activity relationship, metabolism of** • Antacids and Drugs for Peptic Ulcer • Anti- emetics • Laxatives	3	6

			• Anti-diarrheal • Antispasmodics • Drugs for irritable colon • Hepatic protectives • Drugs for gall bladder disorders		
Course Review		a1, a2, a3, b1	Review of the course topics by discussion session.	1	2
FINAL - EXAM				1	2
TOTAL				16	32
Number of Weeks /and Units Per Semester				16 weeks	5 Units

PRACTICAL PART:
1. Introduction to experimental pharmacology and pharmacy. Sources of drugs.
2. Demonstration of common dosage forms
3. Sources of drug information
4. Animal ethics and good laboratory practice
5. Routes of administration of drugs
6. Study of absorption and excretion of drugs in man
7. Therapeutic drug monitoring
8. Adverse drug reaction monitoring
9. Prescription writing
10. Calculation of drug dosage and percentage solutions

Teaching strategies of the course:
Lecture It is the most frequently employed teaching method to convey knowledge and explain theories to students in large groups (50-200) or in sessions, which consist of more than one group gathered in one classroom. The efficiency of lecturing can be enhanced by using techniques such as **Brain-storming**: It depends on stimulation of the student`s brain through a group of questions &/or **Concepts map**: which depends on sequencing of thoughts in the form of maps with horizontal or vertical relations & by using **learning aids** such as Data show projector
Feed-back learning: students are individually asked to do perform quick tests (quiz) or to do certain assignments such lab. experiments, problems solving, homework, topics summarizing or internet search. The teacher will provide them feed-back correction & evaluation

Assignments:				
No	**Assignments**	**Aligned CILOs**	**Week Due**	
1	**Individual**: every student is assigned to solve a list of problems related to advising healthcare of medicines use based comparison of drug benefits and risks for specific patients e.g. CVS patients, renal failure patients, etc.	b1, c1, d1	6-12	

Schedule of Assessment Tasks for Students During the Semester						
No.	**Assessment Method**		**Week Due**	**Mark**	**Proportion of Total course Assessment**	**Aligned Course Learning Outcomes (CILOs)**
1	Term Works	Quizzes	4-13, 14	10	10	b2
		Assignments	7, 12	10	10	b1, c1, d1
2	Mid-semester exam (written exam)		7	20	20	a1, a2, a3, b1
3	Final exam (written exam)		16	60	60	a1, a2, a3, b1
TOTAL				100	100 %	

Learning Resources:
1- Required Textbook(s) (maximum two).
Katzung –Basic and Clinical Pharmacology, (2007), McGraw-Hill Rang, Dale and Ritter. Pharmacology, (2007), Churchill Livingstone.
2- Essential References.
1. Richard A. Harvey. Lippincott's pharmacology, 2000, Lippincott William and Wilkins. 2. Udaykumar. Text book of medical pharmacology
3- Electronic References
1.E-journals A–Z: Pharmacology | HSLS (pitt.edu)

2.Journal of Pharmacy and Pharmacology - Wiley Online Library
3. British Journal of Pharmacology - Wiley Online Library
4. Home | Journal of Pharmacology and Experimental Therapeutics (aspetjournals.org)

	Course Policies:
1	**Class Attendance:** At least 75 % of the course hours should be attended by the student. Otherwise, he/she will not be allowed to attend the final exam
2	**Tardy:** any student who is late for more than 15 minutes from starting the lecture will not be allowed to attend the lecture and will be considered absent.
3	**Exam Attendance/Punctuality:** any student who is late for more than 30 minutes from starting the exam will not be allowed to attend the exam and will be considered absent.
4	**Assignments & Projects:** Assignments and projects will be assessed individually unless the teacher request for group work
5	**Cheating**: Cheating by any means will cause the student failure and he/she must re-study the course
6	**Plagiarism**: Plagiarism by any means will cause the student failure in the course . Other disciplinary procedures will be according to the college rules.

General Microbiology

Course Identification and General Information:								
1	**Course Title:**	**General Microbiology**						
2	**Course Code &Number:**	**PHT 331**						
3	**Credit hours:**	**C.H**						**TOTAL**
		Theoretical			**P.**	**Tr.**		
		L.	**Tut.**	**S.**				
		2	**-**	**-**	**1**	**-**		**3**
4	**Study level/ semester at which this course is offered:**	*(THIRD) Year – (1ST) semester*						
5	**Pre –requisite (if any):**	• **General biology**						
6	**Co –requisite (if any):**	**none**						
7	**Program (s) in which the course is offered:**	**Faculty of Medical Science**						
8	**Language of teaching the course:**	**ENGLISH**						
9	**Location of teaching the course:**	**IN THE UNIVERSITY**						

L: lecturing ; Tut: Tutorial , S: seminar ; P: practical ; Tr.: training

Course Description:
The course deals study of types, microscopical features, identification and common infectious diseases caused by pathogenic microorganisms including bacteria, fungi, rickettsia and viruses. The course also concerns with applications of microbiology in pharmacy including sterilization, preservation, pharmacopeial microbial content, sampling, culturing and antimicrobial sensitivity test.

Intended learning outcomes of the course (CILOs) and their alignment to Program Intended learning outcomes (PILOs), teaching strategies and assessment strategies		
Alignment CILOs to PILOs		
No.	**PILOs**	**CILOs**
1	**A1**	**a1.** Identify the microscopical features of common pathogenic microorganisms including bacteria, fungi, rickettsia and others.
2		**a2.** Describe pathogenicity and management common pathogenic microorganisms including bacteria, fungi, rickettsia and others.
3	**A4**	**a3**. Discuss the principles and technologies of microbiology applied in pharmacy for microbial investigations, product preservation, sterilization and assessment of antimicrobial activity.
4	**A10**	**a4.** Describe the pharmacist role in applying microbiology knowledge for pharmaceutical applications.
5	**B1**	**b1.** Interpret the data of inhibition zone obtained from antimicrobial activity test.
6		**b2.** Differentiate between similar microorganisms such as streptococci and staphylococci using microscopical methods
7	**B2**	**b3 .**Classify bacteria, fungi , rickettsia and viruses
8	**B4**	**b4.** Select standard operation procedures to culture, isolate , identify pathogenic microorganism and testing antimicrobial activity.
9	**C1**	**c1.** Handle efficiently and safely the chemical materials , human biological samples, microbial samples and tools used in the laboratory
10		**c2.** Operate the instruments and perform experiments successfully in the laboratory
11	**C2**	**c3 .**Search efficiently for information using documented and electronic sources of information.
12	**C3**	**c4.** Present and report his/her works correctly using appropriate writing rules and technologies media.
13	**D1**	**d1.** Communicate effectively and behave in discipline with colleagues.
14	**D2**	**d2.** Demonstrate the skills of time management and self-learning.
15	**D3**	**d3.** Participate efficiently with his colleagues in a team work.
Alignment CILOs to teaching strategies and assessment strategies		
(a) Alignment Course Intended Learning Outcomes (CILOs) of knowledge & understanding to Teaching Strategies and Assessment Strategies		

Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
a1, a2, a3, a4	Active Lecture	Written exams
(b) Alignment Course Intended Learning Outcomes (CILOs) of Intellectual Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	**Teaching strategies**	**Assessment Strategies**
b1, b2	laboratory practice	lab. term work, practical final exam
b3	Lecture, feed-back learning	Written exams, quizzes
B4	Lecture, lab. practice	Written exams, lab. term work, practical final exam
(c)Alignment Course Intended Learning Outcomes (CILOs) of Professional and Practical Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	**Teaching strategies**	**Assessment Strategies**
c1, c2,	laboratory practice	Lab. term works, final practical exam
c3, c4	feed-back learning, Group-project	Assignments
(d) Alignment Course Intended Learning Outcomes (CILOs) of Transferable Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	**Teaching strategies**	**Assessment Strategies**
d1, d3	laboratory practice, group-project	Lab. term works, final practical exam, Assignments
d2	Lab. practice, group-project, feed-back learning	Lab. term works, final practical exam, Assignments

Course Content:					
A – Theoretical Aspect:					
Order	**Units/ Topics List**	**CILOs**	**Sub Topics List**	**No. of Weeks**	**contact hours**
1	**Introduction to Microbiology**	a1, a2, a3, a4	• Definition, brief history, role in medical sciences • Prokaryotes and Eukaryotes • Role of microorganisms in life • Classification of microorganisms.	1	2
2	**Bacteria**	a1, a2, a3, a4, b3, b4	• Nomenclature , biological process : (growth, reproduction , nutrition) • Classification • Study of the microscopical features , common infections and culture media of pathogenic bacteria e.g. Staphylococci , Streptococci, Neisseriae, E.coli, pseudomonas, , Mycobacteria , Vibrio , Mycoplasma , Ureaplasma, Chlamydia etc.	3	6
3	**Micro-organisms other than bacteria**	a1, a2, a3, a4, b3, b4	• **Fungi**: Types, morphology, Reproduction and physiology. Pathogenic yeasts , dermatophytes, aspergillus • **Rickettsiae**: Introduction, characteristics, Pathogenic rickettsiae, laboratory diagnosis of rickettsiai diseases. • **Viruses**: History of viruses. Classification. Characteristics. Reproduction and culture of	4	8

			viruses. Virus inhibition. Control of virus infections.		
MID-TERM EXAM				1	2
4	**Application of microbiology in pharmacy**	a1, a2, a3, a4, b3, b4	• Methods of Preservation and sterilization of pharmaceutical preparations • common pharmaceutical preservatives • Pharmacopeial requirements of microbial contents in various pharmaceutical dosage forms. • Procedures for microbial content test • Culture media preparation • Study of antimicrobial activity of drugs : methods, culture media, etc.	5	10
Course Review		a1, a2, a3, a4, b1, b2, b3, b4, b5, b6 , d2	Review of the course topics by discussion session.	1	2
FINAL - EXAM				1	2
TOTAL				16	32
Number of Weeks /and Units Per Semester				16 weeks	4 Units

B - Practical Aspect:				
Order	**Tasks/ Experiments**	**Number of Weeks**	**contact hours**	**Aligned Couse Intended Learning Outcomes CILOs**

1	**introduction to the Lab.: safety requirements, list of experiments, How to report, source of errors, etc.**	**1**	**2**	**b1, b2,b4, ,c1, c2, c4, d1, d2, d3**
2	**Sterilization & disinfection of plastic and glasswares**	**1**	**2**	**b1, b2,b4, ,c1, c2, c4, d1, d2, d3**
3	**Preparation of culture media and inoculums for microorganisms**	**1**	**2**	**b1, b2,b4, ,c1, c2, c4, d1, d2, d3**
4	**Wet preparation & Microscopical characteristics differentiation of bacteria: streptococci, staphylococci, E.coli, pseudomonas aueroginoa, Nesseria, M. tuberculosis.**	**3**	**6**	**b1, b2,b4, ,c1, c2, c4, d1, d2, d3**
5	**Microscopical characteristics differentiation of Fungi Candida albicans.**	**1**	**2**	**b1, b2,b4, ,c1, c2, c4, d1, d2, d3**
6	**Antimicrobial activity of certain antimicrobial disks.**	**1**	**2**	**b1, b2,b4, ,c1, c2, c4, d1, d2, d3**
7	**Antimicrobial activity of certain antimicrobial dermatological products using dilution method**	**1**	**2**	**b1, b2,b4, ,c1, c2, c4, d1, d2, d3**
8	**Determination of microbial content (e.g. staphylococci) in pharmaceutical product : paracetamol syrup**	**1**	**2**	**b1, b2,b4, ,c1, c2, c4, d1, d2, d3**
9	**Testing of sterility of pharmaceutical products**	**1**	**2**	**b1, b2,b4, ,c1, c2, c4, d1, d2, d3**
PRACTICAL EXAM		**1**	**2**	
Total		**12**	**24**	
Number of Weeks			**12**	

Teaching strategies of the course:
Lecture It is the most frequently employed teaching method to convey knowledge and explain theories to students in large groups (50-200) or in sessions, which consist of more than one group gathered in one classroom. The efficiency of lecturing can be enhanced by using techniques such as **Brain-storming**: It depends on stimulation of the student`s brain through a group of questions &/or **Concepts map**: which depends on sequencing of thoughts in the form of maps with horizontal or vertical relations & by using **learning aids** such as Data show projector
Laboratory practice: students doing experiments in labs individually or in small groups
Feed-back learning: students are individually asked to do perform quick tests (quiz) or to do certain assignments such lab. experiments, problems solving, homework, topics summarizing or internet search. The teacher will provide them feed-back correction & evaluation
Group projects: students work on a project in groups of 2 to 3 students. Important for learning by doing ,using the results in practical manner &for promoting team work skills

Assignments:

No	Assignments	Aligned CILOs	Week Due	Mark
1	**Individual**: every student is assigned to do a search report on the pharmacopeial specification of microbial content and sensitivity inhibition zone of one of the studied microbial pathogen.	c3, c4, d2	4-13	3
2	**Group** : each group of students will be assigned to provide a search-based report on natural substances (e.g. plant, minerals) that have antimicrobial activity against one of the studied microbial pathogen.	c3, c4, d1, d2, d3	14	2

Schedule of Assessment Tasks for Students During the Semester						
Theoretical part assessment						
No.	**Assessment Method**		**Week Due**	**Mark**	**Proportion to Total course Assessment**	**Aligned Course Learning Outcomes (CILOs)**
1	Term Works	Quizzes	4-13, 14	5	5	b3
		Assignments	7, 12	5	5	c3, c4, d1, d2, d3
2	Mid-semester exam (written exam)		7	10	10	a1, a2, a3, a4, b3, b4
3	Final exam (written exam)		16	50	50	a1, a2, a3, a4, b3, b4
TOTAL				70	70 %	70

Practical part assessment						
No.	**Assessment Method**		**Week Due**	**Mark**	**Proportion to Total course Assessment**	**Aligned Course Learning Outcomes(CILOs)**
1	Lab. Term works	Attitude	1-12	5	5	**b1, b2,b4, ,c1, c2, c4, d1, d2, d3**
2		Accomplishments		5	5	
	Final exam (practical)		12	20	20	**b1, b2,b4, ,c1, c2, c4, d1, d2, d3**
Total				30	30 %	

Learning Resources:
1- Required Textbook(s) (maximum two).
Chandrakanty pharmaceutical microbiology

2- Essential References.
1. W. B. Hugo: pharmaceutical microbiology, 1998, Black well science LTD. 2. Aulton, pharmaceutics the science of dosage form design, 2002, Churchill Livingston 3. Kar. Pharmaceutical microbiology
3- Electronic Refences
1. Home | Journal of Pharmacology and Experimental Therapeutics (aspetjournals.org) 2. Frontiers in Pharmacology 3. Pharmacology - Home - Karger Publishers 4. Journal of Pharmacology and Pharmacotherapeutics: SAGE Journals (sagepub.com)

Course Policies:	
1	**Class Attendance:** At least 75 % of the course hours should be attended by the student. Otherwise, he/she will not be allowed to attend the final exam
2	**Tardy:** any student who is late for more than 15 minutes from starting the lecture will not be allowed to attend the lecture and will be considered absent.
3	**Exam Attendance/Punctuality:** any student who is late for more than 30 minutes from starting the exam will not be allowed to attend the exam and will be considered absent.
4	**Assignments & Projects:** Assignments and projects will be assessed individually unless the teacher request for group work
5	**Cheating**: Cheating by any means will cause the student failure and he/she must re-study the course
6	**Plagiarism**: Plagiarism by any means will cause the student failure in the course . Other disciplinary procedures will be according to the college rules.

Metabolic Biochemistry

Course Identification and General Information:								
1	**Course Title:**	**Metabolic Biochemistry**						
2	**Course Code &Number:**	**PHL 341**						
3	**Credit hours:**	**C.H**						TOTAL
		Theoretical			**P.**	**Tr.**		
		L.	**Tut.**	**S.**				
		2	-	-	1	-		**3**
4	**Study level/ semester at which this course is offered:**	*(Third) Year – (FRIST) semester*						
5	**Pre –requisite (if any):**	• **Biochemistry & Molecular Biology**						
6	**Co –requisite (if any):**	-						
7	**Program (s) in which the course is offered:**	**Faculty of Medical Science**						
8	**Language of teaching the course:**	**ENGLISH**						
9	**Location of teaching the course:**	**IN THE UNIVERSITY**						

L: lecturing ; Tut: Tutorial , S: seminar ; P: practical ; Tr.: training

Course Description:
This course is complementary to (Medical biochemistry I). It concerns with study of types, regulation, chemical structure, biosynthesis, metabolic pathways and physiological/pathological roles of biochemical compounds including enzymes, nucleic acids and hormones. Moreover, the course provides essential knowledge in types, chemical properties, functions and fate in the body as well as pathological conditions resulted from disturbance of extraneous supplements including vitamins and minerals.

Intended learning outcomes of the course (CILOs) and their alignment to Program Intended learning outcomes (PILOs), teaching strategies and assessment strategies		
1. Alignment CILOs to PILOs		
No.	**PILOs**	**CILOs**
1	**A1**	**a1.** Identify the roles of biochemical compounds, vitamins and minerals in human body.
2		**a2.** Explicit the physiological/pathological involvement of enzymes, nucleic acids and hormones, vitamins and minerals.
3	**A3**	**a3**. Explain the physicochemical properties of carbohydrates, proteins and lipids..
4	**B1**	**b1.** Interpret body diseases resulted from disturbances in levels of enzymes, nucleic acids and hormones, vitamins and minerals.
5		**b2.** Predict the outcomes of biochemical reactions involving enzymes, nucleic acids and hormones, vitamins and minerals.
6	**B2**	**B3 .** Classify enzymes, nucleic acids and hormones, vitamins and minerals..
7		**b3.** Compare between metabolic reactions of enzymes, nucleic acids and hormones, vitamins and minerals.
8	**B4**	**b4.** Select standard operation procedure for isolation of enzymes, nucleic acids and hormones, vitamins and minerals from blood.
9		**b5.** Choose a method for identification of enzymes, nucleic acids and hormones, vitamins and minerals.
10	**C1**	**c1.** Handle efficiently and safely the chemical materials and tools used in the laboratory
11	**C2**	**c2.** Operate the instruments and perform experiments successfully in the laboratory.
12	**C3**	**c3 .** Bioassay enzymes, nucleic acids and hormones, vitamins and minerals in blood.
13	**C7**	**c4 .**Search efficiently for information using documented and electronic sources of information.
14		**c5.** Present and report his/her works correctly using appropriate writing rules and technologies media.
15	**D1**	**d1.** Communicate effectively and behave in discipline with colleagues.

16	**D2**	**d2.** Demonstrate the skills of time management and self-learning.
17	**D3**	**d3.** Participate efficiently with his colleagues in a team work.

Alignment CILOs to teaching strategies and assessment strategies		
(a) Alignment Course Intended Learning Outcomes (CILOs) of knowledge & understanding to Teaching Strategies and Assessment Strategies		
Course Intended Learning Outcomes	**Teaching strategies**	**Assessment Strategies**
a1, a2, a3	**Lecture, laboratory practice**	**written exams , Lab. term work, final practical exam**
(b) Alignment Course Intended Learning Outcomes (CILOs) of Intellectual Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	**Teaching strategies**	**Assessment Strategies**
b1, b2, b3	**lecture, feed-back learning**	**Written exam, quizzes**
b4, b5	**Lecture, , feed-back learning, Lab. practice**	**written exam , quizzes, Lab. term work, final practical exam**
(c)Alignment Course Intended Learning Outcomes (CILOs) of Professional and Practical Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	**Teaching strategies**	**Assessment Strategies**
c1, c2, c3	**Lab. Practice**	**Lab. term work, final practical exam**
c4, c5	**Group-project, feed-back learning**	**Assignment**
(d) Alignment Course Intended Learning Outcomes (CILOs) of Transferable Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies

d1, d3	**Group-project , Lab. practice**	**Assignment s, Lab. term work, final practical exam**
d2	**Feed-back learning , Lab. practice**	**Assignment s, Lab. term work, final practical exam**

Course Content:

A – Theoretical Aspect:

Order	Units/ Topics List	CILOs	Sub Topics List	No. of Weeks	contact hours
1	**Nucleic acids**	a1, a2, a3, b1, b2, b3, b4,b5	• Basic structures • Types (DNA, RNA), roles , biosynthesis and catabolism • DNA replication and mutation • DNA repair mechanism	2	4
2	**Enzymes**	a1, a2, a3, b1, b2, b3, b4,b5	• Classifications and physiological roles • Nomenclature • Factors affecting enzyme action • Enzyme kinetics • Cytochrome P450 enzymes : classification, roles, stimulation and inhibition • Pathological conditions related to enzymes.	4	8
			MID-TERM EXAM	1	2
3	**Hormones and related factors**	a1, a2, a3, b1, b2, b3, b4,b5	Classification, chemical structures, biosynthesis , catabolism and Pathological conditions related to : • Anterior Pituitary gland hormones • Posterior pituitary gland hormones	5	10

			• Corticosteroids • Thyroxin • Insulin • Sex hormones • Others		
4	**Vitamins & minerals & trace elements**	a1, a2, a3, b1, b2, b3, b4,b5	• Vitamins : Classifications , physiological/pathological roles. Sources , chemical structures, absorption, distribution , metabolic pathways . elimination, daily requirements • Minerals and trace elements: physiological/pathological roles. Sources , salts, absorption, distribution , metabolic pathways . elimination, daily requirements	3	6
Course Review		a1, a2, a3, b1, b2, b3, b4,b5	Review of the course topics by discussion session.	1	2
FINAL - EXAM				1	2
TOTAL				16	32
Number of Weeks /and Units Per Semester				16 weeks	4 Units

B - Practical Aspect:				
Order	**Tasks/ Experiments**	**Number of Weeks**	**contact hours**	**Aligned Couse Intended Learning Outcomes CILOs**
1.	Isolation of DNA from saliva human sample	**1**	2	b4, b5, c1, c2, c3, d1, d2, d3
2.	Identification, isolation and bioassay of liver-related enzymes in blood	**2**	**4**	b4, b5, c1, c2, c3, d1, d2, d3
3.	Identification, isolation and bioassay of Myocardial infarction-related enzymes in blood	**1**	4	b4, b5, c1, c2, c3, d1, d2, d3
4.	bioassay of thyroid hormones	**1**	2	b4, b5, c1, c2, c3, d1, d2, d3
5.	bioassay of sex hormones : testosterone, estrogen in blood	**2**	4	b4, b5, c1, c2, c3, d1, d2, d3
6.	Identification, isolation and bioassay of minerals in urine	**1**	2	b4, b5, c1, c2, c3, d1, d2, d3
PRACTICAL EXAM		**1**	**2**	b4, b5, c1, c2, c3, d1, d2, d3
Total		**9**	**18**	

Teaching strategies of the course:
Lecture It is the most frequently employed teaching method to convey knowledge and explain theories to students in large groups (50-200) or in sessions, which consist of more than one group gathered in one classroom. The efficiency of lecturing can be enhanced by using techniques such as **Brain-storming**: It depends on stimulation of the student`s brain through a group of questions &/or **Concepts map**: which depends on sequencing of thoughts in the form of maps with horizontal or vertical relations & by using **learning aids** such as Data show projector
Laboratory practice: students doing experiments in labs individually or in small groups

Feed-back learning: students are individually asked to do perform quick tests (quiz) or to do certain assignments such lab. experiments, problems solving, homework, topics summarizing or internet search. The teacher will provide them feed-back correction & evaluation
Group projects: students work on a project in groups of 2 to 3 students. Important for learning by doing ,using the results in practical manner &for promoting team work skills

Assignments:				
No	**Assignments**	**Aligned CILOs**	**Week Due**	**Mark**
1	**Individual**: the teacher provide the students with biochemical problems related to the studied topics. Every student is assigned to solve some of those problems individually.	d2, c4, c5	4-13	3
2	**Group** : each group of students will be assigned to present a search report on one pathological condition related to disturbances in biochemical levels in the body.	d1, d2, d3, c4, c5	14	2

Schedule of Assessment Tasks for Students During the Semester						
Theoretical part assessment						
No.	**Assessment Method**		**Week Due**	**Mark**	**Proportion to Total course Assessment**	**Aligned Course Learning Outcomes (CILOs)**
1	Term Works	Quizzes	4-13, 14	5	5	b1, b2, b3, b4, b5
		Assignments	7, 12	5	5	c3, c4, d1, d2, d3

2	Mid-semester exam (written exam)	7	10	10	a1, a2, a3, b1, b2, b3, b4, b5
3	Final exam (written exam)	16	50	50	a1, a2, a3, b1, b2, b3, b4, b5
TOTAL			70	70 %	70

Practical part assessment						
No.	**Assessment Method**		**Week Due**	**Mark**	**Proportion to Total course Assessment**	**Aligned Course Learning Outcomes(CILOs)**
1	Lab. Term works	Attitude	1-12	5	5	b4, b5, c1, c2,c3, d1, d2, d3
2		Accomplishments		5	5	
	Final exam (practical)		12	20	20	b4, b5, c1, c2,c3, d1, d2, d3
Total				30	30 %	

Learning Resources:
1- Required Textbook(s) (maximum two)
Pamela C. Champe, Lippincott's illustrated review in Biochemistry, 2010, Lippincott William & Wilkins
2- Essential References.
1. Hiram f. Gilbert , Basic concepts in biochemistry ; a student's survival guide, 2000, McGraw-Hill 2. Vyas . Pharmaceutical biochemistry
3-Electronic References
1. E-journals A–Z: Biochemistry | HSLS (pitt.edu) 2. The Open Biochemistry Journal - Home Page 3. World Open Journal of Metabolic Biochemistry (scitecpub.com)

	Course Policies:
1	**Class Attendance:** At least 75 % of the course hours should be attended by the student. Otherwise, he/she will not be allowed to attend the final exam
2	**Tardy:** any student who is late for more than 15 minutes from starting the lecture will not be allowed to attend the lecture and will be considered absent.
3	**Exam Attendance/Punctuality:** any student who is late for more than 30 minutes from starting the exam will not be allowed to attend the exam and will be considered absent.
4	**Assignments & Projects:** Assignments and projects will be assessed individually unless the teacher request for group work
5	**Cheating**: Cheating by any means will cause the student failure and he/she must re-study the course
6	**Plagiarism**: Plagiarism by any means will cause the student failure in the course . Other disciplinary procedures will be according to the college rules.

Pharmaceutical Drug Discovery & Development

Course Identification and General Information:								
1	**Course Title:**	**Pharmaceutical drug discovery & development**						
2	**Course Code**	**PHT 351**						
3	**Credit hours:**	**C.H**						**TOTAL**
		Theoretical			**P.**	**Tr.**		
		L.	**Tut.**	**S.**				
		2	-	-	-	-		**2**
4	**Study level/ semester at which this course is offered:**	*(Third) Year – (first) semester*						
5	**Pre –requisite (if any):**	**-**						
6	**Co –requisite (if any):**	**-**						
7	**Program (s) in which the course is offered:**	**Faculty of Medical Science**						
8	**Language of teaching the course:**	**ENGLISH**						
9	**Location of teaching the course:**	**At the University**						

L: lecturing ; Tut: Tutorial , S: seminar ; P: practical ; Tr.: training

Course Description:

The course aims to:

- To provide an insight into aspects of the drug discovery and development process
- It will provide an opportunity to study the principles of pharmacology, bioinformatics and toxicology for the development of novel therapeutics for their management
- To understand the requirements for ADME, PK/TK, and DM studies conducted to select the optimal drug discovery lead (developability assessment), to support first-in-human clinical trials, and to compare and extrapolate metabolism profiles from animal models to humans.

Intended learning outcomes of the course (CILOs) and their alignment to Program Intended learning outcomes (PILOs), teaching strategies and assessment strategies.		
Alignment CILOs to PILOs		
PILOs		**CILOs**
Knowledge & understanding : Upon successful completion of the course, students will be able to:		
A3	Explain physicochemical properties of materials and products	**a1.** Understand the role of bioinformatics and genomics in the drug discovery process.
A4	Describe analytical methods, principles, design and development techniques	**a2** Understand the importance of pharmacology in the drug discovery process.
A10	Describe the pharmacists role in different pharmacy practices.	**a3**. Develop an understanding of how drug safety is assessed.
		a4 Understand the role of intellectual property in drug discovery.
Intellectual skills : Upon successful completion of the course, students will be able to:		
B1	Collect interpret and assess information and data relevant to pharmacy practice	**b1.** Discuss and place into context the use of high-throughput-screening in the drug discovery process.
		b2. acquire knowledge about natural drugs causing addiction, c.n.s. stimulants, narcotics or hypnotics and how to identify them in any given sample.
B2	Classify drugs, approaches and other information relevant to pharmacy	**b3.** classify the groups of active constituents and know the medicinal used of each class.

	based on scientific classification system.	**b4 .**Can differentiate between toxic and safe drugs in addition to the precautions accompanying the use of herbal drugs.
B3	Design an evaluate different types of safe and effective drugs , pharmaceutical dosage forms and cosmetic preparations	**b5.** Understand the role of regulatory affairs and drug approval for use in the clinic.

Professional & practical skills : Upon successful completion of the course, students will be able to:		
C1	Handle safely the chemicals, biological samples and pharmaceutical ingredients and products.	c1. Critically evaluate the drug discovery process.
C2	Operate different instruments and use emerge technologies for preformulation, formulation and analysis of materials according to standard guidelines.	**c2.** Skill to criticize any supplied natural drug assessing its validity for treatment purposes.
C7	Conduct research and utilize the results in different pharmaceutical fields.	**c3** Acquire skills to detect adulteration of any supplied natural drugs.
		c4 acquire skills in isolation and identification of the active constituents in natural product **c5.** Skill to compound herbal teas.
Transferable skills : Upon successful completion of the course, students will be able to:		
D1	Interact and communicate effectively and behave in disciplines with colleagues, patients and healthcare professionals effectively in team-activities.	**d1.** Communicate effectively and behave in discipline with colleagues.

D2	Develop and demonstrate skills of time managements, self-learning and decision making.	**d2.** Demonstrate the skills of time management and self-learning.
D3	Participate collaboratively in team work with colleagues and healthcare professionals.	**d3.** Participate efficiently with his colleagues in a team work.

Alignment CILOs to teaching strategies and assessment strategies		
(a) Alignment Course Intended Learning Outcomes (CILOs) of knowledge & understanding to Teaching Strategies and Assessment Strategies		
Course Intended Learning Outcomes	**Teaching strategies**	**Assessment Strategies**
a1. Understand the role of bioinformatics and genomics in the drug discovery process.	**Active Lecture** **Tutorials** **Seminar** **Self-Study** **One-minute paper** **Video-clips** **Role-playing** **Reading/discussing draft articles** **Map concepts**	**Written exams (Mid, Final)** **Quizzes** **Essays** **Reports** **Instructional activities**
a2 Understand the importance of pharmacology in the drug discovery process.		
a3. Develop an understanding of how drug safety is assessed.		
a4 Understand the role of intellectual property in drug discovery.		
(b) Alignment Course Intended Learning Outcomes (CILOs) of Intellectual Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	**Teaching strategies**	**Assessment Strategies**

b1. Discuss and place into context the use of high-throughput-screening in the drug discovery process.	**Active Lecture** **Tutorials** **Seminar** **Self-Study** **One-minute paper** **Video-clips** **Role-playing** **Reading/discussing draft articles** **Map concepts**	**Written exams (Mid, Final)** **Quizzes** **Essays** **Reports** **Instructional activities**
b2. acquire knowledge about natural drugs causing addiction, c.n.s. stimulants, narcotics or hypnotics and how to identify them in any given sample.	**Active Lecture** **Tutorials** **Seminar** **Self-Study** **One-minute paper** **Video-clips** **Role-playing** **Reading/discussing draft articles** **Map concepts**	**Written exams (Mid, Final)** **Quizzes** **Essays** **Reports** **Instructional activities**
b3. classify the groups of active constituents and know the medicinal used of each class.		
b4 . Can differentiate between toxic and safe drugs in addition to the precautions accompanying the use of herbal drugs.		
b5. Understand the role of regulatory affairs and drug approval for use in the clinic.	**Group-project** **Demonstrations**	**Assignments**

(c)Alignment Course Intended Learning Outcomes (CILOs) of Professional and Practical Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	**Teaching strategies**	**Assessment Strategies**
c1. Critically evaluate the drug discovery process.	**laboratory practice** **Demonstrations**	**Lab. term works, final practical exam**
c2. Skill to criticize any supplied natural drug assessing its validity for treatment purposes.		
c3 Acquire skills to detect adulteration of any supplied natural drugs.	**Group-project** **Demonstrations**	**Assignments**
c4 acquire skills in isolation and identification of the active constituents in natural product		
c5. Skill to compound herbal teas.	**Group-project** **Demonstrations**	**Assignments**
(d) Alignment Course Intended Learning Outcomes (CILOs) of Transferable Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	**Teaching strategies**	**Assessment Strategies**
d1. Communicate effectively and behave in discipline with colleagues.	**laboratory practice** **group-project** **Demonstrations**	**Lab. term works, assignment**
d3. Participate efficiently with his colleagues in a team work.		
d2. Demonstrate the skills of time management and self-learning.	**laboratory practice** **Demonstrations**	**Lab. term works, final practical exam**

Course Content:					
A – Theoretical Aspect:					
Order	**Units/ Topics List**	**CILOs**	**Sub Topics List**	**No. of Weeks**	**contact hours**
Part I: ***I- Tannins***					
1	**Topic 1**	a1, a2, a3	Introduction to the Health Care Industry, the Pharmaceutical Pipeline and course outline/objectives	1	4
2	**Topic 2**	a1, a2, a3	Pre-Clinical and Clinical Drug Development.	2	4
3	**Topic 3**	a1, a2, a3	Therapeutics; Filling an Unmet Medical Need.	3	4
4	**Topic 4**	a1, a2, a3	Why do drugs work (ADME) and the role of a Therapeutic Index (TI).	3	4
5	**Topic 5**	a1, a2, a3	Drug Design for a specific human disease: a new chemical entity (NCE) or a biological product (DNA, RNA or protein).	4	4
Mid-Term Exam					

6	**Topic 6**		Mechanisms of drug resistance and strategies circumventing drug resistance.		
7	**Topic 7**		various types of ADME, PK/TK, and DM studies, which include in vitro metabolism and delivery, animal and human pharmacokinetics, protein binding, mass balance, tissue distribution, metabolite isolation and identification and toxicokinetic support		
8	**Topic 8**		Preclinical Animal Model Testing: pharmacology, toxicology, bioavailability, bio-distribution, animal models as predicators for human disease.		
9	**Topic 9**		Drug Discovery (genomics): concept, bioinformatics, database mining, gene discovery, and target identification/validation.		
Final exam				4	2

Teaching strategies of the course:
Active Lecture It is the most frequently employed teaching method to convey knowledge and explain theories to students in large groups (50-200) or in sessions, which consist of more than one group gathered in one classroom. The efficiency of lecturing can be enhanced by using techniques such as **Brain-storming**: It depends on stimulation of the student`s brain through a group of questions &/or **Concepts map**: which depends on sequencing of thoughts in the form of maps with horizontal or vertical relations & by using **learning aids** such as Data show projector

Laboratory practice: students doing experiments in labs individually or in small groups
Feed-back learning: students are individually asked to do perform quick tests (quiz) or to do certain assignments such lab. experiments, problems solving, homework, topics summarizing or internet search. The teacher will provide them feed-back correction & evaluation
Group projects: students work on a project in groups of 2 to 3 students. Important for learning by doing ,using the results in practical manner &for promoting team work skills

Assignments:

No	Assignments	Aligned CILOs	Week Due	
1	Written exam(s) **to assess** knowledge and understanding and intellectual skills. Practical exam(s) **to assess** practical skills. Periodic exam(s) **to assess** understanding and intellectual skills. Oral exam **to assess** knowledge and understanding and intellectual skills.	b5, c3, c4, d1, d3	8	

Schedule of Assessment Tasks for Students During the Semester

Theoretical part assessment

No.	Assessment Method		Week Due	Mark	Proportion to Total course Assessment	Aligned Course Learning Outcomes (CILOs)
1	Term Works	Quizzes	4-13, 14	5	5	b1
		Assignments	7, 12	5	5	b5, c3, c4, d1, d3

2	Mid-semester exam (written exam)	7	10	10	a1, a2,a3 , b1, b2, b3, b4
3	Final exam (written exam)	16	50	50	a1, a2,a3 , b1, b2, b3, b4
TOTAL			70	70 %	70

Practical part assessment						
No.	**Assessment Method**		**Week Due**	**Mark**	**Proportion to Total course Assessment**	**Aligned Course Learning Outcomes(CILOs)**
1	Lab. Term works	Attitude	1-12	5	5	c1, c2, d1, d2, d3
2		Accomplishments		5	5	
	Final exam (practical)		12	20	20	c1, c2, d2
Total				30	30 %	

Learning Resources:
1- Required Textbook(s) (maximum two).
1. Goodman and Gilman's "The Pharmacological Basis of Therapeutics" Tenth Edition (2001), McGraw-Hill Publishers, New York Lippincott's
2- Essential References.
1. "Illustrated Review of Pharmacology" (Harvey and Champe), 2nd edition "Basic Concepts in Pharmacology - A Student's Survival Guide
3- Electronic Materials and Web Sites *etc*.
http://www.pubmed.com http://www.botanical .com http://www.herbmed.com

	Course Policies:
1	**Class Attendance:** At least 75 % of the course hours should be attended by the student. Otherwise, he/she will not be allowed to attend the final exam
2	**Tardy:** any student who is late for more than 15 minutes from starting the lecture will not be allowed to attend the lecture and will be considered absent.
3	**Exam Attendance/Punctuality:** any student who is late for more than 30 minutes from starting the exam will not be allowed to attend the exam and will be considered absent.
4	**Assignments & Projects:** Assignments and projects will be assessed individually unless the teacher request for group work
5	**Cheating**: Cheating by any means will cause the student failure and he/she must re-study the course
6	**Plagiarism**: Plagiarism by any means will cause the student failure in the course . Other disciplinary procedures will be according to the college rules.

Dermatological & Cosmetic preparation

Course Identification and General Information:								
1	**Course Title:**	**Dermatological & Cosmetic preparation**						
2	**Course Code &Number:**	**PHT 361**						
3	**Credit hours:**	**C.H**						**TOTAL**
		Theoretical			**P.**	**Tr.**		
		L.	**Tut.**	**S.**				
		2	-	-	1	-		**3**
4	**Study level/ semester at which this course is offered:**	*(THIRD) Year – (FRIST) semester*						
5	**Pre –requisite (if any):**	• **Pharmaceutics I. II & III**						
6	**Co –requisite (if any):**	**None**						
7	**Program (s) in which the course is offered:**	**Faculty of Medical Science**						
8	**Language of teaching the course:**	**ENGLISH**						
9	**Location of teaching the course:**	**IN THE UNIVERSITY**						

L: lecturing ; Tut: Tutorial , S: seminar ; P: practical ; Tr.: training

Course Description:
This course is one of the newer disciplines in pharmacy education since the role of pharmacists in cosmetic industry has been established. Therefore, this course is designed to provide knowledge and skills necessary for preparation of cosmetics used in cleaning , perfuming, making-up and other purposes and also cosmeceuticals preparations used as antiaging, treatment of skin-pigmentation and other purposes. The course is preceded by (pharmaceutics I ,II) courses since the design of most cosmetic products depends on principles similar to that of liquid and semisolid pharmaceutical dosage forms.

Intended learning outcomes of the course (CILOs) and their alignment to Program Intended learning outcomes (PILOs), teaching strategies and assessment strategies		
Alignment CILOs to PILOs		
No.	**PILOs**	**CILOs**
1	**A3**	**a1.** Explicit the general properties, advantages , disadvantages and requirements of cosmetics and cosmeceuticals,
2		**a2**. Discuss the principles, methods of preparation of various types of cosmetic preparations
3	**A10**	**A3.** Describe the role of pharmacist in formulation of cosmetic preparations. .
4	**A11**	**a4**. Identify the types of cosmetic preparations
5	**B2**	**b1.** Classify cosmetic preparations according to their use and physical form.
6		**b2 .** Compare between various types of cosmetic preparations. .
7	**B3**	**b3.** Design cosmetic preparations
8		**b4.** Evaluate the quality of the prepared cosmetic preparations.
9	**B4**	**b5.**. Select appropriate standard operation procedures for preparation and analysis of cosmetic products.
10	**B9**	**b6 .** Calculate the amount of ingredient required to prepare an enlarged or reduced amount of a cosmetic preparation. ..
11	**C1**	**c1.** Handle efficiently and safely the chemical materials and tools used in the laboratory
12	**C2**	**c2.** Operate the instruments and perform experiments successfully in the laboratory
13	**C3**	**c3.** Employ the relevant way to prepare cosmetic preparations
14	**C7**	**c4 .**Search efficiently for information using documented and electronic sources of information.
15		**c5** Present and report his/her works correctly using appropriate writing rules and technologies media.
16	**D1**	**d1.** Communicate effectively and behave in discipline with colleagues.
17	**D2**	**d2.** Demonstrate the skills of time management and self-learning.
18	**D3**	**d3.** Participate efficiently with his colleagues in a team work.

Alignment CILOs to teaching strategies and assessment strategies		
(a) Alignment Course Intended Learning Outcomes (CILOs) of knowledge & understanding to Teaching Strategies and Assessment Strategies		
Course Intended Learning Outcomes	**Teaching strategies**	**Assessment Strategies**
a1, a2, a3, a4	**Active Lecture**	**Written exams**
(b) Alignment Course Intended Learning Outcomes (CILOs) of Intellectual Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	**Teaching strategies**	**Assessment Strategies**
b1, b2	Active Lecture	Written exams
b3	Feed-back learning	Quizzes
B4, b5	laboratory practice	Lab, term works, final practical exam
b6	Lecture, Lab. practice	Written exams , Lab, term works, final practical exam
(c)Alignment Course Intended Learning Outcomes (CILOs) of Professional and Practical Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	**Teaching strategies**	**Assessment Strategies**
c1, c2, c3	laboratory practice	Lab, term works, final practical exam
c4, c5	Feed-back learning, Group-project	Assignments
(d) Alignment Course Intended Learning Outcomes (CILOs) of Transferable Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	**Teaching strategies**	**Assessment Strategies**
d1, d2, d3	laboratory practice, Feed-back learning, group project	Lab, term works, final practical exam, Assignments

Course Content:					
A – Theoretical Aspect:					
Order	**Units/ Topics List**	**CILOs**	**Sub Topics List**	**No. of Weeks**	**contact hours**
1	**Introduction**	a1, a2, a3, a4, b2, b3, b6	• definitions (cosmetic preparations, cosmeceuticals) • requirements cosmetics preparations registration, • Pharmaceutical classification of cosmetic preparations o cosmetic solutions and oils o cosmetic suspensions and foams o Cosmetic emulsions o Cosmetics solids and semisolids	1	2
2	**Skin-care cosmetic products**	a1, a2, a3, a4, b2, b3, b6	agents, formulations, method of preparations, examples of : a) Anti-wrinkle or anti-aging products including face-masks b) Demulcents and moisturizing products c) Anti-acne products d) Skin- tanning products e) Skin-whitening products f) Hygienic and baby care products	3	6
3	**Make-up and removing make-up products:**	a1, a2, a3, a4, b2, b3, b6	agents, formulations, method of preparations**:** a) Lipsticks b) pencils c) Make up powder d) Make up removing products	2	4

Mid-term exam				1	2
4	**Bath and cleansing products**	a1, a2, a3, a4, b2, b3, b6	agents, formulations, method of preparations**:** a) Shampoos **b)** Soaps	1	2
5	• **Hair care products**	a1, a2, a3, a4, b2, b3, b6	agents, formulations, method of preparations**:** a) hair tints (coloring) and bleaches (discoloring), b) conditioning products for waving, straightening and fixing, c) Depilatories (hair removals). d) hair cleansing products (lotions, powders, shampoo) **e)** Shaving products (creams, foams, lotions, etc.).	2	4
	Pleasantly Odorants	a1, a2, a3, a4, b2, b3, b6	agents, formulations, method of preparations**:** a) Perfumes b) toilet waters c) eau de Colog.	2	4
	Oral and dental hygiene products	a1, a2, a3, a4, b2, b3, b6	agents, formulations, method of preparations**:** a) Toothpaste b) Mouthwashes **c)** Dental gels	2	4
Course Review		a1, a2, a3, a4, b2, b3, b6	Review of the course topics by discussion session.	1	2
FINAL - EXAM				1	2
TOTAL				16	32
Number of Weeks /and Units Per Semester				16 weeks	5 Units

B - Practical Aspect:				
Order	**Tasks/ Experiments**	**Number of Weeks**	**contact hours**	**Aligned Couse Intended Learning Outcomes CILOs**
1	**Introduction to lab: list of experiments, how to report, etc**	**1**	**2**	**b4, b5, b6, c1, c2, c3, d1, d2, d3**
2	**preparation of anti-aging skin creams, ant-acne dermatological form.**	**2**	**2**	**b4, b5, b6, c1, c2, c3, d1, d2, d3**
3	**preparation of** lipsticks	**1**	**2**	**b4, b5, b6, c1, c2, c3, d1, d2, d3**
4	**preparation of** antiseptic soap	**1**	**2**	**b4, b5, b6, c1, c2, c3, d1, d2, d3**
5	**preparation of** antidandruff shampoo	**1**	**2**	**b4, b5, b6, c1, c2, c3, d1, d2, d3**
6	**preparation of** hair nutrient oil	**1**	**2**	**b4, b5, b6, c1, c2, c3, d1, d2, d3**
7	**preparation of after-shaving product**	**1**	**2**	**b4, b5, b6, c1, c2, c3, d1, d2, d3**
8	**preparation of** perfumes	**1**	**2**	**b4, b5, b6, c1, c2, c3, d1, d2, d3**
9	**preparation of** toothpaste	**1**	**2**	**b4, b5, b6, c1, c2, c3, d1, d2, d3**
10	**preparation of** dental gel	**1**	**2**	**b4, b5, b6, c1, c2, c3, d1, d2, d3**
PRACTICAL EXAM		**1**	**2**	**b4, b5, b6, c1, c2, c3, d1, d2, d3**
Total		**11**	**22s**	

Teaching strategies of the course:
Lecture It is the most frequently employed teaching method to convey knowledge and explain theories to students in large groups (50-200) or in sessions, which consist of more than one group gathered in one classroom.

