



## Course Specification of Pharmaceutics I

I. Course Identification and General Information:						
1	Course Title:	Pharmaceutics I				
2	Course Number & Code:	Ph234				
3	Credit hours: 3hrs	C.H				Total
		Theoretical	Practical	Training	Seminar	
		2	2			3
4	Study level/ semester at which this course is offered:	Second year/First semester				
5	Pre –requisite (if any):	Physical pharmacy- Pharmaceutical calculations				
6	Co –requisite (if any):					
7	Program (s) in which the course is offered:	Bachelor of Pharmacy				
8	Language of teaching the course:	English				
9	The department in which the course is offered:	Pharmaceutics and Industrial Pharmacy				
10	Location of teaching the course:	Faculty of Pharmacy-Sana'a University				
11	Prepared by:	Prof. Dr. Abdulwali Ahmed Saif				
12	Date of approval:					

### II. Course description:

This course aims to provide the students with the basic knowledge of pharmaceutics and different pharmaceutical dosage forms and the route of drug administration. It focused on the advantages and disadvantages, additives methods of formulation and methods of evaluation of solutions and colloids as pharmaceutical liquid dosage forms.



### III. Intended learning outcomes (ILOs) of the course:

At the end of this course, the students will be able to:

1. Recognize the characteristics of different pharmaceutical dosage forms and routes of drug administration.
2. Describe the advantages and disadvantages of pharmaceutical liquid dosage forms.
3. Recognize the different additives used in manufacturing of pharmaceutical solutions and colloids.
4. Describe methods of preparation of pharmaceutical solutions and colloids.
5. Discuss the method of evaluation of pharmaceutical solutions and colloids.
6. Distinguish pharmaceutical liquid dosage forms.
7. Determine the appropriate methods for preparation of solutions and colloids.
8. Select the suitable method for evaluation of pharmaceutical liquid dosage forms.
9. Propose best approaches to solve the problems encountered in formulation pharmaceutical liquid dosage forms.
10. Select and practice different methods for preparation of pharmaceutical liquid dosage forms.
11. Formulate different pharmaceutical liquid dosage forms.
12. Label the different formulations of pharmaceutical liquid dosage forms.
13. Evaluate the formulations of pharmaceutical liquid dosage forms.
14. Implement writing and presentation skills.
15. Work independently or collaboratively to prepare seminars/ presentations or write reports.
16. Effectively use internet resources to search for up-to-date information to solve emerging problems.

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

#### (A) Knowledge and Understanding:

Alignment of Course Intended Learning Outcomes (CILOs) to Program Intended Learning Outcomes (PILOs) in: **Knowledge and Understanding.**

Program Intended Learning Outcomes (Sub-PILOs) in: Knowledge and Understanding	Course Intended Learning Outcomes (CILOs) in: Knowledge and Understanding
After completing this program, students will be able to:	After completing this course, students will be able to:

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<b>A1-</b>	Recognize the principles of physical, chemical, clinical, social, behavioral, health and pharmaceutical sciences.	<b>a1-</b>	Recognize the characteristics of different pharmaceutical dosage forms and routes of drug administration.
<b>A2-</b>	Recognize the physicochemical properties, preparation, structure activity relationship (SAR), toxicity and the modern methods of analysis of various substances of chemical and natural products of therapeutic potential as well as the basic principle of drug discovery, design and development	<b>a2-</b>	Describe the advantages and disadvantages of pharmaceutical liquid dosage forms.
<b>A4</b>	Recognize the pharmaceutical dosage form design and the quality control of pharmaceutical formulations according to GMP and pharmacopeia requirements to support the pharmaceutical industries and research.	<b>a3-</b>	Recognize the different additives used in manufacturing of pharmaceutical solutions and colloids.
		<b>a4-</b>	Describe methods of preparation of pharmaceutical solutions and colloids.
		<b>a5-</b>	Discuss the method of evaluation of pharmaceutical solutions and colloids.

