



Specification of Faculty Requirements Courses



Course Specification of General Biology

University: Al-Nasser University

Faculty: Medical Science

Department: Pharmacy

Program title: Pharmacy Program

I. General Information:					
1	Course Title:	General Biology			
2	Credit hours:	C.H			
		Th.	Pr.	Tut.	Tr.
		2	1		
3	Study level/year at which this course is offered:	first semester/ first year			
4	Pre –requisite :	None			
5	Co –requisite :	None			
6	Program (s) in which the course is offered:	Medical Lab			
7	Language of teaching the course:	English/ Arabic			
8	Prepared By:	Mohammed F. Al-Helali			
9	Approved By:				

II. Course Description:
This course is important since it provides brief differences between living and non-living organisms. The topics will cover the cell structure, cell function, cell division including enzymes and material transport.

III. ILOs:
At the end of this course students should be able to:
1. Describe the function and chemical composition of macromolecules like carbohydrates, lipids, proteins and nucleic acids.
2. List the enzymes and material transport in and outside the cell.
3. Explain the cells structure, functions and reproduction of mitosis and meiosis emphasizing on their significance to organism breeding.
4. Distinguish the level of organization and function of organelles.
5. Compare between macromolecules, cell organelles enzymes and transport.
6. Use microscope and chemicals safely.
7. Operate different equipment's and instruments related to biology.
8. Show the appropriate responsibility, self-confidence, and ethical attitudes and behaviors.

9. Work effectively individually or as a part of team work.

IV. Course Content:

1 – Course Topics/Items:

a – Theoretical Aspect:

Order	Topic/ unit	Sub topic	Number of weeks	Contact hours
1	Introduction	History of evolution	1	2
2	Macromolecules	carbohydrates, lipids, proteins and nucleic acid	3	6
3	Cells and midterm	prokaryotes, eukaryotes, cell organelles	4	8
4	Transport	active, passive, and bulky	2	4
5	Enzymes	properties, function and composition	2	4
6	Cell division	mitosis and meiosis in animal cell	2	4
7	Final Exam		1	2
Number of Weeks/and Units Per Semester			15	30

b - Practical Aspect:

Order	Practical Experiment	Number of weeks	Contact hours
1	Introduction	1	2
2	Macromolecules	3	6
3	Cells and tissues	3	6
4	Transport	3	6
5	Enzyme and Cell division	1	2
6	Animal kingdom	1	2
7	Final Exam	1	2
Number of Weeks/and Units Per Semester		13	26

V. Teaching Strategies:

Lectures using data show, Video animation, Seminars, Solving problem method, Laboratory work, Directed reading, Independent study, Discussion.

VI. Assignments and projects:

no	Assignment	Week Due	Mark
1	- Project	5	5

VII. Assessment Tasks:

no	Assessment Method	Week Due	Mark	Proportion of Final Assessment
1	Project (single\group)	2, 8	5	5%
2	Practical reports	1-10	10	10%
3	Oral Tests	5, 9	5	5%
4	Written Test (1)	7	10	10%
5	Final Exam (theoretical)	14	50	50%
6	Final Exam (practical)	11	20	20%
7	Total		100	100%

VIII. Learning Resources:

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

- 1.Sylvia/S.Mader 2012, Human Biology, 12th Edition (McGraw-Hill) N.Y.USA.
- 2.E.Solomon, L.Berg, D.Martin 2008 Biology 8th edition (Thomson Brooks Cole, Belmont.U.S.A College Publishing)

2- Recommended Books and Reference Materials.

- 1.Bruce Albert, Alexander Johnson, Peter Walter (2008), Molecular biology of the cell, Fifth edition, (Garland Science), New York. U.S.A.
- 2.Cecie Starr (1997), Basic concept in biology Third edition, (International Thomson Publishing Company), Belmont, U.S.A.
- 3.Shuaa Al-Yousufy (1994), Cell structure and function, (Qatar Publishing Library), Qatar.
- 4.Aish Zaytoon (1996), Human biology, (National Publishing Library), Jordan.

3- Electronic Materials and Web Sites etc.

- 1- *Journal of biology*, www.jbiol.com
- 2- *Biology of Reproduction*, www.biolreprod.org

X. Course Policies: (including plagiarism, academic honesty, attendance etc)	
The University Regulations on academic misconduct will be strictly enforced. Please refer to Al-Nasser University student's regulations handbook	
1	<p>Class Attendance:</p> <ul style="list-style-type: none"> Absence from lectures and/or practical shall not exceed 25 %. Students who exceed the 25% limit without a medical or emergency excuse acceptable to and approved by the Dean of the college shall not be allowed to take the final exam and shall receive a mark of zero for the course.
2	<p>(Tardy):</p> <p>Students will be allowed to in the class if he/she is late not more than 15 minutes with an acceptable excuse. If the student is late in attending the class for more than three times without an excuse he/she will be warned and will be asked to write undertaken for not repeating that, otherwise his guardian will be notified and the student will miss the classes and will be considered as failed.</p>
3	<p>(Exam Attendance/Punctuality):</p> <ul style="list-style-type: none"> Student will not be allowed to appear in the final exam if he/she is late 30 minutes from the begging of the exam. Students will not be allowed to leave the exam room until unless half of the examination time is passed. If a student misses the final exam, he/she has to provide an accepted excuse he/she will be eligible to take the exam as first attempt. If the student misses the final exam he will be considered as failed and if the repeated exam will be calculated as the minimum of 50%. The student will be considered as failed if he broke the regulations and roles of examination. In the practical courses failing in either part is marked as failing in the course and student has to appear in the failing part and the marks will be given as the minimum mark. Using mobile phones is strictly prohibited in examination time and the student will be considered as failed if he did so.

4	<p>(Assignments and Projects):</p> <ul style="list-style-type: none"> The students have to submit the assignment or project on time. In late cases student has to provide an acceptable and written excuse to the lecturer before the lecturer has to submit the final marks to the department otherwise the student will not be given the marks of the project.
5	<p>(Cheating):</p> <ul style="list-style-type: none"> Cheating in examinations or tests is prohibited which may be in the form of copying from another student or bringing unauthorized materials into the exam room (e.g., crib notes, pagers or cell phones) etc. Midterm Exam cheating results in giving the student a mark of zero Cheating in the final exam will result in failing the student in that subject if he/she did not get benefits in that subject, if he/she gets benefits he/she will be considered as failed in two courses. If the cheating occur in the last day of exam the student will be considered as failed in that course and the previous one. If the students repeats cheating in a single examination period he will be discontinued for a full academic year or permanently if he repeated cheating more than twice.
6	<p>(Plagiarism):</p> <p>“To plagiarize is to take ideas or words of another person and pass them off as one’s own”.</p> <ul style="list-style-type: none"> Plagiarism will results in losing the marks of the assignments. If the students personates other at examination time both will be suspended for a full academic year
7	<p>(Other policies):</p> <ul style="list-style-type: none"> Using mobile or another electronic device capable of storing or transfer data in class during the lecture or the exam is forbidden. Abnormal behavior is not acceptable and the student will face a punitive proceedings. Eating or drinking is strictly prohibited.

Course Specification of Physiology

University: Al-Nasser University

Faculty: Medical Sciences

Department: Pharmacy

Program title: Pharmacy Program

I. General Information:					
1	Course Title:	Physiology			
2	Credit hours:	C.H			
		Th.	Pr.	Th.	Pr.
		3	1		
3	Study level/year at which this course is offered:	Second semester/ first year			
4	Pre –requisite :	Human Anatomy			
5	Co –requisite :	NA			
6	Program (s) in which the course is offered:	None			
7	Language of teaching the course:	English/ Arabic			
8	Prepared By:	Dr. Sadeq Abdulmogny			
9	Approved By:				

II. Course Description:
This introductory physiology course introduces basics concepts in physiology of human body. The course familiarizes students with basic definitions and principles related to physiology. This course helps students to understand body fluid and cellular physiology including the functions of cell components. The course gives an overview on the physiology of autonomic nervous system, structure of nerve, and compositions of blood.

III. ILOs: At the end of this course students must be able to:
<ol style="list-style-type: none"> 1. Recognize the basic concepts of the physiology 2. List the functions of the different organelles in the human cell, and describe the transport system across the cell membranes. 3. Describe the body fluids, compartments, composition and function of blood. 4. Define basal metabolism, metabolic rate and factors affecting it, and homeostasis 5. Distinguish between physiological and pathological performance of body cells.

6. Integrate physiology with other sciences.
7. Reform hematological analysis related to units.
8. Demonstrate the general body composition and function.
9. Choose and classify data obtained from physiological experiments.
10. Present clearly and effectively scientific topic in a tutorial, a staff meeting or the yearly scientific day
11. Communicate effectively with students by discussing results obtained from experimental physiological lab.

IV. Course Contents				
1. Course topics and sub-topics (theoretical and practical) with contact hours and alignment to CILOs				
Topics/Units of Course Contents				
First: Theoretical Aspects				
No.	Course Topics/Units	Sub-topics	No. of Weeks	Contact Hours
1	1-Physiology of the cell. 2-Transport across the cell membrane.	Cell compositions Cell membrane Cytoplasmic organelles Nucleus Movements of molecules across membranes Mechanism of particles and water diffusion across cell membrane	2	6
2	1-Body fluids, composition, distribution, general functions. 2-Osmosis, tonicity and water balance	Body fluid importance Body fluid compartments Intracellular fluid (ICF) Extracellular fluid (ECF)	2	6

3	1-Composition and functions of the blood. 2- RBCs, Formation and general functions.	Blood Composition of blood: Plasma Blood elements Red blood corpuscles Most common types of normal and abnormal hemoglobin Anemia: Types of anemia RBCs functions	2	6
4	Midterm	—————	1	2
5	1- WBCs: structures, classifications and functions 2- Hemostasis and its disorders	White blood cells Types of leucocytes White blood cells functions Platelets Hemostasis and WBCs disorders	2	6
6	1- Nerve fibers, structures, classifications, functions and properties of nerves. 2- Resting membrane potentials, action potentials and factors affecting them. 3- Conduction of nerve impulse, neuromuscular transmission.	The neuron (Nerve cell) neuron classification, structure and function Resting and action potential Myelin sheath Neuroglia or glial cells General functions of neuroglia Types of neuroglia cells	3	9
7	1-Autonomic nervous system, origin, organization, distribution. 1-Autonomic ganglia, chemical transmitters and functions of ANS.	Autonomic (involuntary or visceral) nervous system(ANS) Types of autonomic nervous system	2	6
8	Final exam		1	2

Total number of weeks and hours	16	42
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V. Teaching Strategies			
The methodologies and teaching and learning strategies that can be used:			
1 - Lectures			
2 –Discussions (Seminars)			
2. Practical/Tutorial/Clinical Aspects			
Write up practical/tutorial/clinical topics			
No.	Practical/Tutorial/Clinical topics	No. of Weeks	Contact Hours
1	Separation of the blood	1	2
2	Measurement of the hemoglobin.	1	2
3	Erythrocyte sedimentation rate (ESR)	1	2
4	The hematocrit (H)	1	2
5	Bleeding time and Clotting time	1	2
6	Blood groups	1	2
7	The white blood cells	1	2
Total number of weeks and hours		7	14

VI. Assignments and projects:			
no	Assignment	Week Due	Mark
1	Assignment	9	5

VII. Learning Assessment:				
No.	Assessment Tasks	Week due	Mark	Proportion of Final Assessment
1	Assignments	9	5	5%
2	Quiz Homework	4	5	5%
3	Midterm Exam	7	10	10%
4	Practical Report	ALL	10	10%
5	Final Exam Practical	14	20	20%
6	Final Exam Theory	16	50	50%
Total			100	100%

VIII. Learning Resources :	
(Author, (Year), Book Title, Edition, Publisher, Country of publishing)	
Textbooks-not more than 2	
1- Text book of medical physiology, Guyton and Hall, 12 th Ed 2010, Mississippi Medical Center, Jackson, Mississippi, USA 2- Essentials of Human Physiology for Pharmacy, Laurie Kelly first Ed. 2005, CRC Press, Pharmacy Education series	
Essential References-not less than 4	
1- Textbook: Human Physiology, 13 th Ed. Stuart Ira Fox 2- Anatomy and Physiology, Fifth Ed. Thibodeahandpatton 1999. 3- A-Z of Haematology first Ed. Barbara J. Bain and Rajeev Gupta, Blackwell Publishing Ltd. London 2003. 4- Textbook of Anatomy and Physiology. William Arnould-Taylor and Nelson Thornes, 1998) 5- Human Anatomy and Physiology 13 th Ed. David Shier 2012	
Electronic Materials and Web Sites	
1. www.csun.edu/science/biology/anatomy/anatomy.html 2. www.cliffsnotes.com 3. www.innerbody.com 4. www.anatomyandphysiology.com/ 5. www.mhhe.com/biosci2/anatomyrevealed 6. www.le.ac.uk/pa/teach/va/anatomy	

IX. Course Policies: (including plagiarism, academic honesty, attendance etc)	
The University Regulations on academic misconduct will be strictly enforced. Please refer to Al-Nasser University student's regulations handbook	
1	<p>Class Attendance:</p> <ul style="list-style-type: none"> Absence from lectures and/or practical shall not exceed 25 %. Students who exceed the 25% limit without a medical or emergency excuse acceptable to and approved by the Dean of the college shall not be allowed to take the final exam and shall receive a mark of zero for the course.
2	<p>(Tardy):</p> <p>Students will be allowed to in the class if he/she is late not more than 15 minutes with an acceptable excuse. If the student is late in attending the class for more than three times without an excuse he/she will be warned and will be asked to write undertaken for not repeating that, otherwise his guardian will be notified and the student will miss the classes and will be considered as failed.</p>
3	<p>(Exam Attendance/Punctuality):</p> <ul style="list-style-type: none"> Student will not be allowed to appear in the final exam if he/she is late 30 minutes from the begging of the exam. Students will not be allowed to leave the exam room until unless half of the examination time is passed. If a student misses the final exam, he/she has to provide an accepted excuse he/she will be eligible to take the exam as first attempt. If the student misses the final exam he will be considered as failed and if the repeated exam will be calculated as the minimum of 50%. The student will be considered as failed if he broke the regulations and roles of examination. In the practical courses failing in either part is marked as failing in the course and student has to appear in the failing part and the marks will be given as the minimum mark. Using mobile phones is strictly prohibited in examination time and the student will be considered as failed if he did so.
4	<p>(Assignments and Projects):</p> <ul style="list-style-type: none"> The students have to submit the assignment or project on time. In late cases student has to provide an acceptable and written excuse to the lecturer before the lecturer has to submit the final marks to the department otherwise the student will not be given the marks of the project.
5	<p>(Cheating):</p> <ul style="list-style-type: none"> Cheating in examinations or tests is prohibited which may be in the form of copying from another student or bringing unauthorized materials into the exam room (e.g., crib notes, pagers or cell phones) etc. Midterm Exam cheating results in giving the student a mark of zero Cheating in the final exam will result in failing the student in that subject if he/she did not get benefits in that subject, if he/she gets benefits he/she will be considered as failed in two courses. If the cheating occur in the last day of exam the student will be considered as failed in that course and the previous one.

	<ul style="list-style-type: none">If the students repeats cheating in a single examination period he will be discontinued for a full academic year or permanently if he repeated cheating more than twice.
6	<p>(Plagiarism):</p> <p>“To plagiarize is to take ideas or words of another person and pass them off as one’s own”.</p> <ul style="list-style-type: none">Plagiarism will results in losing the marks of the assignments.If the students personates other at examination time both will be suspended for a full academic year
7	<p>(Other policies):</p> <ul style="list-style-type: none">Using mobile or another electronic device capable of storing or transfer data in class during the lecture or the exam is forbidden.Abnormal behavior is not acceptable and the student will face a punitive proceedings.Eating or drinking is strictly prohibited.



Course Specification of Biochemistry I

University: Al-Nasser University

Faculty: Medical Science

Department: Pharmacy

Program title: Pharmacy Program

I. General Information:					
1	Course Title:	Biochemistry I			
2	Credit hours:	C.H			
		Th.	Pr.	Tut.	Tr.
		3	1		
3	Study level/year at which this course is offered:	First semester/second year			
4	Pre –requisite :	General Biology			
5	Co –requisite :				
6	Program (s) in which the course is offered:	Medical Laboratory			
7	Language of teaching the course:	Arabic/English			
8	Prepared By:	Dr Anwar Masoud			
9	Approved By:				

II. Course Description:
To study the molecules which support life, this course has been designed. The course will focus on studying the biomolecules and macromolecules in living systems with a practical sessions offer a vital hands-on experience, learning key techniques and how to apply them.

III. ILOs:
<p>Upon completion of this course, the students should be able to</p> <ol style="list-style-type: none"> 1. Recognize the biomolecules found in living systems 2. Describe the structure and functions of prokaryotic and eukaryotic cell. 3. Explain the structure and properties of biomolecules including carbohydrates, lipids, proteins, vitamins, nucleic acids and enzymes.

4. Analyze biochemical data with a critical understanding of the appropriate contexts for their use
5. Interpret the relationship between chemical structure and biological function
6. Perform different biochemical analyses of biomolecules.
7. Carry out experimental work using different biochemical techniques.
8. Use the appropriate instrumentations to perform the biomolecules qualitative and quantitative analyses.
9. Demonstrate life-long learning, critical thinking and value the time-management
10. Articulate biochemical information through oral and written communication.
11. Work effectively both individually and in a team.

IV. Course Content:				
1 – Course Topics/Items:				
a – Theoretical Aspect:				
Order	Topic/ unit	Sub topic	Number of weeks	Contact hours
1	Introduction to Biochemistry	1. Definition and importance of biochemistry 2. Cell types and structure	1	3
2	Carbohydrate biochemistry	1. Definition, classification and properties 2. Isomerism 3. Monosaccharides 4. Oligosaccharides 5. Polysaccharides	3	9
3	Protein biochemistry and Midterm exam (1)	1. Definition, importance, classification and properties 2. Amino acids 3. Peptides 4. Proteins (simple, conjugated, derived) 5. Protein structure and denaturation	3	9
4	Lipid biochemistry	1. Definition, importance, classification and properties 2. Fatty acids 3. Waxes 4. Compound lipids (phospholipids, glycolipids,	3	9

		5. Derived lipids (cholesterol, steroids and bile acids)		
5	nucleic acid biochemistry	1. Definition, importance, classification and properties 2. Purines and pyrimidines 3. Nucleotides and nucleosides 4. DNA structure, properties and types 5. RNA structure, properties and types	2	6
6	vitamins biochemistry	1. Definition, importance, classification and properties 2. Fat soluble vitamins (sources, roles, deficiencies and RDA) 3. Water soluble vitamins (sources, roles, deficiencies and RDA)	1	3
7	Enzymes	1. Definition, importance, classification and properties 2. Enzyme inhibition	1	3
8	Final exam		1	2
Number of Weeks/and Units Per Semester			15	38

b - Practical Aspect:			
Order	Practical Experiment	Number of weeks	Contact hours
1	Introduction to lab safety and Qualitative analyses of carbohydrate	3	9
2	Qualitative analyses of lipids	3	9
3	Qualitative analyses of proteins	3	9
4	Qualitative analyses of nucleic acids	1	3
5	Qualitative analyses of vitamins	1	3
6	Final exam	1	3
Number of Weeks/and Units Per First Second semester			36



VI. Assignments and projects:			
No	Assignment	Week Due	Mark
1	Assignment on modern biochemistry topic	10	5



V. Teaching Strategies:				
Lectures using data show, video animation, Cooperative learning and seminars. Leading assignment group, cooperative learning, group discussion and seminars. Laboratory work, directed reading and independent study. Brain storming and problem based learning.				
VII. Assessment Tasks:				
No	Assessment Method	Week Due	Mark	Proportion of Final Assessment
1	Assignment (single\group)	10	5	5%
2	Quizzes	3, 5, 9, 11	5	5%
3	Written Test	7	10	10%
4	Practical reports	All	10	10%
5	Final Exam (practical)	12	20	20%
6	Final Exam (theoretical)	14	50	50%
	Total		100	100%

VIII. Learning Resources:	
1-Required Textbook(s) (maximum two).	
	<ol style="list-style-type: none"> 1. MALLIKARJUNA RAO, (2008). Medical Biochemistry. Second edition, New Age International Limited Publisher, New Delhi, India. 2. John Baynes and Marek Dominiczak, 2014. Medical Biochemistry With STUDENT CONSULT Online Access. Fourth edition, Elsevier limited, China.
2-Recommended Books and Reference Materials.	
	<ol style="list-style-type: none"> 1. Chatterjea MN and Shinde R, (2007). Textbook of Medical Biochemistry, 7th edition, JAYPEE BROTHERS, New Delhi, India. 2. Champe PC, Harvey RA, Ferrier DR (2008). Lippincott's Reviews of Biochemistry, Fourth edition, Lippincott William and Wilkins, London, UK.
3-Electronic Materials and Web Sites <i>etc.</i>	
	<ol style="list-style-type: none"> 1- http://bcs.whfreeman.com/biochem5/default.asp 2- http://www.biochemistry.org/ 3- http://www.wiley.com/college/boyer/0470003790/animations/animations.htm 4- http://www.wiley.com/college/fob/anim/

IX. Course Policies: (including plagiarism, academic honesty, attendance etc)	
The University Regulations on academic misconduct will be strictly enforced. Please refer to Al-Nasser University student's regulations handbook	
1	<p>Class Attendance:</p> <ul style="list-style-type: none"> • Absence from lectures and/or practical shall not exceed 25 %. Students who exceed the 25% limit without a medical or emergency excuse acceptable to and approved by the Dean of the college shall not be allowed to take the final exam and shall receive a mark of zero for the course.
2	<p>(Tardy):</p> <p>Students will be allowed to in the class if he/she is late not more than 15 minutes with an acceptable excuse. If the student is late in attending the class for more than three times without an excuse he/she will be warned and will be asked to write undertaken for not repeating that, otherwise his guardian will be notified and the student will miss the classes and will be considered as failed.</p>
3	<p>(Exam Attendance/Punctuality):</p> <ul style="list-style-type: none"> • Student will not be allowed to appear in the final exam if he/she is late 30 minutes from the begging of the exam. • Students will not be allowed to leave the exam room until unless half of the examination time is passed. • If a student misses the final exam, he/she has to provide an accepted excuse he/she will be eligible to take the exam as first attempt. • If the student misses the final exam he will be considered as failed and if the repeated exam will be calculated as the minimum of 50%. • The student will be considered as failed if he broke the regulations and roles of examination.