The efficiency of lecturing can be enhanced by using techniques such as **Brain-storming**: It depends on stimulation of the student`s brain through a group of questions &/or **Concepts map**: which depends on sequencing of thoughts in the form of maps with horizontal or vertical relations & by using **learning aids** such as Data show projector
Laboratory practice: students doing experiments in labs individually or in small groups
Feed-back learning: students are individually asked to do perform quick tests (quiz) or to do certain assignments such lab. experiments, problems solving, homework, topics summarizing or internet search. The teacher will provide them feed-back correction & evaluation
Group projects: students work on a project in groups of 2 to 3 students. Important for learning by doing ,using the results in practical manner &for promoting team work skills

Assignments:

No	Assignments	Aligned CILOs	Week Due	Mark
1	**Individual**: every student is assigned to present a search report supported with images on 5 trade names (commercial preparations) of the studied cosmetic preparations	c4, c5, d2	4-13	3
2	**Group** :every group is assigned to present an illustrating videos on lab. And industrial preparation of 3 types of cosmetic preparations	c4, c5, d1, d2, d3	14	2

Schedule of Assessment Tasks for Students During the Semester

Theoretical part assessment

No.	Assessment Method		Week Due	Mark	Proportion to Total course Assessment	Aligned Course Learning Outcomes (CILOs)
1		Quizzes	4-13, 14	5	5	b3

	Term Works	Assignments	7, 12	5	5	c4, c5, d1, d2, d3
2	Mid-semester exam (written exam)		7	10	10	a1, a2, a3, a4, a5, b1, b2, b3, b6
3	Final exam (written exam)		16	50	50	a1, a2, a3, a4, a5, b1, b2, b3, b6
TOTAL				70	70 %	70

Practical part assessment						
No.	**Assessment Method**		**Week Due**	**Mark**	**Proportion to Total course Assessment**	**Aligned Course Learning Outcomes(CILOs)**
1	Lab. Term works	Attitude	1-12	5	5	b4, b5, b6, c1, c2, c3, d1, d2, d3
2		Accomplishments		5	5	
	Final exam (practical)		12	20	20	b4, b5, b6, c1, c2, c3, d1, d2, d3
Total				30	30 %	

Learning Resources
1- Required Textbook(s) (maximum two).
1. Hans Mollet, Arnold Grubenmann. Formulation Technology: Emulsions, Suspensions, Solid Forms, 2001 Wiley-VCH Verlag, Wells. 2. Ernest W. Flick. Cosmetic and toiletry formulations, 1996, Noyes Publications
2- Essential References.
1. Saraf. Cosmetics 2. Aulton M.E., Pharmaceutics: the science of dosage form design, 2002, Churchill Livingstone, UK

Course Policies:	
1	**Class Attendance:** At least 75 % of the course hours should be attended by the student. Otherwise, he/she will not be allowed to attend the final exam
2	**Tardy:** any student who is late for more than 15 minutes from starting the lecture will not be allowed to attend the lecture and will be considered absent.
3	**Exam Attendance/Punctuality:** any student who is late for more than 30 minutes from starting the exam will not be allowed to attend the exam and will be considered absent.
4	**Assignments & Projects:** Assignments and projects will be assessed individually unless the teacher request for group work
5	**Cheating**: Cheating by any means will cause the student failure and he/she must re-study the course
6	**Plagiarism**: Plagiarism by any means will cause the student failure in the course . Other disciplinary procedures will be according to the college rules.

GENERAL TOXICOLOGY

Course Identification and General Information:								
1	**Course Title:**	**GENERAL TOXICOLOGY**						
2	**Course Code &Number:**	**PHL 312**						
3	**Credit hours:**	**C.H**						**TOTAL**
		Theoretical			**P.**	**Tr.**		
		L.	**Tut.**	**S.**				
		2	-	-	1	-		**3**
4	**Study level/ semester at which this course is offered:**	*(Third) Year – (2nd) semester*						
5	**Pre –requisite (if any):**	• ---------						
6	**Co –requisite (if any):**	---------						
7	**Program (s) in which the course is offered:**	**Faculty of Medical Science**						
8	**Language of teaching the course:**	**ENGLISH**						
9	**Location of teaching the course:**	**IN THE UNIVERSITY**						

L: lecturing ; Tut: Tutorial , S: seminar ; P: practical ; Tr.: training

Course Description:
The course deals with the study of sources, mode of action, toxic pathophysiological effects, detection, diagnosis and management of poisonous materials including acids, alkalies, metals, metaloids, pesticides. The course also involves management of poisoning with some medicinal agents.

Intended learning outcomes of the course (CILOs) and their alignment to Program Intended learning outcomes (PILOs), teaching strategies and assessment strategies		
Alignment CILOs to PILOs		
No.	**PILOs**	**CILOs**
1.	**A7**	**a1.** Identify the mechanism of toxicity with poisonous materials.
2.		**a2.** Identify the types of poisonous materials that can threaten human life.
3.		**a3.** Describe the clinical features associated with poisoning
4.		**a4.** Discuss the methods of poisons detection, diagnosis and management.
5.	**A10**	**a5.** Describe the role of pharmacist in detection, preventing and management of poisoning.
6.	**B2**	**b1 .** Classify poisonous materials.
7.	**C7**	**c1 .**Search efficiently for information using documented and electronic sources of information.
8.		**c2.** Present and report his/her works correctly using appropriate writing rules and technologies media.
9.	**D2**	**d1.** Demonstrate the skills of time management and self-learning.

Alignment CILOs to teaching strategies and assessment strategies		
(a) Alignment Course Intended Learning Outcomes (CILOs) of knowledge & understanding to Teaching Strategies and Assessment Strategies		
Course Intended Learning Outcomes	**Teaching strategies**	**Assessment Strategies**
a1, a2, a3, a5	**Active Lecture**	**Written exams**
a4	**Lecture, feed-back learning**	**Written exams , quizzes**
(b) Alignment Course Intended Learning Outcomes (CILOs) of Intellectual Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	**Teaching strategies**	**Assessment Strategies**
b1	**Active Lecture**	**Written exams**
(c)Alignment Course Intended Learning Outcomes (CILOs) of Professional and Practical Skills to Teaching Strategies and Assessment Strategies:		

Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
c1 , c2	feed-back learning	Assignment
(d) Alignment Course Intended Learning Outcomes (CILOs) of Transferable Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	**Teaching strategies**	**Assessment Strategies**
d1	Feed-back learning	Assignments

Course Content:					
Order	**Units/ Topics List**	**CILOs**	**Sub Topics List**	**No. of Weeks**	**contact hours**
1	**Introduction to toxicology**	a1, a2, a3, a4, a5, b1	• Definitions • fundamentals and scope of toxicology. • Classification of poisons • Causes of toxicity : accidental, commit suicidal, criminal • General harmful effects of poisons • Approaches to manage poisoning • Mode of actions of poisons • Diagnosis and detection of poisoning • General procedure of management of poisoning	1	2
Sources, mode of action, toxic pathophysiological effects, detection, diagnosis and management of the following types of toxicity					
2	**Poisoning with acids and alkalis**	a1, a2, a3, a4, a5, b1	• Acids toxicity • Alkalis toxicity • Salts toxicity	1	2

3	**Poisoning with metals and metalloids**	a1, a2, a3, a4, a5, b1	• Toxicity of copper, selenium, Molybdenum, phosphorus • Iron toxicity	2	4
4	**Poisoning with heavy metals**	a1, a2, a3, a4, a5, b1	Toxicity of Lead, Mercury and Arsenic	2	4
MID-TERM EXAM				1	2
5	**Poisoning with specific chemicals**	a1, a2, a3, a4, a5, b1	• Cynide • Hydrogen sulfide • Carbon monoxide	2	4
6	**Poisoning with simple organic compounds**	a1, a2, a3, a4, a5, b1	• Methanol and Isopropyl Alcohols • hydrocarbons • fuel materials : petroleum , gasoline, etc	2	4
7	**Poisoning with materials killing harmful Living organisms**	a1, a2, a3, a4, a5, b1	• Rodenticides, • insecticdes • herbicides • Fungicides	2	4
8	**Poisoning with some medicinal agents**	a1, a2, a3, a4, a5, b1	• Poisoning with opiates, benzodiazepines • Poisoning with paracetamol and aspirin	1	2
Course Review		a1, a2, a3, a4, a5, b1	Review	1	2
FINAL - EXAM				1	2
TOTAL				16	32
Number of Weeks /and Units Per Semester				16 weeks	8 Units

Teaching strategies of the course:
Lecture It is the most frequently employed teaching method to convey knowledge and explain theories to students in large groups (50-200) or in sessions, which consist of more than one group gathered in one classroom. The efficiency of lecturing can be enhanced by using techniques such as **Brain-storming**: It depends on stimulation of the student`s brain through a group of questions &/or **Concepts map**: which depends on sequencing of thoughts in the form of maps with horizontal or vertical relations & by using **learning aids** such as Data show projector
Feed-back learning: students are individually asked to do perform quick tests (quiz) or to do certain assignments such lab. experiments, problems solving, homework, topics summarizing or internet search. The teacher will provide them feed-back correction & evaluation
Group projects: students work on a project in groups of 2 to 3 students. Important for learning by doing ,using the results in practical manner &for promoting team work skills

Assignments:

No	Assignments	Aligned CILOs	Week Due	
1	**Individual**: every student is assigned to provide a search-based report on toxicity and management of one poison not included in the study topics.	c1, c2, d1	7	

Schedule of Assessment Tasks for Students During the Semester

No.	Assessment Method		Week Due	Mark	Proportion of Total course Assessment	Aligned Course Learning Outcomes (CILOs)
1	Term Works	Quizzes	4-13, 14	10	10	a4
		Assignments	7, 12	10	10	c1, c2, d1
2	Mid-semester (written exam)		7	20	20	a1, a2, a3, a4, a5, b1
3	Final exam (written exam)		16	60	60	a1, a2, a3, a4, a5, b1

TOTAL	100	100 %	

Learning Resources
1- Required Textbook(s) (maximum two).
1. kokate, text book of forensic pharmacy 2. Peter Viccellio, Handbook of Medical Toxicology
2- Essential References
1. Casarett & Doull's , Essentials of Toxicology 2. Frank A. Barile, Principles of toxicology Testing R.S. Gaud G.T. Gupta practical physical
3-Electronic References
1. Relevance of Toxicology to Public Health—Society of Toxicology 2. Analytical Study of the Penetration of Long Rod Projectiles with Conical and Blunt Nose in Normal and Oblique Ceramic Targets | Technium: Romanian Journal of Applied Sciences and Technology (techniumscience.com) 3. PubsOnLine (informs.org)

Course Policies:	
1.	**Class Attendance:** At least 75 % of the course hours should be attended by the student. Otherwise, he/she will not be allowed to attend the final exam
2.	**Tardy:** any student who is late for more than 15 minutes from starting the lecture will not be allowed to attend the lecture and will be considered absent.
3.	**Exam Attendance/Punctuality:** any student who is late for more than 30 minutes from starting the exam will not be allowed to attend the exam and will be considered absent.
4.	**Assignments & Projects:** Assignments and projects will be assessed individually unless the teacher request for group work
5.	**Cheating**: Cheating by any means will cause the student failure and he/she must re-study the course
6.	**Plagiarism**: Plagiarism by any means will cause the student failure in the course . Other disciplinary procedures will be according to the college rules.

PHARMACOLOGY II

Course Identification and General Information:							
1	**Course Title:**	**PHARMACOLOGY II**					
2	**Course Code &Number:**	**PHL 322**					
3	**Credit hours:**	**C.H**					**TOTAL**
		Theoretical			**P.**	**Tr.**	
		L.	**Tut.**	**S.**			
		2	-	-	1	-	**3**
4	**Study level/ semester at which this course is offered:**	(THIRD) Year – (2nd) semester					
5	**Pre –requisite (if any):**	• **Pharmacology I**					
6	**Co –requisite (if any):**	**Medicinal Chemistry II**					
7	**Program (s) in which the course is offered:**	**Faculty of Medical Science**					
8	**Language of teaching the course:**	**ENGLISH**					
9	**Location of teaching the course:**	**IN THE UNIVERSITY**					

L: lecturing ; Tut: Tutorial , S: seminar ; P: practical ; Tr.: training

Course Description:
This course also as the previous course (pharmacology I) deals with the study of pharmacodynamics (mechanism of action, therapeutic effect, adverse effects) and pharmacokinetics (absorption, distribution, metabolism, execration) of drugs that used for treatment of Cardiovascular System, endocrine disorders, and drugs acting on respiratory tract, and autocoids.

Intended learning outcomes of the course (CILOs) and their alignment to Program Intended learning outcomes (PILOs), teaching strategies and assessment strategies		
Alignment CILOs to PILOs		
No.	**PILOs**	**CILOs**
1	**A5**	**a1.** Identify the actions of medicines in human body, their therapeutic uses, adverse effects drug interactions and interactions
2	**A8**	**a2.** Describe the pharmacokinetics of drugs.
3	**A10**	**a3.** Describe the role of pharmacist in providing correct information on rational use of medications.
4	**B2**	**b1 .**Classify drugs used for disorders of drugs affecting autonomic nervous system, skeletal muscles and drugs used for eye and alimentary system disorders.
5		**b2.** Compare between therapeutically related drugs based on drug benefits (in particular efficacy and potency)and drug limitations.
6	**C7**	**c1 .** Advise the patient and healthcare professional to optimize medicine use
7	**D2**	**d1.** Demonstrate time management and decision making skills.

Alignment CILOs to teaching strategies and assessment strategies		
(a) Alignment Course Intended Learning Outcomes (CILOs) of knowledge & understanding to Teaching Strategies and Assessment Strategies		
Course Intended Learning Outcomes	**Teaching strategies**	**Assessment Strategies**
a1, a2, a3	**Active Lecture**	**Written exams**
(b) Alignment Course Intended Learning Outcomes (CILOs) of Intellectual Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	**Teaching strategies**	**Assessment Strategies**
b1	**Active Lecture**	**Written exams**
b2	**Lecture, feed-back learning**	**Written exam , quizzes, assignments**
(c)Alignment Course Intended Learning Outcomes (CILOs) of Professional and Practical Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	**Teaching strategies**	**Assessment Strategies**

c1	**feed-back learning**	**assignment**
(d) Alignment Course Intended Learning Outcomes (CILOs) of Transferable Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	**Teaching strategies**	**Assessment Strategies**
d1	**Feed-back learning**	**Assignments**

Course Content:

Order	Units/ Topics List	CILOs	Sub Topics List	No. of Weeks	contact hours
	Drugs affecting smooth muscles		**Pharmacokinetics, Pharmacodynamics [drug benefits : MOA, therapeutic action, indications, efficacy and potency) and drug limitation (side effects, precautions, contraindications) and comparison of drugs affecting:** • Histamine and antihistamines • Serotonin • Vasoactive peptides • Eicosanoids • Prostaglandins • Leucotrienes • Nitric oxide	4	8
1	**Drugs acting on respiratory system**	a1, a2, a3, b1	**Pharmacokinetics, Pharmacodynamics [drug benefits : MOA, therapeutic action, indications, efficacy and potency) and drug limitation (side effects, precautions, contraindications) and comparison of :** • Drugs for common cold : nasal decongestant • Drugs for cough • Drugs for bronchial asthma	2	4

2	**Cardiovascular system drugs (1)**	a1, a2, a3, b1	**Pharmacokinetics, Pharmacodynamics [drug benefits : MOA, therapeutic action, indications, efficacy and potency) and drug limitation (side effects, precautions, contraindications) and comparison of :** • Diuretics and Antihypertensive • Hypertensives Drugs affecting kidney • Diuretics (high efficacy, medium efficacy, adjuvant drugs) • Anti-hypertensive drugs • ACE-inhibitors, AR-blockers, Ca-channel blockers, …etc. • Management of congestive heart failure • Cardiac glycosides, …etc. • Anti-arrhythmic drugs • Class-I, class-II, class-III, class-IV • Drugs for ischemic heart diseases • Anti-anginal drugs • Drugs affecting blood coagulation • Anti-platelet drugs, anti-coagulants, thrombolytics • Drugs used for hyper-lipidemia • Statins, fibrates, resins, …etc • Drugs used for anemia • Hematinics, folic acid, vit B12	2	4
Mid term exam				1	2

2	**Cardiovascular system drugs**	a1, a2, a3, b1	**Pharmacokinetics, Pharmacodynamics [drug benefits : MOA, therapeutic action, indications, efficacy and potency) and drug limitation (side effects, precautions, contraindications) and comparison of :** • Antianginal and drugs for myocardial infarction • Drugs for congestive heart failure • antiarrythmics	2	9
3	**Drugs for blood disorders**	a1, a2, a3, b1	**Pharmacokinetics, Pharmacodynamics [drug benefits : MOA, therapeutic action, indications, efficacy and potency) and drug limitation (side effects, precautions, contraindications) and comparison of :** • Haematinics (antianaemic drugs) • Antihemmorrhagic drugs • Anticoagulants	3	6
	Endocrine System		• Hypothalamic & pituitary gland. • Thyroid and antithyroid drugs. • Glucagon and adrenocortical steroids • Insulin &oral hypoglycemic agents. • Sex hormones. o Female sex hormones. o Male sex hormones. • Contraceptives. Pituitary hormones		

Course Review	a1, a2, a3, b1	Review of the course topics by discussion session.	1	3
FINAL - EXAM			1	3
TOTAL			16	47
Number of Weeks /and Units Per Semester			16 weeks	5 Units

PRACTICAL PART:
1. Study of action of drugs on the rabbit's eye
2. Study of effect of drugs on ciliary movement of frog's oesophagus
3. Study of effect of drugs on frog's rectus muscle preparation
4. Effect of cardiac stimulants and depressants on perfused frog's heart
5. Effect of drugs on dog's blood pressure and respiration
6. Evaluation of analgesics by chemical method
7. Effect of saline purgative on frog intestine and the
use of Oral Rehydration Solution
8. Preparation of solution for test dose of penicillin
9. Study of action of antidepressants on mice
10. Study of anorectic and locomotor activity of amphetamine
and fenfluramine

Teaching strategies of the course:
Lecture It is the most frequently employed teaching method to convey knowledge and explain theories to students in large groups (50-200) or in sessions, which consist of more than one group gathered in one classroom. The efficiency of lecturing can be enhanced by using techniques such as **Brain-storming**: It depends on stimulation of the student`s brain through a group of questions &/or **Concepts map**: which depends on sequencing of thoughts in the form of maps with horizontal or vertical relations & by using **learning aids** such as Data show projector
Feed-back learning: students are individually asked to do perform quick tests (quiz) or to do certain assignments such lab. experiments, problems solving, homework, topics summarizing or internet search. The teacher will provide them feed-back correction & evaluation

Assignments:				
No	**Assignments**	**Aligned CILOs**	**Week Due**	
1	**Individual**: every student is assigned to solve a list of problems related to advising healthcare of medicines use based comparison of drug benefits and risks for specific patients e.g. CVS patients, renal failure patients, etc.	b1, c1, d1	6-12	

Schedule of Assessment Tasks for Students During the Semester

No.	Assessment Method		Week Due	Mark	Proportion of Total course Assessment	Aligned Course Learning Outcomes (CILOs)
1	Term Works	Quizzes	4-13, 14	10	10	b2
		Assignments	7, 12	10	10	b1, c1, d1
2	Mid-semester exam (written exam)		7	20	20	a1, a2, a3, b1
3	Final exam (written exam)		16	60	60	a1, a2, a3, b1
TOTAL				100	100 %	

Learning Resources:

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

1. Katzung –Basic and Clinical Pharmacology, McGraw-Hill
2. Rang, Dale and Ritter. Pharmacology, Churchill Livingstone.

2- Essential References.

3. Richard A. Harvey. Lippincott's pharmacology, Lippincott William and Wilkins.
4. Udaykumar. Text book of medical pharmacology

	Course Policies:
1.	**Class Attendance:** At least 75 % of the course hours should be attended by the student. Otherwise, he/she will not be allowed to attend the final exam
2.	**Tardy:** any student who is late for more than 15 minutes from starting the lecture will not be allowed to attend the lecture and will be considered absent.
3.	**Exam Attendance/Punctuality:** any student who is late for more than 30 minutes from starting the exam will not be allowed to attend the exam and will be considered absent.
4.	**Assignments & Projects:** Assignments and projects will be assessed individually unless the teacher request for group work
5	**Cheating**: Cheating by any means will cause the student failure and he/she must re-study the course
6	**Plagiarism**: Plagiarism by any means will cause the student failure in the course . Other disciplinary procedures will be according to the college rules.

Pharmaceutical Microbiology

Course Identification and General Information:								
1	**Course Title:**	**Pharmaceutical microbiology**						
	Course Code	**PHT332**						
2	**Credit hours:**	**C.H**						**TOTAL**
		Theoretical			**P.**	**Tr.**		
		L.	**Tut.**	**S.**				
		2	-	-	1	-		**3**
3	**Study level/ semester at which this course is offered:**	*(Third) Year – (Second) semester*						
4	**Pre –requisite (if any):**	**General Microbiology**						
5	**Co –requisite (if any):**	**-**						
6	**Program (s) in which the course is offered:**	**Faculty of Medical Science**						
7	**Language of teaching the course:**	**ENGLISH**						
8	**Location of teaching the course:**	**At the faculty**						

L: lecturing ; Tut: Tutorial , S: seminar ; P: practical ; Tr.: training

Course Description:
The aim of this course is to teach students to know how to prevent pharmaceutical product from microbial contamination during the knowledge of the sterilization and disinfection, antimicrobial agents including types, uses, properties, mode of action in addition to the bacterial resistance. The course covers pharmaceutical products, contamination, preserving, quality control, and production of therapeutically useful substances by recombinant DNA technologies, which have been studied by student's previously general microbiology.

Intended learning outcomes of the course (CILOs) and their alignment to Program Intended learning outcomes (PILOs), teaching strategies and assessment strategies.		
3. Alignment CILOs to PILOs		
PILOs		**CILOs**
Knowledge & understanding : Upon successful completion of the course, students will be able to:		
A3	Explain physicochemical properties of materials and products	**a1.** Understand the principles of sterilization and disinfection..
A4	Describe analytical methods, principles, design and development techniques	**a2** Have knowledge of all types of antimicrobial agents and their mechanisms of action.
A10	Describe the pharmacists role in different pharmacy practices.	**a3.** Have knowledge of classification of non antibiotic antimicrobial agents and their mechanisms of action.
Intellectual skills : Upon successful completion of the course, students will be able to:		
B1	Collect interpret and assess information and data relevant to pharmacy practice	**b1.** get a skill in the art of compounding of two or more of the studied drugs to prepare a safe and cheap formulae for medication.
B2	Classify drugs, approaches and other information relevant to pharmacy based on scientific classification system.	**b4.** Have knowledge of factory and hospital hygiene and good manufacturing practice
B3	. Design an evaluate different types of safe and effective drugs , pharmaceutical dosage forms and cosmetic preparations	**b5.** deal with microbiological aspects of pharmaceutical industry

Professional & practical skills : Upon successful completion of the course, students will be able to:		
C1	Handle safely the chemicals, biological samples and pharmaceutical ingredients and products.	**c1.** acquire skills to identify medicinal and toxic plants.
C2	Operate different instruments and use emerge technologies for preformulation, formulation and analysis of materials according to standard guidelines.	**c2** acquire skills in isolation and identification of the active constituents in natural product
Transferable skills : Upon successful completion of the course, students will be able to:		
D1	Interact and communicate effectively and behave in disciplines with colleagues, patients and healthcare professionals effectively in team-activities.	**d1.** Communicate effectively and behave in discipline with colleagues.
D2	Develop and demonstrate skills of time managements, self-learning and decision making.	**d2.** Demonstrate the skills of time management and self-learning.
D3	Participate collaboratively in team work with colleagues and healthcare professionals.	**d3.** Participate efficiently with his colleagues in a team work.

Alignment CILOs to teaching strategies and assessment strategies		
(a) Alignment Course Intended Learning Outcomes (CILOs) of knowledge & understanding to Teaching Strategies and Assessment Strategies		
Course Intended Learning Outcomes	**Teaching strategies**	**Assessment Strategies**
a1. acquire knowledge about herbal drugs and natural products concerning their identities,	**Active Lecture**	

safety, optimum use in medication and contraindications.	**Tutorials** **Seminar** **Self-Study** **One-minute paper** **Reading/discussing draft articles** **Map concepts**	**Written exams (Mid, Final)** **Quizzes** **Essays** **Reports** **Instructional activities**
a2. learn how to isolate, identify and estimate the active principles.		
a3. get knowledge about recent researches, articles and advanced studies on drugs treating many diseases.		
(b) Alignment Course Intended Learning Outcomes (CILOs) of Intellectual Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	**Teaching strategies**	**Assessment Strategies**
b1. get a skill in the art of compounding of two or more of the studied drugs to prepare a safe and cheap formulae for medication.	**Active Lecture** **Tutorials** **Seminar** **Self-Study** **Reading/discussing draft articles** **Map concepts**	**Written exams (Mid, Final)** **Quizzes** **Essays** **Reports** **Instructional activities**
b2. acquire knowledge about natural drugs causing addiction, c.n.s. stimulants, narcotics or hypnotics and how to identify them in any given sample.	**Active Lecture** **Tutorials** **Seminar** **Self-Study** **One-minute paper** **Video-clips** **Role-playing** **Reading/discussing draft articles** **Map concepts**	**Written exams (Mid, Final)** **Quizzes** **Essays** **Reports** **Instructional activities**
b3. classify the groups of active constituents and know the medicinal used of each class.		
b4 . Can differentiate between toxic and safe drugs in addition to the precautions accompanying the use of herbal drugs.		

b5. Identity of each herbal drug and evaluation of its genuinety.	**Group-project** **Demonstrations**	**Assignments**

(c)Alignment Course Intended Learning Outcomes (CILOs) of Professional and Practical Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	**Teaching strategies**	**Assessment Strategies**
c1. acquire skills to identify medicinal and toxic plants.	**laboratory practice** **Demonstrations**	**Lab. term works, final practical exam**
c2. Skill to criticize any supplied natural drug assessing its validity for treatment purposes.		
c3 Acquire skills to detect adulteration of any supplied natural drugs.	**Group-project** **Demonstrations**	**Assignments**
c4 acquire skills in isolation and identification of the active constituents in natural product		
c5. Skill to compound herbal teas.		
(d) Alignment Course Intended Learning Outcomes (CILOs) of Transferable Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	**Teaching strategies**	**Assessment Strategies**
d1. Communicate effectively and behave in discipline with colleagues.	**laboratory practice** **group-project** **Demonstrations**	**Lab. term works, assignment**
d3. Participate efficiently with his colleagues in a team work.		

d2. Demonstrate the skills of time management and self-learning.	**laboratory practice** **Demonstrations**	**Lab. term works, final practical exam**

Course Content:					
A – Theoretical Aspect:					
Order	**Units/ Topics List**	**CILOs**	**Sub Topics List**	**No. of Weeks**	**contact hours**
1	**Topic 1**	a1, a2, a3	An Introduction to the pharmaceutical Microbiology	1	3
2	**Topic 2**	a1, a2, a3	An Introduction to the pharmaceutical Microbiology	1	3
3	**Topic 3**	a1, a2, a3	Sterilization and principles and practice of disinfection	1	3
4	**Topic 4**	a1, a2, a3	Sterilization and principles and practice of disinfection	1	3
5	**Topic 5**	a1, a2, a3	Anti-microbial agents :Types of antibiotics, synthetic, anti-microbial agents and semi synthetic.	1	3

Mid-Term Exam					
6	**Topic 6**		Clinical uses of anti- microbial drugs Manufacture of antibiotics.	1	3
7	**Topic 7**		Methods of assaying antibiotics	1	3
8	**Topic 8**		Bacterial resistance to antibiotics and (MIC) Chemical disinfectants, antiseptic and preservatives	1	3
9	**Topic 9**		Evolution of non- antibiotic anti-Microbial agents Mode of action of non-antibiotic antibacterial agents	1	3
Mid-term exam				1	3
4	**Topic 1**	a1, a2,a3 , b1, b2, b3, b4	• Resistance to non-antibiotic anti-microbial agent	1	3 3
		a1, a2,a3 , b1, b2, b3, b4	• Microbiological aspects of pharmaceutical processing	1	3

5	**Topic 2**	a1, a2,a3 , b1, b2, b3, b4	• Ecology of microorganisms as it affects the pharmaceutical	1	3
6	**Topic 3**	a1, a2,a3 , b1, b2, b3, b4	Microbial spoilage and preservation of pharmaceutical products	1	3
7	**Topic 4**	a1, a2,a3 , b1, b2, b3, b4	Contamination of non-sterile pharmaceutical in hospital and community environments (nosocomial infection)	1	3
8	**Topic 5**	a1, a2,a3 , b1, b2, b3, b4	Factory and hospital hygiene and good manufacturing practice	1	3
FINAL - EXAM				-	
TOTAL				16	32
Number of Weeks /and Units Per Semester				16 weeks	6 Units

Teaching strategies of the course:
Active Lecture It is the most frequently employed teaching method to convey knowledge and explain theories to students in large groups (50-200) or in sessions, which consist of more than one group gathered in one classroom. The efficiency of lecturing can be enhanced by using techniques such as **Brain-storming**: It depends on stimulation of the student`s brain through a group of questions &/or **Concepts map**: which depends on sequencing of thoughts in the form of maps with horizontal or vertical relations & by using **learning aids** such as Data show projector

Laboratory practice: students doing experiments in labs individually or in small groups
Feed-back learning: students are individually asked to do perform quick tests (quiz) or to do certain assignments such lab. experiments, problems solving, homework, topics summarizing or internet search. The teacher will provide them feed-back correction & evaluation
Group projects: students work on a project in groups of 2 to 3 students. Important for learning by doing ,using the results in practical manner &for promoting team work skills

Assignments:				
No	**Assignments**	**Aligned CILOs**	**Week Due**	
1	Written exam(s) **to assess** knowledge and understanding and intellectual skills. Practical exam(s) **to assess** practical skills. Periodic exam(s) **to assess** understanding and intellectual skills. Oral exam **to assess** knowledge and understanding and intellectual skills.	b5, c3, c4, d1, d3	8	

Schedule of Assessment Tasks for Students During the Semester						
Theoretical part assessment						
No.	**Assessment Method**		**Week Due**	**Mark**	**Proportion to Total course Assessment**	**Aligned Course Learning Outcomes (CILOs)**
1		Quizzes	4-13, 14	5	5	b1

	Term Works	Assignments	7, 12	5	5	b5, c3, c4, d1, d3
2	Mid-semester exam (written exam)		7	10	10	a1, a2,a3 , b1, b2, b3, b4
3	Final exam (written exam)		16	50	50	a1, a2,a3 , b1, b2, b3, b4
TOTAL				70	70 %	70

Practical part assessment						
No.	**Assessment Method**		**Week Due**	**Mark**	**Proportion to Total course Assessment**	**Aligned Course Learning Outcomes(CILOs)**
1	Lab. Term works	Attitude	1-12	5	5	c1, c2, d1, d2, d3
2		Accomplishments		5	5	
	Final exam (practical)		12	20	20	c1, c2, d2
Total				30	30 %	

Learning Resources:
1- Required Textbook(s) (maximum two).
Pharmaceutical Microbiology by Anthony Cundell. Publisher: Interpharm
2- Essential References.
1-Pharmaceutical Microbiology by A.D. Russell, W.B Hugo (editor) publisher: Blackwell Science 3rd edition (December 1983) 2-Medical Microbiology by Patrick Murray, Ken Rosenthal, G. Kobayashi, M, pfaller. Publisher: Mosby 4th edition (January 15 ,2002)
3- Electronic Materials and Web Sites *etc*.
http://www.pubmed.com

http://www.botanical .com http://www.herbmed.com

	Course Policies:
1	**Class Attendance:** At least 75 % of the course hours should be attended by the student. Otherwise, he/she will not be allowed to attend the final exam
2	**Tardy:** any student who is late for more than 15 minutes from starting the lecture will not be allowed to attend the lecture and will be considered absent.
3	**Exam Attendance/Punctuality:** any student who is late for more than 30 minutes from starting the exam will not be allowed to attend the exam and will be considered absent.
4	**Assignments & Projects:** Assignments and projects will be assessed individually unless the teacher request for group work
5	**Cheating**: Cheating by any means will cause the student failure and he/she must re-study the course
6	**Plagiarism**: Plagiarism by any means will cause the student failure in the course . Other disciplinary procedures will be according to the college rules.

Biostatistics & Pharmacy literature

Course Identification and General Information:								
1	**Course Title:**	**Biostatistics & Pharmacy literature**						
2	**Course Code &Number:**	**PHCL 342**						
3	**Credit hours:**	**C.H**						**TOTAL**
		Theoretical			**P.**	**Tr.**		
		L.	**Tut.**	**S.**				
		1	1	-	-	-		**2**
4	**Study level/ semester at which this course is offered:**	(Third) Year – (2nd) semester						
5	**Pre –requisite (if any):**	• **Mathematics**						
6	**Co –requisite (if any):**	**NONE**						
7	**Program (s) in which the course is offered:**	**Faculty of Medical Science**						
8	**Language of teaching the course:**	**ENGLISH**						
9	**Location of teaching the course:**	**IN THE UNIVERSITY**						

L: lecturing ; Tut: Tutorial , S: seminar ; P: practical ; Tr.: training

Course Description:
The course deals with study of statistical methods used to categorize , test hypothesis and analysis of nominal and parametric data. This course introduces pharmacy students to the principles of applied biostatistics and clinical research methods. The goal of this course is for students to develop the ability to critically appraise health and drug literature in order to make evidence-based decisions in their practice.

Intended learning outcomes of the course (CILOs) and their alignment to Program Intended learning outcomes (PILOs), teaching strategies and assessment strategies		
Alignment CILOs to PILOs		
No.	**PILOs**	**CILOs**
1	**A12**	**a1.** Discuss the basic statistical principles and methods for data analysis.
2	**B1**	**b1.** Interpret the graphical and numerical statistical parameters.
3	**C6**	**c1.** Apply rules of statistics to analyze biomedical/pharmaceutical data
4	**D1**	**d1.** Develop decision making skills using outcomes of statistical analysis.

Alignment CILOs to teaching strategies and assessment strategies		
(a) Alignment Course Intended Learning Outcomes (CILOs) of knowledge & understanding to Teaching Strategies and Assessment Strategies		
Course Intended Learning Outcomes	**Teaching strategies**	**Assessment Strategies**
a1	**Active Lecture-discussion.**	**Written exams**
(b) Alignment Course Intended Learning Outcomes (CILOs) of Intellectual Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	**Teaching strategies**	**Assessment Strategies**
b1	**Lecture-discussion, feed-back learning**	**Written exams, assignments**
(c)Alignment Course Intended Learning Outcomes (CILOs) of Professional and Practical Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	**Teaching strategies**	**Assessment Strategies**
C1	**Feed-back learning, Lecture-discussion**	**quizzes , assignments, written exams**
(d) Alignment Course Intended Learning Outcomes (CILOs) of Transferable Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	**Teaching strategies**	**Assessment Strategies**
d1	**Feed-back learning**	**Assignments**

Course Content:					
Order	**Units/ Topics List**	**CILOs**	**Sub Topics List**	**No. of Weeks**	**contact hours**
1	**Introduction**	a1, b1, c1	definition and significant of statistics, types of data: data, parametric data, nominal data , categorization of data, presentation of data	1	2
2	**Descriptive statistics**	a1, b1, c1	Mean, mode, median, standard deviation, variance, standard error, coefficient of variation.	4	8
3	**Distribution of data**	a1, b1, c1	Types: normal, abnormal; interpretation, solving problems	1	2
4	**Sampling**	a1, b1, c1	definition of population, samples, methods of sampling, with solving problems	1	2
			MID-TERM EXAM	1	2
5	**95 % confidence Interval**	a1, b1, c1	Definition, significance, applications, solving problems	1	2
6	**Correlation statistics**	a1, b1, c1	• Types of correlation • Linear regression • Pearson correlation • Spearman rank correlation • Other methods • solving problems	1	2
7	**Comparative statistics: testing of variations**	a1, b1, c1	• Hypothesis • F-test : P-value , significance of differences in variances between two sets of data, , with solving problems	4	8

			• Student-t test : P-value, significance of differences in means between two sets of data , one-sided test, two-sided test, assuming equal variance, assuming unequal variance, with solving problems • ANOVA : P-value, significance of differences in variances between more than two sets of data , single-factor test, two-factors with replication test, two-factors without replication test • Chi-square test : compare the differences in categorized data. • solving problems		
7	**Introduction to Computer programs in statistics**	a1, b1, c1	• SPSS • Microsoft excel • others	1	4
Course Review		a1, b2, b3, b4, c1,c2	Review of the course topics by discussion session.	1	2
FINAL - EXAM				1	2
TOTAL				16	32
Number of Weeks /and Units Per Semester				16 weeks	3 Units

Teaching strategies of the course:
lecture - Discussion: a short lecture/ address followed by discussion
Feed-back learning: students are individually asked to do perform quick tests (quiz) or to do certain assignments such lab. experiments, problems solving, homework, topics summarizing or internet search. The teacher will provide them feed-back correction & evaluation

Assignments:				
No	**Assignments**	**Aligned CILOs**	**Week Due**	
1	**Individual**: every student is assigned to solve statistical problems during Tutorial at the class .	b1, c1, d1	7	

Schedule of Assessment Tasks for Students During the Semester

(All assessments done by the teacher)

No.	Assessment Method		Week Due	Mark	Proportion of Total course Assessment	Aligned Course Learning Outcomes (CILOs)
2	Term Works	Quizzes	4-13, 14	10	10	c1
		Assignments	7, 12	10	10	b1, c1, d1
3	Mid-semester exam (written exam)		7	20	20	a1, b1, c1
4	Final exam (written exam)		16	60	60	a1, b1, c1
TOTAL				100	100 %	

Learning Resources:

1- Required Textbook(s) (maximum two)

Philip Rowe. Essential statistics for the pharmaceutical sciences, John Wiley & Sons Ltd.

2- Essential References

1. Arun Bhadra Khanal. Methods in Biostatistics For Medical students and Research workers
2. Singh. Biostatistics and introductory calculus

Course Policies:

1	**Class Attendance:** At least 75 % of the course hours should be attended by the student. Otherwise, he/she will not be allowed to attend the final exam.

2	**Tardy:** any student who is late for more than 15 minutes from starting the lecture will not be allowed to attend the lecture and will be considered absent.
3	**Exam Attendance/Punctuality:** any student who is late for more than 30 minutes from starting the exam will not be allowed to attend the exam and will be considered absent.
4	**Assignments & Projects:** Assignments and projects will be assessed individually unless the teacher request for group work
5	**Cheating**: Cheating by any means will cause the student failure and he/she must re-study the course
6	**Plagiarism**: Plagiarism by any means will cause the student failure in the course . Other disciplinary procedures will be according to the college rules.

MEDICINAL CHEMISTRY I

Course Identification and General Information:								
1	**Course Title:**	**MEDICINAL CHEMISTRY I**						
2	**Course Code &Number:**	**PHC 352**						
3	**Credit hours:**	**C.H**						**TOTAL**
		Theoretical			**P.**	**Tr.**		
		L.	**Tut.**	**S.**				
		2	-	-	1	-		**3**
4	**Study level/ semester at which this course is offered:**	(Third) Year – (2^{nd}) semester						
5	**Pre –requisite (if any):**	• **Pharmaceutical organic chemistry I, II** • **Drug discovery & development** • **Pharmacology I**						
6	**Co –requisite (if any):**	**none**						
7	**Program (s) in which the course is offered:**	**Faculty of Medical Science**						
8	**Language of teaching the course:**	**ENGLISH**						
9	**Location of teaching the course:**	**IN THE UNIVERSITY**						

L: lecturing ; Tut: Tutorial , S: seminar ; P: practical ; Tr.: training

Course Description:
This course is the first among (Medicinal chemistry) courses which are designed to provide knowledge and skills in chemistry of medicinal agents (drugs). It deals with the physicochemical properties, chemical synthesis, structure activity relationship (SAR), pharmacophore molecules and metabolism of drugs whose dynamic and kinetics in body has been studied in the previous semesters in (Pharmacology I) course. These drugs including those which affect autonomic nervous system, skeletal muscles and drugs used for eye and alimentary system disorders.

Intended learning outcomes of the course (CILOs) and their alignment to Program Intended learning outcomes (PILOs), teaching strategies and assessment strategies		
Alignment CILOs to PILOs		
No.	**PILOs**	**CILOs**
A3	Explain physicochemical properties of materials and products	**a1.** Explain the correlation between the chemical and therapeutic properties of drugs to their molecular structure.
A4	Describe analytical methods, principles, design and development techniques	**a2.** Explain the principles of synthesis, purification and metabolic reactions of drugs affecting autonomic nervous system, skeletal muscles and drugs used for eye and alimentary system disorders.
A10	Describe the pharmacists role in different pharmacy practices.	**a3.** Describe the role of pharmacist in chemical synthesis of drugs.
B1	Collect interpret and assess information and data relevant to pharmacy practice	**b1.** Interpret the rules of structure-activity relationship to construct pharmacophore of drugs affecting autonomic nervous system, skeletal muscles and drugs used for eye and alimentary system disorders.
		b2. Express molecular structure, synthesis and reactions of drugs with hand-drawing
B2	Classify drugs, approaches and other information relevant to pharmacy based on scientific classification system.	**b3.** Classify, chemically, the drugs affecting autonomic nervous system, skeletal muscles and drugs used for eye and alimentary system disorders.
		b4 . Compare between chemically related drugs based on their chemical structure
B3	Design an evaluate different types of safe and effective drugs , pharmaceutical dosage forms and cosmetic preparations	**b5.** Design newer drugs affecting autonomic nervous system, skeletal muscles and drugs used for eye and alimentary system disorders using structure activity relationship rules.
C1	Handle safely the chemicals, biological samples and pharmaceutical ingredients and products.	**c1.** Handle efficiently and safely the chemical materials and tools used in the laboratory
C2	Operate different instruments and use emerge technologies for preformulation,	**c2.** Operate the instruments and perform experiments successfully in the laboratory

	formulation and analysis of materials according to standard guidelines.	
C7	Conduct research and utilize the results in different pharmaceutical fields.	**c3 .**Search efficiently for information using documented and electronic sources of information.
		c4 Present and report his/her works correctly using appropriate writing rules and technologies media.
D1	Interact and communicate effectively and behave in disciplines with colleagues, patients and healthcare professionals effectively in team-activities.	**d1.** Communicate effectively and behave in discipline with colleagues.
D2	Develop and demonstrate skills of time managements, self-learning and decision making.	**d2.** Demonstrate the skills of time management and self-learning.
D3	Participate collaboratively in team work with colleagues and healthcare professionals.	**d3.** Participate efficiently with his colleagues in a team work.

Alignment CILOs to teaching strategies and assessment strategies		
(a) Alignment Course Intended Learning Outcomes (CILOs) of knowledge & understanding to Teaching Strategies and Assessment Strategies		
Course Intended Learning Outcomes	**Teaching strategies**	**Assessment Strategies**
a1. Understand the correlation between the chemical and therapeutic properties of drugs to their molecular structure.	**Lecture-discussion**	**Written exams**
a2. Explain the principles of synthesis, purification and metabolic reactions of drugs affecting autonomic nervous system, autacoids and respiratory system.		
a3. Describe the role of pharmacist in chemical synthesis of drugs.		
(b) Alignment Course Intended Learning Outcomes (CILOs) of Intellectual Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	**Teaching strategies**	**Assessment Strategies**

b1. Interpret the rules of structure-activity relationship to construct pharmacophore of drugs affecting autonomic nervous system, autacoids and respiratory system.	**Lecture-discussion , feed-back learning**	**Written exams , quizzes**
b2. Express molecular structure, synthesis and reactions of drugs with hand-drawing		**Written exams**
b3. Classify, chemically, the drugs affecting autonomic nervous system, autacoids and respiratory system.	**Lecture-discussion**	**Assignments**
b4 . Compare between chemically related drugs based on their chemical structure	**Group-project**	
b5. Design newer drugs affecting autonomic nervous system, autacoids and respiratory system using structure activity relationship rules.		
(c)Alignment Course Intended Learning Outcomes (CILOs) of Professional and Practical Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	**Teaching strategies**	**Assessment Strategies**
c1. Handle efficiently and safely the chemical materials and tools used in the laboratory	**laboratory practice Group-project**	**Lab. term works, final practical exam Assignments**
c2. Operate the instruments and perform experiments successfully in the laboratory		
c3 . Search efficiently for information using documented and electronic sources of information.		
c4 Present and report his/her works correctly using appropriate writing rules and technologies media.		
(d) Alignment Course Intended Learning Outcomes (CILOs) of Transferable Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	**Teaching strategies**	**Assessment Strategies**
d1. Communicate effectively and behave in discipline with colleagues.	**laboratory practice, group-project laboratory practice**	**Lab. term works, assignment Lab. term works, final practical exam**
d3. Participate efficiently with his colleagues in a team work.		
d2. Demonstrate the skills of time management and self-learning.		

