Republic of Yemen

Ministry of Higher Education & Scientific Research

21 SEPTEMBER UNIVERSITY of MEDICALS & APPLIEED SCIENCES

Faculty of Medicine

Bachelor Program of Medicine and Surgery

Course Specification of

Introduction to Pharmacology

Course Code. (A21P212)

2023

T4: This Template is Developed and Approved by CAQA-Yemen, 2023

Prepared by:	Reviewed by:	Head of department	Quality Unit:	Dean of Medicine Faculty	Center of Development and Quality Assurance Dean
Assoc. Prof. Hassan AL-Mahbashi	Assoc. Prof. Ali Al-yahawi		Dr. Fadhl Shujaa Al-deen	Dr. Salwa Al-Ghomeri	

I. General Information:

1.	**Course Title:**	Introduction to Pharmacology				
2.	**Course Code:**	A21P212				
3.	**Credit Hours:**	**Credit Hours**	**Theory Contact Hours**		**Practical Contact Hours**	
			Lecture	**Tutorial/ Seminar**	**Lab**	**Clinical**
		3	2	--	2	--
4.	**Level/ Semester at which this Course is offered:**	2nd Level / 1st Semester				
5.	**Pre –Requisite (if any):**	Physiology and Biochemistry				
6.	**Co –Requisite (if any):**	------				
7.	**Program (s) in which the Course is Offered:**	Bachelor of Medicine and Surgery				
8.	**Language of Teaching the Course:**	English				
9.	**Location of Teaching the Course:**	Faculty of Medicine				
10.	**Prepared by:**	Dr. Hassan Al-Mahbashi				
١١	**Date and Number of Approval by Council:**	2023				

II. Course Description:

The course will provide the students with the basic knowledge of pharmacology science including pharmacokinetics, pharmacodynamics ,drug prescription ,drugs affecting on the central and peripheral nervous system ,autacoids ,Non-steroidal anti-inflammatory drugs (NSAID),Antibiotics, Antifungal ,antiprotozoal and anti-viral drugs .

III. Course Intended Learning Outcomes (CILOs) : Upon successful completion of the course, students will be able to:		Referenced PILOs		
A. Knowledge and Understanding:		**I, P or M/A**		
a1	Describe the basic of pharmacokinetics and pharmacodynamics of drugs.	M	**A1**	Describe the general and basic sciences related to human body structure and functions with emphasis on normal and abnormal conditions.
a2	Explain the drugs affecting on nervous system and type of NSAID , Antibiotics, Antifungal ,antiprotozoal and anti-viral drugs .	M	**A4**	Recognize the local and international guidelines, ethics, disease management, prevention and other risk factors that affect community health.
B. Intellectual Skills:				
b1	Demonstrate the drugs used in the treatment of nervous system disorders and antimicrobial drugs.	A	**B1**	Compare between normal and abnormal conditions and predict the appropriate treatment or intervention.
b2	Confirm, the core skills of writing for appropriate prescription for specific disease	A	**B2**	Analyze and interpret the finding from history, clinical examination and investigations to propose a diagnosis and develop a shared management plan for common acute, chronic and urgent physical and mental health presentations.
C. Professional and Practical Skills:				
c1	Examine the activity of different drugs in	P	**C1**	Perform complete clinical

	specific disease			examination and precise investigations to reach the final diagnosis
c2	Prepare and Perform experiments on animals to observe the effect of drugs on animals	P	**C2**	Prescribe appropriate drugs taking in mind the benefits, side effects, interactions, safety and availability.
	D. Transferable Skills:			
d1	Uses of computer and internet to improve their skills in research.	I	**D2**	Work individually or in a team and develop lifelong learning using up to date technology that help in understanding the diseases and its control and prevention.
d2	Work and communicate seriously and ethically with patient and his collagenous to develop work and get better results.	I	**D3**	Respect the different cultural beliefs, ethics, personalities, privacy and values for patients and community with a good behavior and follow the institutional and national roles of medical practice
I= Introduced, P=Practiced or M/A= Mastered/Advanced				

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

	Course Intended Learning Outcomes	Teaching Strategies	Assessment Strategies
a1	Describe the basic of pharmacokinetics and pharmacodynamics of drugs.	▪ Interactive lectures	Written exam (mid and final terms)
a2	Explain the drugs affecting on nervous system and type of NSAID, Antibiotics, Antifungal, antiprotozoal and anti-viral drugs .	▪ Interactive lectures	Written exam (mid and final terms)