	<ul style="list-style-type: none"> In the practical courses failing in either part is marked as failing in the course and student has to appear in the failing part and the marks will be given as the minimum mark. Using mobile phones is strictly prohibited in examination time and the student will be considered as failed if he did so.
4	<p>(Assignments and Projects):</p> <ul style="list-style-type: none"> The students have to submit the assignment or project on time. In late cases student has to provide an acceptable and written excuse to the lecturer before the lecturer has to submit the final marks to the department otherwise the student will not be given the marks of the project.
5	<p>(Cheating):</p> <ul style="list-style-type: none"> Cheating in examinations or tests is prohibited which may be in the form of copying from another student or bringing unauthorized materials into the exam room (e.g., crib notes, pagers or cell phones) etc. Midterm Exam cheating results in giving the student a mark of zero Cheating in the final exam will result in failing the student in that subject if he/she did not get benefits in that subject, if he/she gets benefits he/she will be considered as failed in two courses. If the cheating occur in the last day of exam the student will be considered as failed in that course and the previous one. If the students repeats cheating in a single examination period he will be discontinued for a full academic year or permanently if he repeated cheating more than twice.
6	<p>(Plagiarism):</p> <p>“To plagiarize is to take ideas or words of another person and pass them off as one’s own”.</p> <ul style="list-style-type: none"> Plagiarism will results in losing the marks of the assignments. If the students personates other at examination time both will be suspended for a full academic year
7	<p>(Other policies):</p> <ul style="list-style-type: none"> Using mobile or another electronic device capable of storing or transfer data in class during the lecture or the exam is forbidden. Abnormal behavior is not acceptable and the student will face a punitive proceedings. Eating or drinking is strictly prohibited.

Course Specification of Biochemistry II

University: Al-Nasser University

Faculty: Medical Science

Department: Pharmacy

Program title: Pharmacy Program

I. General Information:						
1	Course Title:	Biochemistry II				
2	Credit hours:	C.H				Total
		Th.	Pr.	Tut.	Tr.	
		3	1			
3	Study level/year at which this course is offered:	Second Semester/second year				
4	Pre –requisite :	Biochemistry I				
5	Co –requisite :					
6	Program (s) in which the course is offered:	Medical Laboratory				
7	Language of teaching the course:	Arabic/English				
8	Prepared By:	Dr Anwar Masoud				
9	Approved By:					

II. Course Description:
The importance of studying chemical processes which support life guided designation of this course to focus on studying the chemical reactions involved in digestion and absorption of biomolecules; carbohydrate, proteins, lipids and nucleic acids with more detail to their metabolism, diseases and regulation theoretically and practically.

III. ILOs:	
Upon completion of this course, the students should be able to	
<ol style="list-style-type: none"> 1. Illustrate basis of catabolism and anabolism. 2. Recognize how cells get energy from the oxidation of biomolecules. 3. Identify the digestion, absorption and metabolism of food stuff. 4. Think creatively and critically in solving problems related to the nature of energy in the living cells. 5. Incorporate knowledge and skills learned to solve problems associated with metabolic diseases 6. Analyze different values of biomolecules metabolites. 7. Plan and conduct experiments related to biomolecules metabolism 8. Estimate serum levels of glucose, metabolic enzymes, protein, cholesterol and triglyceride by spectroscopic methods. 9. Use the appropriate instrumentations to prepare serum or plasma and to measure the levels of different metabolic parameters 10. Appreciate the importance of using of information technology e.g. web and internet to learn more about modern topics in metabolism. 11. Identify personal strengths and weaknesses in data presentation and discussion 12. Work effectively both individually and in a team. 	

IV. Course Content:				
1 – Course Topics/Items:				
a – Theoretical Aspect:				
Order	Topic/ unit	Sub topic	Number of weeks	Contact hours
1	Introduction to Bioenergetics	<ol style="list-style-type: none"> 3. Free energy concept 4. Biologic oxidation 5. Introduction to metabolism 	1	3
2	Carbohydrate metabolism	<ol style="list-style-type: none"> 6. Digestion and absorption 7. Glycolysis and citric acid cycle 8. Hexose monophosphate shunt 9. Gluconeogenesis 10. Glycogen metabolism 11. Hexoses metabolism 	4	12
3	Protein metabolism and midterm exam	<ol style="list-style-type: none"> 1. Digestion and absorption 2. Catabolism of amino acids 3. Urea formation 4. Metabolic disturbances of amino acids 5. Protein biosynthesis 	3	9
4	Lipid metabolism	<ol style="list-style-type: none"> 1. Digestion and absorption 	4	12

		2.Fatty acid oxidation and biosynthesis 3.Lipogenesis 4.Phospholipids metabolism 5.Cholesterol metabolism 6.Ketone bodies metabolism 7.Lipoprotein metabolism		
5	Nucleic acids metabolism	1. Digestion and absorption 2. Formation and metabolism of Purines and metabolic disturbances 3. Formation and metabolism of Pyrimidins and metabolic disturbances	2	3
6	Final Exam		1	2
Number of Weeks/and Units Per Semester			15	38

b - Practical Aspect:			
Order	Practical Experiment	Number of weeks	Contact hours
1	Estimation of glucose (random and fasting)	1	3
2	Estimation of amylase and Estimation of lactate dehydrogenase	2	3
3	Lipid profile	2	3
4	Estimation of total protein and Estimation of albumin	2	3
5	Estimation of creatinine	1	3
6	Estimation of uric acid and urea	1	3
7	Estimation of iron	1	3
8	Estimation of ALT and AST	1	3
9	Final Exam	1	3
Number of Weeks/and Units Per First Second semester			36

V. Teaching Strategies:
Lectures using data show, video animation, Cooperative learning and seminars. Leading assignment group, cooperative learning, group discussion and seminars. Laboratory work, directed reading and independent study. Brain storming and problem based learning.

VI. Assignments and projects:			
No	Assignment	Week Due	Mark
1	Assignment on Drug used for metabolic diseases	10	5

VII. Assessment Tasks:				
No	Assessment Method	Week Due	Mark	Proportion of Final Assessment
1	Assignment	10	5	5%
2	Quizzes and homework	3, 5, 9, 11	5	5%
3	Written Test	7	10	10%
4	Practical reports	All	10	10%
5	Final Exam (practical)	12	20	20%
6	Final Exam (theoretical)	14	50	50%
	Total		100	100%

VIII. Learning Resources:	
1-Required Textbook(s) (maximum two).	
	<ol style="list-style-type: none"> 1. MALLIKARJUNA RAO, (2008). Medical Biochemistry. Second edition, New Age International Limited Publisher, New Delhi, India. 2. John Baynes and Marek Dominiczak, 2014. Medical Biochemistry With STUDENT CONSULT Online Access. Fourth edition, Elsevier limited, China.
2-Recommended Books and Reference Materials.	
	<ol style="list-style-type: none"> 1. Chatterjea MN and Shinde R, (2007). Textbook of Medical Biochemistry, 7th edition, JAYPEE BROTHERS, New Delhi, India. 2. Champe PC, Harvey RA, Ferrier DR (2008). Lippincott's Reviews of Biochemistry, Fourth edition, Lippincott William and Wilkins, London, UK.
3-Electronic Materials and Web Sites <i>etc.</i>	
	<ol style="list-style-type: none"> 1- http://bcs.whfreeman.com/biochem5/default.asp 2- http://www.biochemistry.org/ 3- http://www.wiley.com/college/boyer/0470003790/animations/animations.htm 4- http://www.wiley.com/college/fob/anim/

IX. Course Policies: (including plagiarism, academic honesty, attendance etc)	
The University Regulations on academic misconduct will be strictly enforced. Please refer to Al-Nasser University student's regulations handbook	
1	<p>Class Attendance:</p> <ul style="list-style-type: none"> Absence from lectures and/or practical shall not exceed 25 %. Students who exceed the 25% limit without a medical or emergency excuse acceptable to and approved by the Dean of the college shall not be allowed to take the final exam and shall receive a mark of zero for the course.
2	<p>(Tardy):</p> <p>Students will be allowed to in the class if he/she is late not more than 15 minutes with an acceptable excuse. If the student is late in attending the class for more than three times without an excuse he/she will be warned and will be asked to write undertaken for not repeating that, otherwise his guardian will be notified and the student will miss the classes and will be considered as failed.</p>
3	<p>(Exam Attendance/Punctuality):</p> <ul style="list-style-type: none"> Student will not be allowed to appear in the final exam if he/she is late 30 minutes from the begging of the exam. Students will not be allowed to leave the exam room until unless half of the examination time is passed. If a student misses the final exam, he/she has to provide an accepted excuse he/she will be eligible to take the exam as first attempt. If the student misses the final exam he will be considered as failed and if the repeated exam will be calculated as the minimum of 50%. The student will be considered as failed if he broke the regulations and roles of examination. In the practical courses failing in either part is marked as failing in the course and student has to appear in the failing part and the marks will be given as the minimum mark. Using mobile phones is strictly prohibited in examination time and the student will be considered as failed if he did so.
4	<p>(Assignments and Projects):</p> <ul style="list-style-type: none"> The students have to submit the assignment or project on time. In late cases student has to provide an acceptable and written excuse to the lecturer before the lecturer has to submit the final marks to the department otherwise the student will not be given the marks of the project.

5	<p>(Cheating):</p> <ul style="list-style-type: none">• Cheating in examinations or tests is prohibited which may be in the form of copying from another student or bringing unauthorized materials into the exam room (e.g., crib notes, pagers or cell phones) etc.• Midterm Exam cheating results in giving the student a mark of zero• Cheating in the final exam will result in failing the student in that subject if he/she did not get benefits in that subject, if he/she gets benefits he/she will be considered as failed in two courses. If the cheating occur in the last day of exam the student will be considered as failed in that course and the previous one.• If the students repeats cheating in a single examination period he will be discontinued for a full academic year or permanently if he repeated cheating more than twice.
6	<p>(Plagiarism):</p> <p>“To plagiarize is to take ideas or words of another person and pass them off as one’s own”.</p> <ul style="list-style-type: none">• Plagiarism will results in losing the marks of the assignments.• If the students personates other at examination time both will be suspended for a full academic year
7	<p>(Other policies):</p> <ul style="list-style-type: none">• Using mobile or another electronic device capable of storing or transfer data in class during the lecture or the exam is forbidden.• Abnormal behavior is not acceptable and the student will face a punitive proceedings.• Eating or drinking is strictly prohibited.



Specification of Program Requirements Courses



Course Specification of Pharmaceutics I

University: Al-Nasser University

Faculty: Medical Sciences

Department: Pharmacy

Program title: Pharmacy Program

I. General Information:					
1	Course Title:	Pharmaceutics I			
2	Credit hours: 3 hrs.	C.H			
		Th.	Pr.	Tut.	Tr.
		3	1		
3	Study level/year at which this course is offered:	first semester/first year			
4	Pre –requisite :	Physical Pharmacy			
5	Co –requisite :				
6	Program (s) in which the course is offered:				
7	Language of teaching the course:	English/Arabic			
8	Prepared By:	Dr. Mohammed Addoais & Dr. Abdulkarim Alzomor			
9	Approved By:				

II. Course Description:
This course is designed to provide students with a detailed knowledge and understanding of pre-formulation concepts, design and formulation of a different pharmaceutical liquid dosage forms. Students will be given thorough knowledge on liquid dosage forms like solution, suspension and emulsion.

III. ILOs: at end of the course students will be to:
<ol style="list-style-type: none"> 1. Mention the types of solution. 2. List the factors that affect pre-formulation of dosage forms. 3. Illustrate the common solvents used for solution preparation 4. Compare between flocculated and deflocculated suspension 5. Differentiate between stable and unstable emulsion 6. Design stable emulsion and suspension

7. Formulate good and stable liquid dosage forms.
8. Prepare good liquid dosage forms
9. Perform quality control for liquid dosage form
10. Choose the suitable emulsifying agent.
11. Solve instability problems occur during formulation
12. Work effectively in a team.

IV. Course Content:

1 – Course Topics/Items:

a – Theoretical Aspect:

No	Topic/ unit	Sub topic	Number of weeks	Contact hours
1	Pre-formulation studies	<ul style="list-style-type: none"> Study of physical properties of drug and its effect on formulation like <ul style="list-style-type: none"> Physical form Particle size Shape Density and angle of repose Wetting Dielectric constant Solubility Dissolution Organoleptic properties Excipients compatibility Selection of solvent Common solvents used in pharmacy. 	3	9
2	Solution	<ul style="list-style-type: none"> Introduction Classification of pharmaceutical solution Aqueous solution Non aqueous solution Formulation (vehicles used and additives) Isotonicity Stability of solution Manufacture of solution 	5	15
		Midterm exam	1	2
3	Suspension	<ul style="list-style-type: none"> Advantages and disadvantages Pharmaceutical application of suspension Types of suspensions Formulation of suspension 	3	9

		<ul style="list-style-type: none"> • Difference between Flocculation, deflocculation. • Factors affecting sedimentation rate of suspension. • Formulation of various types of suspensions. <ul style="list-style-type: none"> ○ flocculating agents ○ Viscosity modifiers ○ Formulation additives • Stability testing of suspension 		
4	Emulsion	<ul style="list-style-type: none"> • Emulsion types • Emulsion uses • Identification of emulsion type • Emulsion formulation • Choice of emulsion type, and oil phase • Emulsion consistency • Choice of emulsifying agent • Preparation of emulsion • Classification of emulsifying agents • Stability of emulsion • Stability testing of emulsion 	2	6
5		Final exam	1	2
Number of Weeks/and Units Per Semester			15	43

b – Practical Aspect:

Order	Practical Experiment	Number of weeks	Contact hours
1	Weights and measures, Containers, closures and Labeling	1	2
2	Preparation Lugol's solution/ Potassium permanganate 0.2%	1	2
3	Preparation Paracetamol elixir	1	2
4	Preparation sodium bicarbonate Ear drops/ chloramphenicol eye drops	1	2
5	Midterm exam	1	2
6	Preparation Simple syrup/ cough syrup	1	2
7	Starch mucilage.	1	2
8	Preparation of Calamine lotion	1	2
9	Preparation of chloramphenicol suspension	1	2
10	Preparation of mineral oil emulsion/ Liquid paraffin emulsion.	1	2
11	Preparation Castor oil emulsion/ Cod liver oil emulsion.	1	2

12	Final exam	1	2
Number of Weeks/and Units Per Semester			24

V. Teaching Strategies:
<ul style="list-style-type: none"> Lectures using data show Video animation and seminars Laboratory work Directed reading Independent study Group Discussion

VI. Assignments and projects:			
no	Assignment	Week Due	Mark
1	Assignment	9	5

VII. Assessment Tasks:				
No	Assessment Method	Week Due	Mark	Proportion of Final Assessment
1	Assignment	9	5	5%
2	Practical Reports	7	10	10%
3	Quizzes	2, 5, 12	5	5%
4	Written Test (midterm exam)	8	10	10%
5	Final Exam (practical)	14	20	20%
6	Final Exam (theoretical)	16	50	50%
	Total		100	100%

VIII. Learning Resources:
1-Required Textbook(s) (maximum two).
<ol style="list-style-type: none"> Michael E. Aulton, FAAPS, Kevin M.G.(2007).Aulton's Pharmaceutics: The Design and Manufacture of Medicines, Third ed. Elsevier.London, UK. Remington (2005). The Science and Practice of Pharmacy, 2first Edition, Williams and Wilkins. Maryland, USA.
2-Recommended Books and Reference Materials.
<ol style="list-style-type: none"> Ansel and Loyd Allen (2013). Ansel'sPharmaceutical Dosage Forms and Drug Delivery Systems. 10thedition., Williams and Wilkins. Maryland, USA.
3-Electronic Materials and Web Sites <i>etc.</i>

1- www.go.jblearning.com/basicphysicalpharmacy

IX. Course Policies: (including plagiarism, academic honesty, attendance etc)	
The University Regulations on academic misconduct will be strictly enforced. Please refer to Al-Nasser University student's regulations handbook	
1	<p>Class Attendance:</p> <ul style="list-style-type: none"> Absence from lectures and/or practical shall not exceed 25 %. Students who exceed the 25% limit without a medical or emergency excuse acceptable to and approved by the Dean of the college shall not be allowed to take the final exam and shall receive a mark of zero for the course.
2	<p>(Tardy):</p> <p>Students will be allowed to in the class if he/she is late not more than 15 minutes with an acceptable excuse. If the student is late in attending the class for more than three times without an excuse he/she will be warned and will be asked to write undertaken for not repeating that, otherwise his guardian will be notified and the student will miss the classes and will be considered as failed.</p>
3	<p>(Exam Attendance/Punctuality):</p> <ul style="list-style-type: none"> Student will not be allowed to appear in the final exam if he/she is late 30 minutes from the begging of the exam. Students will not be allowed to leave the exam room until unless half of the examination time is passed. If a student misses the final exam, he/she has to provide an accepted excuse he/she will be eligible to take the exam as first attempt. If the student misses the final exam he will be considered as failed and if the repeated exam will be calculated as the minimum of 50%. The student will be considered as failed if he broke the regulations and roles of examination. In the practical courses failing in either part is marked as failing in the course and student has to appear in the failing part and the marks will be given as the minimum mark. Using mobile phones is strictly prohibited in examination time and the student will be considered as failed if he did so.

4	<p>(Assignments and Projects):</p> <ul style="list-style-type: none"> The students have to submit the assignment or project on time. In late cases student has to provide an acceptable and written excuse to the lecturer before the lecturer has to submit the final marks to the department otherwise the student will not be given the marks of the project.
5	<p>(Cheating):</p> <ul style="list-style-type: none"> Cheating in examinations or tests is prohibited which may be in the form of copying from another student or bringing unauthorized materials into the exam room (e.g., crib notes, pagers or cell phones) etc. Midterm Exam cheating results in giving the student a mark of zero Cheating in the final exam will result in failing the student in that subject if he/she did not get benefits in that subject, if he/she gets benefits he/she will be considered as failed in two courses. If the cheating occur in the last day of exam the student will be considered as failed in that course and the previous one. If the students repeats cheating in a single examination period he will be discontinued for a full academic year or permanently if he repeated cheating more than twice.
6	<p>(Plagiarism):</p> <p>“To plagiarize is to take ideas or words of another person and pass them off as one’s own”.</p> <ul style="list-style-type: none"> Plagiarism will results in losing the marks of the assignments. If the students personates other at examination time both will be suspended for a full academic year
7	<p>(Other policies):</p> <ul style="list-style-type: none"> Using mobile or another electronic device capable of storing or transfer data in class during the lecture or the exam is forbidden. Abnormal behavior is not acceptable and the student will face a punitive proceedings. Eating or drinking is strictly prohibited.

Course Specification of Pharmacognosy I

University: Al-Nasser University

Faculty: Medical Science

Department: Pharmacy

Program title: Pharmacy Program

I. General Information:				
1	Course Title:	Pharmacognosy I		
2	Credit hours:	C.H		
		Th.	Pr.	Tut.
		3	1	
3	Study level/year at which this course is offered:	first semester/first year		
4	Pre –requisite :	Botany and Pharmaceutical Organic Chemistry		
5	Co –requisite :	None		
6	Program (s) in which the course is offered:	None		
7	Language of teaching the course:	English/Arabic		

8	Prepared By:	Wedad Mansour and Bushra Moharam
9	Approved By:	

II. Course Description:		
The course is concerns about medicinal plants classification, geographical distribution, cultivation, collection and preparation, drying, processing and storage, standardization, adulteration of crude drugs. Detection of the major active constituents and use of medicinal plants. Also includes the macro- and micro-morphological characteristics of different plant organs (morphological and histological examination, and chemical identification, leaves, barks, subterranean organs and herbs).		
III. ILOs:		
At the end of the course student must be able to:		
<ol style="list-style-type: none"> 1. Recognize the principles of pharmaceutical sciences in the field of pharmacognosy. 2. Illustrate the botanical aspects, nomenclature, and classification of crude drugs. 3. Describe the different ways of natural products cultivation, collection, drying, storage and different adulteration ways of phytomedicinals. 4. Identify morphological and histological features of entire and the powdered plants. 5. List different active constituents and medicinal uses of leaves, barks, subterranean organs and herbs. 6. Compare between the different methods for natural drug products preparation; i.e. cultivation, collection, drying and storage. 7. Categorize the main plant organs under consideration for the production of high quality herbal product. 8. Differentiate between drugs in entire and powdered form. 9. Investigate active constituents of different drugs. 10. Handle and dispose chemicals and broken glasses safely and effectively. 11. Examine drugs of plant origin in entire and powdered form. 12. Perform experiments to identify unknown phytomedicinal cell contents either in an entire organ or in powdered form using different physical and chemical ways. 13. Complete a full scheme for identification of plant leaves, barks, subterranean organs and herbs based on morphological and microscopical examination. 14. Implement writing and presentation skills. 15. Work effectively in team and manage his/her time. 		

16. Use information technology skills including word processing and knowing how to retrieve information from a variety of sources.