Course Content:					
A – Theoretical Aspect:					
Order	**Units/ Topics List**	**CILOs**	**Sub Topics List**	**No. of Weeks**	**contact hours**
1	**Introduction to medicinal chemistry**	a1, a2, a3	• definitions, brief history, roles in pharmacy. • Pharmacophore and Physicochemical properties in relation to biological activity (structure-activity relationship "SAR"). • Basics of chemical drug designing : patent burst, synthesis of fragments, etc.	1	3
2	**Drug-receptor interaction &Stereochemistry of drugs**	a1, a2, a3	• binding and drug-receptor interaction : chemical bonding and biological activity • stereochemical aspects of drug action • isosterism and bioisosterism	1	3
3	**chemistry of Drug metabolism**	a1, a2, a3	• phase I reactions • phase II reactions • Metabolites: inactive, active , more active	1	3
4	**Drugs acting on the autonomics nervous system**	a1, a2,a3 , b1, b2, b3, b4	**Physicochemical properties, synthesis, purification, structure-activity relationship, metabolism of drugs acting on sympathetic system** • Indirectly sympatholytic drugs • Directly sympatholytic drugs : adrenergic blocking agents	2	6

			• Indirectly sympatholytic drugs • Directly sympatholytic drugs : adrenergic blocking agents		
		a1, a2,a3 , b1, b2, b3, b4	**Physicochemical properties, synthesis, chemical & common names, structure-activity relationship, metabolism of drugs acting on parasympathetic system** • Indirectly parasympathomimetics • Direct parasympathomimetics : cholinergic agonists • Indirectly parasympatholytic drugs • Directly sympatholytic drugs : cholinergic blocking agents • **Drugs acting on autonomic ganglia:** Ganglionic stimulants, ganglionic	2	6
			MID-TERM EXAM	1	2
5	**Drugs affecting skeletal muscles**	a1, a2,a3 , b1, b2, b3, b4	**Physicochemical properties, synthesis, chemical & common names, structure-activity relationship, metabolism of drugs acting on parasympathetic system** • Neuromuscular blocking agents • Central muscles relaxants	1	3
6	**Ophthalmic drugs**	a1, a2,a3 ,	**Physicochemical properties, synthesis, chemical & common names, structure-activity**	2	

		b1, b2, b3, b4	**relationship, metabolism of drugs acting on parasympathetic system** • Parasympathomimetic and parasympatholytics agents used for eye disorders. • Adrenergic agonists and antagonists used for eye disorders • Carbonic anhyrdase inhibitors • Prostaglandin analogues • Osmotic agents " ***Topics of Anti-inflammatory, antihistamins, antibiotics used for eye disorders will be discussed in next pharmacology courses"***		6
7	**Drugs for alimentary system disorders**	a1, a2,a3 , b1, b2, b3, b4	**Physicochemical properties, synthesis, chemical & common names, structure-activity relationship, metabolism of** • Antacids and Drugs for Peptic Ulcer • Anti- emetics • Laxatives • Anti-diarrheal • Antispasmodics • Drugs for irritable colon • Hepatic protectives • Drugs for gall bladder disorders	3	9
Course Review		a1, a2,a3 , b1, b2, b3, b4	Review of the course topics by discussion session.	1	3
FINAL - EXAM				1	3
TOTAL				16	47

Number of Weeks /and Units Per Semester	16 weeks	6 Units

B - Practical Aspect:				
Order	**Tasks/ Experiments**	**Number of Weeks**	**contact hours**	**Aligned Couse Intended Learning Outcomes CILOs**
1	**introduction to pharmaceutical organic chemistry Lab.: safety requirements, list of experiments, How to report, etc.**	**1**	**2**	**c1, c2, d1, d2, d3**
2	**Pharmacopeial physicochemical properties , identification of: adrenergic agonist : adrenaline**	**1**	**2**	**c1, c2, d1, d2, d3**
3	**Pharmacopeial physicochemical properties , identification of : adrenergic blockers : atenolol**	**1**	**2**	**c1, c2, d1, d2, d3**
4	**Pharmacopeial physicochemical properties , identification of : parasympathomimetics : neostigmine**	**1**	**2**	**c1, c2, d1, d2, d3**
5	**Pharmacopeial physicochemical properties , identification of : cholinergic blockers : atropine**	**1**	**2**	**c1, c2, d1, d2, d3**
6	**Pharmacopeial physicochemical properties , identification of : skeletal muscle relaxants suxamethonium**	**1**	**2**	**c1, c2, d1, d2, d3**
7	**Pharmacopeial physicochemical properties , identification of : drugs used for eye disorders : pilocarpineeye drops.**	**1**	**2**	**c1, c2, d1, d2, d3**
8	**Pharmacopeial physicochemical properties , identification of : antipeptic ulcer : omeprazole**	**1**	**2**	**c1, c2, d1, d2, d3**

9	**Pharmacopeial physicochemical properties , identification of : antispasmodics : mebeverine**	**1**	**2**	**c1, c2, d1, d2, d3**
10	**Synthesis of drugs**	**1**	**2**	**c1, c2, d1, d2, d3**
	Purification of drugs.	**1**	**2**	**c1, c2, d1, d2, d3**
PRACTICAL EXAM		**1**	**2**	**c1, c2, d1, d2, d3**
Total		**12**	**24**	

V. Teaching strategies of the course:

Active Lecture It is the most frequently employed teaching method to convey knowledge and explain theories to students in large groups (50-200) or in sessions, which consist of more than one group gathered in one classroom.

The efficiency of lecturing can be enhanced by using techniques such as **Brain-storming**: It depends on stimulation of the student`s brain through a group of questions &/or **Concepts map**: which depends on sequencing of thoughts in the form of maps with horizontal or vertical relations & by using **learning aids** such as Data show projector

Laboratory practice: students doing experiments in labs individually or in small groups

Feed-back learning: students are individually asked to do perform quick tests (quiz) or to do certain assignments such lab. experiments, problems solving, homework, topics summarizing or internet search. The teacher will provide them feed-back correction & evaluation

Group projects: students work on a project in groups of 2 to 3 students. Important for learning by doing ,using the results in practical manner &for promoting team work skills

One Minute Paper is based on a concept called retrieval learning. Just fill out a small questionnaire within 15 minutes after taking a class, reading a chapter, watching a documentary, or learning in another way.

Demonstration is a teaching method used to communicate an idea with the aid of visuals such as flip charts, posters, power point, etc. A demonstration is the process of teaching someone how to make or do something in a step-by-step process. As you show how, you “tell” what you are doing.

Video clips can bring a subject to students in a completely new way and help them comprehend the material they’re reading or working with.

Role-play is a technique that allows students to explore realistic situations by interacting with other people in a managed way in order to develop experience and trial different strategies in a supported environment.

A concept map is a visual representation of a topic that students can create using words, phrases, lines, arrows, space on the page, and perhaps color to help organize their ideas and show their understanding of an idea, vocabulary term, or essential question.

Self-studying is a learning method where students direct their own studying—outside the classroom and without direct supervision. Since students are able to take control of what (and how) they are learning, self-study can be a very valuable way for many students to learn.

Assignments:				
No	**Assignments**	**Aligned CILOs**	**Week Due**	
2	**Group** : each group of students will be assigned to hypothetically design newer drugs form a studied patent drug using SAR principles	b5, c3, c4, d1, d3	8	

Schedule of Assessment Tasks for Students During the Semester						
Theoretical part assessment						
No.	**Assessment Method**		**Week Due**	**Mark**	**Proportion to Total course Assessment**	**Aligned Course Learning Outcomes (CILOs)**
1	Term Works	Quizzes	4-13, 14	5	5	b1
		Assignments	7, 12	5	5	b5, c3, c4, d1, d3
2	Mid-semester exam (written exam)		7	10	10	a1, a2,a3 , b1, b2, b3, b4
3	Final exam (written exam)		16	50	50	a1, a2,a3 , b1, b2, b3, b4
TOTAL				70	70 %	70

Practical part assessment					
No.	**Assessment Method**	**Week Due**	**Mark**	**Proportion to Total**	**Aligned Course Learning Outcomes(CILOs)**

					course Assessment	
1	Lab. Term works	Attitude	1-12	5	5	**c1, c2, d1, d2, d3**
2		Accomplishments		5	5	
	Final exam (practical)		12	20	20	**c1, c2, d2**
Total				30	30 %	

Learning Resources:
1- Required Textbook(s) (maximum two).
1- V Alagarsamy. (2009). *Textbook of Medicinal Chemistry,(* volume I & II) . India: Elsevier. 2- V Alagarsamy. (2013). *Textbook of Medicinal Chemistry,(* volume I & II) . India: Elsevier.
2- Essential References.
1- John, M. Beale, Jr. & John H. Block. (2020). *Wilson and Gisvoldd's Textbok of Organic Medicinal Chemistry and Pharmaceutical Chemistry (12th ed.).* New York: Lippincott. 2- Munendra Mohan Varshney & Asif Husain. (2015). *A textbook of medicinal chemistry*. I.K. International Publishing House Pvt. Limited.
3- Electronic Materials and Web Sites *etc*.
1- e-Resources - Medicinal Chemistry - LibGuides at United States International University. 2- Talks and Lectures - Medicinal Chemistry - LibGuides at United States International University. 3- Medicinal Chemistry Resources for Students | PharmaFactz. 4- Medicinal chemistry [electronic resource] (nyp.edu.sg). 5- Oxford University Press | Online Resource Centre | Patrick: An Introduction to Medicinal Chemistry 6e (oup.com) (Bank of Questions) 6- https://pubs.acs.org/journal/jmcmar. 7- https://benthamscience.com/journals/medicinal-chemistry/. 8- https://www.slideserve.com/richard_edik/introduction-to-medicinal-chemistry. 9- Current medicinal chemistry [electronic resource]. in SearchWorks catalog (stanford.edu). 10- P K Kelkar Library | IIT Kanpur. 11- RSC Medicinal Chemistry journal.
4- Important Journals
• Journal of the American Chemical Society • Angewandte Chemie-International Edition • Journal of Medicinal Chemistry • Nature Reviews Drug Discovery

	Course Policies:
1	**Class Attendance:** At least 75 % of the course hours should be attended by the student. Otherwise, he/she will not be allowed to attend the final exam
2	**Tardy:** any student who is late for more than 15 minutes from starting the lecture will not be allowed to attend the lecture and will be considered absent.
3	**Exam Attendance/Punctuality:** any student who is late for more than 30 minutes from starting the exam will not be allowed to attend the exam and will be considered absent.
4	**Assignments & Projects:** Assignments and projects will be assessed individually unless the teacher request for group work
5	**Cheating**: Cheating by any means will cause the student failure and he/she must re-study the course
6	**Plagiarism**: Plagiarism by any means will cause the student failure in the course . Other disciplinary procedures will be according to the college rules.

PATHOLOGY

Course Identification and General Information:								
1	**Course Title:**	**PATHOLOGY**						
2	**Course Code &Number:**	**PATH362**						
3	**Credit hours:**	**C.H**						**TOTAL**
		Theoretical			**P.**	**Tr.**		
		L.	**Tut.**	**S.**				
		2	-	-	1	-		**3**
4	**Study level/ semester at which this course is offered:**	*(3rd) Year –(2nd) semester*						
5	**Pre –requisite (if any):**	• **PSL231** • **PSL262**						
6	**Co –requisite (if any):**	**Pharmacology I**						
7	**Program (s) in which the course is offered:**	**Faculty of Medical Science**						
8	**Language of teaching the course:**	**ENGLISH**						
9	**Location of teaching the course:**	**IN THE UNIVERSITY**						

Course Description:
This course provide knowledge in general topics of ”Pathology” which is a significant field in modern medical diagnosis and medical research, concerned mainly with the causal study of disease. The course also provides specific sections of pathology including: immunopathology, genetic pathology and tumor pathology. The course is preceded by (Physiology) courses in order to make the students able to compare pathological changes of diseases with normal physiological status of body cells and tissues.

Intended learning outcomes of the course (CILOs) and their alignment to Program Intended learning outcomes (PILOs), teaching strategies and assessment strategies		
Alignment CILOs to PILOs		
No.	**PILOs**	**CILOs**
1	**A1**	**a1.** Identify the mechanisms by which diseases occur.
2		**a2.** Determine the pathological changes in normal body systems that occur during diseases.
3	**B1**	**b1.** Interpret pathological features of diseases
4	**C7**	**c1 .**Search efficiently for information using documented and electronic sources of information.
5		**c2.** Present and report his/her works correctly using appropriate writing rules and technologies media.
6	**D1**	**d1.** Communicate effectively and behave in discipline with colleagues.
7	**D2**	**d2.** Demonstrate the skills of time management and self-learning.
8	**D3**	**d3.** Participate efficiently with his colleagues in a team work.

Alignment CILOs to teaching strategies and assessment strategies		
(a) Alignment Course Intended Learning Outcomes (CILOs) of knowledge& understanding to Teaching Strategies and Assessment Strategies		
Course Intended Learning Outcomes	**Teaching strategies**	**Assessment Strategies**
a1, a2	**Active Lecture**	**Written exams**
(b) Alignment Course Intended Learning Outcomes (CILOs) of Intellectual Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	**Teaching strategies**	**Assessment Strategies**
b1	**Lecture-discussion** **Feed-back learning**	**Written exams, quizzes**
(c)Alignment Course Intended Learning Outcomes (CILOs) of Professional and Practical Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	**Teaching strategies**	**Assessment Strategies**
c1, c2	**feed-back learning, Group-project**	**Assignments**

(d) Alignment Course Intended Learning Outcomes (CILOs) of Transferable Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	**Teaching strategies**	**Assessment Strategies**
d1, d3	**group-project**	**Assignments**
d2	**feed-back learning**	**Assignments**

Course Content:					
Order	**Units/Topics List**	**Sub Topics List**	**No. of Weeks**	**Contact hours**	**Course Learning Outcomes**
1	**Introduction to pathology**	**Tissue and cell damage and metabolic disturbance** ❑ Cell injury and tissue damage ❑ Causes of cell injury and tissue damage ❑ Degenerations: ▫ Cloudy swelling ▫ Types of degeneration ❑ Metabolic disorders, causes and types ❑ Necrosis, causes and types ❑ Inflammation ▫ Definition and etiology ▫ Spread of inflammation	4	12	a1, a2, b1,c1

		▪ Local inflammation ▪ Metastatic inflammation ▪ Generalized infection ▫ Types of acute inflammations • Local changes: Hyperemia exudation of leucocytes and others cells and phagocytosis • Systemic effects of acute inflammation • Exudative: serous, suppurative, serofibinous & haemorrhagic ▫ Chronic inflammation : ▪ Specific and non-specific ❑ Repair and Healing ▫ Healing wounds • Healing by first intention • Healing by second intention			

		• Complication of wound healing ▫ Healing by fibrosis • Mechanism of fibrous tissue formation • Factors influencing wound healing and fibrosis ▪ Healing of bone fractures			
Mid-term exam			1	3	
3	❑ ***Neoplasia***	❑ Types of cellular proliferation ▪ Non-neoplastic - metaplasia - hypertrophy ▪ Hyperplasia - dysplasia ❑ Classification of benign and malignant tumors ❑ Pathology of some benign and malignant tumors ❑ Spread of malignant tumors ❑ Prognosis and grading of malignant tumors ❑ Carcinogenesis & theories of origin of neoplasms	2	9	a1, a2, b1,c1,c2
4	❑ ***Hypertrophy***	❑ Types of hypertrophy ❑ Diseases associated with hypertrophy	2	4	a1, a2, b1

		▪ Hypertrophic cardiomyopathy ▪ Congenital hypertrophic pyloric stenosis •			
5	❑ ***Hyperplasia***	❑ Types of hyperplasia ❑ Diseases associated with hyperplasia ▪ Prostatic hyperplasia Thyroid Hyperplasia	1	3	a1, a2, b1,c1,c2
	❑ ***Atrophy***	❑ Types of atrophy ❑ Disorders associated with generalized atrophy ❑ Disorders associated with organ atrophy ▪ Osteoporosis ▪ Alzheimer's Disease ❑ Pick's Disease	1	3	a1, a2, b1,c1,c2
	Tumor Pathology	❑ General definition of tumor ❑ Benign tumors ❑ Malignant tumors ❑ Tumors of limited malignancy ❑ Tumor-like lesions **Tumor Classification** ❑ ***Nonepithelial tumors***	4	6	a1, a2, b1,c1,c2

		❑ General definitions ▫ Benign nonepithelial tumors ▫ Malignant nonepithelial tumors ❑ Fibrous tumors ▫ Fibroma and fibrosarcoma ❑ Tumors of fatty tissue ▫ Lipoma and liposarcoma ❑ Cartilage tumors, chondroma ❑ Bone tumors ▫ Osteoma and osteosarcoma ❑ ***Benign epithelial tumors*** ❑ Papillomas ▫ Mucosal papilloma ▫ Urothelial papilloma ❑ Adenomas ▫ Solid adenoma ▫ Tubular adenoma ▫ Fibroadenoma ❑ Adenocarcinoma ▫ Highly differentiated forms			

		▫ Moderately differentiated forms ▫ Mucigenous carcinomas ❑ ***Carcinomas of specific organs*** ▫ Prostatic carcinomas ▫ Carcinoma of the breast ▫ Lung carcinoma ❑ Colorectal carcinoma			
Course Review			1	3	a1, a2, b1,c1,c2
Final exam			1	3	a1, a2, b1,c1,c2
Number of Weeks /and Units Per Semester			**16**	**32**	

Teaching strategies of the course:
Lecture It is the most frequently employed teaching method to convey knowledge and explain theories to students in large groups (50-200) or in sessions, which consist of more than one group gathered in one classroom. The efficiency of lecturing can be enhanced by using techniques such as **Brain-storming**: It depends on stimulation of the student`s brain through a group of questions &/or **Concepts map**: which depends on sequencing of thoughts in the form of maps with horizontal or vertical relations & by using **learning aids** such as Data show projector
Feed-back learning: students are individually asked to do perform quick tests (quiz) or to do certain assignments such lab. experiments, problems solving, homework, topics summarizing or internet search. The teacher will provide them feed-back correction & evaluation
Field training: each 2-3 students are commissioned to do certain assignments in a real field entity such as drug factory, hospitals, pharmacies under supervision of both the field principle and an academic supervisor

Assignments:				
No	**Assignments**	**Aligned CILOs**	**Week Due**	
1	**Individual**: every student is assigned to provide a search-based report on one pathological features such as inflammation, lesion, allergy, etc.	c1, c2, d2	6	
2	**Group** : each group of students will be assigned to provide a search-based report on a correlation of one disease to its pathological features.	c1, c2, d1, d2, d3	10	

Schedule of Assessment Tasks for Students During the Semester						
No.	**Assessment Method**		**Week Due**	**Mark**	**Proportion to Total course Assessment**	**Aligned Course Learning Outcomes (CILOs)**
1	Term Works	Quizzes	4-13, 14	10	10	b1
		Assignments	7, 12	10	10	c1, c2, d1, d2, d3
2	Mid-semester exam (written exam)		7	20	20	a1, a2, b1
3	Final exam of (written exam)		16	60	60	a1, a2, b1
TOTAL				100	100 %	

Learning Resources:
1- Required Textbook(s)
1. James OD Oxford Textbook of Pathology, Oxford press, 2012.
2- Essential References
1. John H. Bircky , Essentials of Anatomic and Clinical Pathology , 2nd ed. (2001). Health Professions Institute.

2. Stephen HG, Richared DP: Principles and Practice of clinical parasitology, Jhon Wiely & Sons Ltd; New York 2001.

3.Ursus-Nikolaus Riede, Martin Werner: Color Atlas of Pathology: Pathologic Principles· Associated Diseases; Thieme Stuttgart· New York 2004

4.Stephen HG, Richared DP: Principles and Practice of clinical parasitology, Jhon Wiely & Sons Ltd; New York 2001.

3-Electronic Refences

1- The Journal of Pathology - Wiley Online Library
2-Electronic Journal of Pathology and Histology - Volume 8, issue 1-4 - Journals - IOS Press
3-Pathology Journals | Online Journals in Pathology (mdlinx.com)
4-E-Journals & E-Books - Laboratory & Pathology - LibGuides at Vassar Brothers Medical Center
5-International Journal of Pathology and Clinical Research | Clinmed International Library (clinmedjournals.org)

Course Policies:	
1.	**Class Attendance:** At least 75 % of the course hours should be attended by the student. Otherwise, he/she will not be allowed to attend the final exam
2.	**Tardy:** any student who is late for more than 15 minutes from starting the lecture will not be allowed to attend the lecture and will be considered absent.
3.	**Exam Attendance/Punctuality:** Any student who is late for more than 30 minutes from starting the exam will not be allowed to attend the exam and will be considered absent.
4.	**Assignments & Projects:** Assignments and projects will be assessed individually unless the teacher request for group work
5.	**Cheating**: Cheating by any means will cause the student failure and he/she must re-study the course
6.	**Plagiarism**: Plagiarism by any means will cause the student failure in the course. Other disciplinary procedures will be according to the college rules.

Level Four

Course Specification

COMMUNITY PHARMACY I

Course Identification and General Information:								
1	**Course Title:**	**COMMUNITY PHARMACY I**						
2	**Course Code &Number:**	**PHLC 411**						
3	**Credit hours:**	C.H						TOTAL
		Theoretical			P.	Tr.		
		L.	Tut.	S.				
		2	-	-	1	-		**3**
4	**Study level/ semester at which this course is offered:**	(4th) Year – (first) semester						
5	**Pre –requisite (if any):**	• **Pharmacology I** • **Pharmacology II**						
6	**Co –requisite (if any):**	-						
7	**Program (s) in which the course is offered:**	**Faculty of Medical Science**						
8	**Language of teaching the course:**	**ENGLISH**						
9	**Location of teaching the course:**	**IN THE UNIVERSITY**						

L: lecturing ; Tut: Tutorial , S: seminar ; P: practical ; Tr.: training

Course Description:
The course deals with the role of pharmacist in the "community pharmacy" as providers of pharmaceutical care services, including dispensing of medication and counseling , to patients and as administrators of the pharmacy. The course also provides students the essential knowledge and skills in order to properly recommend safe and effective over the counter (OTC) medications to patients based on benefit: risk evaluation and also to promote drug safety in the community and avoid drug abuse/misuse. The course follows completion of (pharmacology I, II) courses in which the student attain knowledge in actions of drugs covered in this course. Owing to great diversity of OTC medications, OTC medications that are not covered in this course will be covered in the course (Community pharmacy II) in the next semester.

Intended learning outcomes of the course (CILOs) and their alignment to Program Intended learning outcomes (PILOs), teaching strategies and assessment strategies		
Alignment CILOs to PILOs		
No.	**PILOs**	**CILOs**
1	**A2**	**a1.** Explain the impact of good behavior of pharmacists on their communication and relationship to patients and healthcare professionals.
2	**A5**	**a2.** Identify the actions of OTC medications on patients and abuse/misuse of different types of those and other medications.
3	**A9**	**a3**. Define the basis of effective pharmacy administration.
4	**A10**	**a4.** Describe the pharmacist role in community pharmacists to dispense and recommend safe and effective OTC medications to patients.
5	**B5**	**b1.** Plan a modern system to effectively administer the "community pharmacy"
6	**B7**	**b2.** Formulate and evaluate a plan of patient need and rational use of OTC medications to improve patient safety and efficacy
7	**C4**	**c1.** Advise the patient to optimize medicine use.
8	**C6**	**c2.** Apply rules for effective" pharmacy administration"
9	**D1**	**d1.** Communicate effectively and behave in discipline with colleagues.
10	**D2**	**d2.** Demonstrate the skills of time management and self-learning.
11	**D3**	**d3.** Participate efficiently with his colleagues in a team work.
12	**D4**	**d4.** Take responsibility for adaption to change needs in pharmacy practice
13	**D5**	**d5.** Use essential references of evidence-based practice to achieve maximum safety and efficacy of medicines.

Alignment CILOs to teaching strategies and assessment strategies		
(a) Alignment Course Intended Learning Outcomes (CILOs) of knowledge & understanding to Teaching Strategies and Assessment Strategies		
Course Intended Learning Outcomes	**Teaching strategies**	**Assessment Strategies**
a1, a2, a4	**Active Lecture**	**Written exams**
a3	**Virtual lab. practice**	**Lab. term works, final practical exam**
(b) Alignment Course Intended Learning Outcomes (CILOs) of Intellectual Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	**Teaching strategies**	**Assessment Strategies**
b1	**lab. practice**	**Lab. term works, final practical exam**
b2	**Lecture, feed-back learning**	**Written exams , quizzes, assignments**
(c)Alignment Course Intended Learning Outcomes (CILOs) of Professional and Practical Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	**Teaching strategies**	**Assessment Strategies**
c1 , c2	**lab. practice**	**Lab. term works, final practical exam**
(d) Alignment Course Intended Learning Outcomes (CILOs) of Transferable Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	**Teaching strategies**	**Assessment Strategies**
d1, d2, d3, d5	**lab. practice**	**Lab. term works, final practical exam**
d4	**Feed-back learning**	**Quizzes**

Course Content:					
A – Theoretical Aspect:					
Order	**Units/ Topics List**	**CILOs**	**Sub Topics List**	**No. of Weeks**	**contact hours**
1	**Community Pharmacy**		• Definitions • Roles of community pharmacist • Community pharmacy organization • Structure of retail and wholesale drug store- • Types of drug stores and design • Legal requirements for establishment • Maintenance of drug store • Dispensing of proprietary products • Maintenance of records of retail and whole sale	**2**	**6**
2	**Introduction to community pharmacy**	a1, a4, b2	• Brief history • Pharmaceutical care Services offered to patients in community pharmacies • Patient counseling: general rules, response to patinets,	2	6
3	**Pharmaceutical care**		**1- Pharmaceutical care** **2- The Practice and Managing the Community Pharmacy**	1	3

			3- OTC Drugs **- FDA and OTC Drugs- Clinical functions of the Pharmacist**		
4	**Drug benefit:risk and selection of drugs to specific group of patients**	a1, a4, b2	• Drug benefit:risk ratio • dealing with specific groups of patients: general rules • Selection of medication to pregnant women • Selection of medications for breastfeeding women • Safe drugs and dose for children • Misleading of herbal medications	2	6
5	**Drug information sources**	a1, a4, b2	• Reliable foundations and refernces drug information sources	1	3
6	MID-TERM EXAM			1	3
7	**Introduction to OTC medications**	a1, a2, a4, b2	• Definitin • Hoe approve OTC medications • Types of medications (OTC) dispensed without a prescription. • referral to physician	1	3
8	**OTC medications for pain and fever**	a1, a2, a4, b2	• Types of pain • Types of OTC analgesics/antipyretics • Risks • Selection for specific groups of patients • Selection for toothache, headache, musculoskeletal pain, migraine, dysmenorroea	1	3

			• Selection for fever • List of trade names		
9	**OTC for oral healthcare**	a1, a2, a4, b2	• Defintion and types of mouth ulcers • OTC for different types of mouth ulcer • OTC for bad breath	1	3
10	**OTC products for alimentary system: part 1**	a1, a2, a4, b2	Types of OTC, community cases, selection for specific groups of patients and list of trade names for the folloeing cases: • Hyperacidity • Nausea and vomiting • Colic	2	6
11	**Community pharmacy services**	a1, a2, a4, b2	• Self care and self medication. • activities of the community pharmacist in o Processing prescription o Care of patients or clinical pharmacy, monitoring and utilization o Informing health care professionals and the public health promotion	1	3
FINAL - EXAM				1	3
TOTAL				16	32

Number of Weeks /and Units Per Semester	16 weeks	11 topics

B - Practical Aspect: The practical sections are carried out in the " Virtual pharmacy Lab"				
Order	**Tasks/ Experiments**	**Number of Weeks**	**contact hours**	**Aligned Couse Intended Learning Outcomes CILOs**
1	Drug product specification	**1**	**2**	b1, c1, c2, d1, d2, d3, d5
2	Arrangement and classification of medications in community pharmacy	**2**	**4**	b1, c1, c2, d1, d2, d3, d5
3	Using " Medscape" application and other reliable sources to search abou drug safety and efficacy	**1**	**2**	b1, c1, c2, d1, d2, d3, d5
4	Patient`s counseling: OTC and community cases for pain fever, mouth ulcer, hyperacaidity, vomiting and colic	**2**	**4**	b1, c1, c2, d1, d2, d3, d5
5	Patient counseling: (role play) How to use specific dosage forms ? eye drops, ear drops, inhalers, efferevescent, dermal preparations,	**1**	**2**	b1, c1, c2, d1, d2, d3, d5
6	Skills of Dispensing of prescriptions : example of written prescriptions	**2**	**4**	b1, c1, c2, d1, d2, d3, d5
7	Pharmacy administration skills : Documentation & indexing, requestion of	**3**	**6**	b1, c1, c2, d1, d2, d3, d5

	medications, ordering and receiving products pharmaceutical agents manufacturers in Yemen			
PRACTICAL EXAM		**1**	**2**	b1, c1, c2, d1, d2, d3, d5
Total		**12**	**24**	

Teaching strategies of the course:
Lecture It is the most frequently employed teaching method to convey knowledge and explain theories to students in large groups (50-200) or in sessions, which consist of more than one group gathered in one classroom. The efficiency of lecturing can be enhanced by using techniques such as **Brain-storming**: It depends on stimulation of the student`s brain through a group of questions &/or **Concepts map**: which depends on sequencing of thoughts in the form of maps with horizontal or vertical relations & by using **learning aids** such as Data show projector
Laboratory practice: students doing experiments in labs individually or in small groups
Feed-back learning: students are individually asked to do perform quick tests (quiz) or to do certain assignments such lab. experiments, problems solving, homework, topics summarizing or internet search. The teacher will provide them feed-back correction & evaluation
Group projects: students work on a project in groups of 2 to 3 students. Important for learning by doing ,using the results in practical manner &for promoting team work skills.

Assignments				
No	**Assignments**	**Aligned CILOs**	**Week Due**	
1	**Individual**: every student is assigned to search using Medscape on risj and benefit of of a type OTC medication for one specific case	b2	8	

Schedule of Assessment Tasks for Students During the Semester						
Theoretical part assessment						
No.	**Assessment Method**		**Week Due**	**Mark**	**Proportion to Total course Assessment**	**Aligned Course Learning Outcomes (CILOs)**
1	Term Works	Quizzes	4-13, 14	5	5	b2, d4
		Assignments	7, 12	5	5	b2
2	Mid-semester exam (written exam)		7	10	10	a1, a4, b2
3	Final exam (written exam)		16	50	50	a1, a2, a4, b2
TOTAL				70	70 %	70

Practical part assessment						
No.	**Assessment Method**		**Week Due**	**Mark**	**Proportion to Total course Assessment**	**Aligned Course Learning Outcomes(CILOs)**
1	Lab. Term works	Attitude	1-12	5	5	b1, c1, c2, d1, d2, d3, d5
2		Accomplishments		5	5	
	Final exam (practical)		12	20	20	b1, c1, c2, d1, d2, d3, d5
Total				30	30 %	

Learning Resources:
1- Required Textbook(s) (maximum two).
Lillian M Azzopardi. Lecture notes on pharmacy practice, 2010, Pharmaceutical press.Christopher A Langley, Dawn Belcher. Applied pharmaceutical skills, 2009, Pharmaceutical press.

2- Essential References.
1. Agarwal. Dispensing and community pharmacy 2. Jain. A text book of professional pharmacy
3-Electronic Resources
Community pharmacy | List of High Impact Articles | PPts | Journals | Videos (longdom.org) Journal of Pharmacy Practice and Community Medicine | (jppcm.org)

	Course Policies:
1	**Class Attendance:** At least 75 % of the course hours should be attended by the student. Otherwise, he/she will not be allowed to attend the final exam
2	**Tardy:** any student who is late for more than 15 minutes from starting the lecture will not be allowed to attend the lecture and will be considered absent.
3	**Exam Attendance/Punctuality:** any student who is late for more than 30 minutes from starting the exam will not be allowed to attend the exam and will be considered absent.
4	**Assignments & Projects:** Assignments and projects will be assessed individually unless the teacher request for group work
5	**Cheating**: Cheating by any means will cause the student failure and he/she must re-study the course
6	**Plagiarism**: Plagiarism by any means will cause the student failure in the course . Other disciplinary procedures will be according to the college rules.

BIOPHARMACEUTICS & PHARMACOKINETICS I

Course Identification and General Information:								
1	**Course Title:**	**BIOPHARMACEUTICS & PHARMACOKINETICS I**						
2	**Course Code &Number:**	**PHCL 451**						
3	**Credit hours:**	C.H						TOTAL
		Theoretical			P.	Tr.		
		L.	Tut.	S.				
		1	1	-	-	-		**2**
4	**Study level/ semester at which this course is offered:**	*(FOURTH) Year – (2^{ND}) semester*						
5	**Pre –requisite (if any):**	**Biopharmaceutics & PHARMACOKINETICS I**						
6	**Co –requisite (if any):**	**NONE**						
7	**Program (s) in which the course is offered:**	**Faculty of Medical Science**						
8	**Language of teaching the course:**	**ENGLISH**						
9	**Location of teaching the course:**	**IN THE UNIVERSITY**						

L: lecturing ; Tut: Tutorial , S: seminar ; P: practical ; Tr.: training

Course Description
This course provides knowledge in drug pharmacokinetics and bioavailability. It provides the student with the knowledge on biopharmaceutics study of drugs, and bioavailability and bioequivalence**.** In addition, this course has a practical part in order to provide students with skills required to carry out pharmacokinetic and biopharmaceutical experiments.

Intended learning outcomes of the course (CILOs) and their alignment to Program Intended learning outcomes (PILOs), teaching strategies and assessment strategies		
Alignment CILOs to PILOs		
No.	**PILOs**	**CILOs**
1	**A4**	**a1.** Explain the procedures employed during pharmacokinetic/biopharmaceutical studies.
2	**A10**	**a2.** Describe the role of pharmacist in determination of pharmacokinetic/biopharmaceutical parameters.
3	**A12**	**a3.**Explain the basic mathematical principles of pharmacokinetic/biopharmaceutical calculations
4		**a4.** Identify the order of changing drug amount in the body and the models of drug distribution
5	**B1**	**b1.** Interpret the numerical and graphical data relevant to drug pharmacokinetic/biopharmaceutical
6	**B9**	**b2.** Apply calculations to graphically & mathematical solve pharmacokinetic/biopharmaceutical problems.
7	**C1**	**c1.** Handle efficiently and safely the chemical materials and tools used in the laboratory
8	**C2**	**c2.** Operate the instruments successfully in the laboratory
9	**C3**	**c3 .** Carry out pharmacokinetic/biopharmaceutical experiment
10	**D1**	**d1.** Communicate effectively and behave in discipline with colleagues.
11	**D2**	**d2.** Demonstrate the skills of time management , self-learning and problems solving
12	**D3**	**d3.** Participate efficiently with his colleagues in a team work.

Alignment CILOs to teaching strategies and assessment strategies		
(a) Alignment Course Intended Learning Outcomes (CILOs) of knowledge& understanding to Teaching Strategies and Assessment Strategies		
Course Intended Learning Outcomes	**Teaching strategies**	**Assessment Strategies**
a1 , a2, a3, a4	**Active lecture**	**Written exams**
(b) Alignment Course Intended Learning Outcomes (CILOs) of Intellectual Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	**Teaching strategies**	**Assessment Strategies**
b1, b2	**Active-lecture, problem-based learning, feed-back learning**	**Written exams , assignments , quizzes**
(c)Alignment Course Intended Learning Outcomes (CILOs) of Professional and Practical Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	**Teaching strategies**	**Assessment Strategies**
c1, c2, c3	**Lab. practice**	**Lab. accomplishments and attitude**
(d) Alignment Course Intended Learning Outcomes (CILOs) of Transferable Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	**Teaching strategies**	**Assessment Strategies**
d1, d3	**Lab. practice**	**Lab. attitude**
d2	**Lab. practice, feed-back learning**	**Assignments**

Course Content

a. Theoretical aspects

Each topic, when applicable, is supported by Solved and homework problems.

Order	Units/ Topics List	CILOs	Sub Topics List	No. of Weeks	contact hours
1	Introduction to Biopharmaceutics	a1, a2, a3, a4, b1, b2	• Effect of various routes of administration on drug bioavailability	6	

			• GIT absorption of drugs ○ Mechanism of drug absorption ○ Physiological factors affecting oral absorption ○ Physical-Chemical factors affecting oral absorption ○ Formulation factors affecting oral absorption • Techniques for the GIT absorption assessment		12
Mid-term exam				1	2

2	**Biopharmaceutics study of drugs**	a1, a2, a3, a4, b1, b2	○ Distribution ○ Metabolism ○ Elimination	3	6
3	**Bioavailability and bioequivalence**	a1, a2, a3, a4, b1, b2	○ Definition ○ Method of determination of bioavailability using blood and urine excretion data.	6	12

			○ Protocol design of bioavailability assessment. ○ Methods of bioequivalence determination		
FINAL – EXAM				1	2
TOTAL				16	32
Number of Weeks /and Units Per Semester				16 weeks	10 Units

Teaching strategies of the course
lecture - Discussion: a short lecture/ address followed by discussion
Feed-back learning: students are individually asked to do perform quick tests (quiz) or to do certain assignments such lab. experiments, problems solving, homework, topics summarizing or internet search. The teacher will provide them feed-back correction & evaluation
Group projects: students work on a project in groups of 2 to 3 students. Important for learning by doing ,using the results in practical manner &for promoting team work skills.

Assignments

No	Assignments	Aligned CILOs	Week Due	Mark
1	**Individual**: A number of problems related to the topics will be answered as homework exercises	b2, c3, d2	2-12	10

Schedule of Assessment Tasks for Students During the Semester

Theoretical part assessment

No.	Assessment Method	Week Due	Mark	Proportion to Total	Aligned Course Learning

					course Assessment	Outcomes (CILOs)
1	Term Works	Quizzes	4-13, 14	5	5	b2
		Assignments	7, 12	5	5	b2, c3, d2
2	Mid-semester exam (written exam)		7	10	10	a1, a2, a3, a4, b1, b2
3	Final exam (written exam)		16	50	50	a1, a2, a3, a4, b1, b2
TOTAL				70	70 %	70

Learning Resources

1- Required Textbook(s) (maximum two)

1 Handbook of Basic Pharmacokinetics-Ritschel, W.A.,Drug Intelligence Publication,
2 Fundamentals of Clinical Pharmacokinetics-Wagner,J.C.,Drug Intelligence Publication,

2- Essential References

1. Wagner. Pharmacokinetics for the pharmaceutical scientist
2. Venkaeswarlu. Biopharmaceutics and pharmacokinetics
3. Remington's Pharmaceutical Sciences - Gennaro A.R., ed., 19th Edition, Mack Publishing Co., Easton, PA. 1995. Clinical Pharmacokinetics - Rowland, M. & Tozer,N., 2nd,edi
4. Pharmacokinetics-Gibaldi M. & Perrier, D., 2nd ed., Marcel Dekker, New York, 1982. Pharmacokinetics for the Pharmaceutical Scientist-Wagner, J.C., Technomic Publishing

Course Policies

1	**Class Attendance:** At least 75 % of the course hours should be attended by the student. Otherwise, he/she will not be allowed to attend the final exam
2	**Tardy:** any student who is late for more than 15 minutes from starting the lecturewill not be allowed to attend the lecture and will be considered absent.
3	**Exam Attendance/Punctuality:** any student who is late for more than 30 minutes from starting the examwill not be allowed to attend the exam and will be considered absent.
4	**Assignments & Projects:** Assignments and projects will be assessed individually unless the teacher request for group work

5	**Cheating**: Cheating by any means will cause the student failure and he/she must re-study the course
6	**Plagiarism**: Plagiarism by any means will cause the student failure in the course . Other disciplinary procedures will be according to the college rules.

PHARMACEUTICAL BIOTECHNOLOGY

Course Identification and General Information:

1	Course Title:	PHARMACEUTICAL BIOTECHNOLOGY					
2	Course Code &Number:	PHT 461					
3	Credit hours:	C.H					TOTAL
		Theoretical			P.	Tr.	
		L.	Tut.	S.			
		2	-	-	-	-	2
4	Study level/ semester at which this course is offered:	*(4TH) Year – (FRIST) semester*					
5	Pre –requisite (if any):	• Pharmaceutics I, II , III • General biology • General microbiology					
6	Co –requisite (if any):	-					
7	Program (s) in which the course is offered:	Faculty of Medical Science					
8	Language of teaching the course:	ENGLISH					
9	Location of teaching the course:	IN THE UNIVERSITY					

Course Description:

The course deals with the study of applications of biotechnological methods such as recombinant DNA , polymerase chain reaction (PCR) and peptide technologies in pharmacy in particular the use of these techniques in analysis of genes and also the recent production of certain medicines such as monoclonal antibodies and others and their therapeutic uses.

Intended learning outcomes of the course (CILOs) and their alignment to Program Intended learning outcomes (PILOs), teaching strategies and assessment strategies		
1. Alignment CILOs to PILOs		
No.	**PILOs**	**CILOs**
1.	**A1**	**a1.** Explain the physicochemical properties of biotechnology drug products.
2.	**A3**	**a2**. Explain the approaches and analytical techniques applied in biotechnology relevant to gene analysis and production of biotechnology-drug products.
3.		**a3**. Identify the actions, therapeutic uses and adverse effects of biotechnology-drug products.
4.	**A4**	**a4.** Describe the role of pharmacist in developing and employing biotechnology techniques in pharmacy practice.
5.	**B2**	**b1 .** Classify biotechnology drugs.
6.	**B4**	**b2 .** Design a suitable method to extract , isolate and purify DNA and genes from human samples
7.	**C7**	**c1 .**Search efficiently for information using documented and electronic sources of information.
8.		**c2.** Present and report his/her works correctly using appropriate writing rules and technologies media.
9.	**D2**	**d1.** Demonstrate the ability of time management and self-learning.

Alignment CILOs to teaching strategies and assessment strategies		
(a) Alignment Course Intended Learning Outcomes (CILOs) of knowledge& understanding to Teaching Strategies and Assessment Strategies		
Course Intended Learning Outcomes	**Teaching strategies**	**Assessment Strategies**
a1, a3, a4	**Lecture**	**Written exams**
a2	**Lecture, feed-back learning**	**Written exams , quizzes**
(b) Alignment Course Intended Learning Outcomes (CILOs) of Intellectual Skills to Teaching Strategies and Assessment Strategies:		

Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
b1	Lecture	Written exams
b2	Lecture, feed-back learning	Written exams, assignment

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

Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
c1 , c2	feed-back learning	Assignments

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

Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
d1	Feed-back learning	Assignments

Course Content:

Order	Units/ Topics List	CILOs	Sub Topics List	No. of Weeks	contact hours
1	**Introduction to Biotechnology**	a1, a2, a3, a4, b1, b2	• definition & purposes & brief history. • Relation of biotechnology to advancement in intracellular chemistry, molecular biology, rDNA technology, pharmacogenomics and immunopharmacology. • living organisms used in biotechnology	2	4
2	**Techniques of Biotechnology**	a1, a2, a3, a4, b1, b2	• Classification of biotechnology techniques • Principles, equipment, pharmaceutical applications, comparison , advantages and disadvantages of :	4	8

			○ recombinant DNA (rDNA). ○ Monoclonal antibodies ○ Polymerase chain Reaction (PCR) ○ Nucleotide blockade/antisense ○ Peptide technology		
3	**Analysis of genes**	a1, a2, a3, a4, b1, b2	• DNA isolation and purification • Genetic analysis	1	2
			• MID-TERM EXAM • Post-exam disussion	1	2
4	**biotechnology produced-Drugs**	a1, a2, a3, a4, b1, b2	• Classification of biotechnology drugs • advantage and disadvantages of biotechnology drug products as compared to classical medications • Proteins as the first biotechnology products of biotechnology • Physicochemical properties, Indication, mechanism of action, dose, route of administration, precautions, biotechnology by which is obtained for the following products, : o Anticoagulant drug: Lepirudin (Refludan) ® o Antisense drugs : Fomivirsen sodium (Vitravene), efavirenz (Sustiva)® o Clotting factors : Systemic antihemophilic factors (Kogenate) ® o colony-stimulating factors: granulocyte colony–stimulating factor (Filgrastim)®	6	12

			• Erythropoietins : Epoetin alfa (Epogen, Procrit) ® • Fusion inhibitors: Enfuvirtide (Fuzeon) ® • Growth factor: becaplermin (Regranex) ® • Human growth hormone: ystemic growth hormone (Humatrope, • protropin) ® • Interferons: interferon beta-1b (betaseron), interferon beta-1a (Avonex) ® • Interleukins: Aldesleukin (Proleukin) ® • tissue plasminogen activators: recombinant Alteplase (Activase) ® • Vaccines: hepatitis B vaccine recombinant (Engerix-b) ®, haemophilus B conjugate vaccine (Hibtiter) ®		
Course Review		a1, a2, a3, a4, b1, b2	Review of the course topics by discussion session.	1	2
FINAL - EXAM				1	2
TOTAL				16	32
Number of Weeks /and Units Per Semester				16 weeks	4 Units

Teaching strategies of the course:

Lecture It is the most frequently employed teaching method to convey knowledge and explain theories to students in large groups (50-200) or in sessions, which consist of more than one group gathered in one classroom.
The efficiency of lecturing can be enhanced by using techniques such as **Brain-storming**: It depends on stimulation of the student`s brain through a group of questions &/or **Concepts**

map: which depends on sequencing of thoughts in the form of maps with horizontal or vertical relations & by using **learning aids** such as Data show projector
Feed-back learning: students are individually asked to do perform quick tests (quiz) or to do certain assignments such lab. experiments, problems solving, homework, topics summarizing or internet search. The teacher will provide them feed-back correction & evaluation

Assignments:

No	Assignments	Aligned CILOs	Week Due	
1	**Individual**: every student is assigned to provide a search-based report on one biotechnology method or one drug produced by biotechnology.	b2, c1, c2, d1	7	

Schedule of Assessment Tasks for Students During the Semester

No.	Assessment Method		Week Due	Mark	Proportion to Total course Assessment	Aligned Course Learning Outcomes (CILOs)
1	Term Works	Quizzes	4-13, 14	10	10	a2
		Assignments	7, 12	10	10	b2, c1, c2, d1
2	Mid-semester exam (written exam)		7	20	20	a1, a2, a3, a4, b1, b2
3	Final exam of (written exam)		16	60	60	a1, a2, a3, a4, b1, b2
TOTAL				100	100 %	

Learning Resources:

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

Ansel`s Pharmaceutical dosage forms and drug delivery system, 2011, Lippincott Williams and Wilkins, USA: Chapter: Biotechnology

2- Essential References.