(B) Alignment of Course Intended Learning Outcomes (Intellectual Skills) to Teaching Strategies and Assessment Methods:			
	Course Intended Learning Outcomes	**Teaching Strategies**	**Assessment Strategies**
b1	Demonstrate the drugs used in the treatment of nervous system disorders and antimicrobial drugs.	▪ Interactive lectures ▪ Discussion ▪ Presentation	Written exam (mid and final terms) Assignments
b2	Confirm, the core skills of writing for appropriate prescription for specific disease	▪ Interactive lectures ▪ Discussion ▪ Presentation	Written exam (mid and final terms)
(C) Alignment of Course Intended Learning Outcomes (Professional and Practical Skills) to Teaching Strategies and Assessment Methods:			
	Course Intended Learning Outcomes	**Teaching Strategies**	**Assessment Strategies**
c1	Examine the activity of different drugs in specific disease	▪ Practical lab ▪ Practical Session	▪ Practical exam ▪ Assignments
c2	Prepare and Perform experiments on animals to observe the effect of drugs on animals	▪ Practical lab ▪ Practical Session	▪ Practical exam
(D) Alignment of Course Intended Learning Outcomes (Transferable Skills) to Teaching Strategies and Assessment Methods:			
	Course Intended Learning Outcomes	**Teaching Strategies**	**Assessment Strategies**
d1	Uses of computer and internet to improve their skills in research.	▪ Discussion ▪ Presentation	Assignments
d2	Work and communicate seriously and ethically with patient and his collagenous to develop work and get better results.	▪ Discussion ▪ Presentation	Assignments

IV. Course Contents:

A. Theoretical Aspect:

No.	Units/Topics List	Sub Topics List	Number of Weeks	Contact Hours	Learning Outcomes (CILOs)
1	**Introduction**	• Definitions • sources of drugs • medical prescription	1	2	a1, b1
2	**Pharmacodynamics**	• Mechanism of drug action • type of receptor ligands • drug- drug interaction	1	2	a1
3	**Pharmacokinetics**	• Absorption • Distribution • Metabolism • Excretion	1	2	a1
4	**Autonomic nervous system**	• Sympathetic and parasympathetic • Function of ANS • Autonomic neurotransmitters and receptors	1	2	a2
5	**Adrenergic agonist and antagonist**	• Sympathomimetic • sympatholytic	1	2	a2, b2
6	**Cholinergic agonist and antagonist**	• Parasympathomimetic • Parasympatholytic	1	2	a2, b2
7	**Autacoids**	• Histamine and anti-histamines • Prostaglandins, their analogs and antagonists (NSAID)	2	4	a2, b2
8	**Mid exam**	•	1	2	a1,a2,b1, b2
9	**Antibiotics**	• Pencillines and cephalosporines • Macrolides and Aminoglycosides • Tetracyclines, Chloramphenicol , Quinolones	4	8	a2, b2

No.	Units/Topics List	Sub Topics List	Number of Weeks	Contact Hours	Learning Outcomes (CILOs)
		and Sulfonamides • Quinolones and Sulfonamides			
10	**Antifungal drugs**	• Drugs For Subcutaneous And Systemic Mycoses • Drugs For Cutaneous Mycoses	1	2	a2, b2
11	**Antiviral drugs**	• Respiratory Virus, Hepatic Viral, Herpesvirus • Cytomegalovirus, Hiv: • Nucleoside And Nucleotide Reverse Transcriptase Inhibitors	1	2	a2, b2
12	**Final Theoretical Exam**		1	2	a1,a2,b1, b2
Number of Weeks /and Units Per Semester			**16**	**32**	

B. Practical Aspect (Lab/Clinical) (if any):

No.	Tasks/ Experiments	Number of Weeks	Contact Hours	Learning Outcomes (CILOs)
1	- Type of drugs Dosage forms	1	2	a1,d1, d2
2	- Route of drug administration	1	2	a1,d1, d2
3	- Calculation of pharmacokinetics parameters	1	2	a1,d1, d2
4	- Handling and types of experimental animals	1	2	d1, d2
5	- Studying effect of drugs on Rabbit's eye	1	2	c1, c2, d1, d2
6	- Mid exam	1	2	a1,c1,c2,d1,d2
7	- Studying effect of drugs on Rabbit's intestine	1	2	c1, c2, d1, d2
8	- Studying effect of drugs on Rabbit's isolated heart	1	2	c1, c2, d1, d2