IV. Course Content:				
1 – Course Topics/Items:				
a – Theoretical Aspect:				
Order	Topic/ unit	Sub topic	Number of weeks	Contact hours
1	Introduction to pharmacognosy	-Definition and importance of pharmacognosy. - Nomenclature and classification of crude drugs. - Cultivation and collection of Medicinal drugs.	1	3
2	Production of drugs:	- Drying, preservation and protection of crude drugs. - Adultration of drugs.	1	3
3	Chemistry of crude drugs	- The food storage products and the products of metabolism.	1	3
4	Leaves	- Introduction to morphological and anatomical description of the leaves - Study of Digitalis, Senna, Guava, Eucalptus leaves	1	3
		- Study of Stramonium, Belladonna, Egyptian henbane, Buchu and Boldo leaves	1	3
		- Study of Coca, Jaborandi, Uva-Ursi, Ivy, Tea and Henna leaves.	1	3
5		Mid exam	1	2
6	Barks	- Introduction to morphological and anatomical description of the barks - Study of Cinchona, Cinnamon, Cassia, Cascara barks.	1	3
7		- Study of Frangula, Quillaia, Pomegranate, Hamamelis baks and Galls	1	3



8	Subterranean organs	- Introduction to subterranean organs (roots, rhizomes, bulbs, corms, tubers) - study of Rauwolfia, Liquorice, Ipecacuanha and Senega	1	3
		- Study of Ginger, Valerian, Filix-mas, Jalap and Aconite	1	3
		- Study of Colchicum, Rhubarb, Squill, Curcuma and Podophylum.	1	3
9	Herbs	- Introduction herbs. - Study of Ergot, Indian hemp, Catharanthus, Lobelia, peppermint and thyme herbs	1	3
10		Final exam	1	2
Number of Weeks/and Units Per First semester4				40



b - Practical Aspect:			
Order	Practical Experiment	Number of weeks	Contact hours
1	Introduction, Laboratory safety measures - The use of light microscope and study types of stomata	1	2
2	Microscopical identification of starch (Potato, Maiz and Wheat)	1	2
3	Morphology - microscopical identification of Senna, Stramonium and Egyptian henbane leaves	1	2
4	Morphology - microscopical identification of Henna, Ivy and Guava leaves	1	2
5	Morphology - microscopical identification of Eucalyptus and Tea leaves	1	2
6	Morphology - microscopical identification of Cassia and Cinnamon.	1	2
7	Morphology - microscopical identification of Pomegranate and Galls	1	2
8	Morphology - microscopical identification of Liquorice and Rhubarb	1	2
9	Morphology - microscopical identification of Ginger and Curcuma	1	2
10	Morphology - microscopical examination of medicinal herbs; Peppermint and Thyme herbs Indian hemp herbs	1	2
11	Final Exam	1	2
Number of Weeks/and Units Per First semester1			22

V. Teaching Strategies:
- Lectures using board and makers, data show, video animation and seminars - Solving Problem method, Laboratory work, independent study and discussion

VI. Assignments and projects:			
no	Assignment	Week Due	Mark
1	Seminar	5	5
2	Projects	9, 11	

VII. Assessment Tasks:				
no	Assessment Method	Week Due	Mark	Proportion of Final Assessment

1	Seminar and project	5, 9, 11	5	5%
2	Practical Reports	1-10	10	10%
3	Quizzes	4, 6, 10	5	5%
4	Written Test (1)	7	10	10%
5	Final Exam (practical)	11	20	20%
6	Final Exam (theoretical)	14	50	50%
	Total		100	100%

VIII. Learning Resources:	
1-Required Textbook(s) (maximum two).	
	1- Evans W.C., Evans D. and Trease E., Saunders "Trease and Evans 'Pharmacognosy" (2009); 16th ed. Elsevier, New York 2- Singh, G.K and Bhandari, A. "Textbook of Pharmacognosy" (2000); first ed., reprint (2008).CBS publisher and Distributers, New Delhi, India.
2-Recommended Books and Reference Materials.	
	1- Sharma, V.D. and Pandey, S.K. "Pharmacognosy Practical Notebook" (2007); first ed. CBS publisher and Distributers, New Delhi, Bangalore, India. 2- Raje, V.N. "Pharmacognosy" (2010); first ed. CBS publisher and Distributers Pvt Ltd., New Delhi, Bangalore, Pune, Kochi, Chennai.
3-Electronic Materials and Web Sites <i>etc.</i>	
	1- http://pages.intnet.mu/webpam/Pharmacognosy.htm 2- http://www.phcog.org/ 3- http://www.botanical.com

IX. Course Policies: (including plagiarism, academic honesty, attendance etc)	
The University Regulations on academic misconduct will be strictly enforced. Please refer to Al-Nasser University student's regulations handbook	
1	Class Attendance: • Absence from lectures and/or practical shall not exceed 25 %. Students who exceed the 25% limit without a medical or emergency excuse acceptable to and approved by the Dean of the college shall not be allowed to take the final exam and shall receive a mark of zero for the course.
2	(Tardy): Students will be allowed to in the class if he/she is late not more than 15 minutes with an acceptable excuse. If the student is late in attending the class for more than three times without an excuse he/she will be warned and will be asked to write undertaken for not repeating that, otherwise his guardian will be notified and the student will miss the classes and will be considered as failed.

3	<p>(Exam Attendance/Punctuality):</p> <ul style="list-style-type: none"> Student will not be allowed to appear in the final exam if he/she is late 30 minutes from the beginning of the exam. Students will not be allowed to leave the exam room until unless half of the examination time is passed. If a student misses the final exam, he/she has to provide an accepted excuse he/she will be eligible to take the exam as first attempt. If the student misses the final exam he will be considered as failed and if the repeated exam will be calculated as the minimum of 50%. The student will be considered as failed if he broke the regulations and roles of examination. In the practical courses failing in either part is marked as failing in the course and student has to appear in the failing part and the marks will be given as the minimum mark. Using mobile phones is strictly prohibited in examination time and the student will be considered as failed if he did so.
4	<p>(Assignments and Projects):</p> <ul style="list-style-type: none"> The students have to submit the assignment or project on time. In late cases student has to provide an acceptable and written excuse to the lecturer before the lecturer has to submit the final marks to the department otherwise the student will not be given the marks of the project.
5	<p>(Cheating):</p> <ul style="list-style-type: none"> Cheating in examinations or tests is prohibited which may be in the form of copying from another student or bringing unauthorized materials into the exam room (e.g., crib notes, pagers or cell phones) etc. Midterm Exam cheating results in giving the student a mark of zero Cheating in the final exam will result in failing the student in that subject if he/she did not get benefits in that subject, if he/she gets benefits he/she will be considered as failed in two courses. If the cheating occur in the last day of exam the student will be considered as failed in that course and the previous one. If the students repeats cheating in a single examination period he will be discontinued for a full academic year or permanently if he repeated cheating more than twice.
6	<p>(Plagiarism):</p> <p>“To plagiarize is to take ideas or words of another person and pass them off as one’s own”.</p> <ul style="list-style-type: none"> Plagiarism will results in losing the marks of the assignments. If the students personates other at examination time both will be suspended for a full academic year



7	<p>(Other policies):</p> <ul style="list-style-type: none">• Using mobile or another electronic device capable of storing or transfer data in class during the lecture or the exam is forbidden.• Abnormal behavior is not acceptable and the student will face a punitive proceedings.• Eating or drinking is strictly prohibited.
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COURSE TITLE: GENERAL CHEMISTRY □

University: Al- Nasser University

Faculty: Medical Sciences

Department: Pharmacy

Program: Pharmacy Program

I. General Information:					
1	Course Title:	General Chemistry I			
2	Credit hours:	C.H			
		Th.	Pr.	Tut.	Tr.
		2	1		
3	Study level/year at which this course is offered:	FIRST SEMESTER/ FIRST YEAR			
4	Pre –requisite (if any):	None			
5	Co –requisite (if any):	None			
6	Program (s) in which the course is offered:				
7	Language of teaching the course:	English/Arabic			
8	Location of course teaching				

II. Course Description:

This course will enhance the student's knowledge of chemistry, it will cover Some basic definitions and Units of measurement, atomic structure electronic structure of atoms, periodic properties of the elements, chemical formulas and chemical equations, chemical bonding, Lewis structure and molecular geometry.

IV. Course Content:

Course Topics/Items:

a – Theoretical Aspect:

Order	Topic/ unit□	Sub topic□	Number of weeks□	Contact hours□
1□	Introduction and Some definitions and Units of Measurements: • Matter • Physical and chemical properties physical and chemical changes, • Intensive and extensive properties, • Energy changes. • Units, SI system and Measurements and significant figures:	• atom, element, compound, mixture. • The basic units in SI system. conversion, significant figures, rules of significant figures.	2□	4□

III. ILOs:

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

1. Recognize the basic principles of general chemistry, and use scientific units of measurement.
2. Identify the arrangement of elements in the periodic table, and classification of elements.
3. Illustrate the types of chemical reactions and the physical laws governing these reactions
4. Describe several types of chemical bonds and geometrical shapes of the molecule.
5. Distinguish between the different chemical reactions and chemical bonds.
6. Interpret the periodic properties of the elements.
7. Analyze data, and clearly express results in a laboratory report.
8. Use the periodic table to get important chemical information and trends.
9. Write the formulas of compounds and chemical equations.
10. Apply stoichiometry in chemical reactions: Mole-mass-number relationships
11. Perform a selection of basic laboratory procedures in general chemistry.
12. Work effectively both in a team, and independently on solving problems.
13. Use internet and search for information.
14. Communicate effectively with his teacher and colleagues.

2	<p>Atomic Structure: Atoms and their component Atomic and Mass Number, Isotopes, Mole, Avogadro's number and the Mole and molecular weight</p> <ul style="list-style-type: none"> • Periodic table: • Cations and anions • Writing formula from ions • Naming Chemical Compounds 	<ul style="list-style-type: none"> • Historical, modern periodic table, Groups and Periods • Ionic ,Covalent (molecules) , and oxoacid compound (Compound containing mono and polyatomic ions . <input type="checkbox"/> 	2 <input type="checkbox"/>	4 <input type="checkbox"/>
3	<p>Electronic Structure of Atoms and Periodic Table</p> <ul style="list-style-type: none"> • Electronic structure • Orbitals and Quantum Numbers: • The Energies of Orbitals • Electron Configuration • Writing Electron Configuration Electron Configuration and the Periodic Table <input type="checkbox"/> 	<ul style="list-style-type: none"> • Principal quantum number, the azimuthal quantum number, the magnetic quantum number, and the spin quantum number <input type="checkbox"/> 	2 <input type="checkbox"/>	4 <input type="checkbox"/>
4	Mid Exam <input type="checkbox"/>		1 <input type="checkbox"/>	2 <input type="checkbox"/>
5	<p>Periodic Properties of the Elements</p> <ul style="list-style-type: none"> • Explaining The Behavior of Elements Through Atomic Properties • The Halogens <input type="checkbox"/> 	<ul style="list-style-type: none"> • Atomic Size, Ionization Energy, Electron Affinity, Electronegativity, Metallic Characters • Oxidizing Agents, Acidic, Basic and Amphoteric Properties <input type="checkbox"/> 	2 <input type="checkbox"/>	4 <input type="checkbox"/>

6	Chemical Formulas and Chemical Equations <ul style="list-style-type: none">• Chemical formulas:• Percent composition Determine the Empirical formula from a percent composition <ul style="list-style-type: none">• Empirical formula and molecular formula• Balance the chemical equation• Chemical Equations Calculations based on Chemical Equations Classifying Chemical Reactions	Empirical, molecular, and structure formulas. Reduction, combination, decomposition, displacement and metathesis reactions	2	4
	Chemical Bonding, Lewis structure and Molecular Geometry <ul style="list-style-type: none">• Lewis Dot Formulas of Atoms• Formation of Ionic bonding and Covalent Bonding• Lewis Formulas for Molecules and Polyatomic Ions• The Octet Rule• Resonance• Limitations of the Octet Rule for Lewis Formulas• Polar and Nonpolar Covalent Bonds• Dipole Moments• Formula charge• Molecular Structure and Covalent Bonding Theories• Valence Bond (VB) Theory Molecular Shapes and Bonding	<ul style="list-style-type: none">• Valence Shell Electron Pair Repulsion (VSEPR) Theory• Polar Molecules: The Influence of Molecular Geometry Valence Bond (VB) Theory	3	6
	Final Exam		1	2
Number of Weeks /and Units Per Semester			15	30
b - Practical Aspect:				

Order	Practical Experiment <input type="checkbox"/>	Number of weeks <input type="checkbox"/>	Contact hours <input type="checkbox"/>
1 <input type="checkbox"/>	Identification of Anions: Carbonate and bicarbonate-sulfur salts-Halides-cyanogen salts-arsenic and phosphorous salts-and other miscellaneous salts <input type="checkbox"/>	2 <input type="checkbox"/>	6 <input type="checkbox"/>
2	Identification of Cations: Silver group - copper/arsenic group - Iron group - Zinc group - alkaline earth group - alkali group. <input type="checkbox"/>	3 <input type="checkbox"/>	9 <input type="checkbox"/>
3	Systematic analysis : of cations and anions in simple inorganic mixtures. <input type="checkbox"/>	2 <input type="checkbox"/>	6 <input type="checkbox"/>
4	Systematic analysis: of cations and anions in mixture containing difficulties, e.g. phosphate organic matter, oxidizing agent, insoluble substances and mixture of related acid radicals. <input type="checkbox"/>	3 <input type="checkbox"/>	9 <input type="checkbox"/>
5	Final Exam <input type="checkbox"/>	1 <input type="checkbox"/>	3 <input type="checkbox"/>
Number of Weeks /and Units Per Semester <input type="checkbox"/>		11 <input type="checkbox"/>	33 <input type="checkbox"/>

V. Teaching Strategies:

- Lectures using data show, video animation and seminars
- Solving Problem method, Laboratory work, directed reading, independent study and discussion☐

I.Assignments and projects:

no	Assignment	Week Due <input type="checkbox"/>	Mark <input type="checkbox"/>
1 <input type="checkbox"/>	Micro assignment	9 <input type="checkbox"/>	5 <input type="checkbox"/>

II.Assessment Tasks:

no	Assessment Method	Week Due <input type="checkbox"/>	Mark <input type="checkbox"/>	Proportion of Final Assessment <input type="checkbox"/>
1 <input type="checkbox"/>	Exercises & Home works	ALL	5	5 %
3 <input type="checkbox"/>	Practical reports	1-10	10	10 %
5 <input type="checkbox"/>	Quizzes	3,6,8,10	5	5 %
6 <input type="checkbox"/>	Written Test (1)	7	5	5 %
7 <input type="checkbox"/>	assignment	9	5	5%
8 <input type="checkbox"/>	Final Exam (theoretical)	15	50	50 %

9□	Final Exam (practical)□	10□	20□	20 %□
□	total		100	100 %

VI. Learning Resources:

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

1. Whitten, Davis, Peck, and Stanley, *General Chemistry*, Thomson: Brooks Cole; 7th edition (2004)
2. Darrell D. Ebbing and Steven D. Gammon. *General Chemistry*. 9th 2009 Houghton Mifflin Company, BOSTON NEW YORK

2- Recommended Books and Reference Materials.

1. Course Notes Handout Texts: Prepared by
2. Satyajit D. Sarker and Lutfun Nahar . *Chemistry for Pharmacy Students: General, Organic and Natural Product Chemistry*. John Wiley & Sons Ltd, The Atrium, Southern Gate, Chichester, West Sussex , 2007
3. C.V.S. Subrahmanyam, *Essentials of Physical Pharmacy*, Published by Vallabh Prakashan (2005)

3- Electronic Materials and Web Sites etc.

1. <http://www.evangel.edu/Personal/badgers/Web/GenChemPPTs.htm>
2. <http://facstaff.uwa.edu/mcurry/General%20Chemistry%20I%20PowerPoint.htm>
3. <http://memo.cgu.edu.tw/ching-shiun/general%20chemistry.htm>□

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

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

1	Class Attendance: • Absence from lectures and/or tutorials shall not exceed 25 %. Students who exceed the 25% limit without a medical or emergency excuse acceptable to and approved by the Dean of the relevant college shall not be allowed to take the final examination and shall receive a mark of zero for the course.
2	Tardy: □ • Students should be attending the classes as its required for the assessments if the student is 15 minutes late in attending to the class for more than two classes he will loss 50 % of quizzes mark.
3	Exam Attendance/Punctuality: • -All examination and their roles will be according to Students affairs regulations
4	Assignments & Projects:

	<ul style="list-style-type: none"> Student who is submitting the assignments or the projects on time, will be awarded good percentage in grading of participation.
5	<p>Cheating:</p> <ul style="list-style-type: none"> All students must be an ideal behavior and respect each other, their teachers and respect the roles of the colleague. In addition, students should follow safety roles while working in the lab. Those who has been caught in any cheating case will be punished according to the Students affairs regulations
6□	<p>Plagiarism:</p> <ul style="list-style-type: none"> Student will be punished depend upon gravity of the action and according to Students affairs regulations which might be ranged from rewriting the homework to suspension or dismissal
7□	<p>Other policies:</p> <ul style="list-style-type: none"> Using mobile or another electronic device capable to store or transfer data in class during the lecture or the exam is forbidden.

Course Specification of Medical Physics

University: Al-Nasser University

Faculty: Medical Sciences

Department: Pharmacy

Program title: Pharmacy Program

I. General Information:					
1	Course Title:	Medical Physics			
2	Credit hours:	C.H			
		Th.	Pr.	Tut.	Tr.
		2	1		
3	Study level/year at which this course is offered:	First Semester/First Year			
4	Pre –requisite :	None			
5	Co –requisite :	None			
6	Program (s) in which the course is offered:	MediOcal Lab			
7	Language of teaching the course:	Arabic/English			
8	Prepared By:	Ibrahim Suraihy			
9	Approved By:				

II. Course Description:

This course will familiarize the students with the basic concepts and principles of mechanics, elasticity, fluids dynamics, electricity, and magnetism. It will strengthen the understanding of the concepts and principles through a broad range of interesting applications to the real world of medicine, dentist, agriculture, and other fields of science.

III. ILOs:

At the end of this course students must be able to:

1. Recognize the nature of general physics phenomena, facts, laws, definitions, concepts, theories.
2. Explain the physical characteristics of concepts, theories and materials.
3. Demonstrate scientific knowledge vocabulary, terminology, conventions (including symbols, quantities and units).
4. Promote science transcends national boundaries and that the language of science, correctly and rigorously applied, is universal.
5. Present reasoned explanations of phenomena, patterns and relationships.
6. Analyze the answer with respect to how likely or realistic it really is, and solve familiar and unfamiliar problems related to medical Physics.
7. Interpret and evaluate experimental observations and data
8. Handle experimental observations and data and work safely in a laboratory.
9. Apply concepts and skills to solve a problem related to medical physics.
10. Record results in an appropriate manner given a detailed format.
11. Make relevant observations, measurements or estimates to a degree of accuracy appropriate to the instruments or techniques used.
12. Use the language skills and terms to explain and discuss aspects of medical physics.
13. Write structural reports or essays in accordance with the standard scientific guidelines.