### Teaching And Assessment Methods For Achieving Learning Outcomes:

#### Alignment of Learning Outcomes of Knowledge and Understanding to Teaching and Assessment Methods:

Course Intended Learning Outcomes (CILOs) in Knowledge and Understanding		Teaching strategies/methods to be used	Methods of assessment
completing this course, students will be able to:		Lectures, brainstorming and group discussion	Attendance, written exams, reports, project and small projects
<b>a1-</b>	Recognize the characteristics of different pharmaceutical dosage forms and routes of drug administration.		
<b>a2-</b>	Describe the advantages and disadvantages of pharmaceutical liquid dosage form.		
<b>a3-</b>	Recognize the different additives used in manufacturing of pharmaceutical solutions.		
<b>a4-</b>	Describe methods of preparation of pharmaceutical solutions.		
<b>a5-</b>	Discuss the method of evaluation of pharmaceutical solutions.		

### (B) Intellectual Skills:

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Alignment of Course Intended Learning Outcomes (CILOs) to Program Intended Learning Outcomes (PILOs) in: <b>Intellectual skills</b>			
Program Intended Learning Outcomes (Sub-PILOs) in Intellectual skills		Course Intended Learning Outcomes (CILOs) of Intellectual Skills	
After completing this program, students will be able to:		After completing this course, students will be able to:	
<b>B1</b>	Consolidate the chemical, biochemical and physiological principles to construct the pharmacophores of the structure and their effect on the stability, pharmacokinetic and pharmacodynamic profiles of the drug.	<b>b1-</b>	Distinguish pharmaceutical liquid dosage forms.
<b>B3</b>	Design different types of safe and effective pharmaceutical dosage forms and develop novel methods of qualitative and quantitative analytical and biological analysis for pharmaceutical and biopharmaceutical products that support pharmaceutical research.	<b>b2-</b>	Determine the appropriate methods for preparation of solutions and colloids.
		<b>b3-</b>	Select the suitable method for evaluation of pharmaceutical liquid dosage forms.
		<b>b4-</b>	Propose best approaches to solve the problems encountered in formulation pharmaceutical liquid dosage forms.
<b>Teaching And Assessment Methods For Achieving Learning Outcomes:</b>			
Alignment of Learning Outcomes of Intellectual Skills to Teaching Methods and Assessment Methods:			
Course Intended Learning Outcomes (CILOs) in Intellectual Skills.		Teaching strategies/methods to be used	Methods of assessment
After completing this course, students will be able to:		Lectures, solving problem, brainstorming and group discussion	Written and oral exams and small projects
<b>b1-</b>	Distinguish pharmaceutical liquid dosage forms.		
<b>b2-</b>	Determine the appropriate methods for preparation of solutions and colloids.		
<b>b3-</b>	Select the suitable method for evaluation of pharmaceutical liquid dosage forms.		

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<b>b4-</b>	Propose best approaches to solve the problems encountered in formulation pharmaceutical liquid dosage forms.		
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### (C) Professional and Practical Skills:

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

Program Intended Learning Outcomes (Sub-PILOs) in Professional and Practical Skills		Course Intended Learning Outcomes (CILOs) in Professional and Practical Skills	
After completing this program, students will be able to:		After completing this course, students will be able to:	
<b>C1-</b>	Operate different pharmaceutical equipments and instruments and use emerging technologies in design, synthesis, pre-formulation, formulation, packaging, storage and analysis of pharmaceutical products according to GLP, GSP and cGMP guidelines.	<b>c1-</b>	Select and practice different methods for preparation of pharmaceutical liquid dosage forms.
<b>C3-</b>	Extract, isolate, purify, identify and formulate the natural products and assure their rational use.	<b>c2-</b>	Formulate different pharmaceutical liquid dosage forms.
<b>C5-</b>	Conduct research studies and utilize the results in different pharmaceutical fields.	<b>c3-</b>	Label the different formulations of pharmaceutical liquid dosage forms.
		<b>c4-</b>	Evaluate the formulations of pharmaceutical liquid dosage forms.