Nagori. Foundation s in pharmaceutical biotechnology R.S. pharmaceutical biotechnology
3- Electronic Resources
European Journal of Pharmaceutics and Biopharmaceutics European Journal of Pharmaceutics and Biopharmaceutics | ScienceDirect.com by Elsevier Home Page: Journal of Pharmaceutical Sciences (jpharmsci.org)

Course Policies:	
1	**Class Attendance:** At least 75 % of the course hours should be attended by the student. Otherwise, he/she will not be allowed to attend the final exam
2	**Tardy:** any student who is late for more than 15 minutes from starting the lecture will not be allowed to attend the lecture and will be considered absent.
3	**Exam Attendance/Punctuality:** any student who is late for more than 30 minutes from starting the exam will not be allowed to attend the exam and will be considered absent.
4	**Assignments & Projects**: Assignments and projects will be assessed individually unless the teacher request for group work
5	**Cheating:** Cheating by any means will cause the student failure and he/she must re-study the course
6	**Plagiarism:** Plagiarism by any means will cause the student failure in the course . Other disciplinary procedures will be according to the college rules.

INDUSTRIAL PHARMACY

Course Identification and General Information:								
1	**Course Title:**	**INDUSTRIAL PHARMACY**						
2	**Course Code &Number:**	**PHT 441**						
3	**Credit hours:**	C.H						TOTAL
		Theoretical			P.	Tr.		
		L.	Tut.	S.				
		2	-	-	-	-		**2**
4	**Study level/ semester at which this course is offered:**	*(4th) Year – (First) semester*						
5	**Pre –requisite (if any):**	-------						
6	**Co –requisite (if any):**	**Pharmaceutical quality control**						
7	**Program (s) in which the course is offered:**	**Faculty of Medical Science**						
8	**Language of teaching the course:**	**ENGLISH**						
9	**Location of teaching the course:**	**AT THE UNIVERSITY FACILITY**						

L: lecturing ; Tut: Tutorial , S: seminar ; P: practical ; Tr.: training

Course Description:
This course deals with the study of criteria of good practices relevant to manufacturing of medications in drug plants . These criteria include current good manufacturing practice (cGMP) , good storage practice (cGSP) and good laboratory practice (cGLP) that are based on global guidelines such as ICH, WHO and ISO. The course also concerns with and the substantial unit operations utilized during manufacturing of these products including those involved in transfer of materials, those applied prior and after mixing of ingredients and those employed in filling and packaging of finished products.

Intended learning outcomes of the course (CILOs) and their alignment to Program Intended learning outcomes (PILOs), teaching strategies and assessment strategies		
3. Alignment CILOs to PILOs		
PILOs		**CILOs**
Knowledge and understanding: upon completion of the course, students will be able to:		
A4	Describe analytical methods, principles, design and development techniques	**a1.** Identify criteria for good practice of pharmaceutical manufacturing including cGMP, cGSP, cGLP based on ICH, WHO and ISO guidelines.
		a2. Describe the different types unit-operation methods used for pharmaceutical manufacturing and their advantages/disadvantages
A10	Describe the pharmacists role in different pharmacy practices.	**a3.** Describe the role of pharmacist in employment GMP criteria and to operate unit operations for manufacturing of drug products.
Intellectual skills: upon completion of the course, students will be able to:		
B3	Design an evaluate different types of safe and effective drugs , pharmaceutical dosage forms and cosmetic preparations	**b1.** Select standard operation procedure to obtain in-process and finished products with specific criteria.
Professional and practical skills: upon completion of the course, students will be able to:		
C1	Handle safely the chemicals, biological samples and pharmaceutical ingredients and products.	**c1.** Handle efficiently and safely the chemical materials and tools used in the laboratory
C2	Operate different instruments and use emerge technologies for preformulation, formulation and	**c2.** Operate the instruments and perform experiments successfully in the laboratory

	analysis of materials according to standard guidelines.	
C7	Conduct research and utilize the results in different pharmaceutical fields.	**c3 .**Search efficiently for information using documented and electronic sources of information.
		c4. Present and report his/her works correctly using appropriate writing rules and technologies media.
Transferable skills: upon completion of the course, students will be able to:		
D1	Interact and communicate effectively and behave in disciplines with colleagues, patients and healthcare professionals effectively in team-activities.	**d1.** Communicate effectively and behave in discipline with colleagues.
D2	Develop and demonstrate skills of time managements, self-learning and decision making.	**d2.** Demonstrate the skills of time management and self-learning.
D3	Participate collaboratively in team work with colleagues and healthcare professionals.	**d3.** Participate efficiently with his colleagues in a team work.

Alignment CILOs to teaching strategies and assessment strategies		
(a) Alignment Course Intended Learning Outcomes (CILOs) of knowledge & understanding to Teaching Strategies and Assessment Strategies		
Course Intended Learning Outcomes	**Teaching strategies**	**Assessment Strategies**

a1. Identify criteria for good practice of pharmaceutical manufacturing including cGMP, cGSP, cGLP based on ICH, WHO and ISO guidelines.	**Active Lecture**	**written exams**
a2. Describe the different types unit-operation methods used for pharmaceutical manufacturing and their advantages/disadvantages		
a3. Describe the role of pharmacist in employment GMP criteria and to operate unit operations for manufacturing of drug products.		
(b) Alignment Course Intended Learning Outcomes (CILOs) of Intellectual Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	**Teaching strategies**	**Assessment Strategies**
b1. Select standard operation procedure to obtain in-process and finished products with specific criteria	**Active lecture, feed-back learning**	**Written exam, quizzes**
(c)Alignment Course Intended Learning Outcomes (CILOs**) of Professional and Practical Skills to Teaching Strategies and Assessment Strategies:**		
Course Intended Learning Outcomes	**Teaching strategies**	**Assessment Strategies**

c1. Handle efficiently and safely the chemical materials and tools used in the laboratory	**Lab. Practice**	**Lab. term works, final practical exam**
c2. Operate the instruments and perform experiments successfully in the laboratory		
c3 . Search efficiently for information using documented and electronic sources of information.	**Lab. Practice, group-project**	**Lab. term works, final practical exam , assignment**
c4. Present and report his/her works correctly using appropriate writing rules and technologies media.		
(d) Alignment Course Intended Learning Outcomes (CILOs) of Transferable Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	**Teaching strategies**	**Assessment Strategies**
d1. Communicate effectively and behave in discipline with colleagues.	**Lab. Practice, group-project**	**Lab. term works, final practical exam , assignments**
d2. Demonstrate the skills of time management and self-learning.		
d3. Participate efficiently with his colleagues in a team work.		

Course Content:					
A. Theoretical aspect					
Order	**Units/ Topics List**	**CILOs**	**Sub Topics List**	**No. of Weeks**	**contact hours**
1	Particle Size reduction	a1, a2, a3, b1	• Mechanism of size reduction • Factors influencing size reduction • Pharmaceutical application • Energy requirements • Types of mills Closed circuit grinding	3	6
2	Particle Size separation	a1, a2, a3, b1	• Size separation standard screens • Oscillating tray sitter grating sifters • Cyclone separators • Sedimentation • Elutriation Handling of powders	2	4
3	Filtration	a1, a2, a3, b1	• Mechanism of Filtration • Factors affecting filter selection • Filter media • Filter selection • Filter aids • Classification of filters o Leaf filters o Rotator continuous o Meta filters	2	4

			Membrane filters		
MID-TERM EXAM				1	2
4	Packaging Technology	a1, a2, a3, b1	- Packaging materials - Glass & Glass containers - Metal & Metal containers - plastics & Plastic containers - Paper & Board - Films, foils & laminates - Rubber - Based compounds - Closures - Filling - Labeling	3	6
5	centrifugation	a1, a2, a3, b1	• Centrifuge theoretical consideration • Laboratory equipment • Large scale equipment Low temperature centrifuge for biological work.	2	4
6	Extraction	a1, a2, a3, b1	• Extraction leaching process • Factors affecting the efficiency of leaching process. • Diffusion batteries • Continuous diffusion batteries • Continuous counter current extraction Cragg's apparatus	2	4

	Crystallization		• Crystallization classification
			  ○ Batch crystallizers
			  ○ Simple vacuum crystallizers
			• Nucleation and crystal growth
			• Critical humidity prevention of caking		

	Mixing	a1, a2, a3, b1	• Mechanism of mixing • Mixing equipment • Mixing selection • Solid-solid, solid-liquid and liquid –liquid mixers used in pharmaceutical industry.		

	Drying	a1, a2, a3, b1	• Classification of dryers
			  ○ Compartment
			  ○ Tunnel
			  ○ Rotary
			  ○ Cylindrical
			  ○ Vacuum
			  ○ Spry driers
			  ○ Fluidized bed dryers.
			• Theory of drying loss on drying and moisture content.
			• Equilibrium moisture content
			• Principles of freeze drying and freeze dryers.		

Course Review	a1, a2, a3, b1	Review of the course topics by discussion session.	1	2
FINAL – EXAM			1	2
TOTAL			16	32
Number of Weeks /and Units Per Semester			16 weeks	6 Units

Teaching strategies of the course:

Active Lecture It is the most frequently employed teaching method to convey knowledge and explain theories to students in large groups (50-200) or in sessions, which consist of more than one group gathered in one classroom.

The efficiency of lecturing can be enhanced by using techniques such as **Brain-storming**: It depends on stimulation of the student`s brain through a group of questions &/or **Concepts map**: which depends on sequencing of thoughts in the form of maps with horizontal or vertical relations & by using **learning aids** such as Data show projector

Feed-back learning: students are individually asked to do perform quick tests (quiz) or to do certain assignments such lab. experiments, problems solving, homework, topics summarizing or internet search. The teacher will provide them feed-back correction & evaluation

Group projects: students work on a project in groups of 2 to 3 students. Important for learning by doing ,using the results in practical manner &for promoting team work skills

Assignments:

No	Assignments	Aligned CILOs	Week Due	
1	**Group :** The teacher will provide the students with a	c3, c4, d1, d2, d3	5-12	

	number of problems related to operation and production studied in this course. The student group is assigned to provide a search-based technical solutions of one of those problems			

Schedule of Assessment Tasks for Students During the Semester						
Theoretical part assessment						
No.	**Assessment Method**		**Week Due**	**Mark**	**Proportion to Total course Assessment**	**Aligned Course Learning Outcomes (CILOs)**
1	Term Works	Quizzes	4-13, 14	5	5	b1
		Assignments	7, 12	5	5	c3, c4, d1
2	Mid-semester exam (written exam)		7	10	10	a1, a2, a3, b1
3	Final exam (written exam)		16	50	50	a1, a2, a3, b1
TOTAL				70	70 %	70

Practical part assessment					
No.	**Assessment Method**	**Week Due**	**Mark**	**Proportion to Total course Assessment**	**Aligned Course Learning Outcomes(CILOs)**

1	Lab. Term works	Attitude	1-12	5	5	b1, c1, c2, d1, d2, d3
		Accomplishments		5	5	
2	Final exam (practical)		12	20	20	b1, c1, c2, d1, d2, d3
Total				30	30 %	

Learning Resources:

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

Aulton M.E., Pharmaceutics: the science of dosage form design, 2012, Churchill Livingstone
Lachman, Theory and Practice of Industrial Pharmacy

2- Essential References.

Vidya. pharmaceutical industrial management Chandrasekhar. Pharmaceutical engineering
Jyothi. pharmaceutical engineering

3- Electronic Materials and Web Sites *etc*.

https://www.slideshare.net/AswaNasir/industrial-pharmacy-ppt
https://www.slideshare.net/WilliamDube1/industrial-pharmacy

Course Policies:	
1	**Class Attendance:** At least 75 % of the course hours should be attended by the student. Otherwise, he/she will not be allowed to attend the final exam
2	**Tardy:** any student who is late for more than 15 minutes from starting the lecture will not be allowed to attend the lecture and will be considered absent.
3	**Exam Attendance/Punctuality:** any student who is late for more than 30 minutes from starting the exam will not be allowed to attend the exam and will be considered absent.

4	**Assignments & Projects:** Assignments and projects will be assessed individually unless the teacher request for group work
5	**Cheating**: Cheating by any means will cause the student failure and he/she must re-study the course
6	**Plagiarism**: Plagiarism by any means will cause the student failure in the course . Other disciplinary procedures will be according to the college rules.

Applied Pharmacognosy

Course Identification and General Information:								
1	**Course Title:**	**Applied Pharmacognosy**						
2	**Course Code**	**PHG 422**						
3	**Credit hours:**	**C.H**						**TOTAL**
		Theoretical			**P.**	**Tr.**		
		L.	**Tut.**	**S.**				
		2	-	-	1	-		**3**
4	**Study level/ semester at which this course is offered:**	*(fourth) Year – (second) semester*						
5	**Pre –requisite (if any):**	**-**						
6	**Co –requisite (if any):**	-						
7	**Program (s) in which the course is offered:**	**Faculty of Medical Science**						
8	**Language of teaching the course:**	**ENGLISH**						
9	**Location of teaching the course:**	**At the faculty**						

L: lecturing ; Tut: Tutorial , S: seminar ; P: practical ; Tr.: training

Course Description:
The course aims to introduce the students to the construction of natural products with usage as drugs and other bioactive molecules from nature, their origin, identification, development, production, control and usage. It aims also to give them basic skills in pharmacognosy, which will give an understanding of the biological effects of natural products, both as medicinal substances, and herbal medicines.

Intended learning outcomes of the course (CILOs) and their alignment to Program Intended learning outcomes (PILOs), teaching strategies and assessment strategies.		
Alignment CILOs to PILOs		
PILOs		**CILOs**
Knowledge & understanding : Upon successful completion of the course, students will be able to:		
A3	Explain physicochemical properties of materials and products	**a1.** Know different methods used to detect adulterants of natural products.
A4	Describe analytical methods, principles, design and development techniques	**a2.** Identify the major active constituents.
A10	Describe the pharmacists role in different pharmacy practices.	**a3.** Know different types of isolation of active constituents through chromatography.
Intellectual skills : Upon successful completion of the course, students will be able to:		
B1	Collect interpret and assess information and data relevant to pharmacy practice	**b1.** Search for suitable method for herbal drug administration.
		b2. Establish a suitable method for herbal drug analysis.

Professional & practical skills : Upon successful completion of the course, students will be able to:		
C1	Handle safely the chemicals, biological samples and pharmaceutical ingredients and products.	**c1.** Carry out simple and adequate method for identification of major herbal drug constituents.
C2	Operate different instruments and use emerge technologies for preformulation, formulation and	**c2.** Find methods for isolation of some herbal a drug constituents.

	analysis of materials according to standard guidelines.	
C7	Conduct research and utilize the results in different pharmaceutical fields.	**c3** Acquire skills to detect adulteration of any supplied natural drugs.
		c4 Determine the Pharmacopeial constants of herbal drugs.
		c5 Comparing traditional and medicinal uses of herbal drugs
Transferable skills : Upon successful completion of the course, students will be able to:		
D1	Interact and communicate effectively and behave in disciplines with colleagues, patients and healthcare professionals effectively in team-activities.	**d1.** Communicate effectively and behave in discipline with colleagues.
D2	Develop and demonstrate skills of time managements, self-learning and decision making.	**d2** Write a report for criticizing an herbal drug.
D3	Participate collaboratively in team work with colleagues and healthcare professionals.	**d3.** Participate efficiently with his colleagues in a team work.

Alignment CILOs to teaching strategies and assessment strategies		
(a) Alignment Course Intended Learning Outcomes (CILOs) of knowledge & understanding to Teaching Strategies and Assessment Strategies		
Course Intended Learning Outcomes	**Teaching strategies**	**Assessment Strategies**
a1. Know different methods used to detect adulterants of natural products.	**Active Lecture** **Tutorials** **Seminar** **Self-Study** **One-minute paper**	**Written exams (Mid, Final)** **Quizzes**
a2. Identify the major active constituents.		

a3. Know different types of isolation of active constituents through chromatography.	**Video-clips Role-playing Reading/discussing draft articles Map concepts**	**Essays Reports Instructional activities**
(b) Alignment Course Intended Learning Outcomes (CILOs) of Intellectual Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	**Teaching strategies**	**Assessment Strategies**
b1. Interpret the rules of structure-activity relationship to construct pharmacophore of drugs affecting autonomic nervous system, autacoids and respiratory system.	**Active Lecture Tutorials Seminar Self-Study One-minute paper Video-clips Map concepts**	**Written exams (Mid, Final) Quizzes Essays Reports Instructional activities**
b1. Search for suitable method for herbal drug administration.	**Active Lecture Tutorials Seminar Self-Study One-minute paper Video-clips Role-playing Reading/discussing draft articles Map concepts**	**Written exams (Mid, Final) Quizzes Essays Reports Instructional activities**
b2. Establish a suitable method for herbal drug analysis.		

(c)Alignment Course Intended Learning Outcomes (CILOs) of Professional and Practical Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	**Teaching strategies**	**Assessment Strategies**

c1. Carry out simple and adequate method for identification of major herbal drug constituents.	**laboratory practice** **Demonstrations**	**Lab. term works, final practical exam**
c2. Find methods for isolation of some herbal a drug constituents.		
c3 Acquire skills to detect adulteration of any supplied natural drugs.	**Group-project** **Demonstrations**	**Assignments**
c4 Determine the Pharmacopeial constants of herbal drugs.		
c5 Comparing traditional and medicinal uses of herbal drugs		

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

Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
d1. Communicate effectively and behave in discipline with colleagues.	**laboratory practice** **group-project** **Demonstrations**	**Lab. term works, assignment**
d2 Write a report for criticizing an herbal drug.		
d3. Participate efficiently with his colleagues in a team work.	**laboratory practice** **Demonstrations**	**Lab. term works, final practical exam**

Course Content:

A – Theoretical Aspect:

Order	Units/ Topics List	CILOs	Sub Topics List	No. of Weeks	contact hours

1	**Topic 1**	a1, a2, a3,a4	• **Production of medicinal plants**	2	4
2		a1, a2, a3 c1,c2,c3,c4	• **Evaluation of medicinal crude drugs**	2	4
3		a1, a2, a3	• **Biosynthesis of natural products**	2	5
Mid-term exam				1	2
4	**Topic 2**	a1, a2,a3 , b1, b2, c1,c2,c3,c4	**Methods used in quality control of natural products** Droplet Counter Current Chromatography. Moisture Content • Radioimmunoassay	3	6
		a1, a2,a3 , b1, b2, c1,c2,c3,c4	**Structure elucidation:** • Physical properties, chromatograpic data (GC, HPLC, Ion exchange), determination of molecular formula, spectroscopic data (UV, IR, mass NMR).	2	

					4
	Topic 3	a1, a2,a3 , b1, b2, c1,c2,c3,c4	**Drugs of biological origin:** Traditional medicine and medicinal plants : traditional medicine and methods utilized in traditional medicine, herbal medicine, vertues and shortcomings, the scientific basis of herbal medicine, treatment of constipation, asthma, inflammation and peptic ulcer, therapeutic effects of ginseng.	2	3
	Topic 4	a1, a2,a3 , b1, b2, c1,c2,c3,c4	**Tissue culture and molecular biology** Basic principles of plant tissue culture, techniques, callus culture, cell culture, organ culture, meristem culture, protoplast culture, biotransformation using cell culture, cryopreservation of germplasm, plant cell immobilization	1	2
FINAL - EXAM				1	2
TOTAL				16	32
Number of Weeks /and Units Per Semester				16 weeks	4 Units

B - Practical Aspect:

Order	Tasks/ Experiments	Number of Weeks	contact hours	Aligned Couse Intended Learning Outcomes CILOs
1	Pharmacopeial physicochemical properties , chemical , chromatographic or spectroscopy identification of: adrenergic agonist : **adrenaline**	**1**	**2**	c1, c2, d1, d2, d3

2	Pharmacopeial physicochemical properties , chemical , chromatographic or spectroscopy identification of: adrenergic blockers : **atenolol**	1	2	c1, c2, d1, d2, d3
3	Pharmacopeial physicochemical properties , chemical , chromatographic or spectroscopy identification of: Parasympathomimetics : **neostigmine**	1	2	c1, c2, d1, d2, d3
4	Pharmacopeial physicochemical properties , chemical , chromatographic or spectroscopy identification of: cholinergic blockers : **atropine**	**1**	**2**	c1, c2, d1, d2, d3
5	Pharmacopeial physicochemical properties , chemical , chromatographic or spectroscopy identification of: skeletal muscle relaxants **suxamethonium**	**1**	**2**	c1, c2, d1, d2, d3
6	Pharmacopeial physicochemical properties , chemical , chromatographic or spectroscopy identification of: drugs affecting autacoids disorders : **chlorpheniramine.**	**1**	**2**	c1, c2, d1, d2, d3
7	Pharmacopeial physicochemical properties , chemical , chromatographic or spectroscopy identification of: drugs serotonin: **ondansetron**	**1**	**2**	c1, c2, d1, d2, d3
8	Synthesis of drugs	**2**	**4**	c1, c2, d1, d2, d3
9	Purification of drugs.	**1**	**2**	c1, c2, d1, d2, d3
PRACTICAL EXAM		**1**	**2**	c1, c2, d1, d2, d3
Total		**11**	**22**	

Teaching strategies of the course:
Active Lecture It is the most frequently employed teaching method to convey knowledge and explain theories to students in large groups (50-200) or in sessions, which consist of more than one group gathered in one classroom. The efficiency of lecturing can be enhanced by using techniques such as **Brain-storming**: It depends on stimulation of the student`s brain through a group of questions &/or **Concepts map**: which depends on sequencing of thoughts in the form of maps with horizontal or vertical relations & by using **learning aids** such as Data show projector
Laboratory practice: students doing experiments in labs individually or in small groups
Feed-back learning: students are individually asked to do perform quick tests (quiz) or to do certain assignments such lab. experiments, problems solving, homework, topics summarizing or internet search. The teacher will provide them feed-back correction & evaluation
Group projects: students work on a project in groups of 2 to 3 students. Important for learning by doing ,using the results in practical manner &for promoting team work skills

Assignments:

No	Assignments	Aligned CILOs	Week Due	
2	**Group** : each group of students will be assigned to hypothetically design newer drugs form a studied patent drug using SAR principles	b5, c3, c4, d1, d3	8	

Schedule of Assessment Tasks for Students During the Semester					
Theoretical part assessment					
No.	**Assessment Method**	**Week Due**	**Mark**	**Proportion to Total**	**Aligned Course Learning**

					course Assessment	Outcomes (CILOs)
1	Term Works	Quizzes	4-13, 14	5	5	b1
		Assignments	7, 12	5	5	b5, c3, c4, d1, d3
2	Mid-semester exam (written exam)		7	10	10	a1, a2,a3 , b1, b2, b3, b4
3	Final exam (written exam)		16	50	50	a1, a2,a3 , b1, b2, b3, b4
TOTAL				70	70 %	70

Practical part assessment						
No.	**Assessment Method**		**Week Due**	**Mark**	**Proportion to Total course Assessment**	**Aligned Course Learning Outcomes(CILOs)**
1	Lab. Term works	Attitude	1-12	5	5	c1, c2, d1, d2, d3
2		Accomplishments		5	5	
	Final exam (practical)		12	20	20	c1, c2, d2
Total				30	30 %	

Learning Resources:
1- Required Textbook(s) (maximum two).
Trease, G.E. and Evans, W.C. Pharmacognosy (1994).

2- Essential References.
Pharmacognosy by Kokate, C.K A and Purohit, A.P. Pharmacognosy and Pharmaco biotechnology by Ashutosh Kar.
3-Electronic References
Journal of Applied Pharmacognosy and Phytochemistry (joapponline.com)

	Course Policies:
1	**Class Attendance:** At least 75 % of the course hours should be attended by the student. Otherwise, he/she will not be allowed to attend the final exam
2	**Tardy:** any student who is late for more than 15 minutes from starting the lecture will not be allowed to attend the lecture and will be considered absent.
3	**Exam Attendance/Punctuality:** any student who is late for more than 30 minutes from starting the exam will not be allowed to attend the exam and will be considered absent.
4	**Assignments & Projects:** Assignments and projects will be assessed individually unless the teacher request for group work
5	**Cheating**: Cheating by any means will cause the student failure and he/she must re-study the course
6	**Plagiarism**: Plagiarism by any means will cause the student failure in the course . Other disciplinary procedures will be according to the college rules.

PHARMACOLOGY III

Course Identification and General Information:								
1	**Course Title:**	**PHARMACOLOGY III**						
2	**Course Code &Number:**	**PHL 421**						
3	**Credit hours:**	C.H						TOTAL
		Theoretical			P.	Tr.		
		L.	Tut.	S.				
		2	-	-	-	-		**2**
4	**Study level/ semester at which this course is offered:**	*(4TH) Year – (FIRST) semester*						
5	**Pre –requisite (if any):**	• **Pharmacology I & II**						
6	**Co –requisite (if any):**	**Medicinal chemistry III**						
7	**Program (s) in which the course is offered:**	**Faculty of Medical Science**						
8	**Language of teaching the course:**	**ENGLISH**						
9	**Location of teaching the course:**	**IN THE UNIVERSITY**						

L: lecturing ; Tut: Tutorial , S: seminar ; P: practical ; Tr.: training

Course Description:
This course deals with the study of pharmacodynamic (mechanism of drug action & their biological effects on different body organs and drug-protein binding) and dosage form of drugs (advantages & disadvantages) and pharmacokinetics (absorption, distribution, metabolism and excretion) of drugs acting on central nervous system and chemotherapeutic drugs.

Intended learning outcomes of the course (CILOs) and their alignment to Program Intended learning outcomes (PILOs), teaching strategies and assessment strategies		
1. Alignment CILOs to PILOs		
No.	**PILOs**	**CILOs**
1.	**A5**	**a1.** Identify the actions of medicines in human body, their therapeutic uses, adverse effects drug interactions and interactions
2.	**A8**	**a2.** Describe the pharmacokinetics of drugs.
3.	**A10**	**a3.** Describe the role of pharmacist in providing correct information on rational use of medications.
4.	**B2**	**b1 .**Classify drugs used for disorders of drugs used for cardiovascular system, blood and endocrine disorders
5.		**b2.** Compare between therapeutically related drugs based on drug benefits (in particular efficacy and potency)and drug limitations.
6.	**C7**	**c1 .** Advise the patient and healthcare professional to optimize medicine use
7.	**D2**	**d1.** Demonstrate time management and decision making skills.

2. Alignment CILOs to teaching strategies and assessment strategies		
(a) Alignment Course Intended Learning Outcomes (CILOs) of knowledge & understanding to Teaching Strategies and Assessment Strategies		
Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
a1, a2, a3	**Active Lecture**	**Written exams**
(b) Alignment Course Intended Learning Outcomes (CILOs) of Intellectual Skills to Teaching Strategies and Assessment Strategies:		

Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
b1	**Active Lecture**	**Written exams**
b2	**Lecture, feed-back learning**	**Written exam , quizzes, assignments**
(c)Alignment Course Intended Learning Outcomes (CILOs) of Professional and Practical Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
c1	**feed-back learning**	**assignment**
(d) Alignment Course Intended Learning Outcomes (CILOs) of Transferable Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
d1	**Feed-back learning**	**Assignments**

Course Content:					
Order	**Units/ Topics List**	**CILOs**	**Sub Topics List**	**No. of Weeks**	**contact hours**
1	Central Nervous System (C.N.S)	a1, a2, a3, b1	**C.N.S. depressant.** Sedatives &hypnotics. Antipsychotic, Neurcoleptic agents. Anti-anxiety agents Antiparkinsonism. Antiepileptic agents.	7	13

			Opioid analgesics. General anesthetics. Local anesthetics. Alcohols (Ethyl alcohol, Methyl alcohol). Skeletal muscle relaxants & Antispastic agents. Analgesics, antipyretics and anti-inflammatory agents. Narcotic analgesics and antagonists. **Antidepressant agents.**		
Mid-term exam				1	2
2	Chemotherapy	a1, a2, a3, b1	General principles of chemotherapy Antibiotics Beta lactam antibiotics & other inhibitors of cell wall synthesis. Chloramphenicol, Tetracycline, Macrolides, Clindamycin. Amino glycosides & Spectinomycines. Sulphonamides, Trimethoprim & Quinolines. Chemotherapy of tuberculosis and leprosy Antiprotozoal agents Leishmaniasis Trypanosomiasis Anti fungal agents.	7	15

			Antiviral agents. Anti malarial agents. Anthelmintic drugs. Chemotherapy of cancer and immunosuppressant drugs		
FINAL - EXAM				1	2
TOTAL				16	32

Teaching strategies of the course:
Lecture It is the most frequently employed teaching method to convey knowledge and explain theories to students in large groups (50-200) or in sessions, which consist of more than one group gathered in one classroom. The efficiency of lecturing can be enhanced by using techniques such as **Brain-storming**: It depends on stimulation of the student`s brain through a group of questions &/or **Concepts map**: which depends on sequencing of thoughts in the form of maps with horizontal or vertical relations & by using **learning aids** such as Data show projector
Feed-back learning: students are individually asked to do perform quick tests (quiz) or to do certain assignments such lab. experiments, problems solving, homework, topics summarizing or internet search. The teacher will provide them feed-back correction & evaluation

Assignments:				
No	**Assignments**	**Aligned CILOs**	**Week Due**	

1	**Individual**: every student is assigned to solve a list of problems related to advising healthcare of medicines use based comparison of drug benefits and risks for specific patients e.g. CVS patients, renal failure patients, etc.	b1, c1, d1	6-12	

Schedule of Assessment Tasks for Students During the Semester						
No.	**Assessment Method**		**Week Due**	**Mark**	**Proportion of Total course Assessment**	**Aligned Course Learning Outcomes (CILOs)**
1	Term Works	Quizzes	4-13, 14	10	10	b2
		Assignments	7, 12	10	10	b1, c1, d1
2	Mid-semester exam (written exam)		7	20	20	a1, a2, a3, b1
3	Final exam (written exam)		16	60	60	a1, a2, a3, b1
TOTAL				100	100 %	

Learning Resources:
1- Required Textbook(s) (maximum two).
1. Katzung –Basic and Clinical Pharmacology, McGraw-Hill 2. Rang, Dale and Ritter. Pharmacology, Churchill Livingstone.

2- Essential References.
1. Richard A. Harvey. Lippincott's pharmacology, Lippincott William and Wilkins. 2. Udaykumar. Text book of medical pharmacology

	Course Policies:
1	**Class Attendance:** At least 75 % of the course hours should be attended by the student. Otherwise, he/she will not be allowed to attend the final exam
2	**Tardy:** any student who is late for more than 15 minutes from starting the lecture will not be allowed to attend the lecture and will be considered absent.
3	**Exam Attendance/Punctuality:** any student who is late for more than 30 minutes from starting the exam will not be allowed to attend the exam and will be considered absent.
4	**Assignments & Projects:** Assignments and projects will be assessed individually unless the teacher request for group work
5	**Cheating**: Cheating by any means will cause the student failure and he/she must re-study the course
6	**Plagiarism**: Plagiarism by any means will cause the student failure in the course . Other disciplinary procedures will be according to the college rules.

COMMUNITY PHARMACY II

Course Identification and General Information:								
1	**Course Title:**	**COMMUNITY PHARMACY II**						
2	**Course Code:**	**PHLC 412**						
3	**Credit hours:**	C.H						TOTAL
		Theoretical			P.	Tr.		
		L.	Tut.	S.				
		2	-	-	1	-		**3**
4	**Study level/ semester at which this course is offered:**	*(4th) Year – (SECOND) semester*						
5	**Pre –requisite (if any):**	**PHP411 (Community Pharmacy I)**						
6	**Co –requisite (if any):**							
7	**Program (s) in which the course is offered:**	**Faculty of Medical Science**						
8	**Language of teaching the course:**	**ENGLISH**						
9	**Location of teaching the course:**	**IN THE UNIVERSITY**						

L: lecturing ; Tut: Tutorial , S: seminar ; P: practical ; Tr.: training

Course Description:
This course is a complement to (Community Pharmacy 1) course. Similar to the previous course, this course also deals with the role of the pharmacist in community pharmacy in selection of safe and effective (over-the-counter OTC) medication for patients. The course focuses on the rest of OTC medication that were not covered in the previous course. These include medications for respiratory disorders, topical preparations, nutritional supplements, baby products and others. The practical part in the virtual pharmacy provides students with the skill of determining drug properties (e.g. brand names, manufacturing and expiration dates, manufacturers and storage requirements) and selecting OTC medications based on an assessment of the patient's case and evaluating the benefits and risks of the drug.

Intended learning outcomes of the course (CILOs) and their alignment to Program Intended learning outcomes (PILOs), teaching strategies and assessment strategies		
Alignment CILOs to PILOs		
PILOs		**CILOs**
A2	Explain the fundamental of social and behavioral sciences.	**a1.** Explain the impact of good behavior of pharmacists on their communication and relationship to patients and healthcare professionals.
A5	Identify actions of medicines on human body.	**a2.** Identify the actions and types of OTC medications that may cause drug abuse/misuse.
A10	Describe the pharmacists role in different pharmacy practices.	**a3.** Describe the pharmacist role in community pharmacists to dispense and recommend safe and effective OTC medications to patients.
B5	**B5.** Plan a modern system for administration of foundations and merge ethics to business in drug marketing.	**b1.** Plan a modern system to effectively administer the "community pharmacy".
B7	Formulate and evaluate patient care plan about rational drug use of medications.	**b2.** Formulate and evaluate a plan of patient need and rational use of OTC medications to improve patient safety and efficacy
B8	Use appropriate research methods including experimental, observational and electronic to collect data and solve problems.	**b3**. Use MEDSAPE to collect information regarding drug benefit/risk to select OTC medication according to the patient`s case
C4	Advice patients and healthcare professionals to optimize medicines use.	**c1.** Advise the patient to optimize use of OTC medication.

D1	Interact and communicate effectively and behave in disciplines with colleagues, patients and healthcare professionals effectively in team-activities.	**d1.** Communicate effectively and behave in discipline with colleagues.
D2	Develop and demonstrate skills of time managements, self-learning and decision making.	**d2.** Demonstrate the skills of time management and self-learning.
D3	Participate collaboratively in team work with colleagues and healthcare professionals.	**d3.** Participate efficiently with his colleagues in a team work.
D4	Take the responsibility for adaption to change needs in pharmacy practice.	**d4.** Take responsibility for adaption to change needs in pharmacy practice
D5	Retrieve essential references of evidence-based to achieve maximal clinical effectiveness	**d5.** Use essential references of evidence-based practice to achieve maximum safety and efficacy of medicines.

Alignment CILOs to teaching strategies and assessment strategies		
(a) Alignment Course Intended Learning Outcomes (CILOs) of knowledge & understanding to Teaching Strategies and Assessment Strategies		
Course Intended Learning Outcomes	**Teaching strategies**	**Assessment Strategies**
a1. Explain the impact of good behavior of pharmacists on their communication and relationship to patients and healthcare professionals.	**Lecture**	**Written exams**
a2. Identify the actions and types of OTC medications that may cause drug abuse/misuse.		

a3. Describe the pharmacist role in community pharmacists to dispense and recommend safe and effective OTC medications to patients.	**lab. practice**	**Lab. term works, final practical exam**
(b) Alignment Course Intended Learning Outcomes (CILOs) of Intellectual Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
b1. Plan a modern system to effectively administer the "community pharmacy".	**lab. practice**	**Lab. term works, final practical exam**
b2. Formulate and evaluate a plan of patient need and rational use of OTC medications to improve patient safety and efficacy	**Lecture, feed-back learning**	**Written exams , quizzes**
b3. Use MEDSAPE to collect information regarding drug benefit/risk to select OTC medication according to the patient`s case	**Feed-back learning , Lab. practice**	**quizzes, assignments, final practical exam**

(c)Alignment Course Intended Learning Outcomes (CILOs) of Professional and Practical Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
c1. Advise the patient to optimize use of OTC medication.	**Feed-back learning, lab. practice**	**Lab. term works, final practical exam**
(d) Alignment Course Intended Learning Outcomes (CILOs) of Transferable Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
d1. Communicate effectively and behave in discipline with colleagues.	**feed-back learning, lab. practice**	

d2. Demonstrate the skills of time management and self-learning.		**assignments , Lab. term works, final practical exam**
d3. Participate efficiently with his colleagues in a team work.		
d5. Use essential references of evidence-based practice to achieve maximum safety and efficacy of medicines.		
d4. Take responsibility for adaption to change needs in pharmacy practice	**Feed-back learning**	**Quizzes**

Course Content:

A – Theoretical Aspect:

Order	**Units/ Topics List**	**CILOs**	**Sub Topics List**	**No. of Weeks**	**contact hours**
1	**OTC products for alimentary system**	a1, a2, b2,b3	○ Diarrhea ○ Constipation ○ Hemorrhoids	3	6
2	**OTC products for respiratory system**	a1, a2, b2,b3	○ Sore throat ○ Cold, flu, rhinitis, sinusitis ○ Dry and Cough preparations	3	6
	MID-TERM EXAM			1	2

3	**Topical OTC products**	a1, a2, b2,b3	○ Nasal drops ○ Eye drops ○ Ear drops ○ Dermatological OTC	4	8
4	**Nutrients OTC products**	a1, a2, b2,b3	○ Vitamins : alone and in combination ○ Minerals alone and in combination ○ Vitamins + minerals combinations	2	4
5	**Baby care products**	a1, a2, b2,b3	○ Baby Diapers ○ Milk-bottles ○ Baby milk ○ Baby nutrients	1	2
6	**Emergency-Contraceptives**	a1, a2, b2, b3	○ Types ○ Components ○ Use and precautions	1	2
FINAL - EXAM				1	2
TOTAL				16	32
Number of Weeks /and Units Per Semester				16 weeks	6 Units

B - Practical Aspect: The practical sections are carried out in the " Virtual pharmacy Lab"				
Order	**Tasks/ Experiments**	**Number of Weeks**	**contact hours**	**Aligned Couse Intended Learning Outcomes CILOs**
1	OTC for alimentary system:; diarrhea,	**2**	**4**	b1, b3, c1, d1, d2, d3, d5

	constipation, hemorrhoids			
2	OTC for respiratory system	**3**	**6**	b1, c1, d1, d2, d3, d5
3	Topical OTC	**3**	**6**	b1, c1, d1, d2, d3, d5
4	Nutrient OTC	**1**	**2**	b1, c1, d1, d2, d3, d5
5	baby care OTC products	**1**	**2**	b1, c1, d1, d2, d3, d5
6	OTC Emergency contraceptive	**1**	**2**	b1, c1, d1, d2, d3, d5
PRACTICAL EXAM		**1**	**2**	b1, c1, d1, d2, d3, d5
Total		**12**	**24**	

Teaching strategies of the course:
Lecture It is the most frequently employed teaching method to convey knowledge and explain theories to students in large groups (50-200) or in sessions, which consist of more than one group gathered in one classroom. The efficiency of lecturing can be enhanced by using techniques such as **Brain-storming**: It depends on stimulation of the student`s brain through a group of questions &/or **Concepts map**: which depends on sequencing of thoughts in the form of maps with horizontal or vertical relations & by using **learning aids** such as Data show projector
Laboratory practice: students doing experiments in labs individually or in small groups
Feed-back learning: students are individually asked to do perform quick tests (quiz) or to do certain assignments such lab. experiments, problems solving, homework, topics summarizing or internet search. The teacher will provide them feed-back correction & evaluation

Assignments:				
No	**Assignments**	**Aligned CILOs**	**Week Due**	
1	**Individual**: every student is assigned solve community-cases to select OTC by assessment of patient`s case and evaluating drug benefits/risks	b3, d5	8	

Schedule of Assessment Tasks for Students During the Semester						
Theoretical part assessment						
No.	**Assessment Method**		**Week Due**	**Mark**	**Proportion to Total course Assessment**	**Aligned Course Learning Outcomes (CILOs)**
1	Term Works	Quizzes	4-13, 14	5	5	b2, d4
		Assignments	7, 12	5	5	b3, d5
2	Mid-semester exam (written exam)		7	10	10	a1, a2, b2
3	Final exam (written exam)		16	50	50	a1, a2, b2
TOTAL				70	70 %	70

Practical part assessment

No.	Assessment Method		Week Due	Mark	Proportion to Total course Assessment	Aligned Course Learning Outcomes(CILOs)
1	Lab. Term works	Attitude	1-12	5	5	b1, b3, c1, d1, d2, d3, d5
2		Accomplishments		5	5	
	Final exam (practical)		12	20	20	b1, b3, c1, d1, d2, d3, d5
Total				30	30 %	

Learning Resources:

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

Community pharmacy (Symptoms, Diagnosis and Treatment) 5th Edition - May 27, 2020

2- Essential References.

Lillian M Azzopardi. Lecture notes on pharmacy practice, 2010, Pharmaceutical press.

3- Electronic Materials and Web Sites *etc*.

1. https://www.slideshare.net/iamkarthika/community-pharmacy-78949878
2. https://www.slideshare.net/sonushanno/community-pharmacy-64829089

Course Policies:	
1	**Class Attendance:** At least 75 % of the course hours should be attended by the student. Otherwise, he/she will not be allowed to attend the final exam
2	**Tardy:** any student who is late for more than 15 minutes from starting the lecture will not be allowed to attend the lecture and will be considered absent.

3	**Exam Attendance/Punctuality:** any student who is late for more than 30 minutes from starting the exam will not be allowed to attend the exam and will be considered absent.
4	**Assignments & Projects:** Assignments and projects will be assessed individually unless the teacher request for group work
5	**Cheating**: Cheating by any means will cause the student failure and he/she must re-study the course
6	**Plagiarism**: Plagiarism by any means will cause the student failure in the course . Other disciplinary procedures will be according to the college rules.

BIOPHARMACEUTICS & PHARMACOKINETICS II

Course Identification and General Information:								
1	**Course Title:**	**BIOPHARMACEUTICS & PHARMACOKINETICS II**						
2	**Course Code &Number:**	**PHCL 452**						
3	**Credit hours:**	C.H						TOTAL
		Theoretical			P.	Tr.		
		L.	Tut.	S.				
		1	1	-	-	-		**2**
4	**Study level/ semester at which this course is offered:**	*(FOURTH) Year – (2^{ND}) semester*						
5	**Pre –requisite (if any):**	**Biopharmaceutics & PHARMACOKINETICS I**						
6	**Co –requisite (if any):**	**NONE**						
7	**Program (s) in which the course is offered:**	**Faculty of Medical Science**						
8	**Language of teaching the course:**	**ENGLISH**						
9	**Location of teaching the course:**	**IN THE UNIVERSITY**						

L: lecturing ; Tut: Tutorial , S: seminar ; P: practical ; Tr.: training

Course Description
The course is complementary to (Biopharmaceutics and Pharmacokinetics I) course and both provide knowledge in drug pharmacokinetics and bioavailability. However, this course provides the student with the knowledge and skills required to use data, obtained from pharmacokinetic/biopharmaceutical studies, for mathematical calculations of drug concentrations in body and the rate and extent of drug absorption, distribution, elimination and bioavailability. In addition, this course has a practical part in order to provide students with skills required to carry out pharmacokinetic and biopharmaceutical experiments.

Intended learning outcomes of the course (CILOs) and their alignment to Program Intended learning outcomes (PILOs), teaching strategies and assessment strategies		
Alignment CILOs to PILOs		
No.	**PILOs**	**CILOs**
1	**A4**	**a1.** Explain the procedures employed during pharmacokinetic/biopharmaceutical studies.
2	**A10**	**a2.** Describe the role of pharmacist in determination of pharmacokinetic/biopharmaceutical parameters.
3	**A12**	**a3.**Explain the basic mathematical principles of pharmacokinetic/biopharmaceutical calculations
4		**a4.** Identify the order of changing drug amount in the body and the models of drug distribution
5	**B1**	**b1.** Interpret the numerical and graphical data relevant to drug pharmacokinetic/biopharmaceutical
6	**B9**	**b2 .** Apply calculations to graphically & mathematical solve pharmacokinetic/biopharmaceutical problems.
7	**C1**	**c1.** Handle efficiently and safely the chemical materials and tools used in the laboratory
8	**C2**	**c2.** Operate the instruments successfully in the laboratory
9	**C3**	**c3 .** Carry out pharmacokinetic/biopharmaceutical experiment
10	**D1**	**d1.** Communicate effectively and behave in discipline with colleagues.
11	**D2**	**d2.** Demonstrate the skills of time management , self-learning and problems solving
12	**D3**	**d3.** Participate efficiently with his colleagues in a team work.

