

Republic of Yemen

Ministry of Higher Education & Scientific Research

21 SEPTEMBER UMAS

Faculty of Faculty of Clinical Pharmacy

Department of

Unit of Development & Quality assurance



الجمهورية اليمنية
وزارة التعليم العالي والبحث العلمي
جامعة 21 سبتمبر للعلوم الطبية والتطبيقية
كلية الصيدلة السريرية
قسم.....
وحدة التطوير وضمان الجودة

Republic of Yemen

Ministry of Higher Education & Scientific Research

21 September University for Medicals and Applied Sciences



Faculty of Clinical Pharmacy

Bachelor of Clinical Pharmacy & Pharm. D.

Course Specification of **Pharmacogenomics**

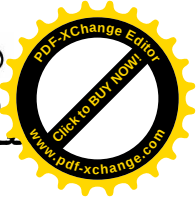
Course No. (02.01.270)

2021/2022



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

Prepared by:	Reviewed by:	Head of the Department:	Vice Dean for Quality Affairs	Dean of College:
Prof. Ali Alkaf	Dr. Ali Alyahawi	Dr. -----	Dr. Abdulelah Thabet	Dr. Ali Alyahawi



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I. Course Identification and General Information:

1	Course Title:	Pharmacogenomics			
2	Course Code & Number:	02.01.270			
3	Credit hours:	C.H			
		Th.	Seminar	Pr	Tr.
		2			
4	Study level/ semester at which this course is offered:	Level 4 – Semester 1			
5	Pre –requisite (if any):	- Pharmacology I, II, III - Biopharmaceutics & Pharmacokinetics			
6	Co –requisite (if any):	NA			
7	Program (s) in which the course is offered:	Bachelor of Clinical Pharmacy & Pharm. D.			
8	Language of teaching the course:	English			
9	Study System	Regular			
10	Mode of delivery:	Semester based system			
11	Location of teaching the course:	Faculty of Clinical Pharmacy			
12	Prepared By:	Dr. Ali Al-Kaf			
13	Date of Approval				

II. Course Description:

The course aims to understanding how an individual's genetics influences responses to drugs. The course provides students the genetic basis of variability in drug response and the application of pharmacogenomics and precision medicine to drug treatment that can contribute to drug efficacy and toxicity and design an effective individualized pharmaceutical care.

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

Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
b1- Explain the basic principles of genomics and other individual factors as they apply to inter-individual variation in treatment response	- Lecture - Self-learning - Interactive Discussion - Use of updated medical references	- Exam - Assignment - Quizzes
b2- Assess the value of phenotyping/genotyping in individualization of drug therapy	- Lecture - Self-learning - Interactive Discussion - Use of updated medical references	- Exam - Assignment - Quizzes

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

Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
C1- Apply pharmacogenomic concepts to a particular drug therapy to solve relevant problems in pharmaceutical care	- Lecture - Self-learning - Use of updated medical references	- Exam - Assignment - Assignment

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

Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
d1- Search efficiently for key sources and reliable databases of pharmacogenomics knowledge base.	- Self-learning - Seminar - Interactive Discussion	- Exam - Assignment
d2- Communicate effectively with healthcare professionals.	- Interactive Discussion - Presentation	- Presentation

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IV. Course Content:

A – Theoretical Aspect:

Order	Units/Topics List	Learning Outcomes	Sub Topics List	Number of Weeks	contact hours
1	Genetic Concepts of Pharmacogenomics	a 1, a2, d1	- Principles of genetic medicine - Basic DNA and Genome structure - Human Genome Project	3	6
2	Pharmacogenetics of Cytochrome P450	a3, b1, b2, d1	- Pharmacogenetics of Cytochrome P450: Introduction	2	4
			- Pharmacogenomics of CYP2C9	1	2
			- Pharmacogenomics of CYP2C19	1	2
3	Midterm Exam	a 1, a2, a3, b2, b3	-	1	2
4	Pharmacogenetics of Cytochrome P450	a 3, b2, b3, d1	- Pharmacogenomics of CYP2D6 - Pharmacogenomics of Other P450s	1	2
5	Pharmacogenomics Resources	a 2, a3, b1, b2, d1	- Key Pharmacogenomics Resources - Clinical Practice Guidelines	2	4
6	Clinical Application of Pharmacogenomics	b 2, c1, d1, d2	- Cardiovascular Pharmacogenomics	1	2
			- Pharmacogenomics in Oncology	1	2
			- Pharmacogenomics of Gastrointestinal Drugs: Focus on Proton Pump Inhibitors	1	2
			- Limitation and ethical issues of gene therapy	1	2
7	Final Exam	a 1, a2, a3 b1, b2, c1,		1	2
Number of Weeks /and Units Per Semester				16	36