### Teaching And Assessment Methods For Achieving Learning Outcomes:

Alignment of Learning Outcomes of Professional and Practical Skills to Teaching and Assessment Methods:

Course Intended Learning Outcomes (CILOs) in Professional and Practical Skills		Teaching strategies/methods to be used	Methods of assessment
After completing this course, students will be able to:		Lectures, tutorials, practical, discussion and brain storming	Attendance, homework, written, practical, oral exams, report, project and observation.
<b>c1-</b>	Select and practice different methods for preparation of pharmaceutical liquid dosage forms.		
<b>c2-</b>	Formulate different pharmaceutical liquid dosage forms.		
<b>c3-</b>	Label the different formulations of pharmaceutical liquid dosage forms.		

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c4-	Evaluate the formulations of pharmaceutical liquid dosage forms.		
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### (D) General / Transferable Skills:

Alignment of Course Intended Learning Outcomes (CILOs) to Program Intended Learning Outcomes (PILOs) in: **General and Transferable skills**

Program Intended Learning Outcomes (PILOs) in General / Transferable skills		Course Intended Learning Outcomes (CILOs) in General / Transferable skills	
After completing this program, students will be able to:		After completing this course, students will be able to:	
D2	Employ proper documentation and filing systems in different pharmaceutical fields.	d1-	Implement writing and presentation skills
		d2-	Work independently or collaboratively to prepare seminars/ presentations or write reports.
D3	Develop financial, market management, writing, presentation and time management skills as well as creativity, critical thinking, problem solving and decision making abilities.	d3-	Effectively use internet resources to search for up-to-date information to solve emerging problems.

### Teaching And Assessment Methods For Achieving Learning Outcomes:

Alignment of Learning Outcomes of General and Transferable skills to Teaching and Assessment Methods:

Course Intended Learning Outcomes (CILOs) in General and Transferable Skills		Teaching strategies/methods to be used	Methods of assessment
After completing this course, students will be able to:		Lectures , practical, discussion and brain storm	Written, practical, oral exams, report, project and observation.
d1-	Implement writing and presentation skills.		
d2-	Work independently or collaboratively to prepare seminars/ presentations or write reports.		
d3-	Effectively use internet resources to search for up-to-date information to solve emerging problems.		

### V. Course Content:

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## 1 – Course Topics/Items:

### a – Theoretical Aspect

Order	Topic List / Units	CILOs (symbols)	Sub-topic List	Number of weeks	Contact hours
1	Introduction to pharmaceutics	a1, b1, c1, d1-3	Definition, types	1	2
2	Classification of dosage forms and route of administration	a1, b1, c1, d1-3	Excipients	1	2
3	Preformulation studies	a3, a4, b2, b4, d1-3	Compatiblity, evaluation	1	2
4	Galenic formulations	a1, b1, d1-3	Dosage forms	1	2
5	Types of liquid pharmaceutical dosage forms	a1, a2, b1, d1-3	Definition, types, Advantages, disadvantages,	1	2
6	Pharmaceutical solvents and excipients	a1, a3, b1-2, d1-3	Definition, types, Advantages, disadvantages,	1	2
7	Mid-term exam	a1-4, b1, b2, b4		1	2
8	Pharmaceutical Aqueous Solutions	a2-5, b1-4, d1-3	Definition, types, Advantages, disadvantages, solvents, excipients, methods of formulation and methods of evaluation of pharmaceutical aqueous solutions.	2	4
9	Pharmaceutical non-aqueous Solutions (elixirs, )	a2-5, b1-4, d1-3	Definition, types, Advantages, disadvantages, solvents, excipients, methods of formulation and methods of evaluation of pharmaceutical non-aqueous solutions.	2	4
10	Pharmaceutical colloids	a2-5, b1-4, d1-3	Definition, types, Advantages, disadvantages, solvents, excipients, methods of formulation and methods of evaluation of pharmaceutical colloids.	2	4
11	Final-term exam	a1-5, b1-4		1	2