No.	Tasks/ Experiments	Number of Weeks	Contact Hours	Learning Outcomes (CILOs)
9	- Studying effect of drugs on Rabbit's blood pressure	1	2	c1, c2, d1, d2
10	- Studying effect of drugs on Rabbit's skeletal muscle	1	2	c1, c2, d1, d2
11	- Prescription writing based on problem based learning-I	1	2	b1, d1, d2
12	- Prescription writing based on problem based learning-II	1	2	b1, d1, d2
13	- Prescription writing based on problem based learning-III	1	2	b1, d1, d2
14	- Final Practical Exam	1	2	a1,b1,c1,c2,d1,d2
Number of Weeks /and Units Per Semester		**14**	**28**	

C. Tutorial Aspect (if any):

No.	Tutorial	Number of Weeks	Contact Hours	Learning Outcomes (CILOs)
1				
Number of Weeks /and Units Per Semester				

VII. Assignments:

No.	Assignments	Week Due	Mark	Aligned CILOs (symbols)
1	**Types of dosage forms, Studying effect of drugs on Rabbit's intestine**	4th	**5**	**b1, d1**
2	**Studying effect of drugs on Rabbit's blood pressure**	10th	**5**	**c1, d1, d2**
Total			**10**	

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

No.	Assessment Method	Week Due	Mark	Proportion of Final Assessment	Aligned Course Learning Outcomes
1	**Assignments**	4th ,10th	10	10%	b1, c1,d1, d2
3	**Mid-Term Theoretical Exam**	8th	٢٠	20%	a1,a2,b1,b2
4	**Final Practical Exam**	**15th**	٢٠	**20%**	a1,b1,c1,c2,d1,d2
5	**Final Theoretical Exam**	**16th**	**50**	**50%**	a1,a2,b1,b2
Total			**100**	**100%**	

IX. Learning Resources:

1- Required Textbook(s):

1- Lippincott's Illustrated Review of Pharmacology; 7th ed.; Richard A Harvey & Pamela C Champe; Lippincott's Williams & Wilkins;٢٠١٨.

2- Essential References:

1. a. Basic and clinical pharmacology; 15th edition; Bertram G. Katzung; McGraw Hill Medical Company; 2020.
2. Goodman and Gilman's the Pharmacological Basis of Therapeutics, 13th ed. Laurence Brunton , Bruce Chabner , BjornKnollman, 2017.

X. Course Policies: (Based on the Uniform Students' By law (2007)

1	**Class Attendance:** Class Attendance is mandatory. A student is considered absent and shall be banned from taking the final exam if his/her absence exceeds 25% of total classes.
2	**Tardiness:** A student will be considered late if he/she is not in class after 10 minutes of the start time of class.
3	**Exam Attendance/Punctuality:** No student shall be allowed to the exam hall after 30 minutes of the start time, and shall not leave the hall before half of the exam time has passed.
4	**Assignments & Projects:** Assignments and projects must be submitted on time. Students who delay their assignments or projects shall lose the mark allocated for the same.
5	**Cheating:** Cheating is an act of fraud that results in the cancelation of the student's exam or assignment. If

	it takes place in a final exam, the penalties stipulated for in the Uniform Students' Bylaw (2007) shall apply.
6	**Forgery and Impersonation:** Forgery/Impersonation is an act of fraud that results in the cancelation of the student's exam, assignment or project. If it takes place in a final exam, the penalties stipulated for in the Uniform Students' Bylaw (2007) shall apply**.**
7	**Other policies:** The University official regulations in force will be strictly observed and students shall comply with all rules and regulations of the examination set by the Department, Faculty and University Administration.

Faculty of Medicine

Bachelor Program of Medicine and Surgery

Course Plan (Syllabus)

Introduction to Pharmacology

Course Code. A21P21٢

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

2023

Prepared by:	Reviewed by:	Head of department	Quality Unit:	Dean of Medicine Faculty	Center of Development and Quality Assurance Dean
Assoc. Prof. Hassan AL-Mahbashi	Assoc. Prof. Ali Al-yahawi		Dr. Fadhl Shujaa Al-deen	Dr. Salwa Al-Ghomeri	

II. Course Identification and General Information:

	Course Title:	Introduction to Pharmacology				
	Course Code:	A21P212				
	Credit Hours:	**Credit Hours**	**Theory Contact Hours**		**Practical Contact Hours**	
			Lecture	**Tutorial/Seminar**	**Lab**	**Clinical**
		3	2	--	2	--
	Level/ Semester at which this Course is offered:	2nd Level / 1st Semester				
	Pre –Requisite (if any):	Physiology and Biochemistry				
	Co –Requisite (if any):	------				
	Program (s) in which the Course is Offered:	Bachelor of Medicine and Surgery				
	Language of Teaching the Course:	English				
	Location of Teaching the Course:	Faculty of Medicine				
	Prepared by:	Dr. Hassan Al-Mahbashi				
١١	**Date and Number of Approval by Council:**	2023				

III. Course Description:

The course will provide the students with the basic knowledge of pharmacology science including pharmacokinetics, pharmacodynamics ,drug prescription ,drugs affecting on the central and peripheral nervous system ,autacoids ,Non-steroidal anti-inflammatory drugs (NSAID),Antibiotics, Antifungal ,antiprotozoal and anti-viral drugs .