I. Course Content:

1 – Course Topics/Items:

a – Theoretical Aspect:

Order	Topic/ unit	Sub topic	Number of weeks	Contact hours
1	Introduction: Physics and Measurements	<ul style="list-style-type: none"> • Concepts of unit and measurements. • Fundamental and derived units. • Units of length, weight, mass, time. • Matter: properties of solids, liquids and gases • Dimensional Analysis • Conversion of Units 	1	2

		<ul style="list-style-type: none"> What is Medical Physics 		
2	Vectors	<ul style="list-style-type: none"> Coordinate Systems Vector and Scalar Quantities Components of a Vector and Unit Vectors Scalar Product of Vectors Displacement, Velocity, and Acceleration 	1	2
3	The Force and Laws of Motion	<ul style="list-style-type: none"> The Concept of Force Newton's First Law Newton's Second Law Mass and Weight Newton's Third Law Free body diagram Forces of Friction Forces in and on the body 	1	2
4	Static Equilibrium and Elasticity	<ul style="list-style-type: none"> The torque The Rigid Object in Equilibrium The Center of Gravity Examples of Rigid Objects in Static Equilibrium. Skeletal Muscles and Levers Static forces in the body Elastic Properties of Solids Stress, Strain, and Elasticity Modulus Example: Bone Shortening 	1	2
5	Work, Energy, and Power	<ul style="list-style-type: none"> Work Done by a Constant Force Kinetic Energy and Potential Energy Conservation of energy Power Energy Changes in the body Energy from Food Metabolic rate Efficiency of the Human body as a machine 	1	2

6	Fluid Mechanics	<ul style="list-style-type: none"> • Properties of fluids: Density, fluid pressure, Atmospheric pressure, surface tension, capillary, Viscosity. • Measurement of pressures, Measurement of blood pressure. • Buoyant Forces and Archimedes' Principle. • Fluid Dynamics, Blood flow, Continuity equation. • Bernoulli's Equation and its Applications • Effect of gravitational forces on human body. 	2	4
7	Mid-term Exam		1	2
8	Temperature and Heat	<ul style="list-style-type: none"> • Temperature • Thermometers and Temperature Scale • Thermal Expansion of Solids and Liquids • An Ideal Gas • Heat and Internal Energy • The First Law of Thermodynamics • Heat Transfer Mechanisms • Heat losses from the body 	1	2
9	Sound	<ul style="list-style-type: none"> • Sound Waves and its Properties • Intensity of Sound Waves • Sound Level • The Doppler Effect • Ultrasound and Medical Applications: A Scan, B Scan, M Scan 	1	2
10	Light	<ul style="list-style-type: none"> • The Nature of Light and the Ray Aspect of Light 	1	2

		<ul style="list-style-type: none"> The Light Reflection and Refraction Medical uses, Endoscope Images formed by thin Lenses. The Magnifier, The Microscope. The Eye, Myopia and correction, Hyperemia 		
11	Electricity	<ul style="list-style-type: none"> Electric Charges, Electric Field, Electric Potential Capacitance, Capacitors, Dielectrics Electric Current, Resistance, Resistors, Electrical Power Electrical Safety Electricity Within the Body, Electromyography (EMG), Electrocardiograph (ECG), Electroencephalograph (EEG) Flow of electricity in Solids, Electrolytes, Gases and Vacuum 	2	4
12	Radiation	<ul style="list-style-type: none"> Some Properties of Nuclei Radioactivity The Decay Processes Natural Radioactivity Nuclear Magnetic Resonance and Magnetic Resonance Imaging (MRI) Radiation Damage Uses of Radiation in diagnostic and therapy X-ray Laser 	1	2
13	FINAL EXAM		1	2
	Number of Weeks /and Units Per Semester		15	30

b - Practical Aspect:			
Order	Practical Experiment	Number of weeks	Contact hours
1	Measurement Tools And Systems	1	3

2	Determination of Young's modulus by Searle's method	1	3
3	Experimental verification of Hooke's law	1	3
4	Experimental determination of viscosity of highly viscous liquids	1	3
5	Experimental verification Stoke's law	1	3
6	Midterm examination	1	3
7	measure the specific heat capacity of a substance	1	3
8	Determine resistance using a voltmeter and an ammeter	1	3
9	Experimental verification Ohm's Law	1	3
10	Experimental verification Pattern of field lines round a bar magnet	1	3
11	Experimental verification mirror lines lows	1	3
12	Final examination	1	3
Number of Weeks/and Units Per First Second semester			36

IV. Teaching Strategies:

- Interactive lecturing in class. Working examples,
- Solving Problem method, Laboratory work, directed reading, independent study and discussion

V. Assignments and projects:

no	Assignment	Week Due	Mark
1	Project	8	5

VI. Assessment Tasks:

No	Assessment Method	Week Due	Mark	Proportion of Final Assessment
1	Exercises and Home works and Quizzes	3, 5, 6, 9, 11	5	5%
2	Practical reports and activities	ALL	10	10%
3	Assignment	8	5	5%
4	Written Test (1)	7	10	10%

5	Final Exam (theoretical)	16	50	50%
6	Final Exam (practical)	14	20	20%
	Total		100	100%

VII. Learning Resources:	
1-Required Textbook(s) (maximum two).	
	<ol style="list-style-type: none"> 1. Serway and Faughn, 2012, College Physics, Second Edition, Open Stax College, 2. Paul Davidovits, 2013, Physics in Biology and Medicine (Complementary Science), 4thRevised Academic Press – Elsevier.
2-Recommended Books and Reference Materials.	
	<ol style="list-style-type: none"> 1. Russell K. Hobbie, Bradley J. Roth, 2009, Intermediate Physics for Medicine and Biology (Biological and Medical Physics, Biomedical Engineering), 4thRevised Edition Springer.
3-Electronic Materials and Web Sites <i>etc.</i>	

IX. Course Policies: (including plagiarism, academic honesty, attendance etc)	
The University Regulations on academic misconduct will be strictly enforced. Please refer to Al-Nasser University student's regulations handbook	
1	<p>Class Attendance:</p> <ul style="list-style-type: none"> • Absence from lectures and/or practical shall not exceed 25 %. Students who exceed the 25% limit without a medical or emergency excuse acceptable to and approved by the Dean of the college shall not be allowed to take the final exam and shall receive a mark of zero for the course.
2	<p>(Tardy):</p> <p>Students will be allowed to in the class if he/she is late not more than 15 minutes with an acceptable excuse. If the student is late in attending the class for more than three times without an excuse he/she will be warned and will be asked to write undertaken for not repeating that, otherwise his guardian will be notified and the student will miss the classes and will be considered as failed.</p>

3	<p>(Exam Attendance/Punctuality):</p> <ul style="list-style-type: none"> • Student will not be allowed to appear in the final exam if he/she is late 30 minutes from the beginning of the exam. • Students will not be allowed to leave the exam room until unless half of the examination time is passed. • If a student misses the final exam, he/she has to provide an accepted excuse he/she will be eligible to take the exam as first attempt. • If the student misses the final exam he will be considered as failed and if the repeated exam will be calculated as the minimum of 50%. • The student will be considered as failed if he broke the regulations and roles of examination. • In the practical courses failing in either part is marked as failing in the course and student has to appear in the failing part and the marks will be given as the minimum mark. • Using mobile phones is strictly prohibited in examination time and the student will be considered as failed if he did so.
4	<p>(Assignments and Projects):</p> <ul style="list-style-type: none"> • The students have to submit the assignment or project on time. • In late cases student has to provide an acceptable and written excuse to the lecturer before the lecturer has to submit the final marks to the department otherwise the student will not be given the marks of the project.
5	<p>(Cheating):</p> <ul style="list-style-type: none"> • Cheating in examinations or tests is prohibited which may be in the form of copying from another student or bringing unauthorized materials into the exam room (e.g., crib notes, pagers or cell phones) etc. • Midterm Exam cheating results in giving the student a mark of zero • Cheating in the final exam will result in failing the student in that subject if he/she did not get benefits in that subject, if he/she gets benefits he/she will be considered as failed in two courses. If the cheating occur in the last day of exam the student will be considered as failed in that course and the previous one. • If the students repeats cheating in a single examination period he will be discontinued for a full academic year or permanently if he repeated cheating more than twice.
6	<p>(Plagiarism):</p> <p>“To plagiarize is to take ideas or words of another person and pass them off as one’s own”.</p> <ul style="list-style-type: none"> • Plagiarism will results in losing the marks of the assignments. • If the students personates other at examination time both will be suspended for a full academic year

7	<p>(Other policies):</p> <ul style="list-style-type: none"> Using mobile or another electronic device capable of storing or transfer data in class during the lecture or the exam is forbidden. Abnormal behavior is not acceptable and the student will face a punitive proceedings. Eating or drinking is strictly prohibited.
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Course Specification of Analytical Chemistry I

University: Al-Nasser University

Faculty: Medical Sciences

Department: Pharmacy

Program title: Pharmacy Program

I. General Information:					
1	Course Title:	Analytical Chemistry I			
2	Credit hours:	C.H			
		Th.	Pr.	Tut.	Tr.
		2	1		
3	Study level/year at which this course is offered:	first semester/first year			
4	Pre –requisite :	General Chemistry II			
5	Co –requisite :				
6	Program (s) in which the course is offered:	None			
7	Language of teaching the course:	English/Arabic			

8	Prepared By:	Dr. Tawfeek Ahmed Alobaidy		
9	Approved By:			
II. Course Description:				
This course focuses on the basic principles of pharmaceutical analytical chemistry, the Qualitative Inorganic Analysis of anions and cations, aqueous and non-aqueous method of titration. Also this course cover some practical method of analysis.				
III. ILOs:				
At the end of this course the student should be able to:				
<div><div>1. Recognizethe basic principle of pharmaceutical analytical chemistry.</div><div>2. Explain the Qualitative Inorganic Analysis of anions and cations</div><div>3. Illustrate the indicators, solvents and reagents used in studied classes.</div><div>4. Describe the advantage and disadvantages of different method of analysis.</div><div>5. Determine the functional groups and their effect on acidity and basicity of pharmaceutical compounds.</div><div>6. Identify the concentration, yield and pH of the pharmaceutical compounds.</div><div>7. Diagram the schemes that explain different method of quantitative analysis.</div><div>8. Predict the pH through the functional groups in the pharmaceutical substances.</div><div>9. Operate different pharmaceutical instrument and equipment in the lab.</div><div>10. Evaluate the result of the practical part.</div><div>11. Solve some problems that are related to acidity and basicity and their effect on drug action.</div><div>12. Practice the standardization of some studied substances.</div><div>13. Cooperate with his/her colleagues to prepare a scientific topic.</div><div>14. Demonstrate critical thinking and decision making abilities</div><div>15. Work effectively in team</div></div>				
IV. Course Content:				
1 – Course Topics/Items:				
a – Theoretical Aspect:				
Order	Topic/ unit	Sub topic	Number of weeks	Contact hours
1	Introduction to analytical chemistry	Definition and scope. Introduction to analytical chemistry, The Analytical Perspective, Common Analytical Problems, why analytical chemistry?	1	2
2	Basic Tools of Analytical Chemistry	Numbers in Analytical Chemistry Fundamental Units of Measure Significant Figures Units for Expressing Concentration Molarity and Formality, Normality Molality Weight, Volume, and Weight-to-Volume	1	2



		<p>Ratios</p> <p>Converting Between Concentration Units</p> <p>p-Functions</p> <p>Stoichiometric Calculations</p> <p>Conservation of Mass</p> <p>Conservation of Charge</p> <p>Conservation of Protons</p> <p>Conservation of Electron Pairs</p>		
3	Qualitative Inorganic Analysis 1	<p>-identification of six groups of Anions :</p> <p>1- Carbonates and Bicarbonates group</p> <p>2- Sulphur-containing anions</p> <p>3- Halides</p> <p>4- Cyanogen anions</p> <p>5- Arsinic and phosphorous containing anions</p> <p>6- Nitrogen- containing anions</p> <p>- separation of a mixture of Anions</p>	3	7
4	Qualitative Inorganic Analysis 2	<p>identification of five groups of cations:</p> <p>Group 1 : lead(II), mercury(I), and silver(I).</p> <p>Group 2: mercury(II), copper(II), bismuth(III), cadmium (II), tin(II), tin(IV), arsenic(III), arsenic(V), antimony(III), and antimony(V).</p> <p>Group 3: iron(II), iron(III), cobalt(II), nickel(II), manganese(II), chromium(III), aluminium(III), and zinc(II).</p> <p>Group 4: calcium(II), strontium(II), and barium(II).</p> <p>Group 5:</p> <p>Magnesium(II), lithium(I), sodium(I), potassium(I), and ammonium(I) ions.</p> <p>-separation of a mixture of Anions</p>	2	4
5	Midterm exam		1	2

6	Acid Base titration :	Modern concepts of acids and base, acid base equilibria, law of mass action, dissociation constants, Common ion effect, Ionic product of water, pH, buffer solutions, theory of acid base titration, neutralization curves, neutralization indicators, mixed and universal indicators. Formal titrations. Pharmaceutical applications	4	8
7	Non aqueous titration:	Theory, advantages and limitation, non-aqueous solvents, ionization and dissociation in non-aqueous media, titration of weak acids and bases, indicators in non-aqueous titration, preparation of standard solutions, Pharmaceutical applications	3	6
8	Final exam		1	2
Number of Weeks/and Units Per First semester6				32

b - PracticalAspect:			
Order	Practical Experiment	Number of weeks	Contact hours
1	Identification of cations	1	2
2	Separation of mixture of cations	1	2
3	Separation of mixture of anions	1	2
4	Calibration of volumetric apparatus	1	2
5	Preparation and standardization of HCl and NaOH solutions	1	2
6	Assay of sodium bicarbonate	1	2
7	Assay of benzoic acid,	1	2
8	Preparation and standardization of perchloric acid	1	2
9	Preparation and standardization of sodium methoxide solutions	1	2
10	Assay of ephedrine	1	2
11	Assay of Metformin hydrochloride	1	2

12	Final Exam	1	2
Number of Weeks/and Units Per First Second semester			24

V. Teaching Strategies:

Lectures using data show video animation, Practice session, Discussions, Solving Problem methods, Group assignments, Small group discussions, Tutorials and Practical classes.

VI. Assignments and projects:

no	Assignment	Week Due	Mark
1	- Project	5	5

VII. Assessment Tasks:

no	Assessment Method	Week Due	Mark	Proportion of Final Assessment
1	Project	2, 8	5	5%
2	Practical reports	1-9	10	10%
3	Oral Tests	5, 9	5	5%
4	Written Test (1)	7	10	10%
5	Final Exam (theoretical)	14	50	50%
6	Final Exam (practical)	10	20	20%
7	Total		100	100%

VIII. Learning Resources:

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

1-	Douglas A. Skoog, Donald M. West, F. James Holler and Stanley R. Crouch Fundamentals of Analytical Chemistry, 2004, 8 th edition, Thomson Brooks/Cole, Belmont, USA.
2-	F.W. Fifield and D. Kealey, "Principles and Practice of Analytical Chemistry" Fifth Edition, 2000, Blackwell Science, London.

2-Recommended Books and Reference Materials.

1-	DEAN'S Analytical Chemistry Handbook, 2004, Second edition, McGraw-Hill Handbooks, New York, USA.
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	<p>2- SomenathMitra, Sample Preparation Techniques in Analytical Chemistry, 2003, A John Wiley and Sons, Inc., Publication, Canada.</p> <p>3- K. Danzer, Analytical ChemistryTheoretical and Metrological Fundamentals, 2007, Springer-Verlag Berlin Heidelberg.</p>
3-Electronic Materials and Web Sites <i>etc.</i>	
	<p>1-The Analytical Abstracts database (http://www.rsc.org/CFAA/AASearchPage.cfm)</p> <p>2-The Analytical Forum on ChemWeb (http://analytical.chemweb.com/search/search.exe)</p>
IX. Course Policies: (including plagiarism, academic honesty, attendance etc)	
The University Regulations on academic misconduct will be strictly enforced. Please refer to Al-Nasser University student's regulations handbook	
1	<p>Class Attendance:</p> <ul style="list-style-type: none"> Absence from lectures and/or practical shall not exceed 25 %. Students who exceed the 25% limit without a medical or emergency excuse acceptable to and approved by the Dean of the college shall not be allowed to take the final exam and shall receive a mark of zero for the course.
2	<p>(Tardy):</p> <p>Students will be allowed to in the class if he/she is late not more than 15 minutes with an acceptable excuse. If the student is late in attending the class for more than three times without an excuse he/she will be warned and will be asked to write undertaken for not repeating that, otherwise his guardian will be notified and the student will miss the classes and will be considered as failed.</p>
3	<p>(Exam Attendance/Punctuality):</p> <ul style="list-style-type: none"> Student will not be allowed to appear in the final exam if he/she is late 30 minutes from the begging of the exam. Students will not be allowed to leave the exam room until unless half of the examination time is passed. If a student misses the final exam, he/she has to provide an accepted excuse he/she will be eligible to take the exam as first attempt. If the student misses the final exam he will be considered as failed and if the repeated exam will be calculated as the minimum of 50%. The student will be considered as failed if he broke the regulations and roles of examination. In the practical courses failing in either part is marked as failing in the course and student has to appear in the failing part and the marks will be given as the minimum mark. Using mobile phones is strictly prohibited in examination time and the student will be considered as failed if he did so.
4	<p>(Assignments and Projects):</p> <ul style="list-style-type: none"> The students have to submit the assignment or project on time.

	<ul style="list-style-type: none"> In late cases student has to provide an acceptable and written excuse to the lecturer before the lecturer has to submit the final marks to the department otherwise the student will not be given the marks of the project.
5	<p>(Cheating):</p> <ul style="list-style-type: none"> Cheating in examinations or tests is prohibited which may be in the form of copying from another student or bringing unauthorized materials into the exam room (e.g., crib notes, pagers or cell phones) etc. Midterm Exam cheating results in giving the student a mark of zero Cheating in the final exam will result in failing the student in that subject if he/she did not get benefits in that subject, if he/she gets benefits he/she will be considered as failed in two courses. If the cheating occur in the last day of exam the student will be considered as failed in that course and the previous one. If the students repeats cheating in a single examination period he will be discontinued for a full academic year or permanently if he repeated cheating more than twice.
6	<p>(Plagiarism):</p> <p>“To plagiarize is to take ideas or words of another person and pass them off as one’s own”.</p> <ul style="list-style-type: none"> Plagiarism will results in losing the marks of the assignments. If the students personates other at examination time both will be suspended for a full academic year
7	<p>(Other policies):</p> <ul style="list-style-type: none"> Using mobile or another electronic device capable of storing or transfer data in class during the lecture or the exam is forbidden. Abnormal behavior is not acceptable and the student will face a punitive proceedings. Eating or drinking is strictly prohibited.

Course Specification of Pharmaceutical Organic Chemistry I

University: Al-Nasser University

Faculty: Medical Sciences

Department: Pharmacy

Program title: Pharmacy Program

I. General Information:					
1	Course Title:	Pharmaceutical Organic Chemistry I			
2	Credit hours:	C.H			
		Th.	Pr.	Tut.	Tr.
		2	1		
3	Study level/year at which this course is offered:	first semester/first year			
4	Pre –requisite :	General Chemistry II			
5	Co –requisite :				
6	Program (s) in which the course is offered:	None			
7	Language of teaching the course:	English/Arabic			
8	Prepared By:	Dr. Tawfeek Ahmed Alobaidy			
9	Approved By:				

II. Course Description:
The course aims to introducing the students to organic chemistry, structure and physical properties, orbital hybridization, factor affecting chemical reactivity. Also it covers the study of alkanes, cycloalkanes, alkenes, alkynes, purification method and some practical differentiation methods.

III. ILOs:
At the end of this course the student should be able:
1. Recognize classification of hydrocarbons structure and physical properties of organic compounds.
2. Explain the factors affecting the chemical reactivity and orbital hybridization.
3. Illustrate the IUPAC nomenclature, physical, chemical properties, preparation and reaction of reactions of hydrocarbons.

4. List the differences between the types of hydrocarbons.
5. Identify the types of hybridization.
6. Predict the method of preparation of the studied organic compounds.
7. Diagram the schemes that relate all the reactions of hydrocarbons
8. Practice the method of purification of organic compounds.
9. Perform qualitative test for some elements.
10. Operate different equipment and instruments.
11. Demonstrate the differentiation between aliphatic and aromatic compounds.
12. Acquire an ethical attitude and approach.
13. Use properly and safely the organic compounds and new tools in the laboratories.
14. Work independently or as a team.
15. Manage and organize the time.

I. Course Content:				
1 – Course Topics/Items:				
a – Theoretical Aspect:				
Order	Topic/ unit	Sub topic	Number of weeks	Contact hours
1	Introduction to Organic Chemistry	<ul style="list-style-type: none"> ➤ The Origins of Organic Chemistry ➤ Classification of carbon compounds <ul style="list-style-type: none"> ➤ Classification According to Molecular Framework <ul style="list-style-type: none"> ▪ Acyclic Compounds ▪ Carbocyclic Compounds ▪ Heterocyclic Compounds ➤ Classification According to Functional Group ➤ Principles of Atomic Structure ➤ Bond Formation: The Octet Rule ➤ How Electrons are Arranged in Atoms ➤ Bonding in organic compounds <ul style="list-style-type: none"> ➤ Ionic Bonding ➤ The Covalent Bond ➤ Hydrogen Bond ➤ Coordinate bonding ➤ Carbon and the Covalent Bond ➤ Carbon-Carbon Single Bonds ➤ Electronegativity and Bond Polarity ➤ Arrhenius Acids and Bases ➤ Formal Charge ➤ Resonance ➤ Arrow Formalism 	1	2



2	Orbitals and Orbital Hybridization	<ul style="list-style-type: none"> ➤ Wave Properties of Electrons in Orbitals ➤ Molecular Orbitals <ul style="list-style-type: none"> ➤ The Sigma Bond ➤ The Pi Bond ➤ Hybridization and Molecular Shapes <ul style="list-style-type: none"> ➤ SP^3 Hybridization ➤ SP^2 Hybridization ➤ SP Hybridization ➤ Drawing Three-Dimensional Molecules ➤ General Rules of Hybridization and Geometry ➤ Bond Rotation 	1	2
3	Alkanes and Cycloalkanes (Paraffinic Hydrocarbons)	<ul style="list-style-type: none"> ➤ The Structures of Alkanes ➤ Nomenclature of Organic Compounds ➤ IUPAC Rules for Naming Alkanes ➤ Alkyl and Halogen Substituents ➤ Use of the IUPAC Rules ➤ Sources of Alkanes ➤ Physical Properties of Alkanes and Nonbonding Intermolecular Interactions ➤ Conformations of Alkanes ➤ Cycloalkane Nomenclature and Conformation ➤ Cis-Trans Isomerism in Cycloalkanes ➤ Stabilities of Cycloalkanes; Ring Strain ➤ General Methods of Preparation of Alkanes ➤ Reactions of Alkanes <ul style="list-style-type: none"> ➤ Oxidation and Combustion; Alkanes as Fuels ➤ Halogenation of Alkanes <ul style="list-style-type: none"> ▪ The Free-Radical Chain Mechanism of Halogenation 	2	4
4	Alkenes and Dienes	<ul style="list-style-type: none"> ➤ Definition and Classification ➤ Nomenclature ➤ Some Facts about Double Bonds ➤ The Orbital Model of a Double Bond; the Pi Bond ➤ <i>Cis-Trans</i> Isomerism in Alkenes ➤ <i>Z-E</i> Isomerism in Alkenes ➤ General methods of Synthesis of Alkenes <ul style="list-style-type: none"> ➤ Synthesis by Elimination of Alkyl Halides <ul style="list-style-type: none"> ▪ Dehydrohalogenation ▪ Debromination of a Vicinal Dibromide ➤ Synthesis by Dehydration of Alcohols ➤ Addition and Substitution Reactions Compared ➤ Addition of Unsymmetric Reagents to Unsymmetric Alkenes; Markovnikov's Rule ➤ Addition Reactions <ul style="list-style-type: none"> ➤ Addition of Hydrogen 	3	6