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Number of Weeks /and Units Per Semester	16	32
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b- Practical Aspect:				
Order	Practical Tasks	CILOs (symbols)	Number of weeks	Contact hours
1.	Formulate, practice preparation, label and evaluate topical aqueous solutions.	c1-4, d1-3	3	6
2.	Formulate, practice preparation, label and evaluate oral aqueous solutions.	c1-4, d1-3	3	6
3.	Mid-term exam	c1-4	1	2
4.	Formulate, practice preparation, label and evaluate topical non-aqueous solutions.	c1-4, d1-3	3	6
5.	Formulate, practice preparation, label and evaluate oral non-aqueous solutions.	c1-4, d1-3	3	6
6.	Formulate, practice preparation, label and evaluate colloidal solutions.	c1-4, d1-3	2	4
7.	Final-term exam	c1-4	1	2
Number of Weeks /and Units Per Semester			16	32

#### I- a-Teaching strategies of the course:

Lecture method, Group Discussion, Problem solving sessions tutorials, brainstorming and Practical sessions.

#### b- Assessment Methods:

Oral Exam, Quizzes, Attendance, Participation, Short answers, reports, homework, and Written exam Practical works, practical exam and practical reports.

#### VII. Assignments:

No.	Assignments	Aligned CILOs (symbols)	Week Due	Mark
1	Homework Assignments	a1-4, b1-4, d1-3	Sporadic through the semester	10

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2	Reports	c1-4, d1-3	
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## II- Schedule of Assessment Tasks for Students During the Semester:

No.	Assessment Method	Week Due	Mark	Proportion of Final Assessment	Aligned Course Learning Outcomes (CILOs symbols)
1.	Attendance, Participation and quizzes	All Weeks	10	7%	a2, a4,b1-2,d1-3
2.	Oral Tests and Homework assignments	Sporadic through the semester	10	7%	a1, a3, a5 b3-4, d1-3
3.	Attendance, Practical Reports	All Weeks	15	10%	c1-4
4.	Practical mid-semester exam	7 <sup>th</sup>	15	10%	c1-4
5.	Theoretical mid-semester exam	7 <sup>th</sup>	30	20%	a1-4, b1, b2, b4
6.	Final Exam (theoretical)	16 <sup>th</sup>	50	33%	a1-5, b1-4
7.	Final Exam (practical)	16 <sup>th</sup>	20	13%	c1-4
<b>Total</b>			<b>150</b>	<b>100%</b>	

## VI. Students' Support:

Office Hours/week	Other Procedures (if any)
2 hours per week	

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VII. Learning Resource (MLA style or APA style)S:	
<b>1- Required Textbook(s) ( maximum two )</b>	
	<ol style="list-style-type: none"> <li>Notes on Pharmaceutics prepared by the department staff.</li> <li>Jones, D., 2008, "FASTtrack Pharmaceutics- dosage form and design" 1st edition, Pharmaceu Press, London.</li> <li>Ansel; H.C., (2011) Pharmaceutical Dosage Forms and drug Delivery Systems'. 9th ed ,Lea Febiger; Philadelphia; London.</li> <li>Aulton, M.E. (ed). (2013) Pharmaceutics, the design and manufacture of medicines. 4th editio Churchill Livingstone, Edinburgh.</li> </ol>
<b>2- Recommended Readings and Reference Materials</b>	
	<ol style="list-style-type: none"> <li>Loyd, V Allen J.,2013, Remington: The Science and Practice of Pharmacy 22nd edition, Pharmaceutical Press, London.</li> <li>Florence, A.T. and Attwood, D., 2006, "Physicochemical principles of pharmacy", 4th edition Pharmaceutical Press, London.</li> <li>Banker, G.S.and Rhodes, C.T, (1999) Modern Pharmaceutics, 3rd edn. Marcel Dekker.</li> </ol>
<b>3- Electronic Materials and Web Sites etc.</b>	
	<a href="http://www.pubmed.com">www.pubmed.com</a> <a href="http://www.sciencedirect.com">http://www.sciencedirect.com</a>
<b>4- Other Learning Material:</b>	
	J. Pharm. Sci Published articles related to the discussed topics

### I. Facilities Required:

<b>1 - Accommodation:</b>	<ul style="list-style-type: none"> <li>Well-equipped lecture halls with data show facilities, whiteboards, net connection, etc.</li> <li>Well-equipped laboratories with all required equipment and reagents.</li> </ul>
<b>2 - Computing resources:</b>	<ul style="list-style-type: none"> <li>Computer laboratory with internet facilities.</li> </ul>