IV. Course Intended Learning Outcomes (CILOs) :

Upon successful completion of the Course, student will be able to:

	A. **Knowledge and Understanding:**
a1	Describe the basic of pharmacokinetics and pharmacodynamics of drugs.
a2	**Explain the drugs affecting on nervous system and type of NSAID** , Antibiotics, Antifungal ,antiprotozoal and anti-viral drugs .
	B. **Intellectual Skills:**
b1	Demonstrate the drugs used in the treatment of nervous system disorders and antimicrobial drugs.
b2	Confirm**, the core skills** of writing for appropriate prescription for specific disease
	C. Professional and Practical Skills:
c1	Examine the activity of different drugs in specific disease
c2	Prepare and Perform experiments on animals to observe the effect of drugs on animals
	D. **Transferable Skills:**
d1	**Uses of computer and internet to** improve their skills in research.
d2	Work and communicate seriously and ethically with patient and his collagenous to develop work and get better results.

I= **Introduced, P= Practiced or M/ A= Ma**

stered /Advanced

V. Course Contents:

A. Theoretical Aspect:

No.	Units/Topics List	Sub Topics List	Number of Weeks	Contact Hours
1	Introduction	• Definitions • sources of drugs • medical prescription	1	2
2	Pharmacodynamics	• Mechanism of drug action • type of receptor ligands • drug- drug interaction	1	2
3	Pharmacokinetics	• Absorption • Distribution • Metabolism • Excretion	1	2
4	Autonomic nervous system	• Sympathetic and parasympathetic • Function of ANS • Autonomic neurotransmitters and receptors	1	2
5	Adrenergic agonist and antagonist	• Sympathomimetic • sympatholytic	1	2
6	Cholinergic agonist and antagonist	• Parasympathomimetic • Parasympatholytic	1	2
7	Autacoids	• Histamine and anti-histamines • Prostaglandins, their analogs and antagonists (NSAID)	2	4
8	Mid exam	•	1	2
9	Antibiotics	• Pencillines and cephalosporines	4	8

No.	Units/Topics List	Sub Topics List	Number of Weeks	Contact Hours
		• Macrolides and Aminoglycosides • Tetracyclines, Chloramphenicol , Quinolones and Sulfonamides • Quinolones and Sulfonamides		
10	Antifungal drugs	• Drugs For Subcutaneous And Systemic Mycoses • Drugs For Cutaneous Mycoses –	1	2
11	Antiviral drugs	• Respiratory Virus, Hepatic Viral, Herpesvirus • Cytomegalovirus, Hiv: • Nucleoside And Nucleotide Reverse Transcriptase Inhibitors	1	2
12	Final Theoretical Exam		1	2
Number of Weeks /and Units Per Semester			16	32

No.	Units/Topics List	Sub Topics List	Number of Weeks	Contact Hours
1	Introduction	• Definitions • sources of drugs • medical prescription	1	2
2	Pharmacodynamics	• Mechanism of drug action • type of receptor ligands • drug- drug interaction	1	2
3	Pharmacokinetics	• Absorption • Distribution • Metabolism • Excretion	1	2
4	Autonomic nervous system	• Sympathetic and parasympathetic • Function of ANS • Autonomic neurotransmitters and receptors	1	2

No.	Units/Topics List	Sub Topics List	Number of Weeks	Contact Hours
5	**Adrenergic agonist and antagonist**	• Sympathomimetic • sympatholytic	1	2
6	**Cholinergic agonist and antagonist**	• Parasympathomimetic • Parasympatholytic	1	2
7	**Autacoids**	• Histamine and anti-histamines • Prostaglandins, their analogs and antagonists (NSAID)	2	4
8	**Mid exam**	•	1	2
9	**Antibiotics**	• Pencillines and cephalosporines • Macrolides and Aminoglycosides • Tetracyclines, Chloramphenicol , Quinolones and Sulfonamides • Quinolones and Sulfonamides	4	8
10	**Antifungal drugs**	• Drugs For Subcutaneous And Systemic Mycoses • Drugs For Cutaneous Mycoses	1	2
11	**Antiviral drugs**	• Respiratory Virus, Hepatic Viral, Herpesvirus • Cytomegalovirus, Hiv: • Nucleoside And Nucleotide Reverse Transcriptase Inhibitors	1	2
12	**Final Theoretical Exam**		1	2
Number of Weeks /and Units Per Semester			**16**	**32**