		➤ Addition of Halogens		
5	Midterm exam		1	2
6	Cont., Alkenes and Dienes	<ul style="list-style-type: none"> ➤ Cont., Reactions of Alkenes <ul style="list-style-type: none"> ➤ Addition of Water (Hydration) ➤ Addition of Acids ➤ Oxidation of Alkenes ➤ Oxidation with Permanganate ➤ Ozonolysis of Alkenes ➤ Mechanism of Electrophilic Addition to Alkenes ➤ Markovnikov's Rule Explained with Rearrangement Reactions ➤ Hydroboration of Alkenes ➤ Additions to Conjugated Systems (Dienes) <ul style="list-style-type: none"> ➤ Addition of Hydrogen ➤ Addition of Halogens ➤ Addition of Water (Hydration) 	1	2
7	Alkynes	<ul style="list-style-type: none"> ➤ Introduction ➤ Nomenclature of Alkynes ➤ Physical Properties of Alkynes ➤ Some Facts About Triple Bonds ➤ The Orbital Model of a Triple Bond <ul style="list-style-type: none"> ➤ Electronic Structure of Alkynes ➤ Commercial Importance of Alkynes ➤ Acidity of Alkynes; Formation of Acetylide Ions ➤ Synthesis of Alkynes from Acetylides ➤ Synthesis of Alkynes by Elimination Reactions ➤ Reactions of Alkynes <ul style="list-style-type: none"> ➤ Addition Reactions of Alkynes ➤ Reduction of an Alkyne ➤ Keto-Enol Tautomerism ➤ Oxidation of Alkynes 	1	2
8	Aromatic Compounds	<ul style="list-style-type: none"> ➤ Some Facts About Benzene ➤ The Kekulé Structure of Benzene ➤ Resonance Model for Benzene ➤ Orbital Model for Benzene ➤ Symbols for Benzene ➤ Nomenclature of Aromatic Compounds ➤ The Resonance Energy of Benzene ➤ Electrophilic Aromatic Substitution ➤ The Mechanism of Electrophilic Aromatic Substitution <ul style="list-style-type: none"> ➤ Halogenation ➤ Nitration ➤ Sulfonation ➤ Alkylation ➤ Acylation 	3	6

		<ul style="list-style-type: none"> ➤ Ring-Activating and Ring-Deactivating Substituents ➤ <i>Ortho</i>, <i>Para</i>-Directing and <i>Meta</i>-Directing Groups <ul style="list-style-type: none"> ➤ <i>Ortho</i>, <i>Para</i>-Directing Groups ➤ <i>Meta</i>-Directing Groups ➤ Substituent Effects on Reactivity ➤ The Importance of Directing Effects in Synthesis 		
9	Final exam		1	2
Number of Weeks/and Units Per Semester			14	28

b – Practical Aspect: Organic Chemistry I			
Order	Practical Experiment	Number of weeks	Contact hours
1	<ul style="list-style-type: none"> ➤ Instruction in the laboratory methods of organic chemistry ➤ rules and ethics in laboratory. ➤ Purification some organic compounds by Filtration 	1	2
2	➤ Purification some organic compounds by Recrystallization	1	2
3	➤ Purification some organic compounds by Sublimation and Simple distillation	1	2
4	➤ Purification some organic compounds by Steam distillation and Determination of Boiling Points	1	2
5	➤ Determination of melting point and mixed melting point	1	2
6	➤ Combustion experiments (benzene and hexane)	1	2
7	➤ Extraction of caffeine from tea	1	2
8	<ul style="list-style-type: none"> ➤ The separation of benzoic acid from p - dichloro benzene ➤ Separation of methyl orange for methylene blue using a chromatography column (adsorption) 	1	2
9	<ul style="list-style-type: none"> ➤ acetylsalicylic acid extraction of aspirin tablets ➤ extraction of R - (+) - limonene from orange peel and grapefruit. 	1	2
10	➤ Paper chromatography (the separation of a mixture of sugars - the separation of amino acids). thin-layer chromatography (preparation of slides and the separation of dyes from the extract of spinach leaves).	1	2
11	➤ Final Exam	1	2
Number of Weeks/and Units Per Semester		11	22

II. Teaching Strategies:
Lectures using data show video animation, Practice session, Discussions, Solving Problem methods, Group assignments, Small group discussions and Practical classes.



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III. Assignments and projects:

no	Assignment	Week Due	Mark
1	- Project	5	5

IV. Assessment Tasks:

no	Assessment Method	Week Due	Mark	Proportion of Final Assessment
1	Project (single\group)	2, 8	5	5%
2	Practical reports	1-9	10	10%
3	Oral Tests	5, 9	5	5%
4	Written Test (1)	7	10	10%
5	Final Exam (theoretical)	14	50	50%
6	Final Exam (practical)	10	20	20%
7	Total		100	100%

V. Learning Resources:

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

	<p>1- R. T. Morrison and R. N. Boyd, Organic Chemistry, 2002, 6th edition, Pearson Prentice Hall of India Pvt. Ltd, New Delhi.</p> <p>2- Francis A. Carey and Richard J. Sundberg, Advanced Organic Chemistry; Part B: Reactions and Synthesis, 2001, 4th edition, Wiley and Sons., Inc. New York.</p>
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2-Recommended Books and Reference Materials.

	<p>1. I. L. Finar, Organic Chemistry: The Fundamental Principles, 1963, Fourth edition, longman green and company ltd. London.</p> <p>2. John McMurry." Fundamentals of Organic Chemistry " 2011, Seventh Edition, Brooks/Cole 20 Davis Drive, Belmont.</p> <p>3. Jerry and March, Advanced Organic Chemistry ; reaction, mechanism and structure, 2007, 6th edition, John Wiley and Sons, Inc., Hoboken, New Jersey</p> <p>4. Janice Gorzynski Smith." Organic Chemistry", 2011, Third Edition, McGraw-Hill, a business unit of The McGraw-Hill Companies, New York.</p>
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3-Electronic Materials and Web Sites *etc.*

	1- www.orgsyn.org 2- 3-
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VI. Course Policies: (including plagiarism, academic honesty, attendance etc)	
The University Regulations on academic misconduct will be strictly enforced. Please refer to Al-Nasser University student's regulations handbook	
1	<p>Class Attendance:</p> <ul style="list-style-type: none"> Absence from lectures and/or practical shall not exceed 25 %. Students who exceed the 25% limit without a medical or emergency excuse acceptable to and approved by the Dean of the college shall not be allowed to take the final exam and shall receive a mark of zero for the course.
2	<p>(Tardy):</p> <p>Students will be allowed to in the class if he/she is late not more than 15 minutes with an acceptable excuse. If the student is late in attending the class for more than three times without an excuse he/she will be warned and will be asked to write undertaken for not repeating that, otherwise his guardian will be notified and the student will miss the classes and will be considered as failed.</p>
3	<p>(Exam Attendance/Punctuality):</p> <ul style="list-style-type: none"> Student will not be allowed to appear in the final exam if he/she is late 30 minutes from the begging of the exam. Students will not be allowed to leave the exam room until unless half of the examination time is passed. If a student misses the final exam, he/she has to provide an accepted excuse he/she will be eligible to take the exam as first attempt. If the student misses the final exam he will be considered as failed and if the repeated exam will be calculated as the minimum of 50%. The student will be considered as failed if he broke the regulations and roles of examination. In the practical courses failing in either part is marked as failing in the course and student has to appear in the failing part and the marks will be given as the minimum mark. Using mobile phones is strictly prohibited in examination time and the student will be considered as failed if he did so.

4	<p>(Assignments and Projects):</p> <ul style="list-style-type: none"> The students have to submit the assignment or project on time. In late cases student has to provide an acceptable and written excuse to the lecturer before the lecturer has to submit the final marks to the department otherwise the student will not be given the marks of the project.
5	<p>(Cheating):</p> <ul style="list-style-type: none"> Cheating in examinations or tests is prohibited which may be in the form of copying from another student or bringing unauthorized materials into the exam room (e.g., crib notes, pagers or cell phones) etc. Midterm Exam cheating results in giving the student a mark of zero Cheating in the final exam will result in failing the student in that subject if he/she did not get benefits in that subject, if he/she gets benefits he/she will be considered as failed in two courses. If the cheating occur in the last day of exam the student will be considered as failed in that course and the previous one. If the students repeats cheating in a single examination period he will be discontinued for a full academic year or permanently if he repeated cheating more than twice.
6	<p>(Plagiarism):</p> <p>“To plagiarize is to take ideas or words of another person and pass them off as one’s own”.</p> <ul style="list-style-type: none"> Plagiarism will results in losing the marks of the assignments. If the students personates other at examination time both will be suspended for a full academic year
7	<p>(Other policies):</p> <ul style="list-style-type: none"> Using mobile or another electronic device capable of storing or transfer data in class during the lecture or the exam is forbidden. Abnormal behavior is not acceptable and the student will face a punitive proceedings. Eating or drinking is strictly prohibited.



Course Specification of Pharmaceutics II

University: Al-Nasser University

Faculty: Medical Science

Department: Pharmacy

Program title: Pharmacy Program

I. General Information:					
1	Course Title:	Pharmaceutics II			
2	Credit hours: 3 hrs.	C.H			
		Th.	Pr.	Tut.	Tr.
		3	1		
3	Study level/year at which this course is offered:	Second semester/ first year			
4	Pre –requisite :	Pharmaceutics I			
5	Co –requisite :				
6	Program (s) in which the course is offered:				
7	Language of teaching the course:	English/Arabic			
8	Prepared By:	Dr. Mohammed Addoais & Dr. Abdulkarim Alzomor			
9	Approved By:				

II. Course Description:
This course will provide students with a detailed knowledge and understanding of design and formulation of a different pharmaceutical dosage forms .Students will be given thorough knowledge on pharmaceutical aerosols, suppositories, parenteral, ophthalmic and semisolid dosage forms like ointments, creams, paste and gel.

III. ILOs: at end of the course students will be to:
<ol style="list-style-type: none"> 1. Enumerate the methods of sterilization 2. Mention the components of aerosol system. 3. Explain the factors affecting percutaneous drug absorption process. 4. List the types of water for injection 5. Differentiate between physical and chemical methods of sterilization 6. Classify ointment bases and creams

7. Categorize suppository bases
8. Design sterile parenteral and ophthalmic preparation.
9. Formulate good and stable parenteral and ophthalmic dosage form.
10. Prepare good semisolid dosage forms
11. Perform quality control for different pharmaceutical dosage form.
12. Make presentation about selective topics

IV. Course Content:

1 – Course Topics/Items:

a – Theoretical Aspect:

No	Topic/ unit	Sub topic	Number of weeks	Contact hours
1	Parenteral preparation	<ul style="list-style-type: none"> Route of administration of injection Types of Water for injection Pyrogenicity Non-aqueous vehicles Isotonicity and methods of adjustment Formulation of injection (the vehicles, osmotic pressure, pH, specific gravity, suspension for injection, emulsion for injection) Containers and closures selection Methods of Sterilization 	3	9
2	Ophthalmic preparation	<ul style="list-style-type: none"> Principles of ocular drug absorption. Ophthalmic solution. Ophthalmic suspension. Ophthalmic ointments. Ocuserts (ophthalmic inserts) Examples of drugs used to treat certain eye diseases. 	1	3
3	Therapeutic aerosols	<ul style="list-style-type: none"> Definition and uses of therapeutic aerosols. Instability of aerosols Deposition of aerosols in the human respiratory tract. Formulation and generation of aerosols Pressurized packages Type of propellants Containers Formulation aspects Performance of pressurized packages as inhalation aerosol generators 	2	6

		<ul style="list-style-type: none"> • Air-blast nebulizers • Dry powder generators • Methods of preparation • Evaluation methods <ul style="list-style-type: none"> ○ Leaking and pressure testing of containers. ○ Output, drug concentration and dose delivered and particle Size analysis 		
4		Midterm exam	1	2
5	Semisolid dosage forms	<ul style="list-style-type: none"> • Skin anatomy and physiology • Percutaneous absorption and factors affecting it. • Ointments • Classification of ointment bases • Additives included in ointment bases • Methods of Preparation of ointments and packaging. • Some examples of medicated ointments • Creams • definition • Classification of creams • Some examples of medicated creams • Pastes • Definition • Composition • Examples of medicated pastes • Gels • Composition and uses • Evaluation of drug release from ointment and cream bases. 	4	12
6	Suppositories	<ul style="list-style-type: none"> • Introduction • Advantages and disadvantages • Anatomy and physiology of rectum • Factors affecting rectal drug absorption. • Shapes and size of suppositories. • Types of suppository bases. • Methods of Preparation of suppositories. • Displacement value • Calibration of suppository mold with bases . 	2	6
7		Final exam	1	2
Number of Weeks/and Units Per Semester			14	40

b - Practical Aspect:			
Order	Practical Experiment	Number of weeks	Contact hours
1	Yellow Simple ointment (ointment base)	1	2
2	Preparation of emulsifying ointment	1	2
3	Preparation of white field/cetrimide ointment	1	2
4	Preparation of atropine sulfate eye ointment 1%	1	2
5	Preparation of Absorption ointment Base	1	2
6	Preparation of W/O Emulsion ointment Base (Cold Cream type base)	1	2
7	Preparation of O/W Emulsion Base (Hydrophilic Ointment)	1	2
8	Preparation of Water Soluble Base (PEG)	1	2
9	Aqueous cream/ Sulfur and salicylic acid cream.	1	2
10	Zinc gelatin paste (Unna's paste).	1	2
11	Calibration of suppository mold using different bases Calculation of displacement value	1	2
12	Preparation of acetaminophen suppositories	1	2
13	Final exam	1	2
Number of Weeks/and Units Per First semester3			26

V. Teaching Strategies:	
<ul style="list-style-type: none"> Lectures using data show Video animation and seminars Laboratory work Directed reading Independent study Group discussion 	

VI. Assignments and projects:			
no	Assignment	Week Due	Mark
1	Assignment	9	5

VII. Assessment Tasks:				
no	Assessment Method	Week Due	Mark	Proportion of Final Assessment
1	Assignment	9	5	5%

2	Practical Reports	1-12	10	10%
3	Quizzes	2, 5, 12	5	10%
4	Written Test (midterm exam)	8	10	10%
5	Final Exam (practical)	14	20	20%
6	Final Exam (theoretical)	16	50	50%
	Total		100	100%

VIII. Learning Resources:

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

1. Michael E. Aulton, FAAPS, Kevin M.G.(2007).Aulton's Pharmaceuticals: The Design and Manufacture of Medicines, Third ed. Elsevier.London, UK.
2. Remington (2005). The Science and Practice of Pharmacy, 2first Edition, Williams and Wilkins. Maryland, USA.

2-Recommended Books and Reference Materials.

1. Ansel and Loyd Allen (2013). Ansel'sPharmaceutical Dosage Forms and Drug Delivery Systems. 10thedition., Williams and Wilkins. Maryland, USA.

3-Electronic Materials and Web Sites *etc.*

- 1-www.go.jblearning.com/basicphysicalpharmacy
- 2-
- 3-

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

The University Regulations on academic misconduct will be strictly enforced. Please refer to Al-Nasser University student's regulations handbook

1	Class Attendance: <ul style="list-style-type: none"> • Absence from lectures and/or practical shall not exceed 25 %. Students who exceed the 25% limit without a medical or emergency excuse acceptable to and approved by the Dean of the college shall not be allowed to take the final exam and shall receive a mark of zero for the course.
2	(Tardy): Students will be allowed to in the class if he/she is late not more than 15 minutes with an acceptable excuse. If the student is late in attending the class for more than three times without an excuse he/she will be warned and will be asked to write undertaken for not repeating that, otherwise his guardian will be notified and the student will miss the classes and will be considered as failed.
3	(Exam Attendance/Punctuality): <ul style="list-style-type: none"> • Student will not be allowed to appear in the final exam if he/she is late 30 minutes from the begging of the exam.

	<ul style="list-style-type: none"> Students will not be allowed to leave the exam room until unless half of the examination time is passed. If a student misses the final exam, he/she has to provide an accepted excuse he/she will be eligible to take the exam as first attempt. If the student misses the final exam he will be considered as failed and if the repeated exam will be calculated as the minimum of 50%. The student will be considered as failed if he broke the regulations and roles of examination. In the practical courses failing in either part is marked as failing in the course and student has to appear in the failing part and the marks will be given as the minimum mark. Using mobile phones is strictly prohibited in examination time and the student will be considered as failed if he did so.
4	<p>(Assignments and Projects):</p> <ul style="list-style-type: none"> The students have to submit the assignment or project on time. In late cases student has to provide an acceptable and written excuse to the lecturer before the lecturer has to submit the final marks to the department otherwise the student will not be given the marks of the project.
5	<p>(Cheating):</p> <ul style="list-style-type: none"> Cheating in examinations or tests is prohibited which may be in the form of copying from another student or bringing unauthorized materials into the exam room (e.g., crib notes, papers or cell phones) etc. Midterm Exam cheating results in giving the student a mark of zero Cheating in the final exam will result in failing the student in that subject if he/she did not get benefits in that subject, if he/she gets benefits he/she will be considered as failed in two courses. If the cheating occur in the last day of exam the student will be considered as failed in that course and the previous one. If the students repeats cheating in a single examination period he will be discontinued for a full academic year or permanently if he repeated cheating more than twice.
6	<p>(Plagiarism):</p> <p>“To plagiarize is to take ideas or words of another person and pass them off as one’s own”.</p> <ul style="list-style-type: none"> Plagiarism will results in losing the marks of the assignments. If the students personates other at examination time both will be suspended for a full academic year
7	<p>(Other policies):</p> <ul style="list-style-type: none"> Using mobile or another electronic device capable of storing or transfer data in class during the lecture or the exam is forbidden. Abnormal behavior is not acceptable and the student will face a punitive proceedings. Eating or drinking is strictly prohibited.

Course Specification of Pharmacognosy II

University: Al-Nasser University

Faculty: Medical Science

Department: Pharmacy

Program title: Pharmacy Program

I. General Information:					
1	Course Title:	Pharmacognosy II			
2	Credit hours:	C.H			
		Th.	Pr.	Tut.	Tr.
		3	1		
3	Study level/year at which this course is offered:	Second semester/ first year			
4	Pre –requisite :	Pharmacognocny I			
5	Co –requisite :	None			
6	Program (s) in which the course is offered:	None			
7	Language of teaching the course:	English/Arabic			
8	Prepared By:	Wedad Mansour andBushra Moharam			
9	Approved By:				

II. Course Description:
<p>This course is designed to underline the basic areas of the pharmacognostical studies for some natural medicinal agent. It concern about the different methods of natural medicinal preparation i.e., cultivation, collection, drying, storage as well as the different adulteration ways of the phytomedicinals. Detection of the major active constituents and use of medicinal plants. and includes the macro- and micro-morphological characteristics of different plant organs (morphological and histological examination, and chemical identification, flowers, fruits, seeds and unorganized drugs).</p>
III. ILOs:
<p>At the end of the course student must be able to:</p> <ol style="list-style-type: none"> Describe the different ways of natural products cultivation, collection, drying, storage and different adulteration ways of phytomedicinals.

2. Identify and explain morphological and histological features of entire and the powdered plants.
3. List different active constituents and medicinal uses of flowers, fruits, seeds and unorganized drugs
4. Categorize the main plant organs under consideration for the production of high quality herbal product.
5. Differentiate between drugs in entire and powdered form.
6. Investigate active constituents of different drugs.
7. Handle and dispose chemicals and broken glasses safely and effectively.
8. Examine drugs of plant origin in entire and powdered form.
9. Perform experiments to identify unknown phytomedicinal cell contents either in an entire organ or in powdered form using different physical and chemical ways.
10. Complete a full scheme for identification of plant flowers, fruits, seeds and unorganized drugs on morphological and microscopical examination.
11. Implement writing and presentation skills.
12. Work effectively in team and manage his/her time.
13. Use information technology skills including word processing and knowing how to retrieve information from a variety of sources.