### II. Course Improvement Processes:

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1- Strategies for obtaining student feedback on effectiveness of teaching	
	<ul style="list-style-type: none"> <li>▪ Student-based assessment of the effectiveness of teaching using a questionnaire designed by the Quality Assurance Unit at the end of the semester.</li> <li>▪ Meeting with students and faculty (once per semester).</li> </ul>
2- Other strategies for evaluation of teaching by the instructor or by the department.	
	<ul style="list-style-type: none"> <li>▪ Assessment of the course syllabus and contents by the teachers using a questionnaire designed by the Quality Assurance Unit of the university at the end of the semester.</li> <li>▪ Regular meeting and discussion of the course content between the Head of Department and the teaching staff of the course (for theory and practice).</li> </ul>
3- Processes for improvement of teaching.	
	<ul style="list-style-type: none"> <li>▪ Revision of the course specification and its teaching strategies every three academic years after consideration of all issues raised by the teachers and/or students during regular meetings and discussions.</li> <li>▪ Exploring any possible defects in the course that might be encountered by the teaching staff and their mitigation in subsequent improved versions of course specification.</li> </ul>
4- Processes for verifying standards of students' achievement	
	<ul style="list-style-type: none"> <li>▪ Checking of a sample of students' work by an independent faculty member.</li> <li>▪ Periodic exchange and check marking of a sample of students' assignments with a faculty member from another institution.</li> <li>▪ Adoption of scoring rubrics to assess the students' achievement (both for ongoing or summative assessments).</li> <li>▪ Regular follow-up of laboratory logbooks to assess the practical achievement of students.</li> </ul>
5- Procedures for periodically reviewing of course effectiveness and planning for improvement	
	<ul style="list-style-type: none"> <li>▪ Student rating and feedback</li> <li>▪ Peer rating and feedback</li> <li>▪ Regular meeting of the Curriculum Committee of the faculty.</li> </ul>
6- Course development plans	
	<ul style="list-style-type: none"> <li>▪ Conducting regular workshops for the staff for improving their course specification skills.</li> <li>▪ Regular revision of course specification and syllabus items.</li> </ul>

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### VIII. Course Policies: (including plagiarism, academic honesty, attendance etc)

The University Regulations on academic misconduct will be strictly enforced. Please refer to -----

1	<p><b>Class Attendance:</b></p> <ul style="list-style-type: none"> <li>Attendance of all lectures and practical sessions is required. Unexcused absence exceeding 25% of the lectures or practical sessions will disqualify the student from entering the final exam.</li> </ul>
2	<p><b>Tardy:</b></p> <p>- Roll will be called in the very beginning of each lecture and practical class. Retardation for more than three weeks without a reasonable excursion, the student involved shall not be allowed to attend the class any longer and consequently shall be considered to be absent.</p>
3	<p><b>Exam Attendance/Punctuality:</b></p> <ul style="list-style-type: none"> <li>Exam attendance is obligatory unless being excused by the department and faculty.</li> <li>Absence from assignments or exams will be dealt with according to the general policy of the university.</li> </ul>
4	<p><b>Assignments &amp; Projects:</b></p> <ul style="list-style-type: none"> <li>Assignments: Written and oral; Laboratory logbook signed by the responsible demonstrator. ■</li> <li>Projects: Not applicable.</li> </ul>
5	<p><b>Cheating:</b></p> <ul style="list-style-type: none"> <li>Punishment of cheating will be according to the general policy of the university in this respect.</li> </ul>
6	<p><b>Plagiarism:</b></p> <ul style="list-style-type: none"> <li>Plagiarism in written essays, reports, etc. is not accepted, and students who plagiarize the works of others will be punished according to the general policy of the university.</li> </ul>
7	<p><b>Other policies:</b></p> <ul style="list-style-type: none"> <li>General policies of the Students' Affairs of the University and the Quality Assurance Unit.</li> </ul>