Alignment CILOs to teaching strategies and assessment strategies		
(a) Alignment Course Intended Learning Outcomes (CILOs) of knowledge& understanding to Teaching Strategies and Assessment Strategies		
Course Intended Learning Outcomes	**Teaching strategies**	**Assessment Strategies**
a1 , a2, a3, a4	**Active lecture**	**Written exam s**
(b) Alignment Course Intended Learning Outcomes (CILOs) of Intellectual Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	**Teaching strategies**	**Assessment Strategies**
b1, b2	**Active-lecture, problem-based learning, feed-back learning**	**Written exams , assignments , quizzes**
(c)Alignment Course Intended Learning Outcomes (CILOs) of Professional and Practical Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	**Teaching strategies**	**Assessment Strategies**
c1, c2, c3	**Lab. practice**	**Lab. accomplishments and attitude**
(d) Alignment Course Intended Learning Outcomes (CILOs) of Transferable Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	**Teaching strategies**	**Assessment Strategies**
d1, d3	**Lab. practice**	**Lab. attitude**
d2	**Lab. practice, feed-back learning**	**Assignments**

Course Content

b. Theoretical aspects

Each topic, when applicable, is supported by Solved and homework problems.

Order	Units/ Topics List	CILOs	Sub Topics List	No. of Weeks	contact hours
1	**Introduction and Mathematical fundamentals**	a1, a2, a3, a4, b1, b2	• Definition and Objectives of pharmacokinetic and biopharmaceutical studes	2	

			• Common logarithm (log) , natural logarithm (ln), base exponent (e-x) • XY data demonstration: tabular form, graphical form (semilog paper, rectangular coordinate paper), Straight line : general equation, determination of slope and rate constant graphically on, semilog paper, rectangular coordinate paper.		4
2	**Clinical aspects of Pharmacokinetic and biopharmaceutical studies**	a1, a2, a3, a4, b1, b2	• **Subjects :** Volunteers specifications: number, gender, weight, height, body syrface area, race • **Drug Dosing :** drug administration, water intake, fed/fasting states. • **Postdosing:** 1- Sampling: blood, urine , others (advantages, disadvantage), interval of sampling, considerations of sampling. 2- Analysis of sample	1	2
3	**Determination of cumulative drug amount (mg or %)**	a1, a2, a3, a4, b1, b2	**<u>Cumulative amount absorbed/excreted</u>** **Analysis of urine samples: urine data:** time of sampling verus Amount excreted at a time (Du_t), cumulative amount of drug excreted at a time (ΣDu_t), excretion rate (Du_t /t), cumulative amount of drug excreted 0- ∞ ($Du_t\infty$), Graphical methods	2	4

			<u>Cumulative amount absorbed</u> **Data from blood samples** Blood data: Time of sampling, drug concentration in plasma at a time (Cp), Area under the curve (AUC∞) , graphical methods		
4	**Models of distribution And orders of kinetics**	a1, a2, a3, a4, b1, b2	**Pharmacokinetic models of distribution** Definition of model, significance, types (one-compartment, two compartments, three compartment) and principle of each model, graphical and mathematical determination. **The order of kinetic (absorption, distribution, eleimination rates) :** definition of kinetic order, significance and types (first order, zero order), mathematical and graphical detemination	2	4
Mid-term exam				1	2
5	**Pharmacokinetics of drugs given by intravenous bolus administration**	a1, a2, a3, a4, b1, b2	**<u>I.V. Bolus</u>** **<u>From Blood data (Cp[vs time)</u>** 1- Determine model and order of kinetic 2- Rates constant , 3- General equations of Cp	2	4

			4- Cp^0 5- **Determine** AUC^{∞} , Bioavilability (F)=1 6- **Distribution:** volume of distribution (VD) 7- **Elimination:** half-life ($t_{1/2}$), clearance (Cl) **I.V. Bolus** **From urine data (**excretion rate versus time or ARE versus time) 1- Determine model and order of kinetic. 2- Determine ($Du_t\infty$) 3- General equation of Du 4- Determine : distribution and eleimination parameters		
6	**Pharmacokinetics of drugs given by intravenous infusion**	a1, a2, a3, a4, b1, b2	**I.V. multiple bolus dosing :** One-compartment assuming first order elimination , general equation of Cp, Determine Cp^0 , determine distribution and eleimination parameters, determine specific data (Cmax, Cmin, Cmax∞, Cmin∞, CP∞, CSS, **I.V. infusion: one-compartment model at constant infusion rate:** General equation of Cp, specific data (rate of infusion(R), steady state concentration Css, maintenance dose Dm, loading	2	4

			dose D_L) , determine distribution and elimination parameters. **I.V. infusion: one-compartment model at changing infusion rate:** General equation of Cp, specific data (rate of infusion(R), steady state concentration Css, maintenance dose Dm, loading dose D_L), determine distribution and elimination parameters. **I .V. bolus followed by IV. infusion:** General equation of Cp, specific data (rate of infusion(R), steady state concentration Css, maintenance dose Dm, loading dose D_L), determine distribution and elimination parameters.:		

7	**Pharmacokinetics of single dose of given by extravascular (oral, I.M., rectal , etc.)**	a1, a2, a3, a4, b1, b2	**Blood data** • Cp versus time curve • General equation of Cp • **Absorption parameters:** Ka, F, Cmax, Tmax Dab, Dab∞, *f*ab (fraction absorbed) , *f*ua (fraction unabsorbed), • **Elimination parameters:** k, half-life , Cl **Urine data** • One-compartment : first-order elimination, zero order elimination, ARE versus time	2	4

8	**Pharmacokinetics of multiple dosing of drug given by extravascular (oral, I.M., rectal , etc.)**	a1, a2, a3, a4, b1, b2	• One-compartment assuming first order elimination: (Cmax, Cmin, Cmax∞, Cmin∞, CP∞, CSS,)	1	2
9	**Specific Pharmacokinetics calculations**	a1, a2, a3, a4, b1, b2	**Calculations of :** • Loading and maintenance doses • Doses and dosage interval at change from I.V. infusion to oral administration. • Changes in plasma concentration with change in route of administration. • Dose in the elderly	1	2
10	**Calculation of bioavailability and bioequivalence**		• Absolute bioavailability • Relative bioavailability • Determination of Bioequivalence • IVIV correlation calculations	1	2
FINAL – EXAM				1	2
TOTAL				16	32
Number of Weeks /and Units Per Semester				16 weeks	10 Units

Teaching strategies of the course
lecture - Discussion: a short lecture/ address followed by discussion
Feed-back learning: students are individually asked to do perform quick tests (quiz) or to do certain assignments such lab. experiments, problems solving, homework, topics summarizing or internet search. The teacher will provide them feed-back correction & evaluation

Group projects: students work on a project in groups of 2 to 3 students. Important for learning by doing ,using the results in practical manner &for promoting team work skills.

Assignments				
No	**Assignments**	**Aligned CILOs**	**Week Due**	**Mark**
1	**Individual**: A number of problems related to the topics will be answered as homework exercises	b2, c3, d2	2-12	10

Schedule of Assessment Tasks for Students During the Semester						
Theoretical part assessment						
No.	**Assessment Method**		**Week Due**	**Mark**	**Proportion to Total course Assessment**	**Aligned Course Learning Outcomes (CILOs)**
1	Term Works	Quizzes	4-13, 14	5	5	b2
		Assignments	7, 12	5	5	b2, c3, d2
2	Mid-semester exam (written exam)		7	10	10	a1, a2, a3, a4, b1, b2
3	Final exam (written exam)		16	50	50	a1, a2, a3, a4, b1, b2
TOTAL				70	70 %	70

Learning Resources
1- Required Textbook(s) (maximum two).
Shargel. Biopharmaceutics and pharmacokinetics, 2012, McGraw Hill Inc Malcolm Rowland. Clinical pharmacokinetics: concepts an applications, 1996, Lippincott's Williams & Wilkins
2- Essential References.
5. Wagner. Pharmacokinetics for the pharmaceutical scientist 6. Venkaeswarlu. Biopharmaceutics and pharmacokinetics

Course Policies	
1	**Class Attendance:** At least 75 % of the course hours should be attended by the student. Otherwise, he/she will not be allowed to attend the final exam
2	**Tardy:** any student who is late for more than 15 minutes from starting the lecture will not be allowed to attend the lecture and will be considered absent.
3	**Exam Attendance/Punctuality:** any student who is late for more than 30 minutes from starting the exam will not be allowed to attend the exam and will be considered absent.
4	**Assignments & Projects:** Assignments and projects will be assessed individually unless the teacher request for group work
5	**Cheating**: Cheating by any means will cause the student failure and he/she must re-study the course
6	**Plagiarism**: Plagiarism by any means will cause the student failure in the course . Other disciplinary procedures will be according to the college rules.

MEDICINAL CHEMISTRY II

Course Identification and General Information:								
1	**Course Title:**	**MEDICINAL CHEMISTRY II**						
2	**Course Code &Number:**	**PHC 431**						
3	**Credit hours:**	C.H						TOTAL
		Theoretical			P.	Tr.		
		L.	Tut.	S.				
		2	-	-	1	-		**3**
4	**Study level/ semester at which this course is offered:**	*(3rd) Year – (1st) semester*						
5	**Pre –requisite (if any):**	**Medicinal chemistry I**						
6	**Co –requisite (if any):**							
7	**Program (s) in which the course is offered:**	**Faculty of Medical Science**						
8	**Language of teaching the course:**	**ENGLISH**						
9	**Location of teaching the course:**	**IN THE UNIVERSITY**						

L: lecturing ; Tut: Tutorial , S: seminar ; P: practical ; Tr.: training

Course Description:
This course is the second among (Medicinal chemistry) courses which are designed to provide knowledge and skills in chemistry of medicinal agents (drugs). It deals with the physicochemical properties, chemical synthesis, structure activity relationship (SAR), pharmacophore molecules and metabolism of drugs affecting smooth muscles and drug used to treat respiratory, cardiovascular systems and blood disorders. The course is co-requisite with (Pharmacology II) as both deal with the same medicinal agents.

Intended learning outcomes of the course (CILOs) and their alignment to Program Intended learning outcomes (PILOs), teaching strategies and assessment strategies		
4. Alignment CILOs to PILOs		
PILOs		**CILOs**
Knowledge & Understanding: Upon successful completion of the course, students will be able to:		
A3	Explain physicochemical properties of materials and products	**a1.** Understand the correlation between the chemical and therapeutic properties of drugs to their molecular structure.
A4	Describe analytical methods, principles, design and development techniques	**a2.** Explain the principles of synthesis, purification and metabolic reactions of drugs affecting smooth muscles and drug used to treat respiratory, cardiovascular systems and blood disorders.
A10	Describe the pharmacists role in different pharmacy practices.	**a3.** Describe the role of pharmacist in chemical synthesis of drugs.
Intellectual skills : Upon successful completion of the course, students will be able to:		
B1	Collect interpret and assess information and data relevant to pharmacy practice	**b1.** Interpret the rules of structure-activity relationship to construct pharmacophore of drugs affecting smooth muscles and drug used to treat respiratory, cardiovascular systems and blood disorders.
		b2. Express molecular structure, synthesis and reactions of drugs with hand-drawing
B2	Classify drugs, approaches and other information relevant to pharmacy based on scientific classification system.	**b3.** Classify, chemically, the drugs affecting smooth muscles and drug used to treat respiratory, cardiovascular systems and blood disorders.
		b4 . Compare between chemically related drugs based on their chemical structure

B3	. Design an evaluate different types of safe and effective drugs , pharmaceutical dosage forms and cosmetic preparations	**b5.** Design newer drugs affecting smooth muscles and drug used to treat respiratory, cardiovascular systems and blood disorders.

Professional & practical skills : Upon successful completion of the course, students will be able to:		
C1	Handle safely the chemicals, biological samples and pharmaceutical ingredients and products.	**c1.** Handle efficiently and safely the chemical materials and tools used in the laboratory
C2	Operate different instruments and use emerge technologies for preformulation, formulation and analysis of materials according to standard guidelines.	**c2.** Operate the instruments and perform experiments successfully in the laboratory
C7	Conduct research and utilize the results in different pharmaceutical fields.	**c3 .**Search efficiently for information using documented and electronic sources of information.
		c4 Present and report his/her works correctly using appropriate writing rules and technologies media.
Transferable skills : Upon successful completion of the course, students will be able to:		
D1	Interact and communicate effectively and behave in disciplines with colleagues, patients and healthcare professionals effectively in team-activities.	**d1.** Communicate effectively and behave in discipline with colleagues.
D2	Develop and demonstrate skills of time managements, self-learning and decision making.	**d2.** Demonstrate the skills of time management and self-learning.

D3	Participate collaboratively in team work with colleagues and healthcare professionals.	**d3.** Participate efficiently with his colleagues in a team work.

5. Alignment CILOs to teaching strategies and assessment strategies		
(a) Alignment Course Intended Learning Outcomes (CILOs) of knowledge & understanding to Teaching Strategies and Assessment Strategies		
Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
a1. Explain the correlation between the chemical and therapeutic properties of drugs to their molecular structure.	**Active Lecture Tutorials Self-Study One-minute paper Video-clips Role-playing Map concepts**	**Written exams (Mid, Final) Quizzes Essays Reports Instructional activities**
a2. Explain the principles of synthesis, purification and metabolic reactions of drugs affecting smooth muscles and drug used to treat respiratory, cardiovascular systems and blood disorders.		
a3. Describe the role of pharmacist in chemical synthesis of drugs.		

(b) Alignment Course Intended Learning Outcomes (CILOs) of Intellectual Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
b1. Interpret the rules of structure-activity relationship to construct pharmacophore of drugs affecting smooth muscles and drug used to treat respiratory, cardiovascular systems and blood disorders.	**Active Lecture Tutorials Self-Study One-minute paper Video-clips Role-playing Map concepts**	**Written exams (Mid, Final) Quizzes Essays Reports Instructional activities**

b2. Express molecular structure, synthesis and reactions of drugs with hand-drawing	**Active Lecture Tutorials Self-Study One-minute paper Video-clips Role-playing Map concepts**	**Written exams (Mid, Final) Quizzes Essays Reports Instructional activities**
b3. Classify, chemically, the drugs affecting smooth muscles and drug used to treat respiratory, cardiovascular systems and blood disorders.		
b4 . Compare between chemically related drugs based on their chemical structure		
b5. Design newer drugs affecting smooth muscles and drug used to treat respiratory, cardiovascular systems and blood disorders.	**Group-project Demonstrations**	**Assignments**
(c)Alignment Course Intended Learning Outcomes (CILOs) of Professional and Practical Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
c1. Handle efficiently and safely the chemical materials and tools used in the laboratory	**laboratory practice**	**Written exams (Mid, Final) Quizzes Essays Reports Instructional activities**
c2. Operate the instruments and perform experiments successfully in the laboratory		
c3 . Search efficiently for information using documented and electronic sources of information.	**Group-project**	**Written exams (Mid, Final) Quizzes Essays Reports Instructional activities**
c4 Present and report his/her works correctly using appropriate writing rules and technologies media.		
(d) Alignment Course Intended Learning Outcomes (CILOs) of Transferable Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
d1. Communicate effectively and behave in discipline with colleagues.	**laboratory practice, group-project**	**Lab. term works, assignment**
d3. Participate efficiently with his colleagues in a team work.		

d2. Demonstrate the skills of time management and self-learning.	**laboratory practice**	**Lab. term works, final practical exam**

Course Content:					
A – Theoretical Aspect:					
Order	**Units/ Topics List**	**CILOs**	**Sub Topics List**	**No. of Weeks**	**contact hours**
1	**Drugs for blood disorders**	a1, a2,a3, b1, b2, b3, b4	**Physicochemical properties, synthesis, chemical & common names, structure-activity relationship, metabolism of** • Haematinics (antianemic drugs) • Antihemmorrhagic drugs • Anticoagulants	2	4
2	**Drugs affecting smooth muscles**	a1, a2,a3, b1, b2, b3, b4	**Physicochemical properties, synthesis, chemical & common names, structure-activity relationship, metabolism of** • Antihistamine 1 • Serotonin agonists and antagonists • Inhibitors of prostaglandins • Leukotriene inhibitors	4	8
3	**Drugs acting on respiratory system**	a1, a2,a3, b1, b2, b3, b4	**Physicochemical properties, synthesis, chemical & common names, structure-activity relationship, metabolism of** • Drugs for common cold and cough • Drugs for bronchial asthma	2	4
Mid-term exam				1	2

4	**Cardiovascular system drugs**	a1, a2,a3, b1, b2, b3, b4	**Physicochemical properties, synthesis, chemical & common names, structure-activity relationship, metabolism of** • Diuretics Antihypertensive • Hypertensives • Antianginal and drugs for myocardial infarction • Drugs for congestive heart failure • antiarrythmics	5	10
	Course review	a1, a2,a3, b1, b2, b3, b4	Review of course topics	1	2
FINAL - EXAM				1	3
TOTAL				16	47

B - Practical Aspect:				
Order	**Tasks/ Experiments**	**Number of Weeks**	**contact hours**	**Aligned Course Intended Learning Outcomes CILOs**
1.	Pharmacopeial physicochemical properties , identification of: antihemorrhagics: Tranexmic acid	**1**	**2**	c1, c2, d1, d2, d3
2.	Pharmacopeial physicochemical properties , identification of: anticoagualsnt warfarin	**1**	**3**	c1, c2, d1, d2, d3

3.	Pharmacopeial physicochemical properties , identification of: bronchiodilators : aminophylline	**1**	**2**	c1, c2, d1, d2, d3
4.	Pharmacopeial physicochemical properties , identification: Diuretics : Furosemide	**1**	**2**	c1, c2, d1, d2, d3
5.	Pharmacopeial physicochemical properties , identification of : Antihypertensives : amlodipine	**1**	**2**	c1, c2, d1, d2, d3
6.	Pharmacopeial physicochemical properties , identification of : Antihypertensives : candesartan	**1**	**2**	c1, c2, d1, d2, d3
7.	pharmacopeial physicochemical properties , identification of : cardiac stimulant : digoxin	**1**	**2**	c1, c2, d1, d2, d3
8.	Synthesis of drugs	**2**	**4**	c1, c2, d1, d2, d3
9.	Purification of drugs.	**2**	**4**	c1, c2, d1, d2, d3
PRACTICAL EXAM		**1**	**2**	c1, c2, d1, d2, d3
Total		**12**	**24**	

Teaching strategies of the course:

Lecture It is the most frequently employed teaching method to convey knowledge and explain theories to students in large groups (50-200) or in sessions, which consist of more than one group gathered in one classroom.

The efficiency of lecturing can be enhanced by using techniques such as **Brain-storming**: It depends on stimulation of the student`s brain through a group of questions &/or **Concepts map**: which depends on sequencing of thoughts in the form of maps with horizontal or vertical relations & by using **learning aids** such as Data show projector

Laboratory practice: students doing experiments in labs individually or in small groups

Feed-back learning: students are individually asked to do perform quick tests (quiz) or to do certain assignments such lab. experiments, problems solving, homework, topics summarizing or internet search. The teacher will provide them feed-back correction & evaluation
Group projects: students work on a project in groups of 2 to 3 students. Important for learning by doing ,using the results in practical manner &for promoting team work skills
One Minute Paper is based on a concept called retrieval learning. Just fill out a small questionnaire within 15 minutes after taking a class, reading a chapter, watching a documentary, or learning in another way.
Demonstration is a teaching method used to communicate an idea with the aid of visuals such as flip charts, posters, power point, etc. A demonstration is the process of teaching someone how to make or do something in a step-by-step process. As you show how, you "tell" what you are doing.
Video clips can bring a subject to students in a completely new way and help them comprehend the material they're reading or working with.
Role-play is a technique that allows students to explore realistic situations by interacting with other people in a managed way in order to develop experience and trial different strategies in a supported environment.
A concept map is a visual representation of a topic that students can create using words, phrases, lines, arrows, space on the page, and perhaps color to help organize their ideas and show their understanding of an idea, vocabulary term, or essential question.
Self-studying is a learning method where students direct their own studying—outside the classroom and without direct supervision. Since students are able to take control of what (and how) they are learning, self-study can be a very valuable way for many students to learn.

Assignments:

No	Assignments	Aligned CILOs	Week Due	
1	**Group** : each group of students will be assigned to hypothetically design newer	b5, c3, c4, d1, d3	8	

	drugs form a studied patent drug using SAR principles			

Schedule of Assessment Tasks for Students During the Semester						
Theoretical part assessment						
No.	**Assessment Method**		**Week Due**	**Mark**	**Proportion to Total course Assessment**	**Aligned Course Learning Outcomes (CILOs)**
1	Term Works	Quizzes	4-13, 14	5	5	b1
		Assignments	7, 12	5	5	b5, c3, c4, d1, d3
2	Mid-semester exam (written exam)		7	10	10	a1, a2,a3 , b1, b2, b3, b4
3	Final exam (written exam)		16	50	50	a1, a2,a3 , b1, b2, b3, b4
TOTAL				70	70 %	70

Practical part assessment						
No.	**Assessment Method**		**Week Due**	**Mark**	**Proportion to Total course Assessment**	**Aligned Course Learning Outcomes(CILOs)**
1	Lab. Term works	Attitude	1-12	5	5	c1, c2, d1, d2, d3
2		Accomplishments		5	5	
	Final exam (practical)		12	20	20	c1, c2, d2
Total				30	30 %	

Learning Resources:
1- Required Textbook(s) (maximum two).
V Alagarsamy. (2009). *Textbook of Medicinal Chemistry,(* volume I & II) . India: Elsevier. V Alagarsamy. (2013). *Textbook of Medicinal Chemistry,(* volume I & II) . India: Elsevier.
2- Essential References.
John, M. Beale, Jr. & John H. Block. (2020). *Wilson and Gisvoldd's Textbok of Organic Medicinal Chemistry and Pharmaceutical Chemistry (12th ed.).* New York: Lippincott. Munendra Mohan Varshney & Asif Husain. (2015). *A textbook of medicinal chemistry*. I.K. International Publishing House Pvt. Limited.
3- Electronic Materials and Web Sites *etc*.
e-Resources - Medicinal Chemistry - LibGuides at United States International University. Talks and Lectures - Medicinal Chemistry - LibGuides at United States International University Medicinal Chemistry Resources for Students | PharmaFactz. Medicinal chemistry [electronic resource] (nyp.edu.sg). Oxford University Press | Online Resource Centre | Patrick: An Introduction to Medicinal Chem 6e (oup.com) (Bank of Questions) https://pubs.acs.org/journal/jmcmar. https://benthamscience.com/journals/medicinal-chemistry/. https://www.slideserve.com/richard_edik/introduction-to-medicinal-chemistry. Current medicinal chemistry [electronic resource]. in SearchWorks catalog (stanford.edu). P K Kelkar Library | IIT Kanpur. RSC Medicinal Chemistry journal.
4- Important Journals
• Journal of the American Chemical Society • Angewandte Chemie-International Edition • Journal of Medicinal Chemistry • Nature Reviews Drug Discovery

Course Policies:	
1.	**Class Attendance:** At least 75 % of the course hours should be attended by the student. Otherwise, he/she will not be allowed to attend the final exam
2.	**Tardy:** any student who is late for more than 15 minutes from starting the lecture will not be allowed to attend the lecture and will be considered absent.

3.	**Exam Attendance/Punctuality:** any student who is late for more than 30 minutes from starting the exam will not be allowed to attend the exam and will be considered absent.
4.	**Assignments & Projects:** Assignments and projects will be assessed individually unless the teacher request for group work
5	**Cheating**: Cheating by any means will cause the student failure and he/she must re-study the course
6	**Plagiarism**: Plagiarism by any means will cause the student failure in the course . Other disciplinary procedures will be according to the college rules.

Pathophysiology

Course Identification and General Information:				
1	**Course Title:**	**Pathophysiology**		
2	**Course Code**	**PHCL 471**		
3	**Credit hours:**	C.H.		
		Theoretical	practical.	Total
		2	-	2
4	**Study level/ semester at which this course is offered:**	(Fourth) Year – (1st) semester		
5	**Pre –requisite (if any):**	• **Anatomy**		
6	**Co –requisite (if any):**	-		
7	**Program (s) in which the course is offered:**	**Faculty of Medical Science**		
8	**Language of teaching the course:**	**ENGLISH**		
9	**Location of teaching the course:**	**IN THE UNIVERSITY**		

Course Description:
The course involves study the normal characteristics and appearance of different types of tissues in the human body including the epithelial , connective muscular and nervous tissues. It concerns with normal physiological functions of the cardiovascular systems, the digestive system, the respiratory system, the urinary system, skeletal system and the reproductive system of males and females.

Intended learning outcomes of the course (CILOs) and their alignment to Program Intended learning outcomes (PILOs), teaching strategies and assessment strategies		
Alignment CILOs to PILOs		
No.	**PILOs**	**CILOs**
1.	**A1**	**a1.** Describe the causes of diseases and mode of cell injury
2.		**a2.** Define the pathological events occurs in inflammation, necrosis and neoplasia
3.		**a3.** Explain the mechanism of cell repair and factors affecting wound healing
4.	**A2**	**a4.** Describe the principles of techniques applied for analysis of human tissue specimens.
5.	**A4**	**a5.** Determine the normal functions and regulation of the cardiovascular, digestive, respiratory, urinary, skeletal and the reproductive systems.
6.	**B1**	**b1.** Integrate the principles of feed-back mechanisms to normality of body organs functions..
7.	**B2**	**b2.** Interpret experiment results efficiently.
8.	**B3**	**b3.** Use critical thinking skill to distinguish between different types of human tissue specimens
9.	**B4**	**b4.** Analyze microscopical images to accurately identify the type of human tissue specimen.
10.	**C1**	**c1.** Link the functions of body systems and their mechanism of action.
11.	**C2**	**c2.** Apply precision and accuracy to efficiently and safely use tools, handle materials and operate Lab. equipment.
12.	**C3**	**c3.** Collect, transport, preserve and store human tissue specimens according to standard operating procedures (SOPs)
13.	**C4.**	**c4.** Employ methods of histology to diagnose human disease

14.	**C7**	**c5.**Prepare, process and present Lab. data using quantitative/qualitative methods**.**
15.	**D1**	**d1.** Participate in teamwork and exhibit collaboration with colleagues and healthcare workers
16.	**D2**	**d2.** Communicate effectively with colleagues , teacher, patients and healthcare workers

Alignment CILOs to teaching strategies and assessment strategies		
(a) Alignment Course Intended Learning Outcomes (CILOs) of knowledge & understanding to Teaching Strategies and Assessment Strategies		
Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
a1. Describe the causes of diseases and mode of cell injury.	**Active lecture** **Active lecture, lab. training**	**Written assessment**
a2. Define the pathological events occurs in inflammation, necrosis and neoplasia.		
a3. Explain the mechanism of cell repair and factors affecting wound healing.		
a4. Describe the principles of techniques applied for analysis of human tissue specimens.		
a5. Determine the normal functions and regulation of the cardiovascular, digestive, respiratory, urinary, skeletal		

and the reproductive systems.		
(b) Alignment Course Intended Learning Outcomes (CILOs) of Intellectual Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	**Teaching strategies**	**Assessment Strategies**
b1. Integrate the principles of feed-back mechanisms to normality of body organs functions..	**Active lecture, Lab. training, Feed-back learning**	**Written assessment , multi-competency comprehensive assessment, assignment**
b2. Interpret experiment results efficiently.	**laboratory training**	**multi-competency comprehensive assessment**
b3. Use critical thinking skill to distinguish between different types of human tissue specimens	**Active lecture, Lab. training, Feed-back learning**	**Written assessment , multi-competency comprehensive assessment, assignment**
b4. Analyze microscopical images to accurately identify the type of human tissue specimen.	**Lab. training, Feed-back learning**	**multi-competency comprehensive assessment, assignment**
(c)Alignment Course Intended Learning Outcomes (CILOs) of Professional and Practical Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	**Teaching strategies**	**Assessment Strategies**
c1. Link the functions of body systems and their mechanism of action.	**laboratory training**	**multi-competency comprehensive assessment**
c2. Apply precision and accuracy to efficiently and safely use tools, handle		

materials and operate Lab. equipment.		
c3. Collect, transport, preserve and store human tissue specimens according to standard operating procedures (SOPs)		
c4. Employ methods of histology to diagnose human disease		
c5. Prepare, process and present Lab. data using quantitive/qualitative methods**.**		
(d) Alignment Course Intended Learning Outcomes (CILOs) of Transferable Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
d1. Participate in teamwork and exhibit collaboration with colleagues and healthcare workers	**laboratory training**	**multi-competency comprehensive assessment**
d2. Communicate effectively with colleagues , teacher, patients and healthcare workers	**Self-directed study and research**	**assignment**

Course Content:					
(1)Theoretical part					
Order	**Units/ Topics List**	**CILOs**	**Sub Topics List**	**No. of Weeks**	**contact hours**
1.	**Introduction**	a2, a1,a4,b2	• Definitions • Brief history • Significance, classification and applications • The Cell : Cell structure and function in health	1	2
2.	**Definition and causes of diseases**	a2, a1,a4,b2	• Etiology & Pathogenesis of diseases. • Congenital /Acquired diseases – • Morphological changes - Functional derangements & clinical manifestation. • Cellular response to stress & noxious stimuli • Genetic basis of diseases	2	4
3.	**Mode of cell injury**	a2, a1,a4,b2	• Different agents causing cell injury • Hypoxic /Chemical /physical injury. • Mechanism of reversible injury. • Mechanism of irreversible injury	1	2

4.	**Cellular adaptation & intracellular accumulation**	a2, a1,a4,b2	• Reversible cell injury (Degeneration) • Fatty Change • Cloudy change • Hyaline change	1	2
5.	**Disturbance of pigments and mineral metabolism**	a2, a1,a4,b2	• Exogenous /Endogenous pigments • Dystrophic /metastatic calcification mecha., Causes etc.	1	2

6.	**Inflammation**	a2, a1,a4,b2	• Definitions
			• Patterns and types of inflammation
			• Acute inflammation
			  ○ Causes
			  ○ Cellular events
			  ○ Vascular events.
			  ○ Chemical mediators
			  ○ Fate of inflammation
			• Chronic inflammation
			  ○ Definition and causes
			  ○ Granulomatous inflammation
				3	6

Mid-semester exam				1	2
7.	**Repair**	a2, a1,a4,b2	• Repair • Regeneration • Healing by primary intension • Healing by secondary intension • Types of fracture • Healing of a fracture • Factors affecting wound healing. • Complications of healing • Chemical Mediators Responsible	2	4

8.	**Necrosis and gangrene**	a2, a1,a4,b2	• Def., Causes • Types of necrosis • Features of necrosis • Gangrene – Def. types Dry/wet/gas • Apoptosis	1	2

9.	**Neoplasia**	a2, a1,a4,b2	• Def., terms, types
			• Difference between benign and malignant tumor
			• Carcinogenesis
			  ○ Definition
			  ○ Carcinogenic agents
			  ○ Chemical carcinogenesis
			  ○ Radiation carcinogenesis
			  ○ Microbial carcinogenesis
			• Staging and spread
			  ○ Mechanisms of invasion and metastasis
			  ○ Grading and staging of tumors
				2	4

10.	**Cardiovascular system**	a2, a1,a4,b2	• The heart: functions and regulation of the heart work, physiologic parameters of the heart work: heart rate, cardiac output, heart rhythmicity, conductivity, contraction • Valves of the heart • Blood vessels: functions and types of the blood vessels (veins, arteries, capillaries) • Physiologic parameters of the blood vessels: blood pressure, peripheral vascular resistance.		

11.	**Digestive system**	a2, a1,a4,b2	• Definition of digestion, processes of digestion. • The gastrointestinal tract; Functions of the mouth, esophagus, stomach, small and large intestine • The accessory digestive organs; Functions of the salivary glands, liver, gall bladder, and pancreas) • Mechanism of digestion		
12.	**Respiratory system**	a2, a1,a4,b2 c3, c2	• Parts of the respiratory and its function • Blood-gas interface, airways, the pleura, • Mechanism of breathing, • Ventilation, Diffusion, Partial pressures of oxygen and carbon dioxide. • Ventilation perfusion matching, Gas transport in blood. • Regulation of ventilation, Ventilator response to exercise		
13.	**Urinary system**	a2, a1,a4,b2 c3, c2	• Structure and function of the basic unit of the kidney. • Renal blood flow, glomerular filtration, reabsorption, tubular secretion. • Regulation of plasma volume and plasma osmolality		
14.	**Male reproductive system**	a2, a1,a4,b2 c3, c2	• Parts and function of the male reproductive system • Spermatogenesis • Hormonal regulation of reproduction.		

15.	**Female reproductive system**	a2, a1,a4,b2 c3, c2	• Parts and function of the female reproductive system • Oogenesis. • Hormonal regulation of reproduction. • Fertility and implantation. • Normal and ectopic pregnancy. • Twins.		
FINAL - EXAM				1	2
TOTAL				16	32
Number of Weeks /and Units Per Semester				16	6 units

Teaching strategies of the course:
Active Lecture: It is the most frequently employed teaching method to convey knowledge and explain theories to students in large groups (50-200) or in sessions, which consist of more than one group gathered in one classroom. The efficiency of lecturing can be enhanced by using techniques such as **Brain-storming**: It depends on stimulation of the student`s brain through a group of questions &/or **Concepts map**: which depends on sequencing of thoughts in the form of maps with horizontal or vertical relations & by using **learning aids** such as Data show projector
Laboratory training: students doing experiments in labs individually or in small groups
Feed-back learning: students are individually asked to do perform quick tests (quiz) or to do certain assignments such lab. experiments, problems solving, homework, topics summarizing or internet search. The teacher will provide them feed-back correction & evaluation
Self-directed study and research: The teacher asks the students to present a report on certain related-topics that have not been included in the lectures to activate their ability to self-study

Schedule of Assessment						
Theoretical part assessment						
No.	**Assessment Method**		**Week Due**	**Mark**	**Proportion to Total course Assessment**	**Aligned Course Learning Outcomes (CILOs)**
1	Term Works	Written assessment (Quizzes)	4-13, 14	5	5	a1, a2, a3, a4, b1
		Assignments	7, 12	5	5	d3
2	Mid-semester exam of theoretical part (written assessment)		7	10	10	a1, a2, a3, a4, b1
3	Final exam of theoretical part (written assessment)		16	50	50	a1, a2, a3, a4, b1
TOTAL				70	70 %	70

Learning Resources:
1- Required Textbook(s) (maximum two).
Micheal M. Ross and Woiciech Pawlina. Histology A text and atlas 6th Ed
2- Essential References.
1. Nitin Ashok John, C.C.Chatterjee. Human physiology, Volume 1, 11th edition, 2017, CBS publisher & distributions Pvt Ltd. 2. Laurie kelly . Essential of human physiology for pharmacy, 2004, CRC press
3. W. F. Ganong. Review of Medical Physiology, 23rd Edition, Copyright © 2010 by The McGraw-Hill Companies, Inc. 4. Guyton and Hall Textbook of Medical Physiology, 13th Edition, 2016, Elsevier, Inc.

3- Electronic Materials and Web Sites etc.:
Websites: 1- https://angelo.libguides.com/biology/anatomyphysiology/websites 2- https://www.khanacademy.org/science/health-and-medicine/human-anatomy-and-physic 3- https://www.physiologyweb.com/physiology.html 4- *www.en.wikipedia.org*

	Course Policies:
1	**Class Attendance:** At least 75 % of the course hours should be attended by the student. Otherwise, he/she will not be allowed to attend the final exam
2	**Tardy:** any student who is late for more than 15 minutes from starting the lecture will not be allowed to attend the lecture and will be considered absent.
3	**Exam Attendance/Punctuality:** any student who is late for more than 30 minutes from starting the exam will not be allowed to attend the exam and will be considered absent.
4	**Cheating**: Cheating by any means will cause the student failure and he/she must re-study the course
5	**Plagiarism**: Plagiarism by any means will cause the student failure in the course. Other disciplinary procedures will be according to the college rules.

MEDICINAL CHEMISTRY III

Course Identification and General Information:								
1	**Course Title:**	**MEDICINAL CHEMISTRY III**						
2	**Course Code &Number:**	**PHC 432**						
3	**Credit hours:**	C.H						TOTAL
		Theoretical			P.	Tr.		
		L.	Tut.	S.				
		2	-	-	1	-		**3**
4	**Study level/ semester at which this course is offered:**	(4TH) Year – (Second) semester						
5	**Pre –requisite (if any):**	**MEDICINAL CHEMISTRY I & II**						
6	**Co –requisite (if any):**	**Pharmacology III**						
7	**Program (s) in which the course is offered:**	**Faculty of Medical Science**						
8	**Language of teaching the course:**	**ENGLISH**						
9	**Location of teaching the course:**	**IN THE UNIVERSITY**						

L: lecturing ; Tut: Tutorial , S: seminar ; P: practical ; Tr.: training

Course Description:
This course is the third one among (Medicinal chemistry) courses which are designed to provide knowledge and skills in chemistry of medicinal agents (drugs). It deals with the physicochemical properties, chemical synthesis, quantitative structure activity relationship (SAR), qualitative structure activity relationship (QSAR), pharmacophore molecules, mechanism of action, and metabolism of drugs used for cardiovascular system, blood and endocrine system disorders. Also there are practical part concerns with Pharmacopeial physicochemical properties , chemical , chromatographic or spectroscopy identification of some CVS drugs.

Intended learning outcomes of the course (CILOs) and their alignment to Program Intended learning outcomes (PILOs), teaching strategies and assessment strategies.		
Alignment CILOs to PILOs		
PILOs		**CILOs**
Knowledge and understanding: upon completion of the course, students will be able to:		
A3	Explain physicochemical properties of materials and products	**a1.** Explain the correlation between the chemical and therapeutic properties of drugs to their molecular structure.
A4	Describe analytical methods, principles, design and development techniques	**a2.** Explain the principles of synthesis, purification and metabolic reactions of drugs used for cardiovascular system, blood and endocrine disorders.
A10	Describe the pharmacists role in different pharmacy practices.	**a3.** Describe the role of pharmacist in chemical synthesis of drugs.
Intellectual skills: upon completion of the course, students will be able to:		
B1	Collect interpret and assess information and data relevant to pharmacy practice	**b1.** Interpret the rules of structure-activity relationship to construct pharmacophore of drugs used for cardiovascular system, blood and endocrine disorders.
		b2. Express molecular structure, synthesis and reactions of drugs with hand-drawing
B2	Classify drugs, approaches and other information relevant to pharmacy based on scientific classification system.	**b3.** Classify, chemically, drugs affecting drugs used for cardiovascular system, blood and endocrine disorders.
		b4 . Compare between chemically related drugs based on their chemical structure

B3	Design an evaluate different types of safe and effective drugs , pharmaceutical dosage forms and cosmetic preparations	**b5.** Design newer drugs used for cardiovascular system, blood and endocrine disorders.

Professional and practical skills: upon completion of the course, students will be able to:		
C1	Handle safely the chemicals, biological samples and pharmaceutical ingredients and products.	**c1.** Handle efficiently and safely the chemical materials and tools used in the laboratory
C2	Operate different instruments and use emerge technologies for preformulation, formulation and analysis of materials according to standard guidelines.	**c2.** Operate the instruments and perform experiments successfully in the laboratory
C7	Conduct research and utilize the results in different pharmaceutical fields.	**c3 .**Search efficiently for information using documented and electronic sources of information.
		c4 Present and report his/her works correctly using appropriate writing rules and technologies media.
Transferable skills: upon completion of the course, students will be able to:		
D1	Interact and communicate effectively and behave in disciplines with colleagues, patients and healthcare professionals effectively in team-activities.	**d1.** Communicate effectively and behave in discipline with colleagues.

D2	Develop and demonstrate skills of time managements, self-learning and decision making.	**d2.** Demonstrate the skills of time management and self-learning.
D3	Participate collaboratively in team work with colleagues and healthcare professionals.	**d3.** Participate efficiently with his colleagues in a team work.

Alignment CILOs to teaching strategies and assessment strategies		
(a) Alignment Course Intended Learning Outcomes (CILOs) of knowledge & understanding to Teaching Strategies and Assessment Strategies		
Course Intended Learning Outcomes	**Teaching strategies**	**Assessment Strategies**
a1. Explain the correlation between the chemical and therapeutic properties of drugs to their molecular structure.	**Active Lecture** **Tutorials** **Self-Study** **One-minute paper** **Video-clips** **Role-playing** **Map concepts**	**Written exams (Mid, Final)** **Quizzes** **Essays** **Reports** **Instructional activities** **Student interviews** **Student reflections** **Classroom discussions** **Graphic organizers (e.g., mind maps, flow charts)**
a2. Explain the principles of synthesis, purification and metabolic reactions of drugs used for cardiovascular system, blood and endocrine disorders.		
a3. Describe the role of pharmacist in chemical synthesis of drugs.		
(b) Alignment Course Intended Learning Outcomes (CILOs) of Intellectual Skills to Teaching Strategies and Assessment Strategies:		

Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
b1. Interpret the rules of structure-activity relationship to construct pharmacophore of drugs used for cardiovascular system, blood and endocrine disorders.	**Active Lecture** **Tutorials** **Self-Study** **One-minute paper** **Video-clips** **Role-playing** **Map concepts**	**Written exams (Mid, Final)** **Quizzes** **Essays** **Reports** **Instructional activities** **Student interviews** **Student reflections** **Classroom discussions** **Graphic organizers (e.g., mind maps, flow charts)**
b2. Express molecular structure, synthesis and reactions of drugs with hand-drawing	**Active Lecture** **Tutorials** **Self-Study** **One-minute paper** **Video-clips** **Role-playing** **Map concepts**	**Written exams (Mid, Final)** **Quizzes** **Essays** **Reports** **Instructional activities** **Student interviews** **Student reflections** **Classroom discussions** **Graphic organizers (e.g., mind maps, flow charts)**
b3. Classify, chemically, drugs affecting drugs used for cardiovascular system, blood and endocrine disorders.		
b4 . Compare between chemically related drugs based on their chemical structure		

b5. Design newer drugs used for cardiovascular system, blood and endocrine disorders.	**Group-project** **Demonstrations**	**Assignments**
(c)Alignment Course Intended Learning Outcomes (CILOs) of Professional and Practical Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	**Teaching strategies**	**Assessment Strategies**
c1. Handle efficiently and safely the chemical materials and tools used in the laboratory	**laboratory practice** **Demonstrations**	**Lab. term works, final practical exam**
c2. Operate the instruments and perform experiments successfully in the laboratory		
c3 . Search efficiently for information using documented and electronic sources of information.	**Group-project** **Demonstrations**	**Assignments**
c4 Present and report his/her works correctly using appropriate writing rules and technologies media.		
(d) Alignment Course Intended Learning Outcomes (CILOs) of Transferable Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	**Teaching strategies**	**Assessment Strategies**
d1. Communicate effectively and behave in discipline with colleagues.	**laboratory practice** **group-project**	**Lab. term works, assignment**

d3. Participate efficiently with his colleagues in a team work.	**Demonstrations**	
d2. Demonstrate the skills of time management and self-learning.	**laboratory practice** **Demonstrations**	**Lab. term works, final practical exam**

Course Content

Order	Units/ Topics List	CILOs	Sub Topics List	No. of Weeks	contact hours
Physicochemical properties, synthesis, chemical & common names, structure-activity relationship, metabolism of drugs					
1	**Cardiovascular and blood Drugs**	a1, a2, a3, b1, b2, b3, b4	Drugs affecting kidney Diuretics (high efficacy, medium efficacy, adjuvant drugs)	1	2
			Anti-hypertensive drugs ACE-inhibitors, AR-blockers, Ca-channel blockers, …etc.	1	2
			Management of congestive heart failure Cardiac glycosides, inodilators, …etc	1	2
			Anti-arrhythmic drugs Class-I, class-II, class-III, class-IV	1	2
			Drugs for ischemic heart diseases Anti-anginal drugs	1	2
			Drugs affecting blood coagulation Anti-platelet drugs, anti-coagulants, thrombolytics	1	2

			Drugs used for hyper-lipidemia Statins, fibrates, resins, …etc	1	2
			Drugs used for anemia Hematinics, folic acid, vit B12	1	2
Mid-term exam				1	2
2	**Drugs for endocrine systems disorders**	a1, a2, a3, b1, b2, b3, b4	Pituitary, hypothalamic, thyroid & parathyroid hormones GH, FSH, LH, ACTH, TSH, ..etc, T_3, T_4, calcitonin, parathormone, anti-thyroid drugs	1	2
			thyroid & parathyroid hormones T_3, T_4, anti-thyroid drugs	1	2
			Drugs used for diabetes mellitus Insulin, oral hypoglycemic drugs	1	2
			Sex hormones Female sex hormones , contraceptives	1	2
			Adrenal cortex hormones Glucocorticoids, other immunosuppressant drugs	1	2
			Drugs affecting bone, parathyroid hormones Drugs used for osteoporosis, calcitonin, parathormone, …etc	1	2
FINAL - EXAM				1	2
TOTAL				16	32

Number of Weeks /and Units Per Semester	16 weeks	2 Units

B - Practical Aspect:				
Order	**Tasks/ Experiments**	**Number of Weeks**	**contact hours**	**Aligned Course Intended Learning Outcomes CILOs**
1	Pharmacopeial physicochemical properties , chemical , chromatographic or spectroscopy identification of: CVS drugs: **furosemide**	**1**	**2**	c1, c2, d1, d2, d3
2	Pharmacopeial physicochemical properties , chemical , chromatographic or spectroscopy identification of: CVS drugs: **amlodipine**	**1**	**2**	c1, c2, d1, d2, d3
3	Pharmacopeial physicochemical properties , chemical , chromatographic or spectroscopy identification of: CVS drugs: **candesartan**	**1**	**2**	c1, c2, d1, d2, d3
4	Pharmacopeial physicochemical properties , chemical , chromatographic or spectroscopy identification of: CVS drugs: **digoxin**	**1**	**2**	c1, c2, d1, d2, d3
5	Pharmacopeial physicochemical properties , chemical , chromatographic or spectroscopy	**1**	**2**	c1, c2, d1, d2, d3

	identification of: blood drugs: **warfarin**			
6	Pharmacopeial physicochemical properties , chemical , chromatographic or spectroscopy identification of: blood drugs: **tranexmic acid**	**1**	**2**	c1, c2, d1, d2, d3
7	Pharmacopeial physicochemical properties , chemical , chromatographic or spectroscopy identification of: endocrine drugs: **glibenclamide**	**1**	**2**	c1, c2, d1, d2, d3
8	pharmacopeial physicochemical properties , identification of endocrine drugs: **dexamethasone**	**1**	**2**	c1, c2, d1, d2, d3
9	Synthesis of drugs	**2**	**4**	c1, c2, d1, d2, d3
10	Purification of drugs.	**1**	**2**	c1, c2, d1, d2, d3
PRACTICAL EXAM		**1**	**2**	
Total		**12**	**24**	
Number of Weeks			**12**	

Teaching strategies of the course
Active Lecture It is the most frequently employed teaching method to convey knowledge and explain theories to students in large groups (50-200) or in sessions, which consist of more than one group gathered in one classroom. The efficiency of lecturing can be enhanced by using techniques such as **Brain-storming**: It depends on stimulation of the student`s brain through a group of questions &/or **Concepts**

map: which depends on sequencing of thoughts in the form of maps with horizontal or vertical relations & by using **learning aids** such as Data show projector
Laboratory practice: students doing experiments in labs individually or in small groups
Feed-back learning: students are individually asked to do perform quick tests (quiz) or to do certain assignments such lab. experiments, problems solving, homework, topics summarizing or internet search. The teacher will provide them feed-back correction & evaluation
Group projects: students work on a project in groups of 2 to 3 students. Important for learning by doing ,using the results in practical manner &for promoting team work skills
One Minute Paper is based on a concept called retrieval learning. Just fill out a small questionnaire within 15 minutes after taking a class, reading a chapter, watching a documentary, or learning in another way.
Demonstration is a teaching method used to communicate an idea with the aid of visuals such as flip charts, posters, power point, etc. A demonstration is the process of teaching someone how to make or do something in a step-by-step process. As you show how, you "tell" what you are doing.
Video clips can bring a subject to students in a completely new way and help them comprehend the material they're reading or working with.
Role-play is a technique that allows students to explore realistic situations by interacting with other people in a managed way in order to develop experience and trial different strategies in a supported environment.
A concept map is a visual representation of a topic that students can create using words, phrases, lines, arrows, space on the page, and perhaps color to help organize their ideas and show their understanding of an idea, vocabulary term, or essential question.
Self-studying is a learning method where students direct their own studying—outside the classroom and without direct supervision. Since students are able to take control of what (and how) they are learning, self-study can be a very valuable way for many students to learn.