IV. Course Content:

1 – Course Topics/Items:

a – Theoretical Aspect:

Order	Topic/ unit	Sub topic	Number of weeks	Contact hours
1	Flowers	- Introduction, morphology and anatomy characters, inflorescence and placentation of flowers	1	3
		- Study of Clove, Chamomile, Pyrethrum and Arnica flowers	1	3
		- Study of Tilia, Santonica, Lavender and Saffron flowers	1	3
2	Fruits	- Introduction, classification microscopical examination, macroscopical characters of fruits	1	3

		- Study of Ammi visnaga and Ammi majus		
		- Study of Anise, Fennel caraway, Cumin and Capsicum fruits	1	3
		- Study of Star-anise, Coriander, vanilla pods and Senna pods fruits	1	3
3		Mid exam	1	2
4	Seeds	- Introduction microscopical examination, macroscopical characters of seeds - Study of Cardamom and Colchicum seeds.	1	3
		- Study of Nux-vomica, Linseed, and (black and white) seeds.	1	3
		- Study of Nutmeg, Fenugreek, Calabar and Nigella seeds	1	3
5	Unorganized drugs	- Definition, classification, chemical and physical properties - Study of resin and resin combination (Colophony, Myrrh, Olibaum and Dragon's blood)	1	3
		- Study of medicinal gums (Gum Arabic and Tragacanth) - Study of Medicinal latex (Opium)	1	3
		- Study of Medicinal juice (Aloe and Kino).	1	3
		- Study of medicinal extracts (Agar and Gelatin).		
6		Final exam	1	2
Number of Weeks/and Units Per First semester4				40

b - PracticalAspect:

Order	Practical Experiment	Number of weeks	Contact hours
1	Morphology - microscopical identification of Clove and Chamomile flowers	1	2
2	Morphology - microscopical identification of Pyrethrum and Arnica flowers	1	2
3	Morphology - microscopical identification of Ammi visnaga, Anise, Fennel caraway and Cumin fruits	1	2
4	Morphology - microscopical identification of Capsicum Coriander, and Senna pods fruits	1	2
5	Morphology - microscopical identification of	1	2

	Cardamom, Nux-vomica and Linseed seeds.		
6	Morphology - microscopical identification of (black and white) and Nigella seeds.	1	2
7	Morphology - microscopical identification of Myrrh, Olibaum and Dragon's blood	1	2
8	Morphology - microscopical identification of Gum Arabic and Tragacanth	1	2
9	Morphology - microscopical identification of Opium and others	1	2
10	Morphology - microscopical identification of Aloe and others	1	2
11	Final Exam	1	2
Number of Weeks/and Units Per Semester			

V. Teaching Strategies:
- Lectures using board and makers, data show, video animation and seminars
- Solving Problem method, Laboratory work, independent study and discussion

VI.Assignments and projects:			
no	Assignment	Week Due	Mark
1	Seminar	5	5
2	Projects	9, 11	

VII.Assessment Tasks:				
no	Assessment Method	Week Due	Mark	Proportion of Final Assessment
1	Seminar and project	5, 9, 11	5	5%
2	Practical Reports	1-10	10	10%
3	Quizzes	4, 6, 10	5	5%
4	Written Test (1)	7	10	10%
5	Final Exam (practical)	11	20	20%
6	Final Exam (theoretical)	14	50	50%
	Total		100	100%

VIII. Learning Resources:	
1-Required Textbook(s) (maximum two).	
	<p>1- Evans W.C., Evans D. and Trease E., Saunders “Trease and Evans ‘Pharmacognosy” (2009); 16th ed. Elsevier, New York</p> <p>2- Singh, G.K and Bhandari, A. “Textbook of Pharmacognosy” (2000); first ed., reprint (2008).CBS publisher and Distributers, New Delhi, India.</p>
2-Recommended Books and Reference Materials.	
	<p>1- Sharma, V.D. and Pandey, S.K. “Pharmacognosy Practical Notebook” (2007); first ed. CBS publisher and Distributers, New Delhi, Bangalore, India.</p> <p>2- Raje, V.N. “Pharmacognosy” (2010); first ed. CBS publisher and Distributers Pvt Ltd., New Delhi, Bangalore, Pune, Kochi, Chennai.</p>
3-Electronic Materials and Web Sites <i>etc.</i>	
	<p>1-http://pages.intnet.mu/webpam/Pharmacognosy.htm</p> <p>2- http://www.phcog.org/</p> <p>3- http://www.botanical.com</p>

IX. Course Policies: (including plagiarism, academic honesty, attendance etc)	
The University Regulations on academic misconduct will be strictly enforced. Please refer to Al-Nasser University student’s regulations handbook	
1	<p>Class Attendance:</p> <ul style="list-style-type: none"> • Absence from lectures and/or practical shall not exceed 25 %. Students who exceed the 25% limit without a medical or emergency excuse acceptable to and approved by the Dean of the college shall not be allowed to take the final exam and shall receive a mark of zero for the course.
2	<p>(Tardy):</p> <p>Students will be allowed to in the class if he/she is late not more than 15 minutes with an acceptable excuse. If the student is late in attending the class for more than three times without an excuse he/she will be warned and will be asked to write undertaken for not repeating that, otherwise his guardian will be notified and the student will miss the classes and will be considered as failed.</p>
3	<p>(Exam Attendance/Punctuality):</p> <ul style="list-style-type: none"> • Student will not be allowed to appear in the final exam if he/she is late 30 minutes from the begging of the exam. • Students will not be allowed to leave the exam room until unless half of the examination time is passed. • If a student misses the final exam, he/she has to provide an accepted excuse he/she will be eligible to take the exam as first attempt.

	<ul style="list-style-type: none"> • If the student misses the final exam he will be considered as failed and if the repeated exam will be calculated as the minimum of 50%. • The student will be considered as failed if he broke the regulations and roles of examination. • In the practical courses failing in either part is marked as failing in the course and student has to appear in the failing part and the marks will be given as the minimum mark. • Using mobile phones is strictly prohibited in examination time and the student will be considered as failed if he did so.
4	<p>(Assignments and Projects):</p> <ul style="list-style-type: none"> • The students have to submit the assignment or project on time. • In late cases student has to provide an acceptable and written excuse to the lecturer before the lecturer has to submit the final marks to the department otherwise the student will not be given the marks of the project.
5	<p>(Cheating):</p> <ul style="list-style-type: none"> • Cheating in examinations or tests is prohibited which may be in the form of copying from another student or bringing unauthorized materials into the exam room (e.g., crib notes, papers or cell phones) etc. • Midterm Exam cheating results in giving the student a mark of zero • Cheating in the final exam will result in failing the student in that subject if he/she did not get benefits in that subject, if he/she gets benefits he/she will be considered as failed in two courses. If the cheating occur in the last day of exam the student will be considered as failed in that course and the previous one. • If the students repeats cheating in a single examination period he will be discontinued for a full academic year or permanently if he repeated cheating more than twice.
6	<p>(Plagiarism):</p> <p>“To plagiarize is to take ideas or words of another person and pass them off as one’s own”.</p> <ul style="list-style-type: none"> • Plagiarism will results in losing the marks of the assignments. • If the students personates other at examination time both will be suspended for a full academic year
7	<p>(Other policies):</p> <ul style="list-style-type: none"> • Using mobile or another electronic device capable of storing or transfer data in class during the lecture or the exam is forbidden. • Abnormal behavior is not acceptable and the student will face a punitive proceedings. • Eating or drinking is strictly prohibited.



Course Specification of Pharmaceutical Organic Chemistry II

University: Al-Nasser University

Faculty: Medical Sciences

Department: Pharmacy

Program title: Pharmacy Program

I. General Information:						
1	Course Title:		Pharmaceutical Organic Chemistry II			
2	Credit hours:	C.H				Total
		Th.	Pr.	Tut.	Tr.	
		2	1			



3	Study level/year at which this course is offered:	<i>Second semester/first year</i>
4	Pre –requisite :	Pharmaceutical Organic Chemistry I
5	Co –requisite :	
6	Program (s) in which the course is offered:	
7	Language of teaching the course:	English/Arabic
8	Prepared By:	Dr. Tawfeek Ahmed Alobaidy
9	Approved By:	

II. Course Description:

This course will enhance students understanding of different organic compounds that includes; the chemistry of Alcohol, Carboxylic acid and their derivatives, Aldehyde, Ketone, Ether, Amines, Reaction mechanisms and Stereochemistry. Also it covers the study of identification and preparation of some organic compounds.

III. ILOs:

At the end of this course the student should be able to:

1. Describe the nomenclature, physical and chemical properties of organic compounds
2. Illustrate the different method of preparations.
3. Explain the mechanism of reactions of different organic compounds.
4. Recognize the pharmaceutical application of the organic compounds.
5. Suggest the possible method of preparation of organic compounds.
6. Design some models that facilitate the stereochemistry of compounds.
7. Interpret the common features between the different classes of organic compounds.
8. Predict the orientation of addition in different conditions.
9. Differentiate between isomers and their importance.
10. Practice some method of preparation of studied classes.
11. Carry out experiments for identification of some studied organic compounds.
12. Operate different equipment such as balances, hot plates, etc.
13. Work independently or as a team.
14. Manage and organize the time.
15. Implement writing and presentation skills and demonstrate critical thinking.

I. Course Content:				
1 – Course Topics/Items:				
a – Theoretical Aspect:				
Order	Topic/ unit	Sub topic	Number of weeks	Contact hours
1	Organic Halogen Compounds	<ul style="list-style-type: none"> ➤ Definition ➤ Classification ➤ Nomenclature ➤ Physical Properties ➤ Interesting Alkyl Halides ➤ The Polar Carbon–Halogen Bond ➤ General methods of Synthesis of Organic Halogen Compounds ➤ Nucleophilic Substitution Reaction <ul style="list-style-type: none"> ➤ Examples of Nucleophilic Substitutions <ul style="list-style-type: none"> ▪ The Leaving Group ▪ The Nucleophile ➤ Nucleophilic Substitution Mechanisms <ul style="list-style-type: none"> ▪ The S_N2 Mechanism ▪ The S_N1 Mechanism ▪ Stereochemistry of the S_N2 and S_N1 Reaction ▪ The S_N1 and S_N2 Mechanisms Compared ➤ Elimination Reaction <ul style="list-style-type: none"> ➤ The E2 Mechanism ➤ The Zaitsev Rule ➤ The E1 Mechanism ➤ Stereochemistry of the E2 Reaction ➤ Substitution and Elimination in Competition 	3	6
2	Alcohols, Phenols and Thiols	<ul style="list-style-type: none"> ➤ Definition ➤ Classification ➤ Nomenclature of Alcohols, Phenols and Thiols ➤ Hydrogen Bonding in Alcohols and Phenols ➤ Physical Properties ➤ Acidity and Basicity Reviewed <ul style="list-style-type: none"> ➤ The Acidity of Alcohols and Phenols ➤ The Basicity of Alcohols and Phenols ➤ Preparation of Alcohols <ul style="list-style-type: none"> ➤ The Grignard Reagent; an Organometallic Compound ➤ General Features—Reactions of Alcohols <ul style="list-style-type: none"> ➤ Dehydration of Alcohols to Alkenes ➤ The Reaction of Alcohols with Hydrogen Halides ➤ Prepare Alkyl Halides from Alcohols 	2	4



		<ul style="list-style-type: none"> ➤ Oxidation of Alcohols to Aldehydes, Ketones, and Carboxylic Acids ➤ Alcohols with More Than One Hydroxyl Group ➤ Aromatic Substitution in Phenols ➤ Oxidation of Phenols ➤ Phenols as Antioxidants ➤ Thiols, the Sulfur Analogs of Alcohols and Phenols 		
3	Midterm Exam		1	2
4	Ethers and Epoxides	<ul style="list-style-type: none"> ➤ Definition ➤ Classification ➤ Nomenclature of Ethers ➤ Physical Properties of Ethers <ul style="list-style-type: none"> ➤ Ethers as Solvents ➤ Preparation of Ethers ➤ Reaction <ul style="list-style-type: none"> ➤ Ethers with Strong Acid ➤ Epoxides ➤ Cleavage of Ethers 	1	2
5	Aldehydes and Ketones	<ul style="list-style-type: none"> ➤ Definition ➤ Nomenclature of Aldehydes and Ketones <ul style="list-style-type: none"> ➤ Some Common Aldehydes and Ketones ➤ Aldehydes and Ketones in Nature ➤ The Carbonyl Group ➤ Preparation of Aldehydes and Ketones ➤ Reactions of Aldehydes and Ketones <ul style="list-style-type: none"> ➤ Nucleophilic Addition to Carbonyl Groups ➤ Addition of Alcohols: Formation of Hemiacetals and Acetals ➤ Addition of Water; Hydration of Aldehydes and Ketones ➤ Addition of Grignard Reagents and Acetylides ➤ Addition of Hydrogen Cyanide; Cyanohydrins ➤ Addition of Nitrogen Nucleophiles <ul style="list-style-type: none"> ➤ Reduction of Carbonyl Compounds ➤ Oxidation of Carbonyl Compounds ➤ Keto–Enol Tautomerism ➤ Acidity of α-Hydrogens; the Enolate Anion ➤ The Aldol Condensation ➤ The Mixed Aldol Condensation 	2	4
6	Carboxylic Acids and Their Derivatives	<ul style="list-style-type: none"> ➤ Definition ➤ Classification and Structure of Carboxylic Acids and Their Derivatives ➤ Nomenclature of Acids ➤ Physical Properties of Acids ➤ Acidity and Acidity Constants <ul style="list-style-type: none"> ➤ Effect of Structure on Acidity; the Inductive Effect Revisited 	2	4



		<ul style="list-style-type: none"> ➤ Conversion of Acids to Salts ➤ Preparation of Acids <ul style="list-style-type: none"> ➤ Oxidation of Primary Alcohols and Aldehydes ➤ Oxidation of Aromatic Side Chains ➤ Reaction of Grignard Reagents with Carbon Dioxide ➤ Hydrolysis of Cyanides (Nitriles) ➤ Carboxylic Acid Derivatives <ul style="list-style-type: none"> ➤ Preparation and Reactions of <ul style="list-style-type: none"> ▪ Esters ▪ Acyl Halides ▪ Acid Anhydrides ▪ Amides ➤ Application: The Mechanism of Action of β-Lactam Antibiotics 		
7		Final Exam	1	2
Number of Weeks/and Units Per semester			14	28

b – Practical Aspect: Organic Chemistry II:			
Order	Practical Experiment	Number of weeks	Contact hours
1	➤ Identification of Alcohols	1	2
2	➤ Identification of aldehyde and ketones	1	2
3	➤ Identification of carboxylic acids	1	2
4	➤ Identification of amines	1	2
5	➤ Fisher method of esterification(preparation of ethylacetate)	1	2
6	➤ Preparation of acetamide	1	2
7	➤ Hydrolysis of acetamide	1	2
8	➤ Detection of halogen and Detection of nitrogen.	2	4
9	➤ Preparation of benzoic acid oxidation of benzyl alcohol	1	2
10	Final exam	1	2
Number of Weeks/and Units Per Semester			22

II. Teaching Strategies:

Lectures using data show video animation, Practice session, Discussions, Solving Problem methods, Group assignments, Small group discussions and Practical classes.



III. Assignments and projects:			
no	Assignment	Week Due	Mark
1	- Project	5	5

IV. Assessment Tasks:				
no	Assessment Method	Week Due	Mark	Proportion of Final Assessment
1	Project (single\group)	2, 8	5	5%
2	Practical reports	1-9	10	10%
3	Oral Tests	5, 9	5	5%
4	Written Test (1)	7	10	10%
5	Final Exam (theoretical)	14	50	50%
6	Final Exam (practical)	10	20	20%
7	Total		100	100%

V. Learning Resources:	
1-Required Textbook(s) (maximum two).	
	1- R. T. Morrison and R. N. Boyd, Organic Chemistry, 2002, 6 th edition, Pearson Prentice Hall of India Pvt. Ltd, New Delhi. 2- K.-H. Hellwich · C. D. Siebert, "Stereochemistry Workbook" 2006, Springer-Verlag Berlin Heidelberg, Berlin.
2-Recommended Books and Reference Materials.	
	1. I. L. Finar, Organic Chemistry: The Fundamental Principles, 1963, Fourth edition, longman green and company ltd. London. 2. John McMurry." Fundamentals of Organic Chemistry " 2011, Seventh Edition, Brooks/Cole 20 Davis Drive, Belmont. 3. Jerry and March, Advanced Organic Chemistry ; reaction, mechanism and structure, 2007, 6 th edition, John Wiley and Sons, Inc., Hoboken, New Jersey 4. Janice Gorzynski Smith." Organic Chemistry", 2011, Third Edition, McGraw-Hill, a business unit of The McGraw-Hill Companies, New York.

3-Electronic Materials and Web Sites <i>etc.</i>	
	1-www.orgsyn.org

VI. Course Policies: (including plagiarism, academic honesty, attendance etc)	
The University Regulations on academic misconduct will be strictly enforced. Please refer to Al-Nasser University student's regulations handbook	
1	<p>Class Attendance:</p> <ul style="list-style-type: none"> Absence from lectures and/or practical shall not exceed 25 %. Students who exceed the 25% limit without a medical or emergency excuse acceptable to and approved by the Dean of the college shall not be allowed to take the final exam and shall receive a mark of zero for the course.
2	<p>(Tardy):</p> <p>Students will be allowed to in the class if he/she is late not more than 15 minutes with an acceptable excuse. If the student is late in attending the class for more than three times without an excuse he/she will be warned and will be asked to write undertaken for not repeating that, otherwise his guardian will be notified and the student will miss the classes and will be considered as failed.</p>
3	<p>(Exam Attendance/Punctuality):</p> <ul style="list-style-type: none"> Student will not be allowed to appear in the final exam if he/she is late 30 minutes from the begging of the exam. Students will not be allowed to leave the exam room until unless half of the examination time is passed. If a student misses the final exam, he/she has to provide an accepted excuse he/she will be eligible to take the exam as first attempt. If the student misses the final exam he will be considered as failed and if the repeated exam will be calculated as the minimum of 50%. The student will be considered as failed if he broke the regulations and roles of examination. In the practical courses failing in either part is marked as failing in the course and student has to appear in the failing part and the marks will be given as the minimum mark. Using mobile phones is strictly prohibited in examination time and the student will be considered as failed if he did so.
4	<p>(Assignments and Projects):</p> <ul style="list-style-type: none"> The students have to submit the assignment or project on time. In late cases student has to provide an acceptable and written excuse to the lecturer before the lecturer has to submit the final marks to the department otherwise the student will not be given the marks of the project.

5	<p>(Cheating):</p> <ul style="list-style-type: none"> Cheating in examinations or tests is prohibited which may be in the form of copying from another student or bringing unauthorized materials into the exam room (e.g., crib notes, pagers or cell phones) etc. Midterm Exam cheating results in giving the student a mark of zero Cheating in the final exam will result in failing the student in that subject if he/she did not get benefits in that subject, if he/she gets benefits he/she will be considered as failed in two courses. If the cheating occur in the last day of exam the student will be considered as failed in that course and the previous one. If the students repeats cheating in a single examination period he will be discontinued for a full academic year or permanently if he repeated cheating more than twice.
6	<p>(Plagiarism):</p> <p>“To plagiarize is to take ideas or words of another person and pass them off as one’s own”.</p> <ul style="list-style-type: none"> Plagiarism will results in losing the marks of the assignments. If the students personates other at examination time both will be suspended for a full academic year
7	<p>(Other policies):</p> <ul style="list-style-type: none"> Using mobile or another electronic device capable of storing or transfer data in class during the lecture or the exam is forbidden. Abnormal behavior is not acceptable and the student will face a punitive proceedings. Eating or drinking is strictly prohibited.

Course Specification of Parasitology

University: Al-Nasser University

Faculty: Medical Science

Department: Pharmacy

Program title: Pharmacy Program

I.General Information:						
1	Course Title:	Parasitology				
2	Credit hours:	C.H				Total
		Th.	Pr.	Tut.	Tr.	
		2	1			
3	Study level/year at which this course is offered:	Second semester/ first year				
4	Pre –requisite :	General biology				
5	Co –requisite :					
6	Program (s) in which the course is offered:	None				
7	Language of teaching the course:	English –Arabic				

8	Prepared By:	Dr. Jamil Salim Mubarak
9	Approved By:	

II. Course Description:

The course deals with parasites that live inside the human body (host) and outside (the vector). It includes the parasites classification, geographical distribution, habitat, morphology, life cycle, treatment, diagnosis, epidemiology, prevention and control.

III. ILOs:

At the end of this course students should be able to:

1. Define the medical terms and classification of the parasites and vectors that are involved in human diseases infection.
2. Illustrate the geographical distribution and habitat internally and externally of the parasite.
3. Identify the different stages of the parasite and its vector microscopically.
4. Analyze the morphology and stages of the parasite inside the host and vector.
5. Distinguish the life cycle of the parasite in the host and vector.
6. Implement the methods of diagnosis that will lead to the identification of the parasites and vectors.
7. Administer the treatment, epidemiology, prevention and control of the parasite and vector.
8. Show the appropriate responsibility, self-confidence, and ethical attitudes and behaviors.
9. Demonstrate critical thinking and decision making abilities and long life learning.

IV. Course Content:

1 – Course Topics/Items:

a – Theoretical Aspect:

Order	Topic/ unit	Sub topic	Number of weeks	Contact hours
1	Schistosomiasis	S. mansoni S. haematobium S. japonicum	1	2
2	Fasciolasis	F. hepatica F. gigantica	1	2
3	Taeniasis	T. saginata T. solium Cysticercosis	1	2

4	Hymenolepis and Diphyllbothriasis	H. nana H. diminuta	1	2
5	Ascaris lumbricoides, Enterobius vermicularis & Trichuris		1	2
6	Hook worm & Filariasis	1. Wuchereria bancrofti 2. W. malayi 3. Onchocerca volvulus 4. Loa loa 5. Mansonella ozzardi 6. M. perstans 7. Dracunculus medinensis	1	2
7	Mid Exam		1	2
8	Amebiasis	Entamoeba histolytica	1	2
9	Gardia & Trichomonads	1. T. vaginalis 2. T. hominis	1	2
10	Trypanosomiasis	1. T. rhodiensis 2. T. gambiensi 3. T. cruzi	1	2
11	Leishmaniasis	1. L. tropica 2. L. barziliensis 3. L. donovani	1	2
12	Malaria		1	2
13	Final Exam		1	2
Number of Weeks/and Units Per First semester5				26

b - Practical Aspect:			
Order	Practical Experiment	Number of weeks	Contact hours
1	Schistosomiasis	2	4
2	Fasciolosis	1	2
3	Taeniasis	2	4
4	Hymenolepis	1	2
5	Diphyllbothrium latum	1	2
6	Diphyllbothrium mansoni	1	2
7	Echinococcus granulosus	2	4
8	Dipylidium caninum	1	2
9	Laboratory diagnosis	1	2



10	Prevention and control	1	2
11	Final Exam	1	2
Number of Weeks /and Units Per Semester 15			28

V. Teaching Strategies:

Lectures using data show.
Video animation.
Seminars.
Solving problem method.
Laboratory work.
Directed reading.
Independent study.
Discussion.