## Course Plan of Pharmaceutics I

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

II. Course Identification and General Information:					
1-	Course Title:	Pharmaceutics I			
2-	Course Number & Code:	Ph234			
3-	Credit hours: 3hrs	C.H			Total
		Th.	Seminar	Pr.	
		2	-	1	3
4-	Study level/year at which this course is offered:	Second year/First semester			
5-	Pre –requisite (if any):	Physical Pharmacy			
6-	Co –requisite (if any):				
7-	Program (s) in which the course is offered	Bachelor of Pharmacy			
8-	Language of teaching the course:	English			
9-	System of Study:	Semesters			
10-	Mode of delivery:	Regular			
11-	Location of teaching the course:	Faculty of Pharmacy-Sana'a University			

VIII. Course description:
This course aims to provide the students with the basic knowledge of pharmaceutics and different pharmaceutical dosage forms and the route of drug administration. It focused on the advantages and disadvantages, additives methods of formulation and methods of evaluation of solutions and colloids as pharmaceutical liquid dosage forms.

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## IX. Intended learning outcomes (ILOs) of the course:

At the end of this course, the students will be able to:

17. Recognize the characteristics of different pharmaceutical dosage forms and routes of drug administration.
18. Describe the advantages and disadvantages of pharmaceutical liquid dosage forms.
19. Recognize the different additives used in manufacturing of pharmaceutical solutions and colloids.
20. Describe methods of preparation of pharmaceutical solutions and colloids.
21. Discuss the method of evaluation of pharmaceutical solutions and colloids.
22. Distinguish pharmaceutical liquid dosage forms.
23. Determine the appropriate methods for preparation of solutions and colloids.
24. Select the suitable method for evaluation of pharmaceutical liquid dosage forms.
25. Propose best approaches to solve the problems encountered in formulation pharmaceutical liquid dosage forms.
26. Select and practice different methods for preparation of pharmaceutical liquid dosage forms.
27. Formulate different pharmaceutical liquid dosage forms.
28. Label the different formulations of pharmaceutical liquid dosage forms.
29. Evaluate the formulations of pharmaceutical liquid dosage forms.
30. Implement writing and presentation skills.
31. Work independently or collaboratively to prepare seminars/ presentations or write reports.
32. Effectively use internet resources to search for up-to-date information to solve emerging problems.

## X. Course Content:

### 1 – Course Topics/Items:

#### a – Theoretical Aspect

Order	Topic List / Units	CILOs (symbols)	Sub-topic List	Number of weeks	Contact hours
1	Introduction to pharmaceuticals	a1, b1, c1, d1-3	Definition, types	1	2
2	Classification of dosage forms and route of administration	a1, b1, c1, d1-3	Excipients	1	2
3	Preformulation studies	a3, a4, b2, b4, d1-3	Compatibility, evaluation	1	2

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4	Galenical formulations	<b>a1, b1, d1-3</b>	Dosage forms	1	2
5	Types of liquid pharmaceutical dosage forms	<b>a1, a2, b1, d1-3</b>	Definition, types, Advantages, disadvantages,	1	2
6	Pharmaceutical solvents and excipients	<b>a1, a3, b1-2, d1-3</b>	Definition, types, Advantages, disadvantages,	1	2
7	Mid-term exam	<b>a1-4, b1, b2, b4</b>		1	2
8	Pharmaceutical Aqueous Solutions	<b>a2-5, b1-4, d1-3</b>	Definition, types, Advantages, disadvantages, solvents, excipients, methods of formulation and methods of evaluation of pharmaceutical aqueous solutions.	2	4
9	Pharmaceutical non-aqueous Solutions (elixirs, )	<b>a2-5, b1-4, d1-3</b>	Definition, types, Advantages, disadvantages, solvents, excipients, methods of formulation and methods of evaluation of pharmaceutical non-aqueous solutions.	2	4
10	Pharmaceutical colloids	<b>a2-5, b1-4, d1-3</b>	Definition, types, Advantages, disadvantages, solvents, excipients, methods of formulation and methods of evaluation of pharmaceutical colloids.	2	4
11	Final-term exam	<b>a1-5, b1-4</b>		1	2
<b>Number of Weeks /and Units Per Semester</b>				<b>16</b>	<b>32</b>