B. Case Studies and Practical Aspect:

No.	Tasks/ Experiments	Number of Weeks	Contact Hours
1	Type of drugs Dosage forms	1	**2**
2	Route of drug administration	1	**2**

Prepared by:	Reviewed by:	Head of department	Quality Unit:	Dean of Medicine Faculty	Center of Development and Quality Assurance Dean
Assoc. Prof. Hassan AL-Mahbashi	Assoc. Prof. Ali Al-yahawi		Dr. Fadhl Shujaa Al-deen	Dr. Salwa Al-Ghomeri	

No.	Tasks/ Experiments	Number of Weeks	Contact Hours
3	Calculation of pharmacokinetics parameters	1	2
4	Handling and types of experimental animals	1	2
5	Studying effect of drugs on Rabbit's eye	1	2
6	Mid exam	1	2
7	Studying effect of drugs on Rabbit's intestine	1	2
8	Studying effect of drugs on Rabbit's isolated heart	1	2
9	Studying effect of drugs on Rabbit's blood pressure	1	2
10	Studying effect of drugs on Rabbit's skeletal muscle	1	2
11	Prescription writing based on problem based learning-I	1	2
12	Prescription writing based on problem based learning-II	1	2
13	Prescription writing based on problem based learning-III	1	2
14	Final Practical Exam	1	2
Number of Weeks /and Units Per Semester		**14**	**28**

No.	Tasks/ Experiments	Number of Weeks	Contact Hours
1	- Type of drugs Dosage forms	1	2
2	- Route of drug administration	1	2
3	- Calculation of pharmacokinetics parameters	1	2
4	- Handling and types of experimental animals	1	2
5	- Studying effect of drugs on Rabbit's eye	1	2
6	- Mid exam	1	2
7	- Studying effect of drugs on Rabbit's intestine	1	2
8	- Studying effect of drugs on Rabbit's isolated heart	1	2
9	- Studying effect of drugs on Rabbit's blood pressure	1	2

No.	Tasks/ Experiments	Number of Weeks	Contact Hours
10	- Studying effect of drugs on Rabbit's skeletal muscle	1	2
11	- Prescription writing based on problem based learning-I	1	2
12	- Prescription writing based on problem based learning-II	1	2
13	- Prescription writing based on problem based learning-III	1	2
14	- Final Practical Exam	1	2
Number of Weeks /and Units Per Semester		14	28

No.	Tutorial	Number of Weeks	Contact Hours
1			
Number of Weeks /and Units Per Semester			

VI. Teaching Strategies of the Course:

خطأ! لم يتم العثور على مصدر المرجع.

VII. Assessment Methods of the Course:

خطأ! لم يتم العثور على مصدر المرجع.

VIII. Assignments:

No.	Assignments	Week Due	Mark
1	Types of dosage forms, Studying effect of drugs on Rabbit's intestine	4th	5
2	Studying effect of drugs on Rabbit's blood pressure	10th	5
Total	10		

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

No.	Assessment Method	Week Due	Mark	Proportion of Final Assessment

No.	Assessment Method	Week Due	Mark	Proportion of Final Assessment
1	Assignments	4th ,10th	10	10%
3	Mid-Term Theoretical Exam	8th	٢٠	20%
4	Final Practical Exam	15th	٢٠	20%
5	Final Theoretical Exam	16th	50	50%
Total	100	100%		

No.	Assessment Method	Week Due	Mark	Proportion of Final Assessment
1	Assignments	4^{th} ,10^{th}	10	10%
3	Mid-Term Theoretical Exam	8^{th}	٢٠	20%
4	Final Practical Exam	15^{th}	٢٠	20%
5	Final Theoretical Exam	16^{th}	50	50%
Total			100	100%

X. Learning Resources:

- *1- Required Textbook(s):*

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2- Essential References:

a. Basic and clinical pharmacology; 15th edition; Bertram G. Katzung; McGraw Hill Medical Company; 2020.

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	class.
3	**Exam Attendance/Punctuality:** No student shall be allowed to the exam hall after 30 minutes of the start time, and shall not leave the hall before half of the exam time has passed.
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