VI. Assignments and projects:

No	Assignment	Week Due	Mark
1	- Project	5	5

VII. Assessment Tasks:

no	Assessment Method	Week Due	Mark	Proportion of Final Assessment
1	Project (single or group)	2,8	2.5	2.5%
2	Practical reports	1-10	10	10%
3	Oral Tests	5,9	2.5	2.5%
4	Written Test (1)	7	15	15%
5	Final Exam (theoretical)	14	50	50%
6	Final Exam (practical)	11	20	20%
7			100	100%

VIII. Learning Resources:

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

	<p>1-David T, William P Marell and Voges. Medical Parasitology 9th edition, 2006 Saunders Eieevier, PA, USA</p> <p>2. Monica Cheesbrough, Medical Laboratory Manual For tropical countries, vol I 2004Butter worth, Heinemann Ltd Oxford Britain</p>
2-Recommended Books and Reference Materials.	
	<p>1-RamnikSood, Medical laboratory technology 6thEdition 2009, Jaypee Brothers Medical Publisher New Delhi - India.</p>
3-Electronic Materials and Web Sites <i>etc.</i>	
	<p>1-www. Wiley short course Parasitology.com</p> <p>2- www. Jaypeebrothers Parasitology.com</p>

IX. Course Policies: (including plagiarism, academic honesty, attendance etc)	
The University Regulations on academic misconduct will be strictly enforced. Please refer to Al-Nasser University student's regulations handbook	
1	<p>Class Attendance:</p> <ul style="list-style-type: none"> • Absence from lectures and/or practical shall not exceed 25 %. Students who exceed the 25% limit without a medical or emergency excuse acceptable to and approved by the Dean of the college shall not be allowed to take the final exam and shall receive a mark of zero for the course.
2	<p>(Tardy):</p> <p>Students will be allowed to in the class if he/she is late not more than 15 minutes with an acceptable excuse. If the student is late in attending the class for more than three times without an excuse he/she will be warned and will be asked to write undertaken for not repeating that, otherwise his guardian will be notified and the student will miss the classes and will be considered as failed.</p>

3	<p>(Exam Attendance/Punctuality):</p> <ul style="list-style-type: none"> • Student will not be allowed to appear in the final exam if he/she is late 30 minutes from the beginning of the exam. • Students will not be allowed to leave the exam room until unless half of the examination time is passed. • If a student misses the final exam, he/she has to provide an accepted excuse he/she will be eligible to take the exam as first attempt. • If the student misses the final exam he will be considered as failed and if the repeated exam will be calculated as the minimum of 50%. • The student will be considered as failed if he broke the regulations and roles of examination. • In the practical courses failing in either part is marked as failing in the course and student has to appear in the failing part and the marks will be given as the minimum mark. • Using mobile phones is strictly prohibited in examination time and the student will be considered as failed if he did so.
4	<p>(Assignments and Projects):</p> <ul style="list-style-type: none"> • The students have to submit the assignment or project on time. • In late cases student has to provide an acceptable and written excuse to the lecturer before the lecturer has to submit the final marks to the department otherwise the student will not be given the marks of the project.
5	<p>(Cheating):</p> <ul style="list-style-type: none"> • Cheating in examinations or tests is prohibited which may be in the form of copying from another student or bringing unauthorized materials into the exam room (e.g., crib notes, pagers or cell phones) etc. • Midterm Exam cheating results in giving the student a mark of zero • Cheating in the final exam will result in failing the student in that subject if he/she did not get benefits in that subject, if he/she gets benefits he/she will be considered as failed in two courses. If the cheating occur in the last day of exam the student will be considered as failed in that course and the previous one. • If the students repeats cheating in a single examination period he will be discontinued for a full academic year or permanently if he repeated cheating more than twice.
6	<p>(Plagiarism):</p> <p>“To plagiarize is to take ideas or words of another person and pass them off as one’s own”.</p> <ul style="list-style-type: none"> • Plagiarism will results in losing the marks of the assignments. • If the students personates other at examination time both will be suspended for a full academic year

7	<p>(Other policies):</p> <ul style="list-style-type: none"> Using mobile or another electronic device capable of storing or transfer data in class during the lecture or the exam is forbidden. Abnormal behavior is not acceptable and the student will face a punitive proceedings. Eating or drinking is strictly prohibited.
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Course Specification of Analytical Chemistry II

University: Al-Nasser University

Faculty: Medical Science

Department: Pharmacy

Program title: Pharmacy Program

I. General Information:					
1	Course Title:	Analytical ChemistryII			
2	Credit hours:	C.H			
		Th.	Pr.	Tut.	Tr.
		2	1		
3	Study level/year at which this course is offered:	Second semester/ first year			
4	Pre –requisite :	Analytical Chemistry I			
5	Co –requisite :				
6	Program (s) in which the course is offered:	None			

7	Language of teaching the course:	English/ Arabic
8	Prepared By:	Dr. Tawfeek Ahmed Alobaidy
9	Approved By:	

II. Course Description:

This course will enhance the student's knowledge of the principles of analysis of pharmaceutical substances by oxidation reduction, gravimetric, precipitation, potentiometric method. Also this course covers the principles of gas analysis and some practical method of analysis.

III. ILOs:

By the end of this course, the student should be able to:

1. Describe the basic principle of pharmaceutical analytical chemistry.
2. Recognize different method of quantitative analysis.
3. List the advantage and disadvantages of different method of analysis.
4. Explain the indicators, solvent reagent used in studied classes.
5. Diagram the schemes that explain different method of quantitative analysis.
6. Identify the concentration and yield of the pharmaceutical compounds.
7. Predict the oxidation number, k_{sp} of the pharmaceutical substances.
8. Evaluate the result of the practical part.
9. Operate different pharmaceutical instrument and equipment in the lab.
10. Perform the standardization and analysis of some studied substances.
11. Communicate effectively and clearly by verbal and written means.
12. Work effectively in team and manage the time.
13. Demonstrate critical thinking and decision making abilities

IV. Course Content:

1 – Course Topics/Items:

a – Theoretical Aspect:

Order	Topic/ unit	Sub topic	Number of weeks	Contact hours
1	Redox titration:	Theory of redox reactions, strength and equivalent weights of oxidizing agents and reducing agents, redox titration curves, redox indicators, titration involving potassium permagnate, ceric sulphate potassium iodate, potassium bromate, titanous chloride, sodium 2, 6-dichlorophenol indophenol. Iodometry and iodimetry, Pharmaceutical application of redox titrations- Pharmaceutical applications	2	4



2	Potentiometry	Theoretical consideration, Measurement of potential, Instrumentation, Reference and indicator electrodes, ion selective electrodes, potentiometric titrations, location of end point, equipment, analytical application direct measurement of mean concentration, differential curve, determination of solubility product	2	4
3	Gravimetric Methods of analysis:	<p>Overview of Gravimetry</p> <p>Types of Gravimetric Methods</p> <p>Conservation of Mass</p> <p>Why Gravimetry Is Important</p> <p>Precipitation Gravimetry</p> <p>Theory and Practice</p> <p>Sparingly soluble substances, Solubility product and common ion effect, factors affecting solubility, fractional precipitation, quantitative precipitation, condition for precipitation, contamination of precipitate-co precipitation and post precipitation, practical aspects of gravimetric analysis-precipitation, digestion, filtration, washing, drying/ignition of precipitate, introduction to thermogravimetry</p> <p>Quantitative Applications</p> <p>Qualitative Applications</p> <p>Volatilization Gravimetry</p> <p>Theory and Practice</p> <p>Quantitative Applications</p> <p>Evaluating Volatilization Gravimetry</p>	3	6

		Particulate Gravimetry Theory and Practice Quantitative Applications Evaluating Precipitation Gravimetry		
4	Midterm		1	2
5	Precipitation titration:	Theory of precipitation titration, Mohrs method, Volhard's method, Adsorption indicators. Pharmaceutical application	1	2
6	Complexometric titration:	Concepts of complexation and chelation, Werner's co-ordination number, stability of complexes, titrants, titration curves, types of complexometric titrations, methods of end point detection, metallochromic indicators, metal ion buffer, titration selectivity - masking and demasking, Applications	3	6
7	Gas analysis:	Principle of gas analysis, Hempel's apparatus, absorbants in gas analysis, applications – assay of oxygen, carbon dioxide, nitrous oxide.	1	2
8	Final exam		1	2
Number of Weeks/and Units Per First semester				4
				28

b - Practical Aspect:			
Order	Practical Experiment	Number of weeks	Contact hours
1	Preparation and standardization of potassium permanganate solution	1	2
2	Preparation and standardization of ceric ammonium sulphate solution	1	2

3	Preparation and standardization of potassium iodidesolution	1	2
4	Assay of phenol	1	2
5	Assay of hydrogen peroxide	1	2
6	Preparation and standardization of ammonium thiocyanate solution.	1	2
7	Preparation and standardization of a silver nitrate solution.	1	2
8	Assay of potassium chloride.	1	2
9	Assay of sodium chloride.	1	2
10	Preparation and standardization of EDTA solution	1	2
11	Assay of Calcium lactate	1	2
12	Final exam	1	2
Number of Weeks/and Units Per Semester			24

V. Teaching Strategies:

Lectures using data show video animation, Practice session, Discussions, Solving Problem methods, Group assignments, Small group discussions and Practical classes.

VI. Assignments and projects:

no	Assignment	Week Due	Mark
1	- Project	5	5

VII. Assessment Tasks:

No	Assessment Method	Week Due	Mark	Proportion of Final Assessment
1	Project (single\group)	2, 8	5	5%
2	Practical reports	1-9	10	10%
3	Oral Tests	5, 9	5	5%
4	Written Test (1)	7	10	10%
5	Final Exam (theoretical)	14	50	50%
6	Final Exam (practical)	10	20	20%

7	Total		100	100%
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VIII. Learning Resources:	
1-Required Textbook(s) (maximum two).	
	<p>1- Douglas A. Skoog, Donald M. West, F. James Holler and Stanley R. Crouch Fundamentals of Analytical Chemistry, 2004, 8th edition, Thomson Brooks/Cole, Belmont, USA.</p> <p>2- F.W. Fifeild and D. Kealey, "Principles and Practice ofAnalytical Chemistry"Fifth Edition, 2000, Blackwell Science, London.</p>
2-Recommended Books and Reference Materials.	
	<p>1- DEAN’S Analytical Chemistry Handbook, 2004, Secondedition, McGraw-Hill Handbooks, New York, USA.</p> <p>2- SomenathMitra, Sample Preparation Techniques in Analytical Chemistry, 2003, A John Wiley and Sons, Inc., Publication, Canada.</p> <p>3- K. Danzer, Analytical ChemistryTheoretical and Metrological Fundamentals, 2007, Springer-Verlag Berlin Heidelberg.</p>
3-Electronic Materials and Web Sites <i>etc.</i>	
	<p>1-The Analytical Abstracts database (http://www.rsc.org/ CFAA/AASearchPage.cfm)</p> <p>2- The Analytical Forum on ChemWeb (http://analytical. chemweb.com/search/search.exe)</p>

IX. Course Policies: (including plagiarism, academic honesty, attendance etc)	
The University Regulations on academic misconduct will be strictly enforced. Please refer to Al-Nasser University student's regulations handbook	
1	<p>Class Attendance:</p> <ul style="list-style-type: none"> Absence from lectures and/or practical shall not exceed 25 %. Students who exceed the 25% limit without a medical or emergency excuse acceptable to and approved by the Dean of the college shall not be allowed to take the final exam and shall receive a mark of zero for the course.
2	<p>(Tardy):</p> <p>Students will be allowed to in the class if he/she is late not more than 15 minutes with an acceptable excuse. If the student is late in attending the class for more than three times without an excuse he/she will be warned and will be asked to write undertaken for not repeating that, otherwise his guardian will be notified and the student will miss the classes and will be considered as failed.</p>

3	<p>(Exam Attendance/Punctuality):</p> <ul style="list-style-type: none"> Student will not be allowed to appear in the final exam if he/she is late 30 minutes from the beginning of the exam. Students will not be allowed to leave the exam room until unless half of the examination time is passed. If a student misses the final exam, he/she has to provide an accepted excuse he/she will be eligible to take the exam as first attempt. If the student misses the final exam he will be considered as failed and if the repeated exam will be calculated as the minimum of 50%. The student will be considered as failed if he broke the regulations and roles of examination. In the practical courses failing in either part is marked as failing in the course and student has to appear in the failing part and the marks will be given as the minimum mark. Using mobile phones is strictly prohibited in examination time and the student will be considered as failed if he did so.
4	<p>(Assignments and Projects):</p> <ul style="list-style-type: none"> The students have to submit the assignment or project on time. In late cases student has to provide an acceptable and written excuse to the lecturer before the lecturer has to submit the final marks to the department otherwise the student will not be given the marks of the project.
5	<p>(Cheating):</p> <ul style="list-style-type: none"> Cheating in examinations or tests is prohibited which may be in the form of copying from another student or bringing unauthorized materials into the exam room (e.g., crib notes, pagers or cell phones) etc. Midterm Exam cheating results in giving the student a mark of zero Cheating in the final exam will result in failing the student in that subject if he/she did not get benefits in that subject, if he/she gets benefits he/she will be considered as failed in two courses. If the cheating occur in the last day of exam the student will be considered as failed in that course and the previous one. If the students repeats cheating in a single examination period he will be discontinued for a full academic year or permanently if he repeated cheating more than twice.
6	<p>(Plagiarism):</p> <p>“To plagiarize is to take ideas or words of another person and pass them off as one’s own”.</p> <ul style="list-style-type: none"> Plagiarism will results in losing the marks of the assignments. If the students personates other at examination time both will be suspended for a full academic year

7	<p>(Other policies):</p> <ul style="list-style-type: none"> Using mobile or another electronic device capable of storing or transfer data in class during the lecture or the exam is forbidden. Abnormal behavior is not acceptable and the student will face a punitive proceedings. Eating or drinking is strictly prohibited.
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Course Specification of Biopharmaceutics and Pharmacokinetics I

University: Al-Nasser University

Faculty: Medical Science

Department: Pharmacy

Program title: Pharmacy Program

I. General Information:					
1	Course Title:	Biopharmaceutics and Pharmacokinetics I			
2	Credit hours: 2hrs.	C.H			
		Th.	Pr.	Tut.	Tr.
		2			
3	Study level/year at which this course is offered:	First semester/second year			
4	Pre –requisite :	Physiology II and Biochemistry II			



5	Co –requisite :	
6	Program (s) in which the course is offered:	
7	Language of teaching the course:	English/ Arabic
8	Prepared By:	Dr. Mohammed Addoais
9	Approved By:	

II. Course Description:

This course will introduces the students to the concepts of biopharmaceutics, and pharmacokinetics, the processes of absorption, distribution, metabolism, and excretion of drugs are discussed with the purpose of improving the evaluation of drug delivery systems, and the therapeutic management of patients.

III. ILOs: at end of the course students will be to:

1. Identify all biologic, physiologic, and pathologic factors, which influence drugs' absorption, disposition and response in the body.
2. Explain how physical and chemical drugs' properties, dosage form and route of administration can influence drug performance in the body
3. Discuss the mechanism of drug transport in the body.
4. List the factors affecting drug metabolism, distribution and excretion.
5. Distinguish renal and non-renal excretion of drugs
6. Compare bioavailability and bioequivalence..
7. Design of bioavailability and bioequivalence studies.
8. Adjust and optimize the dose and dosage regimen
9. Solve any formulation problems affecting drug bioavailability.
10. Measure bioavailability parameters and choose the right method for drug administration.
11. Work effectively in a team
12. Manage time effectively

IV. Course Content:

1 – Course Topics/Items:

a – Theoretical Aspect:

No	Topic/ unit	Sub topic	Number of weeks	Contact hours
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1	Introduction to Biopharmaceutics	<ul style="list-style-type: none"> • Definition of some terms used in biopharmaceutics • Aims of studying of biopharmaceutics and Pharmacokinetics • Plasma –time level curve • Routes of Drug Administration, Bioavailability, Advantages and Disadvantages • Transport of Drugs Across Biological Membranes 	2	4
2	GIT absorption of drugs	<ul style="list-style-type: none"> • Definition • Bio-pharmaceutics hurdles in drug development, approaches to overcome them • Mechanism of drug absorption • Physiological factors affecting oral absorption • Physical-Chemical factors affecting oral absorption • Effect of Food on drug Absorption • Formulation factors affecting oral absorption • Techniques for the GIT absorption assessment 	4	8
3		Midterm exam	1	2
4	Biopharmaceutics study of Drug distribution	<ul style="list-style-type: none"> • Definitions • Factors affecting drug distribution • Volume of distribution • Binding to plasma proteins • Factors affecting protein binding • Drug distribution to special tissue <ul style="list-style-type: none"> ○ Brain ○ Placenta • Drug interaction in protein binding 	2	4
5	Biopharmaceutics study of Drug metabolism	<ul style="list-style-type: none"> • Definitions • Role of drug metabolism • Drug metabolism sites • Metabolic pathway • Metabolism enzymes • Metabolism phases • Factors affecting drug metabolism • Drug interaction in metabolism • Extrahepatic metabolism • Prodrugs 	2	4

6	Biopharmaceutics study of Drug excretion	<ul style="list-style-type: none"> Definitions Role and pathway of excretion Types of excretion <ul style="list-style-type: none"> Renal excretion Non-renal excretion <ul style="list-style-type: none"> Biliary excretion Mammary excretion Salivary excretion Skin excretion Pulmonary excretion GIT excretion Genital excretion Factors Affecting Renal Excretion Drug interaction 	2	4
7	Bioavailability and bioequivalence	<ul style="list-style-type: none"> Historical aspects. Definitions. Objectives and significance of BA/BE studies. Factors affecting Bioavailability. Measurement of Bioavailability. Methods for enhancing Bioavailability. Introduction to Bioequivalence. Limitations of BA/BE studies Protocol design of bioavailability assessment. Methods of bioequivalence determination 	2	4
8		Final exam	16	2
Number of Weeks/and Units Per Semester			16	32

V. Teaching Strategies:
<ul style="list-style-type: none"> Lectures using data show Video animation and seminars Directreading Independent study Group discussion

VI. Assignments and projects:			
no	Assignment	Week Due	Mark
1	Assignment	9	5

VII. Assessment Tasks:

no	Assessment Method	Week Due	Mark	Proportion of Final Assessment
1	Assignment	9	5	5%
2	Quizzes	2, 5, 12	5	5%
3	Written Test (midterm exam)	8	30	30%
4	Final Exam (theoretical)	15	60	60%
	Total		100	100%

VIII. Learning Resources:

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

1. Leon Shargel Andrew (2012). Applied Biopharmaceutics and Pharmacokinetics, Sixth edition, Lippincotts and William, Philadelphia.

2-Recommended Books and Reference Materials.

1. Michel E. Winter (2011). Basic clinical pharmacokinetics, Fifth edition, Lippincotts and William, San Fransisco.

3-Electronic Materials and Web Sites *etc.*

- 1-www.boomer.org

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

The University Regulations on academic misconduct will be strictly enforced. Please refer to Al-Nasser University student's regulations handbook

1

Class Attendance:

- Absence from lectures and/or practical shall not exceed 25 %. Students who exceed the 25% limit without a medical or emergency excuse acceptable to and approved by the Dean of the college shall not be allowed to take the final exam and shall receive a mark of zero for the course.

2	<p>(Tardy):</p> <p>Students will be allowed to in the class if he/she is late not more than 15 minutes with an acceptable excuse. If the student is late in attending the class for more than three times without an excuse he/she will be warned and will be asked to write undertaken for not repeating that, otherwise his guardian will be notified and the student will miss the classes and will be considered as failed.</p>
3	<p>(Exam Attendance/Punctuality):</p> <ul style="list-style-type: none"> • Student will not be allowed to appear in the final exam if he/she is late 30 minutes from the begging of the exam. • Students will not be allowed to leave the exam room until unless half of the examination time is passed. • If a student misses the final exam, he/she has to provide an accepted excuse he/she will be eligible to take the exam as first attempt. • If the student misses the final exam he will be considered as failed and if the repeated exam will be calculated as the minimum of 50%. • The student will be considered as failed if he broke the regulations and roles of examination. • In the practical courses failing in either part is marked as failing in the course and student has to appear in the failing part and the marks will be given as the minimum mark. • Using mobile phones is strictly prohibited in examination time and the student will be considered as failed if he did so.
4	<p>(Assignments and Projects):</p> <ul style="list-style-type: none"> • The students have to submit the assignment or project on time. • In late cases student has to provide an acceptable and written excuse to the lecturer before the lecturer has to submit the final marks to the department otherwise the student will not be given the marks of the project.
5	<p>(Cheating):</p> <ul style="list-style-type: none"> • Cheating in examinations or tests is prohibited which may be in the form of copying from another student or bringing unauthorized materials into the exam room (e.g., crib notes, pagers or cell phones) etc. • Midterm Exam cheating results in giving the student a mark of zero • Cheating in the final exam will result in failing the student in that subject if he/she did not get benefits in that subject, if he/she gets benefits he/she will be considered as failed in two courses. If the cheating occur in the last day of exam the student will be considered as failed in that course and the previous one. • If the students repeats cheating in a single examination period he will be discontinued for a full academic year or permanently if he repeated cheating more than twice.

6	<p>(Plagiarism):</p> <p>“To plagiarize is to take ideas or words of another person and pass them off as one’s own”.</p> <ul style="list-style-type: none"> Plagiarism will results in losing the marks of the assignments. If the students personates other at examination time both will be suspended for a full academic year
7	<p>(Other policies):</p> <ul style="list-style-type: none"> Using mobile or another electronic device capable of storing or transfer data in class during the lecture or the exam is forbidden. Abnormal behavior is not acceptable and the student will face a punitive proceedings. Eating or drinking is strictly prohibited.



Course Specification of Phytochemistry I

University: Al-Nasser University

Faculty: Medical Science

Department: Pharmacy

Program title: Pharmacy Program

I. General Information:						
1	Course Title:	Phytochemistry I				
2	Credit hours:	C.H				Total
		Th.	Pr.	Tut.	Tr.	
		3	1			4

3	Study level/year at which this course is offered:	<i>First semester/second year</i>
4	Pre –requisite :	Botany
5	Co –requisite :	
6	Program (s) in which the course is offered:	None
7	Language of teaching the course:	Arabic/English
8	Prepared By:	Bushra Moharam and Wedad Mansour
9	Approved By:	

II. Course Description:

The course provides information on different types of chromatography and its applications; and on the importance of naturally occurring products from their chemical, pharmaceutical and therapeutic applications. It also deals with their isolation and identification using chromatographic methods.