### b- Practical Aspect:

Order	Practical Tasks	CILOs (symbols)	Number of weeks	Contact hours
8.	Formulate, practice preparation, label and evaluate topical aqueous solutions.	<b>c1-4, d1-3</b>	3	6
9.	Formulate, practice preparation, label and evaluate oral aqueous solutions.	<b>c1-4, d1-3</b>	3	6
10.	Mid-term exam	<b>c1-4</b>	1	2

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11.	Formulate, practice preparation, label and evaluate topical non-aqueous solutions.	c1-4, d1-3	3	6
12.	Formulate, practice preparation, label and evaluate oral non-aqueous solutions.	c1-4, d1-3	3	6
13.	Formulate, practice preparation, label and evaluate colloidal solutions.	c1-4, d1-3	2	4
14.	Final-term exam	c1-4	1	2
<b>Number of Weeks /and Units Per Semester</b>			<b>16</b>	<b>32</b>

#### VI- a-Teaching strategies of the course:

Lecture method, Group Discussion, Problem solving sessions tutorials, brainstorming and Practical sessions.

#### b- Assessment Methods:

Oral Exam, Quizzes, Attendance, Participation, Short answers, reports, homework, and Written exam Practical works, practical exam and practical reports.

#### VII. Assignments:

No.	Assignments	Aligned CILOs (symbols)	Week Due	Mark
1	Homework Assignments	a1-5, b1-4, d1-3	Sporadic through the semester	10
2	Reports	c1-4, d1-3		

#### VIII- Schedule of Assessment Tasks for Students During the Semester:

No.	Assessment Method	Week Due	Mark	Proportion of Final Assessment	Aligned Course Learning Outcomes (CILOs symbols)
8.	Attendance, Participation and quizzes	All Weeks	10	7%	a2, a4, b1-2, d1-3

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9.	Oral Tests and Homework assignments	Sporadic through the semester	10	7%	a1, a3, a5 b3-4, d1-3
10.	Attendance, Practical Reports	All Weeks	15	10%	c1-4
11.	Practical mid-semester exam	7 <sup>th</sup>	15	10%	c1-4
12.	Theoretical mid-semester exam	7 <sup>th</sup>	30	20%	a1-4, b1, b2, b4
13.	Final Exam (theoretical)	16 <sup>th</sup>	50	33%	a1-5, b1-4
14.	Final Exam (practical)	16 <sup>th</sup>	20	13%	c1-4
<b>Total</b>			<b>150</b>	<b>100%</b>	

X. Students' Support:	
Office Hours/week	Other Procedures (if any)
2 hours per week	



## X. Learning Resource (MLA style or APA style)s:

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### 5- Required Textbook(s) ( maximum two )

5. Notes on Pharmaceutics prepared by the department staff.
6. Jones, D., 2008, "FASTtrack Pharmaceutics- dosage form and design" 1st edition, Pharmaceu Press, London.
7. Ansel; H.C., (2011) Pharmaceutical Dosage Forms and drug Delivery Systems'. 9th ed ,Lea Febiger; Philadelphia; London.
8. Aulton, M.E. (ed). (2013) Pharmaceutics, the design and manufacture of medicines. 4th editio Churchill Livingstone, Edinburgh.

### 6- Recommended Readings and Reference Materials

4. Loyd, V Allen J.,2013, Remington: The Science and Practice of Pharmacy 22nd edition, Pharmaceutical Press, London.
5. Florence, A.T. and Attwood, D., 2006, "Physicochemical principles of pharmacy", 4th edition Pharmaceutical Press, London.
6. Banker, G.S.and Rhodes, C.T, (1999) Modern Pharmaceutics, 3rd edn. Marcel Dekker.

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

[www.pubmed.com](http://www.pubmed.com)  
<http://www.sciencedirect.com>

### 8- Other Learning Material:

J. Pharm. Sci  
Published articles related to the discussed topics

## XI. Facilities Required:

### 1 - Accommodation:

- Well-equipped lecture halls with data show facilities, whiteboards, net connection, etc.
- Well-equipped laboratories with all required equipment and reagents.