Assignments				
No	**Assignments**	**Aligned CILOs**	**Week Due**	
1	**Group** : each group of students will be assigned to hypothetically design newer drugs form a studied patent drug using SAR principles	b5, c3, c4, d1, d3	8	

Schedule of Assessment Tasks for Students During the Semester						
Theoretical part assessment						
No.	**Assessment Method**		**Week Due**	**Mark**	**Proportion to Total course Assessment**	**Aligned Course Learning Outcomes (CILOs)**
1	Term Works	Quizzes	4-13, 14	5	5	b1
		Assignments	7, 12	5	5	b5, c3, c4, d1, d3
2	Mid-semester exam (written exam)		7	10	10	a1, a2,a3 , b1, b2, b3, b4
3	Final exam (written exam)		16	50	50	a1, a2,a3 , b1, b2, b3, b4
TOTAL				70	70 %	70

Practical part assessment						
No.	**Assessment Method**		**Week Due**	**Mark**	**Proportion to Total course Assessment**	**Aligned Course Learning Outcomes(CILOs)**
1	Lab. Term works	Attitude	1-12	5	5	c1, c2, d1, d2, d3
		Accomplishments		5	5	
2	Final exam (practical)		12	20	20	c1, c2, d2
Total				30	30 %	

Learning Resources

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

3- V Alagarsamy. (2009). *Textbook of Medicinal Chemistry,(* volume I & II) . India: Elsevier.
4- V Alagarsamy. (2013). *Textbook of Medicinal Chemistry,(* volume I & II) . India: Elsevier.

2- Essential References.

1- Munendra Mohan Varshney & Asif Husain . A textbook of medicinal chemistry. 2015, I.K. International Publishing House Pvt. Limited.
2- John, M. Beale, Jr. & John H. Block. (2020). *Wilson and Gisvoldd's Textbook of Organic Medicinal Chemistry and Pharmaceutical Chemistry (12th ed.).* New York: Lippincott.

3- Electronic Materials and Web Sites *etc*.

1- https://pubs.acs.org/journal/jmcmar
2- https://benthamscience.com/journals/medicinal-chemistry/
3- https://www.slideshare.net/akkimipadama/medicinal-chemistry-1257073004-

4- https://slideplayer.com/slide/7330128/
5- e-Resources - Medicinal Chemistry - LibGuides at United States International University
6- Talks and Lectures - Medicinal Chemistry - LibGuides at United States International University.
7- Medicinal Chemistry Resources for Students | PharmaFactz.
8- Medicinal chemistry [electronic resource] (nyp.edu.sg).
9- Oxford University Press | Online Resource Centre | Patrick: An Introduction to Medicina Chemistry 6e (oup.com) (Bank of Questions)
10- https://pubs.acs.org/journal/jmcmar.
11- https://benthamscience.com/journals/medicinal-chemistry/.
12- https://www.slideserve.com/richard_edik/introduction-to-medicinal-chemistry.
13- Current medicinal chemistry [electronic resource]. in SearchWorks catalog (stanford.edu
14- P K Kelkar Library | IIT Kanpur.
15- RSC Medicinal Chemistry journal.

	Course Policies:
1	**Class Attendance:** At least 75 % of the course hours should be attended by the student. Otherwise, he/she will not be allowed to attend the final exam
2	**Tardy:** any student who is late for more than 15 minutes from starting the lecture will not be allowed to attend the lecture and will be considered absent.
3	**Exam Attendance/Punctuality:** any student who is late for more than 30 minutes from starting the exam will not be allowed to attend the exam and will be considered absent.
4	**Assignments & Projects:** Assignments and projects will be assessed individually unless the teacher request for group work
5	**Cheating**: Cheating by any means will cause the student failure and he/she must re-study the course
6	**Plagiarism**: Plagiarism by any means will cause the student failure in the course . Other disciplinary procedures will be according to the college rules.

PHYSICAL ASSESSMENT SKILLS

Course Identification and General Information:							
1	**Course Title:**	**Physical Assessment Skills**					
2	**Course Code &Number:**	**PHCL452**					
3	**Credit hours:**	C.H					TOTAL
		L.	Tu.	S.	P	Tr.	
		2	-	-	-	-	***2***
4	**Study level/ semester at which this course is offered:**	*Fourth Year – 2nd semester*					
5	**Pre –requisite (if any):**	**none**					
6	**Co –requisite (if any):**	**none**					
7	**Program (s) in which the course is offered:**	**Faculty of Medical Science**					
8	**Language of teaching the course:**	**ENGLISH**					
9	**Location of teaching the course:**	**IN THE UNIVERSITY**					

Course Description

This course aims to:

1. develop student competency in assessing physical parameters which may be affected by specific drugs and diseases states.

2. develop the knowledge and skills necessary for the student to obtain subjective and objective data from patients to evaluate drug therapy.

Program Intended learning outcomes (PILOs) & the Course Intended learning outcomes (CILOs) and their alignment to teaching and assessment strategies			
A) Alignment Course Intended Learning Outcomes of Intellectual Skills to Teaching Strategies and Assessment Strategies:			
PILOs	CILOs	Teaching strategies	Assessment Strategies
A3	**a1-** Correlate physiological and pathophysiological processes with specific physical findings.	**lecture, Tutorial**	**written exam , assignments, quizzes**
(B) Alignment Course Intended Learning Outcomes of Intellectual Skills to Teaching Strategies and Assessment Strategies:			
PILOs	CILOs	Teaching strategies	Assessment Strategies
B1	**b1-** List specific information which should be obtained from a patient to aid in evaluation of each system.	**lecture, Tutorial**	**written exam , assignments, quizzes**
(C)Alignment Course Intended Learning Outcomes of Professional and Practical Skills to Teaching Strategies and Assessment Strategies:			
C7	**c1-** Demonstrate the techniques used to evaluate each system. **c2**Demonstrate proficiency in blood pressure and heart rate measurements.	**lecture, Tutorial**	**written exam , assignments, quizzes**
(D) Alignment Course Intended Learning Outcomes of Transferable Skills to Teaching Strategies and Assessment Strategies:			
	Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies

D2	**d1**-demonstrate self-learning and time management skills.	**lecture, Tutorial**	**assignments**

Course Content:					
A – Theoretical Aspect:					
Order	**Units/Topics List**	**Learning Outcomes**	**Sub Topics List**	**Number of Weeks**	**contact hours**
1	1	a1,b1, c1, d1	• Basis of patient physical assessment	4	16
2	2	a1,b1, c1, d1	▪ Cultural considerations in patient assessment	3	12
3	**3**	a1,b1, c1, d1	Health and medication history	1/2	2
4	**4**	a1,b1, c1, d1	skills related to various diseases that help to achievement of SOAP, including, a. Height b. BMI c. Vital signs d. Blood pressure e. Heart rate f. ECG g. Heart and respiratory sounds h. Skin rashes i. Changes in nails, hair,	1/2 7	2 28

			eyes, ears, head, neck j. Functions of liver and kidney • Reviews of systems (ROS).		
5			Total	15	60
Number of Weeks /and Units Per Semester				**15**	**3**

PRACTICAL PART:
a) Measurements of
• Blood pressure
• BMI, body temperature
• Heart rate bowel rate
• Respiratory rate
• ECG
• Kidney function

Teaching strategies of the course:
Lecture It is the most frequently employed teaching method to convey knowledge and explain theories to students in large groups (50-200) or in sessions, which consist of more than one group gathered in one classroom. The efficiency of lecturing can be enhanced by using techniques such as **Brain-storming**: It depends on stimulation of the student`s brain through a group of questions &/or **Concepts map**: which depends on sequencing of thoughts in the form of maps with horizontal or vertical relations & by using **learning aids** such as Data show projector

Assignments				
No	**Assignments**	**Aligned CILOs(symbols)**	**Week Due**	

1	Tutorial exercises	a1, b1, c1, d1	3	
2	Homework Exercises	a1, b1, c1, d1	7	

Schedule of Assessment Tasks for Students During the Semester

No.	Assessment Method		Week Due	Mark	Proportion of Total course Assessment	Aligned Course Learning Outcomes (CILOs)
2	Term Works	Quizzes	4-13, 14	10	10	a1, b1, c1, d1
		Assignments	7, 12	10	10	a1, b1, c1, d1
3	Mid-semester exam of theoretical part (written exam		7	20	20	b1, c1, d1
4	Final exam of theoretical part (written exam)		16	60	60	b1, c1, d1
TOTAL				100	100 %	

Learning Resources

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

1.Bates B. A Guide to Physical Examination and History Taking. Sixth edition, JB Lippincott, Philadelphia, Pennsylvania, 1995.

2- Essential References.

1.Bickley LS. Bates' Guide to Physical Examination and History Taking. Seventh Edition,
2.Lippincott Williams and Wilkins, Philadelphia, Pennsylvania, 1999.

Course Policies

1	**Class Attendance:** At least 75 % of the course hours should be attended by the student. Otherwise, he/she will not be allowed to attend the final exam
2	**Tardy:** any student who is late for more than 15 minutes from starting the lecture will not be allowed to attend the lecture and will be considered absent.
3	**Exam Attendance/Punctuality:** any student who is late for more than 30 minutes from starting the exam will not be allowed to attend the exam and will be considered absent.
4	**Assignments & Projects:**

	Assignments and projects will be assessed individually unless the teacher request for group work
5	**Cheating**: Cheating by any means will cause the student failure and he/she must re-study the course
6	**Plagiarism**: Plagiarism by any means will cause the student failure in the course . Other disciplinary procedures will be according to the college rules.

Principles of Pharmacy Practice

	Course Identification and General Information:							
1	**Course Title:**	**Principles of Pharmacy Practice**						
2	**Course Code &Number:**	**PHC 462**						
3	**Credit hours:**	**C.H**						**TOTAL**
		Theoretical			**P.**	**Tr.**		
		L.	**Tut.**	**S.**				
		2	-	-	1	-		**3**
4	**Study level/ semester at which this course is offered:**	*(Fourth) Year – (Second) semester*						
5	**Pre –requisite (if any):**	**-**						
6	**Co –requisite (if any):**	-						
7	**Program (s) in which the course is offered:**	**Faculty of Medical Science**						
8	**Language of teaching the course:**	**ENGLISH**						
9	**Location of teaching the course:**	**At the faculty**						

L: lecturing ; Tut: Tutorial , S: seminar ; P: practical ; Tr.: training

Course Description
The course focuses on introducing the concepts and principles of clinical pharmacy practice, including maintenance of patient profiles, proper documentation and drug filing systems as well as drug information retrieval and presentation of drug information to members of the healthcare team as well as patient's drug regimen prescribing and monitoring, and the concept of drug and poison information centers, information about medication errors, evidence-based medicine and drug monographs.

Intended learning outcomes of the course (CILOs) and their alignment to Program Intended learning outcomes (PILOs), teaching strategies and assessment strategies.		
Alignment CILOs to PILOs		
PILOs		**CILOs**
Knowledge & understanding : Upon successful completion of the course, students will be able to:		
A3	**A3**	a1 Analyze and interpret information needed in pharmacy practice, making logical deductions, giving clear advice and critical decisions about patient's state of health. Such decisions may not only be related to medications but may extend to health promotion, disease prevention and encouraging self-care.
A4		**a2.** Explain the principles of synthesis, purification and metabolic reactions of drugs affecting autonomic nervous system, autacoids and respiratory system.
A10		**a3.** Describe the role of pharmacist in chemical synthesis of drugs.
Intellectual skills : Upon successful completion of the course, students will be able to:		
B1	B1	**b1.** Apply in practice settings the knowledge of pharmaceutical sciences and pharmacy related subjects.
		b2. Interpret of patient clinical data, in addition to the ability to contribute to the development of health care through reflective practice, enquiry and innovation, and the interpretation of prescriptions and other orders for medicines
B2	**B2**	**b3 .** Utilize excellent management of medicines embracing dispensing, clinical pharmacy (including good clinical practice), OTC prescribing, provision of drug information, reporting of adverse reactions to medicines and assessment of toxicity profile, medicine utilization review as well as measuring outcomes in support of evidence-based practice and achieving maximal clinical effectiveness, in addition to health screening and promotion, including diagnostic testing.

Professional & practical skills : Upon successful completion of the course, students will be able to:		
C1	**C1**	**c1.** Use the language of medicine in communication with other health team members.
C2	**C2**	**c2.** Apply the relevant knowledge to health care either by direct instructions or advice to patients or by properly informing and effectively influencing decisions and actions of other health and social care professionals.
Transferable skills : Upon successful completion of the course, students will be able to:		
	D1	**d1.** Communicate effectively and behave in discipline with colleagues.
	D2	**d2.** Demonstrate the skills of time management and self-learning.
	D3	**d3.** Participate efficiently with his colleagues in a team work.

Alignment CILOs to teaching strategies and assessment strategies

(a) Alignment Course Intended Learning Outcomes (CILOs) of knowledge & understanding to Teaching Strategies and Assessment Strategies

Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
a1 Analyze and interpret information needed in pharmacy practice, making logical deductions, giving clear advice and critical decisions about patient's state of health. Such decisions may not only be related to medications but may extend to	**Active Lecture** **Tutorials** **Seminar**	**Written exams (Mid, Final)** **Quizzes**

health promotion, disease prevention and encouraging self-care.	**Self-Study** **One-minute paper** **Video-clips** **Role-playing** **Reading/discussing draft articles** **Map concepts**	**Essays** **Reports** **Instructional activities**
a2. Explain the principles of synthesis, purification and metabolic reactions of drugs affecting autonomic nervous system, autacoids and respiratory system.		
a3. Describe the role of pharmacist in chemical synthesis of drugs.		
(b) Alignment Course Intended Learning Outcomes (CILOs) of Intellectual Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	**Teaching strategies**	**Assessment Strategies**
b1. Apply in practice settings the knowledge of pharmaceutical sciences and pharmacy related subjects.	**Active Lecture** **Tutorials** **Seminar** **Self-Study** **One-minute paper** **Video-clips** **Role-playing** **Reading/discussing draft articles** **Map concepts**	**Written exams (Mid, Final)** **Quizzes** **Essays** **Reports** **Instructional activities**
b2. Interpret of patient clinical data, in addition to the ability to contribute to the development of health care through reflective practice, enquiry and innovation, and the interpretation of prescriptions and other orders for medicines	**Active Lecture** **Tutorials** **Seminar**	**Written exams (Mid, Final)** **Quizzes**

b3 . Utilize excellent management of medicines embracing dispensing, clinical pharmacy (including good clinical practice), OTC prescribing, provision of drug information, reporting of adverse reactions to medicines and assessment of toxicity profile, medicine utilization review as well as measuring outcomes in support of evidence-based practice and achieving maximal clinical effectiveness, in addition to health screening and promotion, including diagnostic testing.	**Self-Study** **One-minute paper** **Video-clips** **Role-playing** **Reading/discussing draft articles** **Map concepts**	**Essays** **Reports** **Instructional activities**

(c)Alignment Course Intended Learning Outcomes (CILOs) of Professional and Practical Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	**Teaching strategies**	**Assessment Strategies**
c1. Use the language of medicine in communication with other health team members.	**laboratory practice** **Demonstrations**	**Lab. term works, final practical exam**
c2. Apply the relevant knowledge to health care either by direct instructions or advice to patients or by properly informing and effectively influencing decisions and actions of other health and social care professionals.		
(d) Alignment Course Intended Learning Outcomes (CILOs) of Transferable Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	**Teaching strategies**	**Assessment Strategies**
d1. Communicate effectively and behave in discipline with colleagues.	**laboratory practice**	

d3. Participate efficiently with his colleagues in a team work.	**group-project** **Demonstrations**	**Lab. term works, assignment**
d2. Demonstrate the skills of time management and self-learning.	**laboratory practice** **Demonstrations**	**Lab. term works, final practical exam**

Course Content

A – Theoretical Aspect:

Order	Units/ Topics List	CILOs	Sub Topics List	No. of Weeks	contact hours
1	**Unit 1**	a1, a2, a3	An introduction to the professional standards of pharmacy practice, their place in practice, intention and use: an introduction to the legal and ethical frameworks of professional practice	2	4
2	**Unit 2**	a1, a2, a3 ,b1,b2	• Patient Assessment and the pharmaceutical care process • General Assessment and vital signs Pain assessment	2	4
3	**Unit 3**	a1, a2, a3 ,c1,c2	The role-specific skills required for contemporary professional pharmacy practice in the major settings including: primary health care in community pharmacy	2	5

Mid-term exam				1	2
4	**Unit 4**	a1, a2,a3 , b1, b2, b3, b4	• Medication provision and review in community pharmacy: various models of medication management and drug optimization	3	6
		a1, a2,a3 , b1, b2, b3, b4	• Drug interactions with vitamins and minerals • Drug interactions with psychiatric medicines for the pharmacy practitioner	2	4
5	**Unit 5**	a1, a2,a3 , b1, b2, b3, b4	• Pharmacovigilance • Adverse drug events , Medication errors	3	6
FINAL - EXAM				1	2

TOTAL	16	32
Number of Weeks /and Units Per Semester	16 weeks	6 Units

Teaching strategies of the course:
Active Lecture It is the most frequently employed teaching method to convey knowledge and explain theories to students in large groups (50-200) or in sessions, which consist of more than one group gathered in one classroom. The efficiency of lecturing can be enhanced by using techniques such as **Brain-storming**: It depends on stimulation of the student`s brain through a group of questions &/or **Concepts map**: which depends on sequencing of thoughts in the form of maps with horizontal or vertical relations & by using **learning aids** such as Data show projector
Laboratory practice: students doing experiments in labs individually or in small groups
Feed-back learning: students are individually asked to do perform quick tests (quiz) or to do certain assignments such lab. experiments, problems solving, homework, topics summarizing or internet search. The teacher will provide them feed-back correction & evaluation
Group projects: students work on a project in groups of 2 to 3 students. Important for learning by doing ,using the results in practical manner &for promoting team work skills

Schedule of Assessment Tasks for Students During the Semester						
Theoretical part assessment						
No.	**Assessment Method**		**Week Due**	**Mark**	**Proportion to Total course Assessment**	**Aligned Course Learning Outcomes (CILOs)**
1		Quizzes	4-13, 14	5	5	b1

	Term Works	Assignments	7, 12	5	5	b5, c3, c4, d1, d3
2	Mid-semester exam (written exam)		7	10	10	a1, a2,a3 , b1, b2, b3, b4
3	Final exam (written exam)		16	50	50	a1, a2,a3 , b1, b2, b3, b4
TOTAL				70	70 %	70

Practical part assessment						
No.	**Assessment Method**		**Week Due**	**Mark**	**Proportion to Total course Assessment**	**Aligned Course Learning Outcomes(CILOs)**
1	Lab. Term works	Attitude	1-12	5	5	c1, c2, d1, d2, d3
2		Accomplishments		5	5	
	Final exam (practical)		12	20	20	c1, c2, d2
Total				30	30 %	

Learning Resources
1- Required Textbook(s) (maximum two).
1.Patient assessment in Pharmacy Practice, Jones and Rospond 2003 2.Handbook of Pharmacy healthcare, Harman and Mason, second edition, 2002

2- Essential References.
1.Pharmaceutical Practice, Winfield, A. J. and Richards, R.M.E, 2nd edition 1998 2.Remington. The Science and Practice of Pharmacy, Gennaro, A.R., 20th edition, 2000..
3- Electronic Materials and Web Sites *etc*.
1.Pharmacy Practice 2.Free Online Pharmacy Course | Introduction to Pharmacy | Alison

	Course Policies:
1	**Class Attendance:** At least 75 % of the course hours should be attended by the student. Otherwise, he/she will not be allowed to attend the final exam
2	**Tardy:** any student who is late for more than 15 minutes from starting the lecture will not be allowed to attend the lecture and will be considered absent.
3	**Exam Attendance/Punctuality:** any student who is late for more than 30 minutes from starting the exam will not be allowed to attend the exam and will be considered absent.
4	**Assignments & Projects:** Assignments and projects will be assessed individually unless the teacher request for group work
5	**Cheating**: Cheating by any means will cause the student failure and he/she must re-study the course
6	**Plagiarism**: Plagiarism by any means will cause the student failure in the course . Other disciplinary procedures will be according to the college rules.

Level Five

Course Specification

CLINICAL PHARMACY I

Course Identification and General Information:								
1	**Course Title:**	**CLINICAL PHARMACY I**						
2	**Course Code &Number:**	**PHCL511**						
3	**Credit hours:**	C.H						TOTAL
		Theoretical			P.	Tr.		
		L.	Tut.	S.				
		2	-	1	-	-		**3**
4	**Study level/ semester at which this course is offered:**	*(FIFTH) Year – (FRIST) semester*						
5	**Pre –requisite (if any):**	• **Pharmacology I , II, III**						
6	**Co –requisite (if any):**	**None**						
7	**Program (s) in which the course is offered:**	**Faculty of Medical Science**						
8	**Language of teaching the course:**	**ENGLISH**						
9	**Location of teaching the course:**	**IN THE UNIVERSITY**						

L: lecturing ; Tut: Tutorial , S: seminar ; P: practical ; Tr.: training

Course Description
The course is designed to provide the student with essential knowledge and skills necessary to provide pharmaceutical clinical patient-oriented services to patients, in general, and in particular to specific populations of patients including pregnant , pediatric , lactating and geriatric patients. The course is preceded by courses necessary to help the student to evaluate patient case and select safe and effective drugs for them. These course are (pharmacology I, II and III) and (Biopharmaceutics and pharmacokinetics I) which concern with pharmacodynamic and pharmacokinetics of drugs, respectively.

Intended learning outcomes of the course (CILOs) and their alignment to Program Intended learning outcomes (PILOs), teaching strategies and assessment strategies		
Alignment CILOs to PILOs		
No.	**PILOs**	**CILOs**
1	**A2**	**a1**. Explain the impact of good behavior and communication of al clinical pharmacists on their relationship with patients and other healthcare professionals
2	**A5**	**a2**. Identify the therapeutic uses of medicines, their adverse effects and non-pharmacotherapy measures to aid cure of diseases.
3	**A10**	**a3.** Describe the role of clinical pharmacists in rational medications use and designing therapeutic regimens for patients
4	**B1**	**b1.** Interpret clinical features and other disease data to properly recommend safe and effective medications for patients
5	**B7**	**b2.** Formulate and evaluate patient care plan about ration medication use to improve patient safety and drug efficacy
6	**C4**	**c1.** Advise patient and healthcare professionals to optimize medicinal uses.
7	**C7**	**c2 .** Search efficiently for information using evidence-based sources.
8		**c3.** Present and report his/her works correctly using appropriate writing rules and technologies media.
9	**D2**	**d1.** Demonstrate the skills of time management, decision -making and self-learning.
10	**D3**	**d2.** Participate effectively with his/her colleagues in a team work
11	**D4**	**d3.** Take responsibility for adaption to change needs in clinical pharmacy practice
12	**D5**	**d4.** Retrieve essential references of evidence-based practice to achieve maximum clinical effectiveness.

Alignment CILOs to teaching strategies and assessment strategies		
(a) Alignment Course Intended Learning Outcomes (CILOs) of knowledge & understanding to Teaching Strategies and Assessment Strategies		
Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
a1, a2, a3	**Lecture**	**Written exams**

(b) Alignment Course Intended Learning Outcomes (CILOs) of Intellectual Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	**Teaching strategies**	**Assessment Strategies**
b1, b2	**Lecture, feed-back learning, seminar**	**Written exams , quizzes, seminar assessment**
(c)Alignment Course Intended Learning Outcomes (CILOs) of Professional and Practical Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	**Teaching strategies**	**Assessment Strategies**
c1, c3	**Seminar**	**seminar assessment**
c2	**Seminar**	**seminar assessment**
(d) Alignment Course Intended Learning Outcomes (CILOs) of Transferable Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	**Teaching strategies**	**Assessment Strategies**
d1, d2, d3, d4	**Seminar**	**seminar assessment**

Course Content					
Order	**Units/ Topics List**	**CILOs**	**Sub Topics List**	**No. of Weeks**	**contact hours**
1	**Introduction to clinical pharmacy**	a1, a2, a3, b1, b2	• Definition • Patients-oriented services: clinical, hospital, community pharmacy; inter-relations and differences • Pharmacy from dispensing service to caregiving • Duties of clinical pharmacist • Clinical pharmacists as drug information center: source of information, types of drug information demanded	1	2

			(indications, contraindications, precautions, drug interactions, etc.) • basic requirements (knowledge and skills) of clinical pharmacist		
2	**Clinical pharmacist as a member of the health care team**	a1, a2, a3, b1, b2	○ sharing in morning rotation and discussion , cooperation with other members ○ patient`s medical record (PMR): components, examples ○ Skills of communication with patients	1	2
3	**Clinical skills of diagnosis and data interpretation**	a1, a4, b1, b2, b3, b5, d4	• Clinical features • Physical (clinical) examinations: methods and interpretation • Vital signs evaluation and interpretation • Clinical lab. Data interpretation: blood analysis (CBC, serology, biochemistry, tumor markers), stool analysis, urine analysis. • Clinical instrumental diagnosis: techniques and data interpretation: Radiography, ultrasonography, Computed Tomography Scan (CT scan), Magnetic Resonance Imaging	**3**	6
4	**Seminar 1**	c1, c2 c3, d1, d2, d3, d4	Interpretation of clinical features, lab. diagnosis and instrumental diagnosis of clinical cases provided by the teacher at the end of previous lecture	**1**	2
Mid-term exam				1	2

4	**Non-pharmacotherapy measures**	a1, a2, a3, a4, c1	• Definition, types • Physiotherapy : role, advantages • Psychotherapy : role, advantages • Life-style changes • Diet control • Other methods	1	2
5	**Benefit: Risk ratio**	a1, a2, a3, a4, c1	• Benefits of medications • Risks of medications • Methods for Assessment benefit: risk ratio **<u>with clinical case`s examples</u>**	1	2
6	**Seminar 2**	c1, c2 c3, d1, d2, d3, d4	Seminar on assessment of benefit: risk ratio for clinical cases provided by the teacher at the end of previous lecture	1	2
7	**Pharmacotherapy for specialized population (1)**	a1, a2, a3, b1, b2	**<u>Pharmacotherapy accompanied with clinical cases for</u>:** 1. **Pregnant women**: Harmful effects on the fetus, Recognition of teratogenic drugs, pharmacokinetics in pregnancy, drugs prescribed in pregnancy (Pregnancy A, B, C, X categories), drugs prescribed for [pain, GIT disorders, diabetes, gestational diabetes, asthma, cough, allergy, urinary tract infection, hypertension, thyroid abnormalities, thromboembolism, inflectional vaginosis, Epilepsy, mental health disorders] 2. **lactating women:** factors influence the amount of drug an infant will receive through breast-feeding, drugs avoided during lactation, treatment of mastitis,	**2**	4

			postpartum depression, cessation of lactation)		
8	**Seminar 3**	c1, c2 c3, d1, d2, d3, d4	Seminar to solve clinical cases of pregnant and lactating women	**1**	2
9	**Pharmacotherapy for specialized population (2)**	a1, a2, a3, b1, b2	3. **Pediatrics:** classification of pediatrics (newborn, infant, child), differences of pharmacodynamics and pharmacokinetics and admiration sites of drugs in children, drug efficacy and toxicity, factors affecting pediatric therapy, drugs prescribed for [pain, fever, infections, GIT disorders]. 4. **Geriatrics:** relation of aging to diseases, common physiological changes in aging, alteration of pharmacokinetics and pharmacodynamics of drugs, drugs risks in elderly, drugs avoided in geriatric patients	**2**	4
10	**Seminar 4**	c1, c2 c3, d1, d2, d3, d4	Seminar to solve clinical cases of pregnant and lactating women	**1**	2
FINAL - EXAM				1	2
TOTAL				16	32
Number of Weeks /and Units Per Semester				16 weeks	10 Units

Teaching strategies of the course:
Lecture It is the most frequently employed teaching method to convey knowledge and explain theories to students in large groups (50-200) or in sessions, which consist of more than one group gathered in one classroom.

The efficiency of lecturing can be enhanced by using techniques such as **Brain-storming**: It depends on stimulation of the student`s brain through a group of questions &/or **Concepts map**: which depends on sequencing of thoughts in the form of maps with horizontal or vertical relations & by using **learning aids** such as Data show projector
Seminar : Each group of students will be assigned to solve a number of case studies prepared by the teacher

Seminar

At the specified time due , group(s) of students will be assigned by the teacher to present a seminar about one topic. The seminar include power point presentation followed by discussion and questions from the teacher and other students

No	Topic	Aligned CILOs	Week Due
1	Interpretation of clinical data	c1, c2 c3, d1, d2, d3, d4	6
2	Benefit: risk ratio	c1, c2 c3, d1, d2, d3, d4	10
3	Seminar to solve clinical cases of pregnant and lactating women	c1, c2 c3, d1, d2, d3, d4	13
4	Seminar to solve clinical cases of pediatric and geriatric	c1, c2 c3, d1, d2, d3, d4	15

Schedule of Assessment Tasks for Students During the Semester

Assessment Method			Mark	Proportion to Total course Assessment %	**Aligned CILOs**
Term Works	Quizzes		5	5	b1
	Seminar assessment	Presentation	15	15	c1, c2 c3, d1, d2, d3, d4
		Seminar discussion			
Mid-semester exam (written exam)			20	20	
Final exam (written exam)			60	60	a1, a2, a3, b1, b2
Total			100	100	a1, a2, a3, b1, b2

Learning Resources
1- Required Textbook(s) (ma3imum two).
Karen J. Tietze. Clinical skills for pharmacists : A Patient-Focused Approach, Elsevier Inc. James M. Ritter , A text book of clinical pharmacology and therapeutics, HodderArn
2- Essential References.
1. Joseph T. Diprio, Encyclopaedia of clinical pharmacy, Marcel Dekker. 2. Widmann. Good clinical interpretation of laboratory tests
3- Electronic References
https://www.slideshare.net/SohanPatel8/clinical-pharmacy-57774896 Clinical Pharmacy - an overview | ScienceDirect Topics

Course Policies	
1	**Class Attendance:** At least 75 % of the course hours should be attended by the student. Otherwise, he/she will not be allowed to attend the final exam
2	**Tardy:** any student who is late for more than 15 minutes from starting the lecture will not be allowed to attend the lecture and will be considered absent.
3	**Exam Attendance/Punctuality:** any student who is late for more than 30 minutes from starting the exam will not be allowed to attend the exam and will be considered absent.
4	**Assignments & Projects:** Assignments and projects will be assessed individually unless the teacher request for group work
5	**Cheating**: Cheating by any means will cause the student failure and he/she must re-study the course
6	**Plagiarism**: Plagiarism by any means will cause the student failure in the course . Other disciplinary procedures will be according to the college rules.

PHARMACEUTICAL INSTRUMENTAL ANALYSIS

Course Identification and General Information:								
1	**Course Title:**	**PHARMACEUTICAL INSTRUMENTAL ANALYSIS**						
2	**Course Code &Number:**	**PHC 521**						
3	**Credit hours:**	**C.H**						**TOTAL**
		Theoretical			**P.**	**Tr.**		
		L.	**Tut.**	**S.**				
		1	1	-	1	-		**3**
4	**Study level/ semester at which this course is offered:**	*(5^{TH}) Year – (1^{ST}) semester*						
5	**Pre –requisite (if any):**	-						
6	**Co –requisite (if any):**	**Industrial Pharmacy**						
7	**Program (s) in which the course is offered:**	**Faculty of Medical Science**						
8	**Language of teaching the course:**	**ENGLISH**						
	Location of teaching the course:	**IN THE UNIVERSITY**						

L: lecturing ; Tut: Tutorial , S: seminar ; P: practical ; Tr.: training

Course Description:
The course deals with the study of principles, instrumentation and applications of advanced analytical techniques including atomic absorption/emission, infrared and mass spectrophotometric/spectroscopic as well as HPLC and UHPLC chromatographic techniques. The practical part provides the student with skills to effectively operate equipment of those techniques and to perform analysis of compounds using such instrumentation.

Intended learning outcomes of the course (CILOs) and their alignment to Program Intended learning outcomes (PILOs), teaching strategies and assessment strategies		
1. Alignment CILOs to PILOs		
PILOs		**CILOs**
A3	Explain physicochemical properties of materials and products	**a1**. Explain the physicochemical properties of substances that can be utilized for their qualitative and quantitative analysis
A4	Describe analytical methods, principles, design and development techniques	**a2**. Describe the principles of atomic absorption/emission, infrared and mass spectrophotometric/spectroscopic as well as HPLC and UHPLC chromatographic techniques.
A10	Describe the pharmacists role in different pharmacy practices.	**a3.** Describe the role of pharmacist to perform accurate and precise quantitative and qualitative analysis.
B1	Collect interpret and assess information and data relevant to pharmacy practice.	**b1.** Interpret data obtained by atomic absorption/emission, infrared and mass spectrophotometric/spectroscopic as well as HPLC and UHPLC chromatographic techniques.
B2	Classify drugs, approaches and other information relevant to pharmacy based on scientific classification system.	**b2.** Design a suitable atomic absorption/emission, infrared and mass spectrophotometric/spectroscopic as well as HPLC and UHPLC chromatographic techniques based on the substance physicochemical properties.
B3	Design an evaluate different types of safe and effective drugs , pharmaceutical dosage forms and cosmetic preparations.	**b3.** Select appropriate standard operating procedure for atomic absorption/emission, infrared and mass

		spectrophotometric/spectroscopic as well as HPLC and UHPLC chromatographic techniques.
B9	Apply mathematical equations to calculate data relevant to pharmacy practices.	**b4.** Calculate the content % and identify substances in a sample using atomic absorption/emission, infrared and mass spectrophotometric/spectroscopic as well as HPLC and UHPLC chromatographic techniques.
C1	Handle safely the chemicals, biological samples and pharmaceutical ingredients and products.	**c1.** Handle efficiently and safely the chemical materials and tools used in the laboratory
C2	Operate different instruments and use emerge technologies for preformulation, formulation and analysis of materials according to standard guidelines.	**c2.** Operate the instruments and perform experiments successfully in the laboratory
C7	Conduct research and utilize the results in different pharmaceutical fields.	**c3 .**Search efficiently for information using documented and electronic sources of information.
		c4. Present and report his/her works correctly using appropriate writing rules and technologies media.
D1	Interact and communicate effectively and behave in disciplines with colleagues, patients and healthcare professionals effectively in team-activities.	**d1.** Communicate effectively and behave in discipline with colleagues.
D2	Develop and demonstrate skills of time managements, self-learning and decision making.	**d2.** Demonstrate the skills of time management and self-learning.

D3	Participate collaboratively in team work with colleagues and healthcare professionals.	**d3.** Participate efficiently with his colleagues in a team work.

2. Alignment CILOs to teaching strategies and assessment strategies		
(a) Alignment Course Intended Learning Outcomes (CILOs) of knowledge& understanding to Teaching Strategies and Assessment Strategies		
Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
a1. Explain the physicochemical properties of substances that can be utilized for their qualitative and quantitative analysis	**Lecture**	**Written exams**
a2. Describe the principles of atomic absorption/emission, infrared and mass spectrophotometric/spectroscopic as well as HPLC and UHPLC chromatographic techniques.		
a3. Describe the role of pharmacist to perform accurate and precise quantitative and qualitative analysis.		
(b) Alignment Course Intended Learning Outcomes (CILOs) of Intellectual Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
b1. Interpret data obtained by atomic absorption/emission, infrared and mass spectrophotometric/spectroscopic as well as HPLC and UHPLC chromatographic techniques.	**Lecture-discussion laboratory practice, Feed-back learning**	**Written exams, quizzes, lab. term work, practical final exam**
b2. Design a suitable atomic absorption/emission, infrared and mass spectrophotometric/spectroscopic as well as HPLC		

and UHPLC chromatographic techniques based on the substance physicochemical properties.		
b3. Select appropriate standard operating procedure for atomic absorption/emission, infrared and mass spectrophotometric/spectroscopic as well as HPLC and UHPLC chromatographic techniques.		
b4. Calculate the content % and identify substances in a sample using atomic absorption/emission, infrared and mass spectrophotometric/spectroscopic as well as HPLC and UHPLC chromatographic techniques.		
(c)Alignment Course Intended Learning Outcomes (CILOs) of Professional and Practical Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
c1. Handle efficiently and safely the chemical materials and tools used in the laboratory	**laboratory practice**	**Lab. term works, final practical exam**
c2. Operate the instruments and perform experiments successfully in the laboratory		
c3 . Search efficiently for information using documented and electronic sources of information.	**feed-back learning, Group-project**	**Assignments**
c4. Present and report his/her works correctly using appropriate writing rules and technologies media.		
(d) Alignment Course Intended Learning Outcomes (CILOs) of Transferable Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies

d1. Communicate effectively and behave in discipline with colleagues.	**laboratory practice, group-project**	**Practical assessment (Lab. attendance, attitude, practical exam), Assignments**
d3. Participate efficiently with his colleagues in a team work.		
d2. Demonstrate the skills of time management and self-learning.	**Lab. practice, group-project, feed-back learning**	**Practical assessment (Lab. attendance, attitude, practical exam), Assignments**

Course Content:

A – Theoretical Aspect:

Order	Units/ Topics List	CILOs	Sub Topics List	No. of Weeks	contact hours
1	**Introduction**	a1,a2, a3, b1, b2, b3, b4	Principles and applications of pharmacopoeial assays and limit tests	**1**	
2	**Principles and pharmaceutical applications of**	a1,a2, a3, b1, b2, b3, b4	Mass spectrometry Ultraviolet and infrared spectroscopy.		

3	**Advanced spectroscopic techniques**	a1,a2, a3, b1, b2, b3, b4	• Chromatography • Nuclear magnetic resonance spectroscopy • Atomic absorption spectroscopy, • Flame photometry Potentiometric titrimetry.	8	16
4	**mid-term exam**			1	2
5	**Advanced chromatographic techniques**	a1,a2, a3, b1, b2, b3, b4	**Theoretical principle and components , components interactions , types, instrumentation, factors affecting, output data, applications in quantitative/qualitative analysis, data interpretation :** • High performance liquid chromatography (HPLC) • Ultra High performance liquid chromatography (UHPLC)	6	12

	The application of these techniques in		• Identification of bulk pharmaceuticals • Detection of impurities • Quality control • Structural elucidation and drug regulation.		
FINAL - EXAM				1	2
TOTAL				16	32
Number of Weeks /and Units Per Semester				16 weeks	4 Units

B - Practical Aspect:

Order	Tasks/ Experiments	Number of Weeks	contact hours	Aligned Course Intended Learning Outcomes CILOs
1	Simulation and Determination of drugs in different dosage forms using HPLC : • Amikacin injections • Amlodipine tablets • Cephradine capsules • Paracetamol + caffeine tablets • Pseudoephedrine + cetrizine capsules	**7**	**14**	b1, b2, b3, b4, c1, c2, d1, d2, d3

	• Drotaverine + codeine tablets • Miconazole + hydrocortisone oral gel			
2	Simulation and data interpretation of Infrared spectroscopy analysis of • Carbamezapine • Bisoprolol • Amoxicillin • Unknown drug	**3**	**6**	b1, b2, b3, b4, c1, c2, d1, d2, d3
PRACTICAL EXAM		**1**	**2**	b1, b2, b3, b4, c1, c2, d1, d2, d3
Total		**11**	**22**	

Teaching strategies of the course:
Lecture It is the most frequently employed teaching method to convey knowledge and explain theories to students in large groups (50-200) or in sessions, which consist of more than one group gathered in one classroom. The efficiency of lecturing can be enhanced by using techniques such as **Brain-storming**: It depends on stimulation of the student`s brain through a group of questions &/or **Concepts map**: which depends on sequencing of thoughts in the form of maps with horizontal or vertical relations & by using **learning aids** such as Data show projector
Laboratory practice: students doing experiments in labs individually or in small groups
Feed-back learning: students are individually asked to do perform quick tests (quiz) or to do certain assignments such lab. experiments, problems solving, homework, topics summarizing or internet search. The teacher will provide them feed-back correction & evaluation
Group projects: students work on a project in groups of 2 to 3 students. Important for learning by doing ,using the results in practical manner &for promoting team work skills

Assignments:				
No	**Assignments**	**Aligned CILOs**	**Week Due**	
1	**Individual**: every student is assigned to solve the problems provided by the teacher at the end of each unit.	b2, c5, c6, d4	4-13	
2	**Group** : each group of students will be assigned to provide a video of simulation of one of the analytical technique studied. The students of each group must explain the simulation for other students.	c5, c6, d1, d2, d4	14	

Schedule of Assessment Tasks for Students During the Semester						
Theoretical part assessment						
No.	**Assessment Method**		**Week Due**	**Mark**	**Proportion to Total course Assessment**	**Aligned Course Learning Outcomes (CILOs)**
1	Term Works	Quizzes	4-13, 14	5	5	b1, b2, b3, b4, b5, b6, b7
		Assignments	7, 12	5	5	c3, c4, d1, d2, d3
2	Mid-semester exam of theoretical part (written exam		7	10	10	a1, a2, a3, b1, b2, b3, b4
3	Final exam of theoretical part (written exam)		16	50	50	a1, a2, a3, b1, b2, b3, b4
TOTAL				70	70 %	70

Practical part assessment						
No.	**Assessment Method**		**Week Due**	**Mark**	**Proportion to Total course Assessment**	**Aligned Course Learning Outcomes(CILOs)**
1	Lab. Term works	Attitude	1-12	5	5	b1, b2, b3, b4, c1, c2, d1, d2,d3
2		Accomplishments		5	5	
	Final exam (practical)		12	20	20	b1, b2, b3, b4, c1, c2, d1, d2,d3
Total				30	30 %	

Learning Resources:
1- Required Textbook(s) (maximum two).
Satinder Ahuja and Stephen Scypinski. Handbook of Modern Pharmaceutical Analysis, 2010, Elsevier
2- Essential References.
1- David G. Watson, RuAngelie Edrada-Ebel Pharmaceutical Analysis A Textbook for Pharmacy Students and Pharmaceutical Chemists, 2012, Elsevier Churchill Livingstone 2- USP 41-NF36, United states pharmacopeia, 2018
3- Electronic Materials and Web Sites *etc*.
1- https://www.slideserve.com/burian/interpreting-ir-and-nmr-spectra **2-** https://www.slideshare.net/durgasairelangi/uvvisnmrmassir **3-** https://www.slideserve.com/caridadp/identification-of-organic-compounds-by-gc ir-amp-nmr-powerpoint-ppt-presentation

	Course Policies:
1	**Class Attendance:** At least 75 % of the course hours should be attended by the student. Otherwise, he/she will not be allowed to attend the final exam
2	**Tardy:** any student who is late for more than 15 minutes from starting the lecture will not be allowed to attend the lecture and will be considered absent.
3	**Exam Attendance/Punctuality:** any student who is late for more than 30 minutes from starting the exam will not be allowed to attend the exam and will be considered absent.
4	**Assignments & Projects:** Assignments and projects will be assessed individually unless the teacher request for group work
5	**Cheating**: Cheating by any means will cause the student failure and he/she must re-study the course
6	**Plagiarism**: Plagiarism by any means will cause the student failure in the course . Other disciplinary procedures will be according to the college rules.

