



The University of Jordan

Accreditation & Quality Assurance Center

COURSE Syllabus

1	Course title	Applications of chromatography
2	Course number	1201524
3	Credit hours (theory, practical)	2
	Contact hours (theory, practical)	2 per w/ theoretical For some techniques /principles a demo in the lab or lecture room will be made
4	Prerequisites/corequisites	Instrumental analysis
5	Program title	MSc, pharmacy / Pharm D
6	Program code	
7	Awarding institution	University of Jordan
8	Faculty	Pharmacy
9	Department	Pharmaceutical sciences
10	Level of course	Introductory high
11	Year of study and semester (s)	Typically fourth or fifth year students first or second semester but , currently second semester.
12	Final Qualification	
13	Other department (s) involved in teaching the course	non
14	Language of Instruction	English
15	Date of production/revision	Revision Feb /2016

16. Course Coordinator:

Office numbers, office hours, phone numbers, and email addresses should be listed.

Office No.: 129

Office hours:

Day/Time	Sunday	Monday	Tuesday	Wednesday	Thursday
	9-10	9-10	9-10	9-10	
	11-12	11-12	11-12	11-12	

Phone No. : 0777 484573

Email: I.hamdan@ju.edu.jo ; or iimad68@yahoo.com

17. Other instructors:

Office numbers, office hours, phone numbers, and email addresses should be listed.

None

18. Course Description:

As stated in the approved study plan.

Course Description:

This course discusses the most important chromatographic techniques in a technical detailed format that is most relevant to pharmaceutical industries. That includes chromatographic method development which involves choice of chromatographic techniques, optimization of the parameters, validation of the method and eventual application of the method to real samples. Sample preparation, which is crucial to chromatographic analysis, will be given sufficient attention. Modern approaches of chromatographic conditions (parameters) optimization will be looked at in sufficient details.

1. 19. Course aims and outcomes:

2.

A- Aims:

- 1) To realize the potential role of chromatographic techniques and HPLC in particular, in pharmaceutical industry.
- 2) To be able to start a chromatographic method development starting from the choice of the technique to the end.
- 3) To be able to perform a quantitative chromatographic analysis

B- Intended Learning Outcomes (ILOs): Upon successful completion of this course students will be able to ...

- a- Realize the importance of chromatographic methods in pharmaceutical analysis.
- b- Understand the concept of HPLC and other instruments as powerful tools for pharmaceutical analysis.
- c- Know the validation criteria that are necessary for establishing confidence in analytical methods.
- d- Employ theoretical principles to develop and optimize an analytical method.
- e- Start a scheme to determine a drug in biological fluids.
- f- Criticize a deficient analytical chromatographic method in terms of quality criteria. I

20. Topic Outline and Schedule:

3.

Topic	Week	Instructor	Achieved ILOs	Evaluation Methods	Reference
Introduction To chromatographic	1	Dr. Imad Hamdan	Chromatographic techniques are essential	Exam, mid final	-

techniques			to achieve a selective method		
Theory of chromatography, resolution	2	Dr. Imad Hamdan	Understand how molecules pass through the column	Exam, mid final	
Reversed phase HPLC Normal Phase HPLC	3	Dr. Imad Hamdan	To differentiate between RP and NP HPLC	Exam, mid final	
HIC HPLC Introduction to quantitation by HPLC	4	Dr. Imad Hamdan	To value the HIC in comparison to NP and RP	Exam, mid final	
method development Sample treatment Choice of stationary phase	5	Dr. Imad Hamdan	How to start method development and choice of stationary phase	Exam, mid final	
Optimization of separation	6	Dr. Imad Hamdan	Understand factors that affect efficiency	Exam, mid final	
Mid term exam	7	--	--	--	
Sequential methods of optimizing mobile phase	8	Dr. Imad Hamdan	Understand concepts of sequential search as applied to chromatography	Exam, mid final	
Retention factor and selectivity	9	Dr. Imad Hamdan	Realize the concept and importance of retention factor	Exam, mid final	
Selectivity factor and overall resolution	10	Dr. Imad Hamdan	How to manipulate selectivity factor	Exam, mid final	
Predictive methods of optimization	11	Dr. Imad Hamdan	Predictive methods principles	Exam, mid final	

Predictive methods continue	12	Dr. Imad Hamdan	Applications of predictive methods	Exam, mid final	
Chromatography of drugs in plasma	13	Dr. Imad Hamdan	Particularities for drugs in plasma	Exam, mid final	
Drugs in plasma continue	14	Dr. Imad Hamdan	Understand some examples	Exam, mid final	

4.

21. Teaching Methods and Assignments:

Development of ILOs is promoted through the following teaching and learning methods:

*Lectures , interactive lectures
Demonstrations in research lab or lecture room.*

Learning skills:

- 1- *Critical thinking*
- 2- *Scientific reasoning*
- 3- *Problem-solving skills*
- 4- *Self-directed learning*

22. Evaluation Methods and Course Requirements:

Opportunities to demonstrate achievement of the ILOs are provided through the following assessment methods and requirements:

*Mid-term exam
Quizzes
Final exam*

23. Course Policies:

A- Attendance policies:

Students must attend more than 10 % of the lecture, if they didn't they would be denied the final exam and loose the course

B- Absences from exams and handing in assignments on time:

If a student doesn't attend the midterm exam and provided a reasonable excuse he would be given a chance to set for a new exam that would be generally harder than the common one.

C- Health and safety procedures:

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D- Honesty policy regarding cheating, plagiarism, misbehavior:

General University rules will strictly be applied for students who attempt cheating, After a student being reported to the deanship the case would be investigated by a special committee and if found guilty he might lose all courses that he was registered for in that semester.

E- Grading policy:

Grading policy is announced to the students, marking of MCQs would be carried out by automatic scanner. In all cases students would be discussed regarding the exam questions and proper answers. After that any student thinks he should have gotten more than he had, he would be given the chance to revise his papers with the instructor. Before the time of final exam, the marks collected by the students hetherto should be announced on the website (a general university instruction).

F- Available university services that support achievement in the course:

- Well equipped lecture rooms with boards and data show
- Labs and HPLC equipment for the demonstration.

24. Required equipment:

Data show and computer and software

White board

HPLC chromatograph

25. References:

A- Required book (s), assigned reading and audio-visuals:

- 1. Title:** Introduction to modern liquid chromatography **Author:** Snyder, Lloyd R. Kirkland, J. J. (Joseph Jack) **Publisher:** Wiley, 3rd Edn, 2010.
- 2. Title:** Pharmaceutical Analysis a Textbook for pharmacy students. **Author:** Dvid Watson, 2005 2nd Edn, Elsevier.

B- Recommended books, materials, and media:

1. Usp: united States pharmacopeia, 2000
2. BP: British pharmacopeia, 2000

26. Additional information:

List of expected competencies in line with the faculty strategic plan:

- Identify analytical method development and validation used in pharmaceutical analysis (point 3.11 in the faculty list).
- Recognize quality assurance principles (point 3.8 in the faculty list).
- Recognize quality control principles (point 3.9 in the faculty list).

Name of Course Coordinator: -----Signature: ----- Date: -----

Head of curriculum committee/Department: ----- Signature: -----

Head of Department: ----- Signature: -----

Head of curriculum committee/Faculty: ----- Signature: -----

Dean: -----Signature: -----

Copy to:

Head of Department
Assistant Dean for Quality Assurance
Course File