### 3 - Computing resources:

- Computer laboratory with internet facilities.

## XII. Course Improvement Processes:

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6- Strategies for obtaining student feedback on effectiveness of teaching	
	<ul style="list-style-type: none"> <li>▪ Student-based assessment of the effectiveness of teaching using a questionnaire designed by the Quality Assurance Unit at the end of the semester.</li> <li>▪ Meeting with students and faculty (once per semester).</li> </ul>
7 Other strategies for evaluation of teaching by the instructor or by the department.	
	<ul style="list-style-type: none"> <li>▪ Assessment of the course syllabus and contents by the teachers using a questionnaire designed by the Quality Assurance Unit of the university at the end of the semester.</li> <li>▪ Regular meeting and discussion of the course content between the Head of Department and the teaching staff of the course (for theory and practice).</li> </ul>
8- Processes for improvement of teaching.	
	<ul style="list-style-type: none"> <li>▪ Revision of the course specification and its teaching strategies every three academic years after consideration of all issues raised by the teachers and/or students during regular meetings and discussions.</li> <li>▪ Exploring any possible defects in the course that might be encountered by the teaching staff and their mitigation in subsequent improved versions of course specification.</li> </ul>
9- Processes for verifying standards of students' achievement	
	<ul style="list-style-type: none"> <li>▪ Checking of a sample of students' work by an independent faculty member.</li> <li>▪ Periodic exchange and check marking of a sample of students' assignments with a faculty member from another institution.</li> <li>▪ Adoption of scoring rubrics to assess the students' achievement (both for ongoing or summative assessments).</li> <li>▪ Regular follow-up of laboratory logbooks to assess the practical achievement of students.</li> </ul>
10- Procedures for periodically reviewing of course effectiveness and planning for improvement	
	<ul style="list-style-type: none"> <li>▪ Student rating and feedback</li> <li>▪ Peer rating and feedback</li> <li>▪ Regular meeting of the Curriculum Committee of the faculty.</li> </ul>
6- Course development plans	
	<ul style="list-style-type: none"> <li>▪ Conducting regular workshops for the staff for improving their course specification skills. ▪ Regular revision of course specification and syllabus items.</li> </ul>

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### XIII. Course Policies: (including plagiarism, academic honesty, attendance etc)

The University Regulations on academic misconduct will be strictly enforced. Please refer to -----

1	<p><b>Class Attendance:</b></p> <ul style="list-style-type: none"> <li>Attendance of all lectures and practical sessions is required. Unexcused absence exceeding 25% of the lectures or practical sessions will disqualify the student from entering the final exam.</li> </ul>
2	<p><b>Tardy:</b></p> <p>- Roll will be called in the very beginning of each lecture and practical class. Retardation for more than three weeks without a reasonable excursion, the student involved shall not be allowed to attend the class any longer and consequently shall be considered to be absent.</p>
3	<p><b>Exam Attendance/Punctuality:</b></p> <ul style="list-style-type: none"> <li>Exam attendance is obligatory unless being excused by the department and faculty.</li> <li>Absence from assignments or exams will be dealt with according to the general policy of the university.</li> </ul>
4	<p><b>Assignments &amp; Projects:</b></p> <ul style="list-style-type: none"> <li>Assignments: Written and oral; Laboratory logbook signed by the responsible demonstrator.</li> <li>Projects: Not applicable.</li> </ul>
5	<p><b>Cheating:</b></p> <ul style="list-style-type: none"> <li>Punishment of cheating will be according to the general policy of the university in this respect.</li> </ul>
6	<p><b>Plagiarism:</b></p> <ul style="list-style-type: none"> <li>Plagiarism in written essays, reports, etc. is not accepted, and students who plagiarize the works of others will be punished according to the general policy of the university.</li> </ul>
7	<p><b>Other policies:</b></p> <ul style="list-style-type: none"> <li>General policies of the Students' Affairs of the University and the Quality Assurance Unit.</li> </ul>