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V. Teaching & Assessment strategies of the course:

- 1- Lecture
- 2- Seminars
- 3- Self-learning
- 4- Interactive Discussion
- 5- Use of updated medical references
- 6- Office hour
- 7- Exam
- 8- Quiz

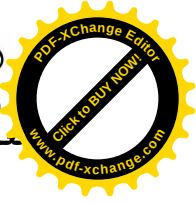
VI. Assignments:

No	Assignments	Aligned CILOs(symbols)	Week Due	Mark
1	Assignment 1: Each student is assigned to provide a search-based report on metabolism variability of one type of Cyt450.	a 2, a3, b2, d1	Week 6	5%
2	Assignment 2: Each students group will be assigned to provide a search-based report on one recent advances in gene therapy techniques and applications.	a 2, a3, b2, d1	Week 12	5%
Total				10

VII. 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	Week 6 and 12	10	10%	a1, a 2, a3, b2, d1
2	Quiz 1	Week 6	5	5%	a 2, a3, b2, d1, d2
3	Midterm Exam	Week 8	20	20%	a1, a2, a3, b1, b2
4	Quiz 2	Week 12	5	5%	a 2, a3, b2, d1, d2
5	Final exam	Week 16	60	60%	a 1, a2, b1, b2, c1,
Total			100	100%	

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

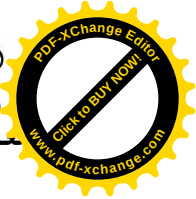
- ## 2- Essential References.

- ### 3- Electronic Materials and Web Sites etc.

- ## I. Course Policies: (Based on the Uniform Students' Bylaw (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. |

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Faculty of Clinical Pharmacy

Program of Clinical Pharmacy & Pharm. D.

Course Plan (Syllabus) of Pharmacogenomics

Course No. (02.01.270)

2021/2022

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

Name of Faculty Member	Prof. Ali Alkaf	Office Hours					
Location & Telephone No.		SAT	SUN	MON	TUE	WED	THU
E-mail							

III. Course Identification and General Information:

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2	Course Code & Number:	02.01.270				
3	Credit hours:	C.H				TOTAL
		Th.	Seminar	Pr	Tr.	
		2	--		--	2
4	Study level/ semester at which this course is offered:	4 th Year- 1 st Semester				
5	Pre –requisite (if any):	- Pharmacology - Biopharmaceutics & Pharmacokinetics				
6	Co –requisite (if any):	None				
7	Program (s) in which the course is offered:	Bachelor of Clinical Pharmacy & Pharm. D.				
8	Language of teaching the course:	English				
9	Study System	Semester Based System				
10	Mode of delivery:	Full Time – Regular				
11	Location of teaching the course:	Faculty of Clinical Pharmacy				

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- Seminars
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- Exam
- Quiz

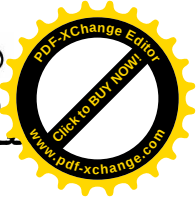
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1- Required Textbook(s) (maximum two).

3. J Licinio and M Wong (2003), Pharmacogenomics: The Search for Individualized Therapies; 1st Edition
4. Anthony Meagre (1999), Gene therapy technologies, applications and regulations, John Wiley & Sons Ltd

3. American College of Clinical Pharmacy (ACCP); 2009, Pharmacogenomics: Applications to Patient Care; 2nd Edition
4. American Society of Health System Pharmacists, 2010. Concepts in Pharmacogenomics

- Updated evidence-based literatures

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