PHARMACEUTICAL QUALITY CONTROL AND GOOD MANUFACTURING PRACTICE (GMP)

Course Identification and General Information:								
1	**Course Title:**	**PHARMACEUTICAL QUALITY CONTROL AND GOOD MANUFACTURING PRACTICE (GMP)**						
2	**Course Code &Number:**	**PHT 531**						
3	**Credit hours:**	C.H						TOTAL
		Theoretical			P.	Tr.		
		L.	Tut.	S.				
		2	1	-		-		**3**
4	**Study level/ semester at which this course is offered:**	*(5TH) Year – (FIRST) semester*						
5	**Pre –requisite (if any):**	• **Pharmaceutics I , II , III**						
6	**Co –requisite (if any):**	**-**						
7	**Program (s) in which the course is offered:**	**Faculty of Medical Science**						
8	**Language of teaching the course:**	**ENGLISH**						
9	**Location of teaching the course:**	**IN THE UNIVERSITY**						

L: lecturing ; Tut: Tutorial , S: seminar ; P: practical ; Tr.: training

Course Description
The course deals with the study of the quality management, requirements, procedures as well as pharmacopeial tests to evaluate the quality of raw materials, in-process products and finished pharmaceutical products. This course provides an introduction to GMP. It reviews a brief history of GMP regulations and discusses the regulatory requirements for the quality management system, equipment, batch records, validation, packaging, labeling, holding, and distribution.

Intended learning outcomes of the course (CILOs) and their alignment to Program Intended learning outcomes (PILOs), teaching strategies and assessment strategies		
Alignment CILOs to PILOs		
No.	**PILOs**	**CILOs**
1	**A3**	**a1.** Identify the physicochemical properties of raw materials , in-process products and finished products that are used to evaluate their qualities.
2	**A4**	**a2**. Explain the analytical methods and procedures applied to evaluate the quality of pharmaceutical raw materials , in-process products and finished products.
3	**A10**	**a3.** Describe the role of pharmacists in implementing quality control rules and in evaluating the quality of pharmaceutical products.
4	**B1**	**b1.** Interpret the out-coming data obtained after qualitative or quantitative analysis of raw materials , in-process products and finished pharmaceutical products
5	**B3**	**b2.** Evaluate different types of pharmaceutical dosage forms.
6	**B4**	**b3 .** Select suitable standard operation procedures to investigate quality of pharmaceutical raw materials , in-process products and finished products
7	**B9**	**b4 .**Apply calculations to assess the quality of raw materials , in-process products and finished pharmaceutical products
8	**C1**	**c1.** Handle efficiently and safely the chemical materials and tools used in the laboratory
9	**C2**	**c2.** Operate the instruments and perform experiments successfully in the laboratory
10	**D1**	**d1.** Communicate effectively and behave in discipline with colleagues.
11	**D2**	**d2.** Demonstrate the skills of time management and self-learning.
12	**D3**	**d3.** Participate efficiently with his colleagues in a team work.

Alignment CILOs to teaching strategies and assessment strategies		
(a) Alignment Course Intended Learning Outcomes (CILOs) of knowledge & understanding to Teaching Strategies and Assessment Strategies		
Course Intended Learning Outcomes	**Teaching strategies**	**Assessment Strategies**
a1, a2, a3	**Active Lecture**	**written exams**
(b) Alignment Course Intended Learning Outcomes (CILOs) of Intellectual Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	**Teaching strategies**	**Assessment Strategies**
b1, b2, b4	**Active Lecture, feed-back learning**	**Written exams , quizzes, assignment**
b3	**Active Lecture, laboratory practice**	**Written exam , Lab. term works, final practical exam**
(c)Alignment Course Intended Learning Outcomes (CILOs) of Professional and Practical Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	**Teaching strategies**	**Assessment Strategies**
c1, c2	**laboratory practice**	**Lab. term works, final practical exam**
(d) Alignment Course Intended Learning Outcomes (CILOs) of Transferable Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	**Teaching strategies**	**Assessment Strategies**
d1, d3	**laboratory practice**	**Lab. term works, final practical exam**
d2	**laboratory practice, Feed-back learning**	**Lab. term works, final practical exam, Assignments**

Course Content					
A – Theoretical Aspect:					
Order	**Units/ Topics List**	**CILOs**	**Sub Topics List**	**No. of Weeks**	**contact hours**
1	**Introduction to Quality control**	a1, a2, a3, b1, b2	• definition of quality, quality control QC, specifications (qualitative and quantitative) , governmental and drug plant QC lab, Relation and mission of quality management system (QMS), quality assurance (QA), GMP and QC • Pharmacopeias : the References of quality control : BP, USP: contents , volumes , understanding monographs	2	4
2	**Units of QC lab**	a1, a2, a3, b1, b2	**missions of** a) Raw materials unit b) In-process unit c) Validation unit d) Microbiology unit e) Finished-product unit	1	2
3	**Procedures of QC**	a1, a2, a3, b1, b2	• sampling methods, number of samples based on batch size • Checking and calibration of equipments • Validation of results: accuracy, precision • Documenting and reporting • Quarantine, releasing and rejecting	2	4
4	**QC tests of raw materials**	a1, a2, a3, b1, b2, b4	**Tests of pharmacopeial specification of raw materials** identification, assay, microbial content, impurities content, other	2	

			tests with examples from the pharmacopeia		4
			• MID-TERM EXAM • Post-exam discussion	1	2
5	**QC tests of raw In-process products**	a1, a2, a3, b1, b2, b4	Evaluation of specification of products resulting from unit-operations : drying, evaporation, filtration, milling, granulation, mixing	2	4
6	**QC tests of raw finished products , package and labels**	a1, a2, a3, b1, b2, b4	**specific Tests (pharmacopeial specification) finished products including :** • Solutions • Suspensions & emulsions • Semisolid products • Suppositories • Powders • Granules • Tablets • Capsules • Sterile products : parenteral, ophthalmic preparations **Testing of pharmacopeial specifications of :** • Package Labels : information	4	8
Course Review		a1, a2, a3, b1, b2, b4	Review of the course topics by discussion session.	1	2
FINAL - EXAM				1	2
TOTAL				16	32
Number of Weeks /and Units Per Semester				16 weeks	6 Units

B - Practical Aspect:				
Order	**Tasks/ Experiments**	**Number of Weeks**	**contact hours**	**Aligned Couse Intended Learning Outcomes CILOs**
1	QC sampling , checking of equipments & reporting	**1**	**2**	b3, c1, c2, d1, d2, d3
2	QC of raw materials : paracetamol BP	**1**	**2**	b3, c1, c2, d1, d2, d3
3	QC of in-process products after : mixing	**1**	**2**	b3, c1, c2, d1, d2, d3
4	QC of in-process finished products : solution chlorpheniramine syrup BP	**1**	**2**	b3, c1, c2, d1, d2, d3
5	QC of in-process finished products : suspension metronidazole suspension USP	**1**	**2**	b3, c1, c2, d1, d2, d3
6	QC of in-process finished products : creams miconazole cream BP	**1**	**2**	b3, c1, c2, d1, d2, d3
7	QC of in-process finished products : suppositories paracetamol suppositories		**2**	b3, c1, c2, d1, d2, d3
8	QC of in-process finished products : paracetamol tablet friability hardness	**1**	**2**	b3, c1, c2, d1, d2, d3
9	QC of in-process finished products : paracetamol tablet (dissolution, disintegration)	**1**	**2**	b3, c1, c2, d1, d2, d3
10	QC of in-process finished products : capsules amoxicillin capsules USP	**1**	**2**	b3, c1, c2, d1, d2, d3
11	QC labels of labels & package	**1**	**2**	b3, c1, c2, d1, d2, d3
PRACTICAL EXAM		**1**	**2**	
Total		**12**	**24**	

Teaching strategies of the course
Lecture It is the most frequently employed teaching method to convey knowledge and explain theories to students in large groups (50-200) or in sessions, which consist of more than one group gathered in one classroom. The efficiency of lecturing can be enhanced by using techniques such as **Brain-storming**: It depends on stimulation of the student`s brain through a group of questions &/or **Concepts map**: which depends on sequencing of thoughts in the form of maps with horizontal or vertical relations & by using **learning aids** such as Data show projector
Laboratory practice: students doing experiments in labs individually or in small groups
Feed-back learning: students are individually asked to do perform quick tests (quiz) or to do certain assignments such lab. experiments, problems solving, homework, topics summarizing or internet search. The teacher will provide them feed-back correction & evaluation

Assignments

No	Assignments	Aligned CILOs	Week Due	
1	**Individual**: every student is assigned to solve the problems provided by the teacher at the end of each unit	b4, d2	7	

Schedule of Assessment Tasks for Students During the Semester

Theoretical part assessment

No.	Assessment Method		Week Due	Mark	Proportion to Total course Assessment	Aligned Course Learning Outcomes (CILOs)
1	Term Works	Quizzes	4-13, 14	5	5	b1, b2, b3
		Assignments	7, 12	5	5	b4, d2

2	Mid-semester exam (written exam)	7	10	10	a1, a2, a3, b1, b2, b4
3	Final exam (written exam)	16	50	50	a1, a2, a3, b1, b2, b4
TOTAL			70	70 %	70

Practical part assessment						
No.	**Assessment Method**		**Week Due**	**Mark**	**Proportion to Total course Assessment**	**Aligned Course Learning Outcomes(CILOs)**
1	Lab. Term works	Attitude	1-12	5	5	b3, c1, c2, d1, d2, d3
2		Accomplishments		5	5	
	Final exam (practical)		12	20	20	b3, c1, c2, d1, d2, d3
Total				30	30 %	

Learning Resources
1- Required Textbook(s) (maximum two).
Marayya. Quality assurance and quality management in pharmaceutical industry USP, 2018
2- Essential References.
1. A. P. Kulkarni. Process instrumentation And control 2. Ansel`s Pharmaceutical dosage forms and drug delivery system, 2011, Lippincott Williams and Wilkins, USA
3- Electronic Refences
Pharmaceutical Quality Control Courses | Pharma Medical

Course Policies:	
1	**Class Attendance:** At least 75 % of the course hours should be attended by the student. Otherwise, he/she will not be allowed to attend the final exam
2	**Tardy:** any student who is late for more than 15 minutes from starting the lecture will not be allowed to attend the lecture and will be considered absent.
3	**Exam Attendance/Punctuality:** any student who is late for more than 30 minutes from starting the exam will not be allowed to attend the exam and will be considered absent.
4	**Assignments & Projects:** Assignments and projects will be assessed individually unless the teacher request for group work
5	**Cheating**: Cheating by any means will cause the student failure and he/she must re-study the course
6	**Plagiarism**: Plagiarism by any means will cause the student failure in the course . Other disciplinary procedures will be according to the college rules.

PHARMACY REGULATIONS & ETHICS

Course Identification and General Information:								
1	**Course Title:**	**PHARMACY REGULATIONS & ETHICS**						
2	**Course Code &Number:**	**PHLC 541**						
3	**Credit hours:**	C.H						TOTAL
		Theoretical			P.	Tr.		
		L.	Tut.	S.				
		2	-	-	-	-		**2**
4	**Study level/ semester at which this course is offered:**	*(Fifth) Year – (first) semester*						
5	**Pre –requisite (if any):**	-						
6	**Co –requisite (if any):**	-						
7	**Program (s) in which the course is offered:**	**Faculty of Medical Science**						
8	**Language of teaching the course:**	**ENGLISH**						
9	**Location of teaching the course:**	**IN THE UNIVERSITY**						

L: lecturing ; Tut: Tutorial , S: seminar ; P: practical ; Tr.: training

Course Description
The course equips the students with basic knowledge relevant to regulations and ethics of pharmacy profession. The main purpose of this course is to make the graduate able to demonstrate and practice his/her responsibilities as pharmacist ethically and legally and to respect the rights of patients, colleagues and healthcare professionals.

Intended learning outcomes of the course (CILOs) and their alignment to Program Intended learning outcomes (PILOs), teaching strategies and assessment strategies		
Alignment CILOs to PILOs		
No.	**PILOs**	**CILOs**
1	**A2**	**a1.** Explain the fundamentals of pharmacy regulations and ethics and their impact to relationship with patients and healthcare professionals
2	**A10**	**a2.** Describe the pharmacists role to practice pharmacy legally and ethically.
3	**B5**	**b1.** Emerge ethics to different types of pharmacy practice
4	**C6**	**c1 .**Ethically use knowledge and skills in pharmacy.
5	**D2**	**d1.** Demonstrate time management and self-learning skills
6	**D4**	**d2.** Take responsibility of adaption to change needs in pharmacy practice.

Alignment CILOs to teaching strategies and assessment strategies		
(a) Alignment Course Intended Learning Outcomes (CILOs) of knowledge & understanding to Teaching Strategies and Assessment Strategies		
Course Intended Learning Outcomes	**Teaching strategies**	**Assessment Strategies**
a1, a2	**Lecture**	**Written exams**
(b) Alignment Course Intended Learning Outcomes (CILOs) of Intellectual Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	**Teaching strategies**	**Assessment Strategies**
b1	**feed-back learning**	**Assignments, quizzes**
(c)Alignment Course Intended Learning Outcomes (CILOs) of Professional and Practical Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	**Teaching strategies**	**Assessment Strategies**
c1	**feed-back learning**	**Assignments**
(d) Alignment Course Intended Learning Outcomes (CILOs) of Transferable Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	**Teaching strategies**	**Assessment Strategies**

d1, d2	**feed-back learning**	**Assignments**

Course Content					
Order	**Units/ Topics List**	**CILOs**	**Sub Topics List**	**No. of Weeks**	**contact hours**
Part I: Pharmacy laws, regulations and acts					
1	**Introduction**	a1, a2	• Definition of regulations, act, laws • History of pharmacy regulations	1	2
2	**Foundations and authorities controlling pharmacy profession**	a1, a2	➢ Pharmacy Authority in : • Yemen • Arab countries • International ➢ Pharmacy practice licenses: requirements and procedures in Yemen , Arab countries and international	2	4
3	**Regulations and acts of pharmacy**	a1, a2	Pharmacy Regulations and acts controlling pharmacy profession in Yemen • Local (Yemeni)	3	6
Mid-term exam				1	2
3	**Regulations and acts of pharmacy**		Regulations in Arab countries and global e.g. UK and USA	2	4
Part II: Pharmacy Ethics					
4	**Patients and professional Rights**	a1, a2	• Patient rights • Medical workers rights • Pharmacist rights	3	6

5	**Pharmacy Code of Ethics**	a1, a2	• Old (Oath of Hippocrates) • Arab countries • Asian • Europe • USA • Local (Yemeni) Code of ethics	2	4
Course Review		a1, a2	Review of the course topics by discussion session.	1	2
FINAL - EXAM				1	2
TOTAL				16	32
Number of Weeks /and Units Per Semester				16 weeks	5 Units

Teaching strategies of the course:
Lecture It is the most frequently employed teaching method to convey knowledge and explain theories to students in large groups (50-200) or in sessions, which consist of more than one group gathered in one classroom. The efficiency of lecturing can be enhanced by using techniques such as **Brain-storming**: It depends on stimulation of the student`s brain through a group of questions &/or **Concepts map**: which depends on sequencing of thoughts in the form of maps with horizontal or vertical relations & by using **learning aids** such as Data show projector
Feed-back learning: students are individually asked to do perform quick tests (quiz) or to do certain assignments such lab. experiments, problems solving, homework, topics summarizing or internet search. The teacher will provide them feed-back correction & evaluation

Assignments				
No	**Assignments**	**Aligned CILOs**	**Week Due**	

1	**Individual**: every student is assigned to provide a survey/observational/ and/or web-search based report on one illegal or non-ethical issue related to pharmacy practice in Yemen	b1, c1, d1, d2	12	

Schedule of Assessment Tasks for Students During the Semester

No.	Assessment Method		Week Due	Mark	Proportion of Total course Assessment	Aligned Course Learning Outcomes (CILOs)
1	Term Works	Quizzes	4-13, 14	10	10	b1
		Assignments	12	10	10	b1, c1, d1, d2
2	Mid-semester exam (written exam)		7	20	20	a1, a2
3	Final exam of (written exam)		16	60	60	a1, a2
TOTAL				100	100 %	

Learning Resources

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

1. Yemeni law of medical profession and pharmacy
2. Pharmacy code of ethics. USA, American association of pharmacy
3. Pharmacy laws & regulations, USA, 2014

2- Essential References.

1. قانون مزاولة مهنة الصيدلة- مصر
2. قانون المهن الطبية – الجمهورية اليمنية

3- Electronic Materials and Web Sites *etc*.

قانون رقم (26) لسنة 2002م بشأن مزاولة المهن الطبية والصيدلانية (yemen-nic.info)
نصوص و مواد قانون مزاولة مهنة الصيدلة في مصر - استشارات قانونية مجانية (mohamah.net)

	Course Policies
1	**Class Attendance:** At least 75 % of the course hours should be attended by the student. Otherwise, he/she will not be allowed to attend the final exam
2	**Tardy:** any student who is late for more than 15 minutes from starting the lecture will not be allowed to attend the lecture and will be considered absent.
3	**Exam Attendance/Punctuality:** any student who is late for more than 30 minutes from starting the exam will not be allowed to attend the exam and will be considered absent.
4	**Assignments & Projects:** Assignments and projects will be assessed individually unless the teacher request for group work
5	**Cheating**: Cheating by any means will cause the student failure and he/she must re-study the course
6	**Plagiarism**: Plagiarism by any means will cause the student failure in the course . Other disciplinary procedures will be according to the college rules.

NUCLEAR PHARMACY

Course Identification and General Information:								
1	**Course Title:**	**NUCLEAR PHARMACY**						
2	**Course Code &Number:**	**PHT 551**						
3	**Credit hours:**	C.H						TOTAL
		Theoretical			P.	Tr.		
		L.	Tut.	S.				
		2	-	-	-	-		**2**
4	**Study level/ semester at which this course is offered:**	*(FIFTH) Year – (first) semester*						
5	**Pre –requisite (if any):**	• **Pharmaceutics I, II, III** • **Novel drug delivery systems** • **Pharmacology I, II, III**						
6	**Co –requisite (if any):**	-						
7	**Program (s) in which the course is offered:**	**Faculty of Medical Science**						
8	**Language of teaching the course:**	**ENGLISH**						
9	**Location of teaching the course:**	**IN THE UNIVERSITY**						

Course Description:
The aim of the nuclear pharmacy course is to introduce the students the study of types, production, regulations, risks and quality control of radiopharmaceuticals products and their applications in diagnosis and treatment of human disease.

Intended learning outcomes of the course (CILOs) and their alignment to Program Intended learning outcomes (PILOs), teaching strategies and assessment strategies		
Alignment CILOs to PILOs		
No.	**PILOs**	**CILOs**
1	**A3**	**a1.** Explain the physicochemical properties of radionuclides, radioisotopes , radioisomers and radiopharmaceuticals.
2	**A4**	**a2.** Describe the analytical methods used for measurement of radioactivity , radiodiagnosis of human diseases and quality evaluation of radiopharmaceuticals.
3	**A5**	**a3**. Identify actions of radiations and radiopharmaceuticals in human.
4	**A10**	**a4.** Describe the role of pharmacist in safe and effective radiopharmaceutical administration.
5	**B2**	**b1.** Classify radiations, radionuclides and radiopharmaceuticals.
6	**B9**	**b2 .**Apply calculations to measure radioactivity and radiopharmaceutical doses.
7	**C7**	**c1 .**Search efficiently for information using documented and electronic sources of information.
8		**c2.** Present and report his/her works correctly using appropriate writing rules and technologies media.
9	**D2**	**d1.** Demonstrate time management and self-learning skills.

Alignment CILOs to teaching strategies and assessment strategies		
(a) Alignment Course Intended Learning Outcomes (CILOs) of knowledge& understanding to Teaching Strategies and Assessment Strategies		
Course Intended Learning Outcomes	**Teaching strategies**	**Assessment Strategies**
a1, a2, a3, a4	**Active Lecture**	**Written exams**
(b) Alignment Course Intended Learning Outcomes (CILOs) of Intellectual Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	**Teaching strategies**	**Assessment Strategies**
b1	**Active Lecture**	**Written exams**
b2	**Lecture , feed-back learning**	**Written exams , Quizzes**

(c)Alignment Course Intended Learning Outcomes (CILOs) of Professional and Practical Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	**Teaching strategies**	**Assessment Strategies**
c1 , c2	**feed-back learning**	**Assignments**
(d) Alignment Course Intended Learning Outcomes (CILOs) of Transferable Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	**Teaching strategies**	**Assessment Strategies**
d1	**feed-back learning**	**Assignments**

Course Content					
Order	**Units/ Topics List**	**CILOs**	**Sub Topics List**	**No. of Weeks**	**contact hours**
1	**Introduction To Nuclear pharmacy**	a1, a2, a3, a4, b1, b2	• Definitions : nuclear medicine, nuclear pharmacy, , radiopharmaceuticals). • Regulations of nuclear pharmacy • Significance of nuclear pharmacy • Interior design and location of a nuclear pharmacy • The basics of atom radioactivity : atom nuclear structure, types of particles. • Radioactivity: lower, high energy, theories • Radionuclides, radioisotopes, radioisomers, normal atoms vs. radionuclides	2	4

			• Types of radiations : ionizing, non-ionizing. Differences and types • Ionizing radiations : Particle radiations (α, β), wave radiations (gamma radiations, X-rays) properties. • Risks of radiations: types of risks, factors affecting risks		
2	**Radioactivity**	a1, a2, a3, a4, b1, b2	• Radioactivity: types of radioactive substances (natural, artificial) • Properties of commonly used radionuclides • Units of measurement of radioactivity • Half-lives : physical, biological, effective • Kinetics of radioactivity • Calculation of radiation exposure • calculation of radiation absorbed by man • calculation of dose of radiopharmaceutical: dose as Ci or Bq, as µg as rad/mCi	3	6
3	**Introduction to Radiopharmaceuticals**	a1, a2, a3, a4, b1, b2	• Definition and components of radiopharmaceutical • Production and labeling • classification • properties of ideal radiopharmaceutical • Routes of administration	2	4

			• Administration procedures: dose calibrator		
	Mid-term exam			1	2
4	**Diagnostic radiopharmaceuticals**	a1, a2, a3, a4, b1, b2	**I. In vitro diagnostic methods** o Radioimmunoassay o Schilling test o Blood volume determination **II. In vivo (Imaging diagnostic radiopharmaceuticals):** (i) **Gamma camera techniques:** scintillation, SPECT techniques , types , doses and adverse effects for o Heart imaging o Brain imaging o Kidney imaging o Thyroid and parathyroid imaging o Lung imaging o Bone and joint imaging o Liver imaging o Infection and inflammation imaging **(ii) Positron emission tomography (PET)** o Advantages o Disadvantages	4	8

			○ Radionuclides and Radiopharmaceuticals used for imaging		
5	**Therapeutic Radiopharmaceuticals**	a1, a2, a3, a4, b1, b2	• General properties of radiotherapeutics • Types , doses and adverse effects for Radiopharmaceuticals used for therapy of : ○ Hyperthyroidism ○ Thyroid cancer ○ Bone metastasis ○ Neuroendocrine digestive system tumor ○ Prostate cancer ○ Liver cancer ○ Non-Hodking lymphoma ○ Polycythemia and leukemia	2	4
6	**Quality control of radiopharmaceuticals**	a2, a4	• Physicochemical tests • Radioactive purity • Radiochemical purity • Chemical purity • Radioassay • Biological tests: sterility, apyrogenicity	1	
FINAL - EXAM				1	2
TOTAL				16	32
Number of Weeks /and Units Per Semester				16 weeks	6 Units

Teaching strategies of the course
Lecture It is the most frequently employed teaching method to convey knowledge and explain theories to students in large groups (50-200) or in sessions, which consist of more than one group gathered in one classroom. The efficiency of lecturing can be enhanced by using techniques such as **Brain-storming**: It depends on stimulation of the student`s brain through a group of questions &/or **Concepts map**: which depends on sequencing of thoughts in the form of maps with horizontal or vertical relations & by using **learning aids** such as Data show projector
Feed-back learning: students are individually asked to do perform quick tests (quiz) or to do certain assignments such lab. experiments, problems solving, homework, topics summarizing or internet search. The teacher will provide them feed-back correction & evaluation
Group projects: students work on a project in groups of 2 to 3 students. Important for learning by doing ,using the results in practical manner &for promoting team work skills

Assignments			
No	**Assignments**	**Aligned CILOs**	**Week Due**
1	**Individual**: every student is assigned to provide a search-based report on one radiopharmaceutical product.	c1, c2, d1	4-13

Schedule of Assessment Tasks for Students During the Semester						
No.	**Assessment Method**		**Week Due**	**Mark**	**Proportion to Total course Assessment**	**Aligned Course Learning Outcomes (CILOs)**
1	Term Works	Quizzes	4-13, 14	10	10	b2
		Assignments	7, 12	10	10	c1, c2, d1
2	Mid-semester exam (written exam)		7	20	20	a1, a2, a3, a4, b1, b2

3	Final exam of (written exam)	16	60	60	a1, a2, a3, a4, b1, b2
TOTAL			100	100 %	

Learning Resources:
1- Required Textbook(s) (maximum two).
4. Gopal B. Saha. Fundementals of nuclear pharmacy, 2010, Springer.
2- Essential References.
1. Ansel`s Pharmaceutical dosage forms and drug delivery system, 2011, Lippincott Williams and Wilkins.

Course Policies	
1	**Class Attendance:** At least 75 % of the course hours should be attended by the student. Otherwise, he/she will not be allowed to attend the final exam
2	**Tardy:** any student who is late for more than 15 minutes from starting the lecturewill not be allowed to attend the lecture and will be considered absent.
3	**Exam Attendance/Punctuality:** any student who is late for more than 30 minutes from starting the examwill not be allowed to attend the exam and will be considered absent.
4	**Assignments & Projects:** Assignments and projects will be assessed individually unless the teacher request for group work
5	**Cheating**: Cheating by any means will cause the student failure and he/she must re-study the course
6	**Plagiarism**: Plagiarism by any means will cause the student failure in the course . Other disciplinary procedures will be according to the college rules.

PHARMACY ADMINISTRATION

Course Identification and General Information:								
1	**Course Title:**	**Pharmacy Administration**						
	Course code	**PHLC 561**						
2	**Credit hours:**	**C.H**						**TOTAL**
		Theoretical			**P.**	**Tr.**		
		L.	**Tut.**	**S.**				
		2	-	-	-	-		**2**
3	**Study level/ semester at which this course is offered:**	*(Fifth) Year – (first) semester*						
4	**Pre –requisite (if any):**	**-**						
5	**Co –requisite (if any):**	-						
6	**Program (s) in which the course is offered:**	**Faculty of Medical Science**						
7	**Language of teaching the course:**	**ENGLISH**						
8	**Location of teaching the course:**	**At the faculty**						

L: lecturing ; Tut: Tutorial , S: seminar ; P: practical ; Tr.: training

Course Description:

The aim of the course is to give students sufficient background about the essentials of management and administration. They will efficiently apply these essentials to different health care organizations, specially hospitals and pharmacy settings. The curriculum focuses on the four areas of Pharmacy Administration, fundamentals of management, management in health care organization, community pharmacy management, and purchasing pharmaceutics.

Intended learning outcomes of the course (CILOs) and their alignment to Program Intended learning outcomes (PILOs), teaching strategies and assessment strategies.		
6. Alignment CILOs to PILOs		
PILOs		CILOs
Knowledge & understanding : Upon successful completion of the course, students will be able to:		
A3	Explain physicochemical properties of materials and products	**a1.** Define the principles of management, financial and human resources, drug promotion, sales and marketing, business administration, accounting, and pharmacoeconomic as well as the field of social, behavioral and environmental sciences and health policy relevant to pharmacy.
A4	Describe analytical methods, principles, design and development techniques	**a2.** Develop and demonstrate depth and breadth of knowledge in, social/behavioral/administrative sciences.
Intellectual skills : Upon successful completion of the course, students will be able to:		
B1	Collect interpret and assess information and data relevant to pharmacy practice	**b1.** Explain the law relating to pharmacy and medicines, regulatory affairs, ethics of health care and its impact on relationships with patients and other healthcare professionals.
B2	Classify drugs, approaches and other information relevant to pharmacy based on scientific classification system.	**b2.** Apply knowledge in foundational sciences to solve therapeutic problems and advance patient-centered care and population-based care.

Professional & practical skills : Upon successful completion of the course, students will be able to:		
C1	Handle safely the chemicals, biological samples and pharmaceutical ingredients and products.	**c1.** Explain the cross-cultural context of public and private institutions operating in a global environment.

C2	Operate different instruments and use emerge technologies for preformulation, formulation and analysis of materials according to standard guidelines.	**c2** Demonstrate the integrative knowledge, skills, and ethics necessary for responsible administrative, management and leadership positions.
Transferable skills : Upon successful completion of the course, students will be able to:		
D1	Interact and communicate effectively and behave in disciplines with colleagues, patients and healthcare professionals effectively in team-activities.	**d1.** Communicate effectively and behave in discipline with colleagues.
D2	Develop and demonstrate skills of time managements, self-learning and decision making.	**d2.** Demonstrate the skills of time management and self-learning.
D3	Participate collaboratively in team work with colleagues and healthcare professionals.	**d3.** Participate efficiently with his colleagues in a team work.

7. Alignment CILOs to teaching strategies and assessment strategies

(a) Alignment Course Intended Learning Outcomes (CILOs) of knowledge & understanding to Teaching Strategies and Assessment Strategies

Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
a1. Define the principles of management, financial and human resources, drug promotion, sales and marketing, business administration, accounting, and pharmacoeconomic as well as the field of social, behavioral and environmental sciences and health policy relevant to pharmacy.	**Active Lecture** **Tutorials** **Seminar** **Self-Study** **One-minute paper** **Video-clips** **Role-playing**	**Written exams (Mid, Final)** **Quizzes** **Essays** **Reports** **Instructional activities**
a2. Develop and demonstrate depth and breadth of knowledge in, social/behavioral/administrative sciences.		

	Reading/discussing draft articles **Map concepts**	
(b) Alignment Course Intended Learning Outcomes (CILOs) of Intellectual Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	**Teaching strategies**	**Assessment Strategies**
b1. Explain the law relating to pharmacy and medicines, regulatory affairs, ethics of health care and its impact on relationships with patients and other healthcare professionals.	**Active Lecture** **Tutorials** **Seminar** **Self-Study** **One-minute paper** **Video-clips** **Role-playing**	**Written exams (Mid, Final)** **Quizzes** **Essays** **Reports** **Instructional activities**
b2. Apply knowledge in foundational sciences to solve therapeutic problems and advance patient-centered care and population-based care.	**Active Lecture** **Tutorials** **Seminar** **Self-Study** **Video-clips** **Map concepts**	**Written exams (Mid, Final)** **Quizzes** **Essays** **Reports** **Instructional activities**

(c) Alignment Course Intended Learning Outcomes (CILOs) of Professional and Practical Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	**Teaching strategies**	**Assessment Strategies**
c1. Explain the cross-cultural context of public and private institutions operating in a global environment.	**laboratory practice** **Demonstrations**	**Lab. term works, final practical exam**
c2 Demonstrate the integrative knowledge, skills, and ethics necessary for responsible administrative, management and leadership positions.		
c3. Skill to compound herbal teas.		
(d) Alignment Course Intended Learning Outcomes (CILOs) of Transferable Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	**Teaching strategies**	**Assessment Strategies**
d1. Communicate effectively and behave in discipline with colleagues.	**laboratory practice** **group-project**	**Lab. term works, assignment**
d3. Participate efficiently with his colleagues in a team work.	**Demonstrations**	
d2. Demonstrate the skills of time management and self-learning.	**laboratory practice** **Demonstrations**	**Lab. term works, final practical exam**

Course Content:

A – Theoretical Aspect:

Order	Units/	CILOs	Sub Topics List	No. of	contact hours

	Topics List			Weeks	
Part I: ***I- Tannins***					
1	**Topic 1**	a1, a2, a3	Fundamentals of management	1	2
2	**Topic 2**	a1, a2, a3	Management in health care organization	1	2
3	**Topic 3**	a1, a2, a3	Planning	1	2
4	**Topic 4**	a1, a2, a3	Organization	1	2
5	**Topic 5**	a1, a2, a3	Rewarding and communication	1	2
Mid-Term Exam					
6	**Topic 6**		Control and evaluation	1	2
7	**Topic 7**		Management theories	1	2
8	**Topic 8**		Organization structures	1	2

9	**Topic 9**		Purchasing pharmaceuticals	1	2
4	**Topic 10**	a1, a2,a3 , b1, b2, b3, b4	• Principles of inventory management	1	2
		a1, a2,a3 , b1, b2, b3, b4	• Pharmacy design	1	2
5	**Topic 11**	a1, a2,a3 , b1, b2, b3, b4	• Community pharmacy management	1	2
6	**Topic 12**	a1, a2,a3 , b1, b2, b3, b4	Hospital pharmacy management	1	2
FINAL - EXAM				2	2
TOTAL				16	32
Number of Weeks /and Units Per Semester				16 weeks	6 Units

Teaching strategies of the course:
Active Lecture It is the most frequently employed teaching method to convey knowledge and explain theories to students in large groups (50-200) or in sessions, which consist of more than one group gathered in one classroom. The efficiency of lecturing can be enhanced by using techniques such as **Brain-storming**: It depends on stimulation of the student`s brain through a group of questions &/or **Concepts map**: which depends on sequencing of thoughts in the form of maps with horizontal or vertical relations & by using **learning aids** such as Data show projector
Laboratory practice: students doing experiments in labs individually or in small groups
Feed-back learning: students are individually asked to do perform quick tests (quiz) or to do certain assignments such lab. experiments, problems solving, homework, topics summarizing or internet search. The teacher will provide them feed-back correction & evaluation
Group projects: students work on a project in groups of 2 to 3 students. Important for learning by doing ,using the results in practical manner &for promoting team work skills

Assignments:

No	Assignments	Aligned CILOs	Week Due	
1	Written exam(s) **to assess** knowledge and understanding and intellectual skills. Practical exam(s) **to assess** practical skills. Periodic exam(s) **to assess** understanding and intellectual skills. Oral exam **to assess** knowledge and	b5, c3, c4, d1, d3	8	

	understanding and intellectual skills.			

Schedule of Assessment Tasks for Students During the Semester

Theoretical part assessment

No.	Assessment Method		Week Due	Mark	Proportion to Total course Assessment	Aligned Course Learning Outcomes (CILOs)
1	Term Works	Quizzes	4-13, 14	5	5	b1
		Assignments	7, 12	5	5	b5, c3, c4, d1, d3
2	Mid-semester exam (written exam)		7	10	10	a1, a2,a3 , b1, b2, b3, b4
3	Final exam (written exam)		16	50	50	a1, a2,a3 , b1, b2, b3, b4
TOTAL				70	70 %	70

Practical part assessment

No.	Assessment Method		Week Due	Mark	Proportion to Total course Assessment	Aligned Course Learning Outcomes(CILOs)
1	Lab. Term	Attitude	1-12	5	5	c1, c2, d1, d2, d3
2		Accomplishments		5	5	

	works					
	Final exam (practical)		12	20	20	c1, c2, d2
Total				30	30 %	

Learning Resources:
1- Required Textbook(s) (maximum two).
Pharmaceutical Microbiology by Anthony Cundell. Publisher: Interpharm
2- Essential References.
1-Pharmaceutical Microbiology by A.D. Russell, W.B Hugo (editor) publisher: Blackwell Science 3rd edition (December 1983) 2-Medical Microbiology by Patrick Murray, Ken Rosenthal, G. Kobayashi, M, pfaller. Publisher: Mosby 4th edition (January 15 ,2002)
3- Electronic Materials and Web Sites *etc*.
http://www.pubmed.com http://www.botanical .com http://www.herbmed.com

Course Policies:	
1	**Class Attendance:** At least 75 % of the course hours should be attended by the student. Otherwise, he/she will not be allowed to attend the final exam
2	**Tardy:** any student who is late for more than 15 minutes from starting the lecture will not be allowed to attend the lecture and will be considered absent.
3	**Exam Attendance/Punctuality:** any student who is late for more than 30 minutes from starting the exam will not be allowed to attend the exam and will be considered absent.
4	**Assignments & Projects:** Assignments and projects will be assessed individually unless the teacher request for group work
5	**Cheating**:

	Cheating by any means will cause the student failure and he/she must re-study the course
6	**Plagiarism**: Plagiarism by any means will cause the student failure in the course . Other disciplinary procedures will be according to the college rules.

PROFESSIONAL PRACTICE EXPERIENCE

Course Identification and General Information:							
1	**Course Title:**	**Professional Practice Experience**					
2	**Course Code &Number:**	**PHP 571**					
3	**Credit hours:**	**C.H**					**TOTAL**
		Theoretical			**P.**	**Tr.**	
		L.	**Tut.**	**S.**			
		-	-	-	-	-	-
		The actual contact hours are (150 hours)					
4	**Study level/ semester at which this course is offered:**	*(FIFTH) Year – (1ST) semester*					
5	**Pre –requisite (if any):**	• **Pharmaceutics I, II & III** • **Pharmacology I & II & III** • **Community pharmacy I, II**					
6	**Co –requisite (if any):**	• **Pharmacoeconomics and pharmacoepidemology**					
7	**Program (s) in which the course is offered:**	**Faculty of Medical Science**					
8	**Language of teaching the course:**	**ENGLISH**					
9	**Location of teaching the course:**	**IN THE UNIVERSITY**					

L: lecturing ; Tut: Tutorial , S: seminar ; P: practical ; Tr.: training

Course Description:
This is course concerns with training in actual fields and is designed to make the students able to apply their knowledge and skills in a real "community pharmacy". The course is preceded by (community pharmacy I,II) courses which concerned in knowledge and patient counseling and pharmacy administration skills required for effective practicing in "community pharmacy. The course is co-requisite with the (pharmacoeconomics course) in order to link between pharmacist roles as provider of services to patients and as business men/women.

Intended learning outcomes of the course (CILOs) and their alignment to Program Intended learning outcomes (PILOs), teaching strategies and assessment strategies		
Alignment CILOs to PILOs		
No.	**PILOs**	**CILOs**
1	**A10**	**a1.** Describe the role of pharmacist in actual life-field of community pharmacies
2	**B7**	**b1.** Formulate and evaluate patient needs to OTC medications to improve patient safety and drug efficacy
3	**C4**	**c1.** Advice patients to optimize medicines use.
4	**C6**	**c2 .** Apply administrative and pharmacoeconomics rules in "community pharmacy".
5	**D1**	**d1.** Communicate effectively and behave in discipline with colleagues, supervisor and boss,
6	**D2**	**d2.** Demonstrate the skills of time management and self-learning.
7	**D4**	**d3.** Take responsibility for adaption to change needs in community pharmacy practice
8	**D5**	**d4.** Retrieve evidence-based references to obtain correct information on medications.

Alignment CILOs to teaching strategies and assessment strategies		
(a)Alignment Course Intended Learning Outcomes (CILOs) of knowledge skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	**Teaching strategies**	**Assessment Strategies**
a1	**Field training**	**Committee Exam**
(b) Alignment Course Intended Learning Outcomes (CILOs) of intellectual Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	**Teaching strategies**	**Assessment Strategies**
b1	**Field training**	**Committee exam Committee Exam, Reporting & accomplishment**

		assessment (by the supervisor of training)
(c)Alignment Course Intended Learning Outcomes (CILOs) of intellectual Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	**Teaching strategies**	**Assessment Strategies**
c1	**Field training**	**Committee exam Committee Exam, Reporting & accomplishment assessment (by the supervisor of training)**
c2	**Field training**	**Reporting & accomplishment assessment (by the supervisor of training)**
(d)Alignment Course Intended Learning Outcomes (CILOs) of Transferable Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	**Teaching strategies**	**Assessment Strategies**
d1, d3	**Field training**	**Attitude assessment (by the supervisor of training)**
d2, d4	**Field training**	**Reporting & accomplishment assessment (by the supervisor of training)**

Course Content: Field training in a community pharmacy (supervised and monitored by a supervisor)					
Order	**Units/ Topics List**	**CILOs**	**Sub Topics List**	**No. of Weeks**	**contact hours**
1	**Drug products arrangement and Storage**	a1, b1, c1, c2, d1, d2, d3, d4	• Arrangement of drug products in community pharmacy • Application the specific storage conditions for drug products	1 - 5th week	

			• Reporting of types of dug products in the pharmacy		30
2	**Skills of dispensing**	a1, b1, c1, c2, d1, d2, d3, d4	• Application of Dispensing regulations • Medical prescriptions and interpretation • Dispensing of controlled drugs	6th week – 8th week	40
3	**skills of Patients counseling services & drug information**	a1, b1, c1, c2, d1, d2, d3, d4	• Skills of communication with patients • Responding to patients questions • Counseling related to Drug products use • Recommendation of OTC products • Drug indexes : types, how to use	9th week – 11th week	40
4	**Pharmacy management**	a1, b1, c1, c2, d1, d2, d3, d4	• Employments leadership • Sale & purchasing skills • Ordering of drug products • Documentation • Financial tasks.	12th week – 15th week	40
FINAL - EXAM				1	2
TOTAL				16	150 contact hours equivalent to 2 credit hours
Number of Weeks /and Units Per Semester				16 weeks	4 Units

Teaching strategies of the course:
Field training: each 2-3 students are commissioned to do certain assignments in a real field entity such as drug factory, hospitals, pharmacies under supervision of both the field principle and an academic supervisor

Accomplishment and Reporting assignment:				
No	**Assignments**	**Aligned CILOs**	**Week Due**	
1	**Individual :** each student is assigned complete all tasks mentioned in the course content and to fill the field-training booklet and answers all questions in it.	a1, b1, c1, c2, d2, d4	1- 14 th week	

Schedule of Assessment Tasks for Students During the Semester

No.	**Assessment Method**		**Week Due**	**Mark**	**Proportion of Total course Assessment**	**Aligned Course Learning Outcomes (CILOs)**
1	Training works Assessment (by the supervisor of training)	Attitude	1-15	20	20 %	d1, d3
2		Reporting and accomplishment	12	50	50 %	a1, b1, c1, c2, d2, d4
4	Final Committee exam * (Oral exam)		17	30	30 %	a1, b1, c1, c2, d1, d2, d3, d4
TOTAL				100	100 %	

* : A committee of three of the teaching stuff including the supervisor of the training.

The marks of the committee exam is divided as follows:

Item	Mark
supervisor	10
Committee member (A member of staff of pharmacy department)	20

General Rule

- The student should provide a signed letter form the from the community pharmacy where he has practiced. The letters shall confirm the student`s appropriate attendance, behavior and number hours of practice. No student will be allowed to enter the final exam without such letters.

Learning Resources:
1- Required Textbook(s) (maximum two).
1. Lillian M Azzopardi. Lecture notes on pharmacy practice, Pharmaceutical press. 2. A Langley, Dawn Belcher. Applied pharmaceutical skills, Pharmaceutical press.
2- Essential References.
1. Agarwal. Dispensing and community pharmacy 2. Jain. A text book of professional pharmacy

Course Policies:	
1.	**Attendance:** At least 75 % of the course hours should be attended by the student. Otherwise, he/she will not be allowed to attend the final exam

CLINICAL PHARMACY II

Course Identification and General Information:								
1	**Course Title:**	**CLINICAL PHARMACY II**						
2	**Course Code &Number:**	**PHCL 512**						
3	**Credit hours:**	**C.H**						**TOTAL**
		Theoretical			**P.**	**Tr.**		
		L.	**Tut.**	**S.**				
		1	-	1	1	-		**3**
4	**Study level/ semester at which this course is offered:**	*(5TH) Year – (SECOND) semester*						
5	**Pre –requisite (if any):**	• **Pharmacology I , II, III** • **Clinical pharmacy I**						
6	**Co –requisite (if any):**	**None**						
7	**Program (s) in which the course is offered:**	**Faculty of Medical Science**						
8	**Language of teaching the course:**	**ENGLISH**						
9	**Location of teaching the course:**	**IN THE UNIVERSITY**						

L: lecturing ; Tut: Tutorial , S: seminar ; P: practical ; Tr.: training

Course Description:
The course is complementary to (clinical pharmacy I) course and both are designed to provide the students with essential knowledge and skills necessary to select appropriate safe and effective medications for patient`s cases. The course concerns in particular with drug therapy monitoring and also with clinical management of patients having CVS, endocrinal disorders, respiratory, renal, infectious and oncologic disorders.

Intended learning outcomes of the course (CILOs) and their alignment to Program Intended learning outcomes (PILOs), teaching strategies and assessment strategies		
Alignment CILOs to PILOs		
No.	**PILOs**	**CILOs**
1	**A2**	**a1**. Explain the impact of good behavior and communication of al clinical pharmacists on their relationship with patients and other healthcare professionals
2	**A5**	**a2**. Identify the therapeutic uses of medicines, their adverse effects and non-pharmacotherapy measures to aid cure of diseases.
3	**A10**	**a3.** Describe the role of clinical pharmacists in rational medications use and designing therapeutic regimens for patients
4	**B1**	**b1.** Interpret clinical features and other disease data to properly recommend safe and effective medications for patients
5	**B7**	**b2.** Formulate and evaluate patient care plan about ration medication use to improve patient safety and drug efficacy
6	**C4**	**c1.** Advise patient and healthcare professionals to optimize medicinal uses.
7	**C7**	**c2 .** Search efficiently for information using evidence-based sources.
		c3. Present and report his/her works correctly using appropriate writing rules and technologies media.
8	**D2**	**d1.** Demonstrate the skills of time management, decision -making and self-learning.
9	**D3**	**d2.** Participate effectively with his/her colleagues in a team work
10	**D4**	**d3.** Take responsibility for adaption to change needs in clinical pharmacy practice
11	**D5**	**d4.** Retrieve essential references of evidence-based practice to achieve maximum clinical effectiveness.

Alignment CILOs to teaching strategies and assessment strategies		
(a) Alignment Course Intended Learning Outcomes (CILOs) of knowledge & understanding to Teaching Strategies and Assessment Strategies		
Course Intended Learning Outcomes	**Teaching strategies**	**Assessment Strategies**
a1, a2, a3	**Lecture**	**Written exams**
(b) Alignment Course Intended Learning Outcomes (CILOs) of Intellectual Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	**Teaching strategies**	**Assessment Strategies**
b1, b2	**Lecture, feed-back learning, seminar**	**Written exams , quizzes, seminar assessment**
(c)Alignment Course Intended Learning Outcomes (CILOs) of Professional and Practical Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	**Teaching strategies**	**Assessment Strategies**
c1, c3	**Seminar**	**seminar assessment**
c2	**Seminar**	**seminar assessment**
(d) Alignment Course Intended Learning Outcomes (CILOs) of Transferable Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	**Teaching strategies**	**Assessment Strategies**
d1, d2, d3, d4	**Seminar**	**Seminar assessment**

Course Content					
Order	**Units/ Topics List**	**CILOs**	**Sub Topics List**	**No. of Weeks**	**contact hours**
1	**skills of Assessment of drug therapy(drug therapy monitoring DTM)**	a1, a2, a3, a4, c1	• Objectives • patients need DTM • Drugs require DTM • Steps and methods of DTM • Examples of solved case studies	1	2

2	**Clinical management and pharmacotherapy :** Definition, types, pathogenesis, diagnosis and differentiation, pharmacotherapy (types of drugs, drug selection and algorithm) , non-pharmacotherapy measures				
a.	**CVS disorders**	a1, a2, a3, a4, c1	• Hypertension • Angina & Myocardial infarction	2	4
b.	**Endocrinal disorders**	a1, a2, a3, a4, c1	• Diabetes mellitus • Thyroid disorders	2	4
c.	**Seminar**	c1, c2 c3, d1, d2, d3, d4	Seminar to discuss and solve clinical case studies.	1	
	mid-term exam			1	2
d.	**Respiratory disorders**	a1, a2, a3, a4, c1	• Bronchial asthma • Chronic Obstructive Pulmonary Disease (COPD)	2	6
e.	**Renal disorders**	a1, a2, a3, a4, c1	• Acute renal failure • Chronic kidney disease	2	6
f.	**Seminar**		Seminar to discuss and solve clinical case studies.	1	2
g.	**Infectious disorders**	a1, a2, a3, a4, c1	Antimicrobial regimen selection	1	2
h.	**Oncologic disorders**	a1, a2, a3, a4, c1	• Breast cancer	1	2
i.	**Seminar**	c1, c2 c3, d1, d2, d3, d4	Seminar to discuss and solve clinical case studies.	1	2

FINAL – EXAM	1	2
TOTAL	16	32

Practical Part:

Selected case studies on the above subjects

Teaching strategies of the course
Lecture It is the most frequently employed teaching method to convey knowledge and explain theories to students in large groups (50-200) or in sessions, which consist of more than one group gathered in one classroom. The efficiency of lecturing can be enhanced by using techniques such as **Brain-storming**: It depends on stimulation of the student`s brain through a group of questions &/or **Concepts map**: which depends on sequencing of thoughts in the form of maps with horizontal or vertical relations & by using **learning aids** such as Data show projector
Seminar : Each group of students will be assigned to solve a number of case studies prepared by the teacher
Feed-back learning: students are individually asked to do perform quick tests (quiz) or to do certain assignments such lab. experiments, problems solving, homework, topics summarizing or internet search. The teacher will provide them feed-back correction & evaluation
Group projects: students work on a project in groups of 2 to 3 students. Important for learning by doing ,using the results in practical manner &for promoting team work skills

Seminar

At the specified time due , group(s) of students will be assigned by the teacher to present a seminar about one topic. The seminar include power point presentation followed by discussion and questions from the teacher and other students

No	Topic	Aligned CILOs	Week Due
1	CVS, endocrinal disorders	c1, c2 c3, d1, d2, d3, d4	6
2	Respiratory, renal disorders	c1, c2 c3, d1, d2, d3, d4	12
3	Infectious, oncologic disorders	c1, c2 c3, d1, d2, d3, d4	15

Schedule of Assessment Tasks for Students During the Semester					
Assessment Method			Mark	Proportion to Total course Assessment %	**Aligned CILOs**
Term Works	Quizzes		5	5	b1
	Seminar assessment	Presentation	15	15	c1, c2 c3, d1, d2, d3, d4
		Seminar discussion			
Mid-semester exam (written exam)			20	20	
Final exam (written exam)			60	60	a1, a2, a3, b1, b2
Total			100	100	a1, a2, a3, b1, b2

Learning Resources
1- Required Textbook(s) (ma3imum two).
Karen J. Tietze. Clinical skills for pharmacists : A Patient-Focused Approach, Elsevier Inc. James M. Ritter , A text book of clinical pharmacology and therapeutics, HodderArn
2- Essential References.
3. Joseph T. Diprio, Encyclopaedia of clinical pharmacy, Marcel Dekker. 4. Widmann. Good clinical interpretation of laboratory tests
3- Electronic Refences
https://www.slideshare.net/SohanPatel8/clinical-pharmacy-57774896

Course Policies	
1	**Class Attendance:** At least 75 % of the course hours should be attended by the student. Otherwise, he/she will not be allowed to attend the final exam
2	**Tardy:** any student who is late for more than 15 minutes from starting the lecture will not be allowed to attend the lecture and will be considered absent.

3	**Exam Attendance/Punctuality:** any student who is late for more than 30 minutes from starting the exam will not be allowed to attend the exam and will be considered absent.
4	**Assignments & Projects:** Assignments and projects will be assessed individually unless the teacher request for group work
5	**Cheating**: Cheating by any means will cause the student failure and he/she must re-study the course
6	**Plagiarism**: Plagiarism by any means will cause the student failure in the course . Other disciplinary procedures will be according to the college rules.

HOSPITAL PHARMACY PRACTICE

Course Identification and General Information:								
1	**Course Title:**	**HOSPITAL PHARMACY PRACTICE**						
2	**Course Code &Number:**	**PHCL 522**						
3	**Credit hours:**	**C.H**						**TOTAL**
		Theoretical			**P.**	**Tr.**		
		L.	**Tut.**	**S.**				
		2	-	2	-	-		**2**
4	**Study level/ semester at which this course is offered:**	*(Fifth) Year – (2nd) semester*						
5	**Pre –requisite (if any):**	• **Pharmaceutical calculations** • **Pharmaceutics I, II, III** • **Clinical pharmacy I & II**						
6	**Co –requisite (if any):**	• **Pharmacy training II**						
7	**Program (s) in which the course is offered:**	**Faculty of Medical Science**						
8	**Language of teaching the course:**	**ENGLISH**						
9	**Location of teaching the course:**	**IN THE UNIVERSITY**						

L: lecturing ; Tut: Tutorial , S: seminar ; P: practical ; Tr.: training

Course Description:
The course is designed to provide the students with essential knowledge and skills necessary to effectively and ethically perform missions of hospital pharmacist in healthcare facilities. The missions include, for instance, affording pharmaceutical care services to in-patient and out-patients, management of the hospital pharmacy, medical stores and medical supply administration, participation in the drug and therapeutics committee and education of patients and healthcare professionals in rational use of medications. The course is co-requisite with (Pharmacy II) training that involve visits to a local hospital der in order to link the theoretical aspects of the course to actual-field practice.

Intended learning outcomes of the course (CILOs) and their alignment to Program Intended learning outcomes (PILOs), teaching strategies and assessment strategies		
Alignment CILOs to PILOs		
No.	**PILOs**	**CILOs**
1	A9	**a1.** Explain the regulations and polices employed in hospital pharmacy practice.
2	A10	**a2**. Describe the role of hospital pharmacists in providing services to in-patients and outpatients in the healthcare facilities.
3	A12	**a3.** Describe the methods of calculations relevant to hospital pharmacy practice.
4	B5	**b1.** Plan a modern system to manage the hospital pharmacy and manage medical stores and medical supply administration.
5	B7	**b2.** Review and evaluate prescriptions and patient`s medication record to improve patient safety and medication efficacy.
6	B8	**b3.** Apply calculations in preparation of extemporaneous preparations including IV-admixtures and TPN and to modify dose for children, renal failure and obese patients.
7	C4	**c1.** Advise patients and healthcare professionals to optimize medicines use.
8	C5	**c2.** Employ the relevant way to prepare extemporaneous preparations including IV-admixtures and TPN.
9	C6	**c3.** Apply administrative rules in hospital pharmacy practice.
10	D2	**d1.** Demonstrate time management, problem-solving and self-learning skills.
11	D4	**d2.** Take responsibility of adaption to change needs in hospital pharmacy practice.
12	D5	**d3.** Retrieve evidence-based references to achieve maximal clinical efficacy.

Alignment CILOs to teaching strategies and assessment strategies		
(a) Alignment Course Intended Learning Outcomes (CILOs) of knowledge & understanding to Teaching Strategies and Assessment Strategies		
Course Intended Learning Outcomes	**Teaching strategies**	**Assessment Strategies**
a1, a2, a3	**Lecture**	**Written exams**

(b) Alignment Course Intended Learning Outcomes (CILOs) of Intellectual Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	**Teaching strategies**	**Assessment Strategies**
b1, b3	**Lecture, feed-back learning**	**Written exams , quizzes, assignment**
b2	**feed-back learning**	**assignment**
(c)Alignment Course Intended Learning Outcomes (CILOs) of Professional and Practical Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	**Teaching strategies**	**Assessment Strategies**
c1, c2, c3	**Feed-back learning,**	**Quizzes**
(d) Alignment Course Intended Learning Outcomes (CILOs) of Transferable Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	**Teaching strategies**	**Assessment Strategies**
d1, d3	**Feed-back learning**	**Assignments**
d2	**Feed-back learning**	**Quizzes**

Course Content					
Order	**Units/ Topics List**	**CILOs**	**Sub Topics List**	**No. of Weeks**	**contact hours**
1	**Introduction**	a1, a2, a3, b1, b3	• definition of hospital, hospital pharmacy hospital pharmacists • difference between community, clinical and hospital pharmacy. • Objectives and responsibilities of hospital pharmacists • Missions of hospital pharmacists • Risks of hospital pharmacy practice • Complexity of hospital pharmacy practice • requirements of a pharmacist to practice	1	2

2	**Organization and management of hospital pharmacy**	a1, a2, a3, b1, b3	• Physical organization: location , area, interior design • Personnel (Staff) organization • Drugs and therapeutics committee (DTC): members, missions, meetings, budget plan and implantation • Hospital formulary : components, missions	1	2
3	**Medical supply, stores and control**	a1, a2, a3, b1, b3	• The structure of medical supply administration • Types and goals and controlling systems in medical supply administration • Systems controlling Flow of medications • Regulations of medications Receiving process • Regulations of medical stores • Principles of issuing medications • Procedure and measures of safety in medical stores • Controlling of leakage of medications	2	4
4	**Specific drug products in the hospital**	a1, a2, a3, b1, b3	Types, examples, Regulation and specific store and dispensing rules of : ○ Emergency medications ○ Pre-operative and operative medications ○ Controlled drugs	1	2
5	**In-patient services (1)**	a1, a2, a3, b1, b3	**1- Distribution of medications to in-patients** **(Drug distribution systems): mechanism,** advantages and disadvantages of floor (ward) stock system, individual prescription system, combined system, unit dose system (procedures). **2- Wards inspection services** 3- **After-hours pharmacy services**	1	2

			MID-TERM EXAM	1	2
5	**In-patient services (2)**	a1, a2, a3, b1, b3	**4- Extemporaneous preparations in hospital** (i) Non-sterile : repacking, preparations from raw materials, preparations from available dosage forms (ii) Sterile requirements: aseptic conditions, laminar air flow (iii) IV-admixtures: definition, components, advantages, disadvantages, incompatibility problem (iv) IV-mixtures of electrolytes: calculations and preparation of IV electrolyte salt required daily: calcium, sodium, magnesium, potassium , iron (v) Total parenteral nutrition (TPN): definition, components, indications, calculation of daily requirement of water, lipid, protein and carbohydrates, vitamins.	3	6
5	**In-patient services (3)**	a1, a2, a3, b1, b3	**5- Clinical missions of hospital pharmacist** (i) Checking of prescribed medications (ii) Review patient medication record (iii) Dose adjustment: children, renal failure patients, underweight/overweigh obese/t patient (iv) Drug therapy monitoring	2	4
6	**Outpatient services**	a1, a2, a3, b1, b3	1- Dispensing of medications to outpatients: types of prescriptions, data in prescriptions, checking errors	1	2s

			2- Patient counseling and education 3- Health promotion: family planning, smoking cessation		
7	**Educative, training and research missions of hospital pharmacists**	a1, a2, a3, b1, b3	○ Education of healthcare professionals about rational drug use ○ Training of undergraduate and pharmacy technicians ○ Research aspects in hospital pharmacy	1	2
FINAL - EXAM				1	2
TOTAL				16	32
Number of Weeks /and Units Per Semester				16 weeks	7 Units

Teaching strategies of the course:
Lecture It is the most frequently employed teaching method to convey knowledge and explain theories to students in large groups (50-200) or in sessions, which consist of more than one group gathered in one classroom. The efficienc4 of lecturing can be enhanced by using techniques such as **Brain-storming**: It depends on stimulation of the student`s brain through a group of questions &/or **Concepts map**: which depends on sequencing of thoughts in the form of maps with horizontal or vertical relations & by using **learning aids** such as Data show projector
Feed-back learning: students are individually asked to do perform quick tests (quiz) or to do certain assignments such lab. experiments, problems solving, homework, topics summarizing or internet search. The teacher will provide them feed-back correction & evaluation

Assignments				
No	**Assignments**	**Aligned CILOs**	**Week Due**	**Mark**

1	**Individual**: every student is assigned to execute the following homework tasks 1- Review and evaluate patient1s medication record 2- Solve problems related to hospital practice The teacher provide the student with those records and problems	b2, b3, d1, d3	4-13	10

Schedule of Assessment Tasks for Students During the Semester						
No.	**Assessment Method**		**Week Due**	**Mark**	**Proportion of Total course Assessment**	**Aligned Course Learning Outcomes (CILOs)**
1	Term Works	Quizzes	4-13	10	10	b1, b3, d2
		Assignments	4-13	10	10	b2, b3, d1, d3
2	Mid-semester exam of theoretical part (written exam		7	20	20	a1, a2, a3, b1, b3
3	Final exam of theoretical part (written exam)		16	60	60	a1, a2, a3, b1, b3
TOTAL				100	100 %	

Learning Resources
1- Required Textbook(s) (maximum two).
Martin Stephens. Hospital pharmacy. 2nd Edition, Pharmaceutical press.
2- Essential References.
1. Paradkar. Hospital and clinical pharmacy 2. Qadry. A text book of hospital pharmacy 3. Mark Jackson, Andrew Lowey. Handbook of extemporaneous preparation, The NHS Pharmaceutical Quality Assurance Committee, pharmaceutical press.

	Course Policies
1	**Class Attendance:** At least 75 % of the course hours should be attended by the student. Otherwise, he/she will not be allowed to attend the final exam
2	**Tardy:** any student who is late for more than 15 minutes from starting the lecture will not be allowed to attend the lecture and will be considered absent.
3	**Exam Attendance/Punctuality:** any student who is late for more than 30 minutes from starting the exam will not be allowed to attend the exam and will be considered absent.
4	**Assignments & Projects:** Assignments and projects will be assessed individually unless the teacher request for group work
5	**Cheating**: Cheating by any means will cause the student failure and he/she must re-study the course
6	**Plagiarism**: Plagiarism by any means will cause the student failure in the course . Other disciplinary procedures will be according to the college rules.

Communication Skills in Pharmacy

Course Identification and General Information:

1	**Course Title:**	Communication Skills in Pharmacy					
2	**Credit hours:**	**C.H**					**TOTAL**
		Theoretical			**P.**	**Tr.**	
		L.	**Tut.**	**S.**			
		2	-	-	-	-	**2**
3	**Study level/ semester at which this course is offered:**	*(Fifth) Year – (Second) semester*					
4	**Pre –requisite (if any):**	**-**					
5	**Co –requisite (if any):**	-					
6	**Program (s) in which the course is offered:**	**Faculty of Medical Science**					
7	**Language of teaching the course:**	**ENGLISH**					
8	**Location of teaching the course:**	**At the faculty**					

L: lecturing ; Tut: Tutorial , S: seminar ; P: practical ; Tr.: training

Course Description:

This course introduces students to the field of verbal and nonverbal communication and how it affects pharmacists interaction. Emphasis is on public speaking with attention to audience analysis, organizational, and delivery skills. The aim of the course is introduce students to practice and perfect those communication skills of effective speaking and critical listening valued in all professions, the community, and personal relations.

By the end of this course the student should have a better understanding about :-

1. The role of communication in Pharmacy practice.
2. The need for and the benefits of effective communication and the negative consequences of poor communication.
3. The practical skills for pharmacists needed for effective communication with patient. Interviewing and assessment of patients.

Intended learning outcomes of the course (CILOs) and their alignment to Program Intended learning outcomes (PILOs), teaching strategies and assessment strategies.		
8. Alignment CILOs to PILOs		
PILOs		CILOs
Knowledge & understanding : Upon successful completion of the course, students will be able to:		
A4 Describe analytical methods, principles, design and development techniques		**a1**. apply knowledge of human communication and language processes as they occur across various contexts, e.g., interpersonal, intrapersonal, small group, organizational, media, gender, family, intercultural communication, technologically mediated communication, etc. from multiple perspectives.
		a2. Understand and evaluate key theoretical approaches used in the interdisciplinary field of communication. I.e., students will be able to explain major theoretical frameworks, constructs, and concepts for the study of communication and language, summarize the work of central thinkers associated with particular approaches, and begin to evaluate the strengths and weaknesses of their approaches.
Intellectual skills : Upon successful completion of the course, students will be able to:		
B1	Collect interpret and assess information and data relevant to pharmacy practice	**b1.** find, use, and evaluate primary academic writing associated with the communication discipline.
Professional & practical skills : Upon successful completion of the course, students will be able to:		
C1	Handle safely the chemicals, biological samples and pharmaceutical ingredients and products.	**c1.** Develop knowledge, skills, and judgment around human communication that facilitate their ability to work collaboratively with others.

		Such skills could include communication competencies such as managing conflict, understanding small group processes, active listening, appropriate self-disclosure, etc..
C2	Operate different instruments and use emerge technologies for preformulation, formulation and analysis of materials according to standard guidelines.	**c2.** Communicate fluently and sustain comprehension of an extended discourse.
Transferable skills : Upon successful completion of the course, students will be able to:		
D1	Interact and communicate effectively and behave in disciplines with colleagues, patients and healthcare professionals effectively in team-activities.	**d1.** Communicate effectively orally and in writing.
D2	Develop and demonstrate skills of time managements, self-learning and decision making.	**d2.** Demonstrate the skills of time management and self-learning.
D3	Participate collaboratively in team work with colleagues and healthcare professionals.	**d3.** Participate efficiently with his colleagues in a team work.

9. Alignment CILOs to teaching strategies and assessment strategies

(a) Alignment Course Intended Learning Outcomes (CILOs) of knowledge & understanding to Teaching Strategies and Assessment Strategies

Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
a1. processes as they occur across various contexts, e.g., interpersonal, intrapersonal, small group, organizational, media, gender, family, intercultural communication, technologically mediated communication, etc. from multiple perspectives.	**Active Lecture** **Self-Study** **One-minute paper** **Video-clips**	**Written exams (Mid, Final)** **Quizzes** **Essays**

a2. processes as they occur across various contexts, e.g., interpersonal, intrapersonal, small group, organizational, media, gender, family, intercultural communication, technologically mediated communication, etc. from multiple perspectives.	**Role-playing** **Reading/discussing draft articles** **Map concepts**	**Reports** **Instructional activities**

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

Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
b1. find, use, and evaluate primary academic writing associated with the communication discipline.	**Active Lecture** **Self-Study** **One-minute paper** **Video-clips** **Role-playing** **Reading/discussing draft articles** **Map concepts**	**Written exams (Mid, Final)** **Quizzes** **Essays** **Reports** **Instructional activities**

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

Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
c1. Develop knowledge, skills, and judgment around human communication that facilitate their ability to work collaboratively with others. Such skills could include communication competencies such as managing conflict, understanding small	**Active Lecture** **Self-Study** **One-minute paper**	**Written exams (Mid, Final)** **Quizzes**

group processes, active listening, appropriate self-disclosure, etc..	**Video-clips** **Role-playing** **Reading/discussing draft articles** **Map concepts**	**Essays** **Reports** **Instructional activities**
c2. Communicate fluently and sustain comprehension of an extended discourse.		
(d) Alignment Course Intended Learning Outcomes (CILOs) of Transferable Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	**Teaching strategies**	**Assessment Strategies**
d1. Communicate effectively orally and in writing.	**Active Lecture** **Self-Study** **One-minute paper** **Video-clips** **Role-playing** **Reading/discussing draft articles** **Map concepts**	**Written exams (Mid, Final)** **Quizzes** **Essays** **Reports** **Instructional activities**
d3. Participate efficiently with his colleagues in a team work.		
d2. Demonstrate the skills of time management and self-learning.	**Active Lecture** **Self-Study** **One-minute paper** **Video-clips** **Role-playing** **Reading/discussing draft articles** **Map concepts**	**Written exams (Mid, Final)** **Quizzes** **Essays** **Reports** **Instructional activities**

Course Content:

A – Theoretical Aspect:

Order	Units/ Topics List	CILOs	Sub Topics List	No. of Weeks	contact hours
Part I: ***I- Tannins***					
1	**Topic 1**	a1, a2, a3	Introduction to communication	1 &2	4
2	**Topic 2**	a1, a2, a3	Communication concept and process	3 &4	4
3	**Topic 3**	a1, a2, a3	Effective communication and their objectives	5	4
4	**Topic 4**	a1, a2, a3	Key issues for pharmacist – patient interaction	6 & 7	4
5	**Topic 5**	a1, a2, a3	Consequences of the pharmacist as a skilled or unskilled	8	4
Mid-Term Exam 9					

6	**Topic 6**		• Skills for pharmacists to effectively communicate with, patient, doctors and staff of the pharmacy: - Building rapport - Asking questions - Active listening - Assertiveness (patient, doctor and staff members) - Explaining - Opening and closing of dialogue with patient	10	
7	**Topic 7**		Barriers in communication in pharmacy practice	11	
8	**Topic 8**		Nonverbal communication	12 & 13	
9	**Topic 9**		Interviewing and assertiveness of patients	14	
	Review			15	
FINAL - EXAM				16	
TOTAL				16	32
Number of Weeks /and Units Per Semester				16 weeks	6 Units

Teaching strategies of the course:

Active Lecture It is the most frequently employed teaching method to convey knowledge and explain theories to students in large groups (50-200) or in sessions, which consist of more than one group gathered in one classroom.

The efficiency of lecturing can be enhanced by using techniques such as **Brain-storming**: It depends on stimulation of the student`s brain through a group of questions &/or **Concepts map**: which depends on sequencing of thoughts in the form of maps with horizontal or vertical relations & by using **learning aids** such as Data show projector

Feed-back learning: students are individually asked to do perform quick tests (quiz) or to do certain assignments such lab. experiments, problems solving, homework, topics summarizing or internet search. The teacher will provide them feed-back correction & evaluation

Group projects: students work on a project in groups of 2 to 3 students. Important for learning by doing ,using the results in practical manner &for promoting team work skills

Assignments:

No	Assignments	Aligned CILOs	Week Due	
1	Written exam(s) **to assess** knowledge and understanding and intellectual skills. Practical exam(s) **to assess** practical skills. Periodic exam(s) **to assess** understanding and intellectual skills. Oral exam **to assess** knowledge and understanding and intellectual skills.	b5, c3, c4, d1, d3	8	

Schedule of Assessment Tasks for Students During the Semester

Theoretical part assessment						
No.	**Assessment Method**		**Week Due**	**Mark**	**Proportion to Total course Assessment**	**Aligned Course Learning Outcomes (CILOs)**
1	Term Works	Quizzes	4-13, 14	5	5	b1
		Assignments	7, 12	5	5	b5, c3, c4, d1, d3
2	Mid-semester exam (written exam)		7	10	10	a1, a2,a3 , b1, b2, b3, b4
3	Final exam (written exam)		16	50	50	a1, a2,a3 , b1, b2, b3, b4
TOTAL				70	70 %	70

Practical part assessment						
No.	**Assessment Method**		**Week Due**	**Mark**	**Proportion to Total course Assessment**	**Aligned Course Learning Outcomes(CILOs)**
1	Lab. Term works	Attitude	1-12	5	5	c1, c2, d1, d2, d3
2		Accomplishments		5	5	
	Final exam (practical)		12	20	20	c1, c2, d2
Total				30	30 %	

Learning Resources:

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

Hargie, O. and Dickson, D. (2004) Skilled Interpersonal Communication: Research Theory and Practice, 4th edition, London: Routledge.

2- Essential References.

Clampitt, P. (1991) Communicating for Managerial Effectiveness, Newbury Park: Sage.

Hargie, O. and Tourish, D. (eds) (2000) Handbook of Communication Audits for Organisations, London: Routledge.

Davies, J.W. (2001) Communication Skills: A Guide for Engineering and Applied Science Students, Harlow: Prentice Hall.

O'Hair, D. and Friedrich, G. (1998) Strategic Communication in Business and the Professions, 3rd edition, Boston: Houghton Mifflin.

3- Electronic Materials and Web Sites *etc.*

Avoid These 6 Mistakes for Better Email and Text Communication (makeuseof.com)

Communication Skills | SkillsYouNeed

Course Policies:

1	**Class Attendance:** At least 75 % of the course hours should be attended by the student. Otherwise, he/she will not be allowed to attend the final exam
2	**Tardy:** any student who is late for more than 15 minutes from starting the lecture will not be allowed to attend the lecture and will be considered absent.
3	**Exam Attendance/Punctuality:** any student who is late for more than 30 minutes from starting the exam will not be allowed to attend the exam and will be considered absent.
4	**Assignments & Projects**: Assignments and projects will be assessed individually unless the teacher request for group work
5	**Cheating:** Cheating by any means will cause the student failure and he/she must re-study the course

6	**Plagiarism:** Plagiarism by any means will cause the student failure in the course . Other disciplinary procedures will be according to the college rules.

PHARMACEUTICAL MARKETING & PROMOTION

Course Identification and General Information:							
1	**Course Title:**	**PHARMACEUTICAL MARKETING & PROMOTION**					
2	**Course Code &Number:**	**PHCL542**					
3	**Credit hours:**	**C.H**					**TOTAL**
		Theoretical			**P.**	**Tr.**	
		L.	**Tut.**	**S.**			
		1	-	1	-	-	**2**
4	**Study level/ semester at which this course is offered:**	*(5TH) Year – (SECOND) semester*					
5	**Pre –requisite (if any):**	• **Pharmacoeconomics**					
6	**Co –requisite (if any):**	-					
7	**Program (s) in which the course is offered:**	**Faculty of Medical Science**					
8	**Language of teaching the course:**	**ENGLISH**					
9	**Location of teaching the course:**	**IN THE UNIVERSITY**					

L: lecturing ; Tut: Tutorial , S: seminar ; P: practical ; Tr.: training

Course Description:
The course is designed to provide the students with knowledge and skills required to effectively promote pharmaceutical and cosmetic products. The course also concerns with skills of self-promotion including preparation of CV and practicing effective Job interview. It aims at introducing students to the skills of pharmaceutical marketing.

III. Intended learning outcomes of the course (CILOs) and their alignment to Program Intended learning outcomes (PILOs), teaching strategies and assessment strategies		
Alignment CILOs to PILOs		
No.	**PILOs**	**CILOs**
1	**A9**	**a1.** Define the basis of marketing and its strategies and applications in pharmacy.
2	**A10**	**a2.** Describe the role of pharmacist in promoting pharmaceutical and cosmetic products
3	**B2**	**b1.** Plan a modern marketing strategy to promote pharmaceutical and cosmetic products.
4	**C3**	**c1.** Apply marketing rules to apply to jobs and to promote pharmaceutical and cosmetic products.
5	**D1**	**d1.** Interact and communicate effectively with healthcare professional during marketing of pharmaceutical and cosmetic products.

Alignment CILOs to teaching strategies and assessment strategies		
(a) Alignment Course Intended Learning Outcomes (CILOs) of knowledge & understanding to Teaching Strategies and Assessment Strategies		
Course Intended Learning Outcomes	**Teaching strategies**	**Assessment Strategies**
a1, a2	**Active Lecture** **Self-Study** **One-minute paper** **Video-clips** **Role-playing** **Reading/discussing draft articles** **Map concepts**	**Written exams (Mid, Final)** **Quizzes** **Essays** **Reports** **Instructional activities**
(b) Alignment Course Intended Learning Outcomes (CILOs) of Intellectual Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	**Teaching strategies**	**Assessment Strategies**

b1	**Active Lecture** **Self-Study** **One-minute paper** **Video-clips** **Role-playing** **Reading/discussing draft articles** **Map concepts**	**Written exams**
(c)Alignment Course Intended Learning Outcomes (CILOs) of Professional and Practical Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	**Teaching strategies**	**Assessment Strategies**
c1	**Seminar**	**Seminar assessment**
(d) Alignment Course Intended Learning Outcomes (CILOs) of Transferable Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
d1	**Seminar**	**Seminar assessment**

Course Content					
Order	**Units/ Topics List**	**CILOs**	**Sub Topics List**	**No. of Weeks**	**contact hours**
1	**Introduction to marketing**	a1, a2, b1	• definitions, (markets, marketing, promotion, promotional materials, products, competitors, customers, marketing targets, plan and planning • Significance and objectives of marketing	1	2
2	**Requirements of a successful marketing**	a1, a2, b1	• personnel, mental, skills communication and relationship building	2	

			• Strategy of marketing: planning, execution, evaluation • Designing a marketing plan		4
3	**Understanding the customers**	a3, b1	• Types of customers • Dealing with customers • customers need and satisfaction	1	2
4	**Pharmaceutical marketing**	a1, a2, b1	• significance • Who is the med. Rep. ? • ethical issues • Pharmaceutical products: differences from other products, essential information to be full known on pharmaceutical products (pharmaceutical, pharmacological, commercial)properties • Pharmaceutical Promotional materials: brochures, gifts, charts, etc.	3	6
Mid-term exam				1	2
5	**Role play:**	a1, a2, b1	• **Training on visiting to customers (physicians)** : pre-visit preparation ad skills of effective visit (meeting, opening, offering, closing), post-visit evaluation	1	2
6	**Self-marketing { C.V)**	a1, a2, b1	• How to prepare C.V.	1	2
	Self-marketing (Job applications and interview)	a1	• Requirements of successful job application and interview	1	2

7	**Seminar (1)**	c1, d1	• Role play	2	4
	Seminar (2)	c1, d1	• CV preparation	1	4
	Seminar (3)	c1, d1	• Job interview	1	4
FINAL - EXAM				1	2
TOTAL				16	32
Number of Weeks /and Units Per Semester				16 weeks	7 Units

Teaching strategies of the course:
Lecture It is the most frequently employed teaching method to convey knowledge and explain theories to students in large groups (50-200) or in sessions, which consist of more than one group gathered in one classroom. The efficiency of lecturing can be enhanced by using techniques such as **Brain-storming**: It depends on stimulation of the student`s brain through a group of questions &/or **Concepts map**: which depends on sequencing of thoughts in the form of maps with horizontal or vertical relations & by using **learning aids** such as Data show projector
Seminar : The student(s) is assigned to present one-related topic with discussion such topic with other students

Seminar			
No	**Topic**	**Aligned CILOs**	**Week Due**
1	Role play marketing	c1, d1	12, 13
2	Job interview	c1, d1	14
3	CV preparation	c1, d1	15

Schedule of Assessment Tasks for Students During the Semester						
No.	**Assessment Method**		**Week Due**	**Mark**	**Proportion of Total course Assessment**	**Aligned Course Learning Outcomes (CILOs)**
1	Term Works	Quizzes	4-13	5	5	c1
		Seminar	12, 13, 14, 15	15	15	c1, d1
2	Mid-semester exam of theoretical part (written exam		7	20	20	a1, a2, b1
3	Final exam of theoretical part (written exam)		16	60	60	a1, a2, b1
TOTAL				100	100 %	

Learning Resources:
1- Required Textbook(s) (maximum two).
4. Ross Mulner. Pharmaceutical marketing, Journal of Consumer Marketing, 2005
2- Essential References.
3. Handbook of pharmaceutical marketing
3- Electronic References
1- Product lifecycle management in pharmaceuticals - Vandana Prajapati, Harish Dureja, 2012 (sagepub.com) 2- Strategic Market Segmentation: An Opportunity to Integrate Medical and Marketing Activities - Janice MacLennan, David MacKenzie, 2000 (sagepub.com) 3- Page not found - The Pharmaceutical Journal (pharmaceutical-journal.com)

Course Policies:	
1	**Class Attendance:** At least 75 % of the course hours should be attended by the student. Otherwise, he/she will not be allowed to attend the final exam
2	**Tardy:** any student who is late for more than 15 minutes from starting the lecture will not be allowed to attend the lecture and will be considered absent.
3	**Exam Attendance/Punctuality:** any student who is late for more than 30 minutes from starting the exam will not be allowed to attend the exam and will be considered absent.

4	**Assignments & Projects:** Assignments and projects will be assessed individually unless the teacher request for group work
5	**Cheating**: Cheating by any means will cause the student failure and he/she must re-study the course
6	**Plagiarism**: Plagiarism by any means will cause the student failure in the course . Other disciplinary procedures will be according to the college rules.

PHARMACY RESEARCH PROJECT

Course Identification and General Information:								
1	**Course Title**	**PHARMACY RESEARCH PROJECT**						
2	**Course Code &Number:**	**PHI 562**						
3	**Credit hours:**	C.H						TOTAL
		Theoretical			P .	Tr.		
		L.	Tut.	S.				
		-	-	-	4	-		**4**
4	**Study level/ semester at which this course is offered:**	*(Fifth) Year – (2ND) semester*						
5	**Pre –requisite (if any):**	• **All specific program courses + Biostatistics**						
6	**Co –requisite (if any):**	• **None**						
7	**Program (s) in which the course is offered:**	**Faculty of Medical Science**						
8	**Language of teaching the course:**	**ENGLISH**						
9	**Location of teaching the course:**	**IN THE UNIVERSITY**						

L: lecturing ; Tut: Tutorial , S: seminar ; P: practical ; Tr.: training

Course Description:
The course is a fulfillment for graduation from the program. It is designed to provide the students skills of practicing scientific research in pharmacy. The course aims to nurture the Pharmacy students for inquiry and knowledge creation through fostering their intellectual rigor in tackling research questions related to pharmacy and pharmaceutical sciences. The research project will allow students to have the hands-on opportunity to develop pertinent skills in research, including the formulation of a research hypothesis, critique of published literature, experimental design methodologies, and data collection and analysis.

Intended learning outcomes of the course (CILOs) and their alignment to Program Intended learning outcomes (PILOs), teaching strategies and assessment strategies		
Alignment CILOs to PILOs		
No.	**PILOs**	**CILOs**
1	**B8**	**b1.** Use appropriate research methods to conduct the graduation project.
2	**C7**	**c1.** Conduct research studies and utilize the results in different pharmacy fields.
3	**D1**	**d1**. Communicate effectively and behave in discipline with colleagues and supervisor
4	**D2**	**d2.** Demonstrate skills of effective presentation and time-management.
5	**D3**	**d3**. Participate successfully with colleagues in team work
6	**D5**	**d4**. Retrieve evidence-based references while proposing, conducting and writing the research papers.

Alignment CILOs to assessment strategies	
(b) Alignment Course Intended Learning Outcomes (CILOs) of Intellectual Skills to Assessment Strategies:	
Course Intended Learning Outcomes	Assessment Strategies
b1	**Research methodology assessment (by internal and external examiner)**
(c)Alignment Course Intended Learning Outcomes (CILOs) of Professional and Practical Skills to Assessment Strategies:	
Course Intended Learning Outcomes	Assessment Strategies
c1	**Research methodology assessment (by internal and external examiner)**
(d) Alignment Course Intended Learning Outcomes (CILOs) of Transferable Skills to Assessment Strategies:	
Course Intended Learning Outcomes	Assessment Strategies
d1	**Attitude assessment (by the supervisor)**

d2	**Presentation assessment (by internal and external examiner)**
d3	**Participation assessment (by the supervisor)**
d4	**Research methodology assessment (by internal and external examiner)**

Course Content:
Each 4-7 students group is assigned to do a research (experimental or observational) directed by a supervisor of the department teaching staff or outside the faculty. The topic of research can be proposed by : • The supervisor • Or the students after supervisor acceptance The topic must be approved by the department/faculty administration. Experiments are carried out in the faculty laboratories and if necessary outside the faculty The department and the faculty provide the students with necessary instruments and materials The research is to be carried out within the period of the term (i.e. 16 weeks) and must be delivered to the department within that period The faculty propose the name of committee members to the faculty council . The committee will discuss and judge the research as described below in the assessment schedule.

Schedule of Assessment Tasks for Students During the Semester

Each project will be assessed by a committee of three member as follows

Items	**Weight**	**Aligned CILOs**
Project supervisor	70 %	c1, d1, d3
Internal examiner : a member of the department teaching stuff.	15 %	b1, c1, d2, d4
external examiner : a qualified external examiner (either from other departments of the faculty or from another university)	15 %	
Total	**100**	

Assessment of the project by the project supervisor		
Items	**Mark** [1]	**Aligned CILOs**
Attitude	30	d1
Participation	40	c1, d3
Total	**70**	

[1]: Every student will be assessed by the supervisor individually.

Assessment of the project by the internal examiner		
Items	**Mark** [1]	**Aligned CILOs**
Research methodology	10	b1, c1, d4
Research presentation	*5*	d2
Total	**15**	

[1]: The whole students will be assessed by the internal as one unit

Assessment of the project by the external examiner		
Items	**Mark** [1]	**Aligned CILOs**
Research methodology	10	b1, c1, d4
Presentation	*5*	d2
Total	**15**	

[1]: The whole students will be assessed by the internal as one unit

Learning Resources:
1- Required Textbook(s) (maximum two).
Variable
2- Essential References.
Variable

Course Policies:	
	Attendance: At least 75 % of the course hours should be attended by the student. Otherwise, he/she will not be allowed to attend the final exam

PROFESSIONAL PRACTICE EXPERIENCE

Course Identification and General Information:								
1	**Course Title:**	**PROFESSIONAL PRACTICE EXPERIENCE**						
2	**Course Code &Number:**	**PHTR 572**						
3	**Credit hours:**	**C.H**						**TOTAL**
		Theoretical			**P.**	**Tr.**		
		L.	**Tut.**	**S.**				
		-	-	-	-	-		-
		The Actual contact hours are (50 hours)						
4	**Study level/ semester at which this course is offered:**	*(5TH) Year – (SECOND) semester*						
5	**Pre –requisite (if any):**	• **Pharmaceutics I, II & III** • **Clinical pharmacy II** • **Pharmacology I & II & III** • **Pharmaceutical quality control** • **Industrial pharmacy**						
6	**Co –requisite (if any):**	• **Hospital pharmacy**						
7	**Program (s) in which the course is offered:**	**Faculty of Medical Science**						
8	**Language of teaching the course:**	**ENGLISH**						
9	**Location of teaching the course:**	**IN THE UNIVERSITY**						

L: lecturing ; Tut: Tutorial , S: seminar ; P: practical ; Tr.: training

Course Description:
This is course is the second training course in the program and it concerns with actual training and visits to real life-fields including: hospitals and Pharmaceutical manufacturing plants. The course is co-requisite with the (hospital pharmacy course) in order to make the students able to apply their knowledge and skills attained with the relevant course into real practice in hospitals.

Intended learning outcomes of the course (CILOs) and their alignment to Program Intended learning outcomes (PILOs), teaching strategies and assessment strategies		
Alignment CILOs to PILOs		
No.	**PILOs**	**CILOs**
1.	**A10**	**a1.** Describe the role of pharmacist in actual life-practice in hospitals and pharmaceutical manufacturing plants.
2.	**B3**	**b1.** Design and evaluate different types of pharmaceutical products.
3.	**C4**	**c1.** Advice patients to optimize medicines use.
4.	**C6**	**c2 .** Apply administrative and pharmacoeconomics rules in hospitals.
5.	**D1**	**d1.** Communicate effectively and behave in discipline with colleagues , supervisor and field managers.
6.	**D2**	**d2.** Demonstrate the skills of time management.
7.	**D4**	**d3.** Take responsibility for adaption to change needs in community pharmacy practice
8.	**D5**	**d4.** Retrieve evidence-based references to obtain correct information on medications.

Alignment CILOs to teaching strategies and assessment strategies		
(a)Alignment Course Intended Learning Outcomes (CILOs) of knowledge skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	**Teaching strategies**	**Assessment Strategies**
a1	**Field training**	**Committee Exam**
(b) Alignment Course Intended Learning Outcomes (CILOs) of intellectual Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
b1	**Field training**	**Committee exam Committee Exam, Reporting & accomplishment**

		assessment (by the supervisor of training)
(b)Alignment Course Intended Learning Outcomes (CILOs) of intellectual Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	**Teaching strategies**	**Assessment Strategies**
c1	**Field training**	**Committee exam Committee Exam, Reporting & accomplishment assessment (by the supervisor of training)**
c2	**Field training**	**Reporting & accomplishment assessment (by the supervisor of training)**
(d)Alignment Course Intended Learning Outcomes (CILOs) of Transferable Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	**Teaching strategies**	**Assessment Strategies**
d1, d3	**Field training**	**Attitude assessment (by the supervisor of training)**
d2, d4	**Field training**	**Reporting & accomplishment assessment (by the supervisor of training)**

Course Content: Field training in a community pharmacy (supervised and monitored by a supervisor)					
Order	**Units/ Topics List**	**CILOs**	**Sub Topics List**	**No. of Weeks**	**contact hours**
	Hospital training	a1, b1, c1, c2, d1, d2, d3, d4	**Training in the hospital** **<u>Hospital pharmacy tasks</u>** • Distribute drugs to in-patients • Dispense drugs to in-patients and out-patients	1-6th weeks (6 weeks)	

			• Arrangement of hospital specific drug products: operations and preoperative drug products, emergency drug products • Documenting • performing Medical supply practice in the hospital **Clinical tasks** • Checking of patients prescriptions using reliable references e.g. Medscape • Evaluation of patient medication records		30
	Drug plants	a1, b1, d1, d2, d3	**Visiting 2 local drug plants:** Students are intended to visit 2 pharmaceutical manufacturing companies in order to accomplish the following tasks :- • **Quality control** o Identifying processes of Sampling and analysis of raw materials o Identifying processes Sampling and analysis of pharmaceutical dosage forms. o Identifying Microbiological analysis in the plant	7-16th weeks (10 weeks)	20 (approximately 4 visits)

			• Identifying unit-operation employed for pharmaceutical dosage forms production: o Solid dosage forms o Liquid dosage forms o Semisolid dosage forms • Identifying the aspects of Pharmaceutical research and development. o Master file o Similar Products investigation o Formulation steps o Stability studies		
FINAL - EXAM				1	2
TOTAL				16	50 contact hours
Number of Weeks /and Units Per Semester				16 weeks	2 Units

Teaching strategies of the course:
Field training: each 2-3 students are commissioned to do certain assignments in a real field entity such as drug factory, hospitals, pharmacies under supervision of both the field principle and an academic supervisor

Accomplishment and Reporting assignment:				
No	**Assignments**	**Aligned CILOs**	**Week Due**	
1	**Individual :** each student is assigned complete all tasks mentioned in the course content and to fill the field-training booklet and answers all questions in it.	a1, b1, c1, c2, d2, d4	1- 14 week	

Schedule of Assessment Tasks for Students During the Semester						
No.	**Assessment Method**		**Week Due**	**Mark**	**Proportion of Total course Assessment**	**Aligned Course Learning Outcomes (CILOs)**
1	Training works Assessment (by the supervisor of training)	Attitude	1-15	20	20 %	d1, d3
2		Reporting and accomplishment	12	50	50 %	a1, b1, c1, c2, d2, d4
3	Final Committee exam * (Oral exam)		17	30	30 %	a1, b1, c1, c2, d1, d2, d3, d4
TOTAL				100	100 %	

* : A committee of three of the teaching stuff including the supervisor of the training.

The marks of the committee exam is divided as follows:

Item	Mark
supervisor	10
Committee member (A member of staff of pharmacy department)	20

General Rule

- The student should provide a signed letter form the from the community pharmacy where he has practiced. The letters shall confirm the student`s appropriate attendance, behavior and number hours of practice. No student will be allowed to enter the final exam without such letters.

Learning Resources:
1- Required Textbook(s) (maximum two).
3. Lillian M Azzopardi. Lecture notes on pharmacy practice, Pharmaceutical press. 4. A Langley, Dawn Belcher. Applied pharmaceutical skills, Pharmaceutical press.
2- Essential References.
3. Agarwal. Dispensing and community pharmacy 4. Jain. A text book of professional pharmacy

	Course Policies:
2.	**Attendance:** At least 75 % of the course hours should be attended by the student. Otherwise, he/she will not be allowed to attend the final exam