III. ILOs:

Upon completion of this course, the students should be able to:

- 1- Illustrate the principles of different chromatographic techniques.
- 2- Identify the different classes of biologically active compounds of natural origin alkaloids, terpenoids and steroids, their distribution in nature and classification.
- 3- Explain physico-chemical properties of natural origin substances of alkaloids, terpenoids and steroids.
- 4- Recognize the methods of extraction, separation and purification of the constituents of natural products such as alkaloids, terpenoids and steroids.
- 5- Describe the chemical structure of alkaloids, terpenoids, and steroids, their pharmacological properties (biological activities) and contraindications of them.
- 6- Apply the chromatographic techniques in phytochemical analysis of natural products (alkaloids, terpenoids).
- 7- Correlate the chemical structure of natural products (alkaloids, terpenoids, steroids) with their pharmacological activity and predict of structural changes that modify the biological activity.
- 8- Research about suitable methods for extraction; isolation of different compounds from natural origin
- 9- Perform suitable methods for extraction; isolation of alkaloids and terpenoids.

- 10- Carry out different assay procedures for quantitative determination of alkaloids and terpenoids in their origin or preparations.
- 11- Construct a research study about different chromatographic techniques.
- 12- Write reports about the chemistry natural products such as alkaloids, terpenoids, steroids and their isolation and present them.
- 13- Cooperate effectively with other people and to work in teamwork and team planning.
- 14- Evaluate information from different sources, demonstrate critical thinking, problem solving and decision making abilities

IV. Course Content:

1 – Course Topics/Items:

a – Theoretical Aspect:

Order	Topic/ unit	Sub topic	Number of weeks	Contact hours
1	Chromatography	- Introduction, classification, and general concepts (adsorption and partition chromatography) - Separation techniques	1	3
2		Types of chromatographic methods: Column chromatography (CC), Paper chromatography, Thin layer chromatography (TLC).	1	3
3		Types of chromatographic methods: Gas chromatography (GC), High performance liquid chromatography (HPLC), Ion exchange chromatography and Gel chromatography.	1	3
4	Alkaloids	Definition, classification, distribution, functions, function in plant, properties, extraction, uses. Phenylalkylamine alk.; Ephedra, khat. Capsicum.	1	3
5		Tropolone alk.; Colchicum, Pyridine and piperidine; tobacco, Pepper, Pomegranate Tropane alk.; Belladonna, Coca, Quinoline alk; cinchona alk	1	3
6		Isoquinoline alk; opium alk,	1	3

		(Phenanthrene): morphine, Codeine, thebaine; benzylisoquinoline alk: papaverine; phthalidisoquinoline; ipecacuanha alk.		
7		Mid exam	1	2
8	Alkaloids	Indol alk; phystostigma, ergot, Nux vomica, Vinca, Rauwolfia Purine alk.; caffeine, theophylline, theobromine imidazol alk; pilocarpus alk, Terpenoid alk; aconitine, taxol alk	1	3
9	Terpenoids	Definition, classification, distribution, extraction, functions Monoterpenes; Classification, extraction and characterization, plant containing regular monoterpene, valerian, olea europae, Irregular monoterpene, pyrethrum.	1	3
10		Sesquiterpene; Structure, chemical and biological properties; gossypol compound, sesquiterpene lactones; arnica, sweet wormwood Diterpene Structure, chemical and biological properties; yews, coleus.	1	3
11		Triterpenes ;Classification, structures, cucurbitacines Tetraterpenoids: Biological origin, distribution, uses, drug containing tetraterpenoids	1	3
12	Steroids	Definition, Classification, Structures, Sterols, Vitamin D, Bile acids: Sources, structure, action, clinical uses.	1	3
13		Steroid hormones: (sex hormones and adrenocortical hormones)	1	3
14		Final exam	1	2
Number of Weeks/and Units Per First semester4				40

b - Practical Aspect:			
Order	Practical Experiment	Number of weeks	Contact hours
1	Adsorption chromatography; column chromatography (column packaging)	1	2

2	Separation of plant pigments (Extraction by column chromatography)	1	2
3	Partition chromatography; paper chromatography	1	2
4	Partition chromatography; Thin layer chromatography	1	2
5	Extraction and identification of alkaloids derived from Phenylalkylamine (khat, capsicum)	1	2
6	Extraction and identification of alkaloids derived from piperidine (Pomegranate)	1	2
7	Extraction and identification of alkaloids derived from tropane (Stramonium)	1	2
8	Extraction and identification of alkaloids derived from purine (caffeine)	1	2
9	Extraction and identification of alkaloid derived from phthalidisoquinoline (ippecacuanha)	1	2
10	Extraction and identification of terpenoids (Colocynth)	1	2
	Final Exam	1	2
Number of Weeks/and Units Per First semester1			22

V. Teaching Strategies:

- Lectures using board and makers, data show, video animation and seminars
- Solving Problem method, Laboratory work, independent study and discussion

VI. Assignments and projects:

no	Assignment	Week Due	Mark
1	Seminar	3, 5, 9	5
2	Projects	11, 12, 13	

VII. Assessment Tasks:

no	Assessment Method	Week Due	Mark	Proportion of Final Assessment
1	Seminar and project	3, 5, 9, 11-13	5	5%
2	Practical Reports	1-10	10	10%
3	Quizzes	4, 6, 8, 10	5	5%
4	Written Test (1)	7	10	10%
5	Final Exam (practical)	12	20	20%
6	Final Exam (theoretical)	14	50	50%
	Total		100	100%

VIII. Learning Resources:	
1-Required Textbook(s) (maximum two).	
	<p>1- Evans W.C., Evans D. and Trease E., Saunders "Trease and Evans 'Pharmacognosy" (2009); 16th ed. Elsevier, New York</p> <p>2- Jarald E.E. and Jarald S. E., "Textbook of Pharmacognosy and Phytochemistry" (2009); CBS Publishers and Distributors, New Delhi</p>
2-Recommended Books and Reference Materials.	
	<p>1- Steven M. Colegate and Russell J. Molyneux. "Bioactive natural products : detection, isolation, and structural determination" (2008); Seconded, editor.</p> <p>2- Cordell G.A. "The alkaloids: Chemistry and Biology" (2002); Volume 59, Elsevier, New York</p>
3-Electronic Materials and Web Sites <i>etc.</i>	
	<p>1- http://www.Phytomania.org.</p> <p>2- http://www.medicalbotanyintroduction.html.</p> <p>3- http://www.botanical.com</p>

IX. Course Policies: (including plagiarism, academic honesty, attendance etc)	
The University Regulations on academic misconduct will be strictly enforced. Please refer to Al-Nasser University student's regulations handbook	
1	<p>Class Attendance:</p> <ul style="list-style-type: none"> Absence from lectures and/or practical shall not exceed 25 %. Students who exceed the 25% limit without a medical or emergency excuse acceptable to and approved by the Dean of the college shall not be allowed to take the final exam and shall receive a mark of zero for the course.
2	<p>(Tardy):</p> <p>Students will be allowed to in the class if he/she is late not more than 15 minutes with an acceptable excuse. If the student is late in attending the class for more than three times without an excuse he/she will be warned and will be asked to write undertaken for not repeating that, otherwise his guardian will be notified and the student will miss the classes and will be considered as failed.</p>
3	<p>(Exam Attendance/Punctuality):</p> <ul style="list-style-type: none"> Student will not be allowed to appear in the final exam if he/she is late 30 minutes from the begging of the exam. Students will not be allowed to leave the exam room until unless half of the examination time is passed. If a student misses the final exam, he/she has to provide an accepted excuse he/she will be eligible to take the exam as first attempt. If the student misses the final exam he will be considered as failed and if the repeated exam will be calculated as the minimum of 50%. The student will be considered as failed if he broke the regulations and roles of examination.

	<ul style="list-style-type: none"> In the practical courses failing in either part is marked as failing in the course and student has to appear in the failing part and the marks will be given as the minimum mark. Using mobile phones is strictly prohibited in examination time and the student will be considered as failed if he did so.
4	<p>(Assignments and Projects):</p> <ul style="list-style-type: none"> The students have to submit the assignment or project on time. In late cases student has to provide an acceptable and written excuse to the lecturer before the lecturer has to submit the final marks to the department otherwise the student will not be given the marks of the project.
5	<p>(Cheating):</p> <ul style="list-style-type: none"> Cheating in examinations or tests is prohibited which may be in the form of copying from another student or bringing unauthorized materials into the exam room (e.g., crib notes, pagers or cell phones) etc. Midterm Exam cheating results in giving the student a mark of zero Cheating in the final exam will result in failing the student in that subject if he/she did not get benefits in that subject, if he/she gets benefits he/she will be considered as failed in two courses. If the cheating occur in the last day of exam the student will be considered as failed in that course and the previous one. If the students repeats cheating in a single examination period he will be discontinued for a full academic year or permanently if he repeated cheating more than twice.
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7	<p>(Other policies):</p> <ul style="list-style-type: none"> Using mobile or another electronic device capable of storing or transfer data in class during the lecture or the exam is forbidden. Abnormal behavior is not acceptable and the student will face a punitive proceedings. Eating or drinking is strictly prohibited.

Course Specification of Pharmacology I

University: Al-Nasser University

Faculty: Medical Science

Department: Pharmacy

Program title: Pharmacy Program

I. General Information:					
1	Course Title:	Pharmacology I			
2	Credit hours:	C.H			
		Th.	Pr.	Tut.	Tr.
		3			
3	Study level/year at which this course is offered:	First semester/second year			
4	Pre –requisite :	Physiology			
5	Co –requisite :				
6	Program (s) in which the course is offered:				
7	Language of teaching the course:	English – Arabic			
8	Prepared By:	Dr/ Mohammad Abobakr Al-Ghazali			
9	Approved By:				

II. Course Description:
The course will provide the student with the pharmacological knowledge and skills in the basics of pharmacological aspects in kinetics and dynamics of drugs and the role of Autonomic Nervous System in the action of drugs.

III. ILOs: After participation in this course students must be able to:
1- Define the different scientific names in Pharmacological aspects. 2- Describe the vital process and mechanisms in Pharmacokinetics and Pharmacodynamics. 3- Classify the actions of drugs according to the Autonomic Nervous System. 4- Recognize the different mechanism between Sympathetic and Parasympathetic systems. 5- Investigate the kinetics and dynamics of drugs. 6- Discriminate the action of drugs in different groups. 7- Distinguish the accurate selection of drugs on different disorders. 8- Perform confident skills in oral and written knowledge gained from this course.

- 9- Sketch the groups of each drugs covered in this course.
10- Choose professional in selecting the suitable therapy for different disorders covered in this course.
11- Work effectively in a team and demonstrate creativity and time management abilities.
12- Demonstrate critical thinking and decision making abilities.
13- Communicate professional with patients and other health care specialist by verbal and written means.

IV. Course Content:

1 – Course Topics/Items:

a – Theoretical Aspect:

Order	Topic/ unit	Sub topic	Number of weeks	Contact hours
1	General Introduction of Pharmacology	Introduction to Pharmacology	3	9
		Pharmacokinetics		
		Pharmacodynamics		
2	Autonomic Nervous System	Introduction	5	15
		Sympathomimetic Drugs		
		Sympatholytic Drugs		
		Para-sympathomimetic Drugs		
		Para-sympatholytic Drugs		
		Autonomic Ganglia		
3	Midterm Exam		1	2
4	Anti-inflammatory Drugs	Introduction	2	6
		Non-Steroidal Anti-inflammatory Drugs		
5	Autacoids	Histamine and its antagonists	1	3
		Serotonin and its antagonists		
6	Final Exam		1	2
Number of Weeks/and Units Per First semester5				37

V. Teaching Strategies:
-Lectures -Student oral and written presentation

VI. Assignments and projects:			
no	Assignment	Week Due	Mark
1	- Presentation	6	5%

VII.Assessment Tasks:				
no	Assessment Method	Week Due	Mark	Proportion of Final Assessment
1	Assignment/ Presentation	6	5	5%
2	Quizzes	4 - 8	5	5%
3	Written Test (1)	7	30	30%
4	Final Exam (theoretical)	15	60	60%
	total		100	100%

VIII. Learning Resources:
1-Required Textbook(s) (maximum two).
1- M.A. Clark, R. Finkel, J.A. Rey, K. Whalen (2009)Lippincott's Illustrated Reviews of Pharmacology, <i>11th edition</i> , Lippincott's Williams and Wilkins, Philadelphia. 2- B.G. Katzung, S.B. Masters, A.J. Trevor (2012)Basic and Clinical Pharmacology, <i>Fifth edition</i> , Mc Graw Hill Lange, U.S.A.
2-Recommended Books and Reference Materials.
1- H.P. Rang, M.M. Dale, J.M. Ritter, R.J. Flower (2007) Rand and Dale's Pharmacology, <i>6th edition</i> , Churchill Livingstone Elsevier, Philadelphia. 2- Lectures notes.
3-Electronic Materials and Web Sites etc.
1- www.who.int 2- www.drugs.com

IX. Course Policies: (including plagiarism, academic honesty, attendance etc)	
The University Regulations on academic misconduct will be strictly enforced. Please refer to Al-Nasser University student's regulations handbook	
1	<p>Class Attendance:</p> <ul style="list-style-type: none"> Absence from lectures and/or practical shall not exceed 25 %. Students who exceed the 25% limit without a medical or emergency excuse acceptable to and approved by the Dean of the college shall not be allowed to take the final exam and shall receive a mark of zero for the course.
2	<p>(Tardy):</p> <p>Students will be allowed to in the class if he/she is late not more than 15 minutes with an acceptable excuse. If the student is late in attending the class for more than three times without an excuse he/she will be warned and will be asked to write undertaken for not repeating that, otherwise his guardian will be notified and the student will miss the classes and will be considered as failed.</p>
3	<p>(Exam Attendance/Punctuality):</p> <ul style="list-style-type: none"> Student will not be allowed to appear in the final exam if he/she is late 30 minutes from the begging of the exam. Students will not be allowed to leave the exam room until unless half of the examination time is passed. If a student misses the final exam, he/she has to provide an accepted excuse he/she will be eligible to take the exam as first attempt. If the student misses the final exam he will be considered as failed and if the repeated exam will be calculated as the minimum of 50%. The student will be considered as failed if he broke the regulations and roles of examination. In the practical courses failing in either part is marked as failing in the course and student has to appear in the failing part and the marks will be given as the minimum mark. Using mobile phones is strictly prohibited in examination time and the student will be considered as failed if he did so.

4	<p>(Assignments and Projects):</p> <ul style="list-style-type: none"> The students have to submit the assignment or project on time. In late cases student has to provide an acceptable and written excuse to the lecturer before the lecturer has to submit the final marks to the department otherwise the student will not be given the marks of the project.
5	<p>(Cheating):</p> <ul style="list-style-type: none"> Cheating in examinations or tests is prohibited which may be in the form of copying from another student or bringing unauthorized materials into the exam room (e.g., crib notes, pagers or cell phones) etc. Midterm Exam cheating results in giving the student a mark of zero Cheating in the final exam will result in failing the student in that subject if he/she did not get benefits in that subject, if he/she gets benefits he/she will be considered as failed in two courses. If the cheating occur in the last day of exam the student will be considered as failed in that course and the previous one. If the students repeats cheating in a single examination period he will be discontinued for a full academic year or permanently if he repeated cheating more than twice.
6	<p>(Plagiarism):</p> <p>“To plagiarize is to take ideas or words of another person and pass them off as one’s own”.</p> <ul style="list-style-type: none"> Plagiarism will results in losing the marks of the assignments. If the students personates other at examination time both will be suspended for a full academic year
7	<p>(Other policies):</p> <ul style="list-style-type: none"> Using mobile or another electronic device capable of storing or transfer data in class during the lecture or the exam is forbidden. Abnormal behavior is not acceptable and the student will face a punitive proceedings. Eating or drinking is strictly prohibited.

Course Specification of Pharmaceutical Microbiology I

University: AL-Naseer University

Faculty: Medical Science

Department: Pharmacy

Program title: Pharmacy Program

I. General Information:					
1	Course Title:	Pharmaceutical Microbiology I			
2	Credit hours:	C.H			
		Th.	Pr.	Tut.	Tr.
		3	1		
3	Study level/year at which this course is offered:	First semester/second year			
4	Pre –requisite :	General biology			
5	Co –requisite :				
6	Program (s) in which the course is offered:				
7	Language of teaching the course:	English/ Arabic			
8	Prepared By:	Dr. Ebtisam Almoayad			
9	Approved By:				

II. Course Description:
<p>This course is designed to provide the students with knowledge about microbial agents of infection, bacteria and fungi. It describes the classification, morphology, transmission routes, virulence factors, pathogenicity, clinical manifestation, control of the disease, and antibiotics sensitivity. Also this course describes the modes of action of types of antimicrobial agents and mechanisms of antibiotics resistance. The practical part will be concerned with the laboratory diagnosis of bacteria and fungi (microscopically, microbiologically), and antimicrobial susceptibility test.</p>

III. Intended Learning Outcomes (ILOs):

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

1. Define medical terms that relate to microbiology.
2. Identify the characteristics of bacteria and fungi.
3. Describe the classification, pathogenesis, control, diagnosis, and treatment of bacteria and fungi.
4. Recognize techniques and procedures used for laboratory diagnosis of bacteria and fungi.
5. List the modes of action of antimicrobial agents and mechanisms of antibiotics resistance.
6. Design suitable methods/protocols.
7. Apply advanced level knowledge and skills to identify the bacteria.
8. Operate different equipment's and instruments and use emerging technologies in medical laboratory practice.
9. Perform antimicrobial susceptibility test.
10. Practice the principle of infection control, biosafety measures and aseptic precautions.
11. Manage a lab which employs a team of specialists and administrative aspects of that lab.
12. Show the appropriate responsibility, self-confidence, and ethical attitudes and behaviors.
13. Implement writing and presentation skills and demonstrate critical thinking and decision making abilities and long life learning.

IV. Course Content:

1 – Course Topics/Items:

a – Theoretical Aspect:

Order	Topic/ unit	Sub topic	Number of weeks	Contact hours
1	<i>Introduction in microbiology</i>	- Importance of microorganisms Medical terms in microbiology	1	3
2	<i>Prokaryotes and Eukaryotes</i>	- Comparison	1	3
3	<i>Bacterial structure</i>	- Components - Function	1	3
4	<i>Classification of bacteria Morphology of bacteria</i>		1	3
5	<i>Bacterial metabolism</i>	<i>Growth requirements</i>	1	3

6	Bacterial Pathogenicity	The virulence factors Transmission routes of bacterial infection	1	3
7	Middle exam		1	3
8	Bacterial infections	- Common bacterial diseases - Stages of infection	1	3
9	Normal bacterial flora	- Types - Function	1	3
10	Antimicrobial agents	- Sources of antibacterial agents - Types of antibiotics	1	3
11	Antimicrobial agents	- Mechanisms of action of antibiotics - Resistance of bacteria to antibiotics	1	3
12	Antimicrobial agents	MIC, MBC	1	3
13	Fungi	- General Characteristics and - Importance	1	3
14	Fungi	- Morphology of fungi	1	3
15	Mycoses	- Classification - Pathology, - Clinical significance, - Treatment	1	3
16	Final exam		1	2
Number of Weeks/and Units Per Semester				44

b - Practical Aspect:			
Order	Practical Experiment	Number of weeks	Contact hours
1	Infection control polices in microbiology lab	1	2
2	Preparation and sterilization of culture media	1	2
3	Inoculation and incubation of culture media	1	2
4	Examination of culture Preparation of smear	1	2
5	Gram staining	1	2
6	Microscopic examination of isolates	1	2
7	Biochemical tests	1	2

8	Antimicrobial susceptibility test	1	2
9	Antimicrobial susceptibility test	1	2
10	Determination of the minimal inhibitory concentration (MIC) and minimum bactericidal concentration (MBC)	1	2
11	<i>Media, techniques, and incubation used for culturing fungi</i>	1	2
12	<i>Microscopic examination of fungi</i>	1	2
13	<i>Collection of specimens and diagnosis of dermatophytoses</i>	1	2
14	<i>Final exam</i>	1	2
Number of Weeks/and Units Per Semester			28

V. Teaching Strategies:

- Lectures using data show, video animation and seminars
- Solving Problem method, Laboratory work, directed reading, independent study, discussion, and report.

VI. Assignments and projects:

No	Assignment	Week Due	Mark
1	Antibiotics resistance	4	5

VII. Assessment Tasks:

No	Assessment Method	Week Due	Mark	Proportion of Final Assessment
1	Exercises and Home works, Quizzes	2	5	5%
2	Project	4	5	5%
3	Practical Reports	All	10	10%
4	Written Test	6	10	10%
5	Final Exam (theoretical)	16	50	50%
6	Final Exam (practical)	15	20	20%
7	Total		100	100%

VIII. Learning Resources:

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

	<ol style="list-style-type: none"> 1. Harvey RA, Champe PA, Strol WA, Rouse h, Fisher BD. Lippincott's Illustrated Reviews Microbiology (2001). Lippincott Williams and Wilkins. Philadelphia. 2. Kar A. Pharmaceutical Microbiology. (2008). New age international publisher. New Delhi.
2-Recommended Books and Reference Materials.	
	<ul style="list-style-type: none"> • Winn W, Allen S, Janda W, Koneman E, Procop G, Schreckenberger P, and Woods G. Koneman's Color Atlas and Textbook of Diagnostic Microbiology. (2006)6th edition.Lippincott Williams and Wilkins. • Cheesbrough M. Medical laboratory manual for tropical countries. ELBS with Butterworth-Heinemann, University press, Cambridge, UK. Vol. II. Microbiology.
3-Electronic Materials and Web Sites <i>etc.</i>	
	<p> www.ncbi.nlm.nih.gov/books/NBK7627/ www.cdc.gov/ www.textbookofbacteriology.net/ www.wsmicrobiology.com www.microbiologyonline.org.uk www.asm.org </p>

IX. Course Policies: (including plagiarism, academic honesty, attendance etc)	
The University Regulations on academic misconduct will be strictly enforced. Please refer to Al-Nasser University student's regulations handbook	
1	<p>Class Attendance:</p> <ul style="list-style-type: none"> • Absence from lectures and/or practical shall not exceed 25 %. Students who exceed the 25% limit without a medical or emergency excuse acceptable to and approved by the Dean of the college shall not be allowed to take the final exam and shall receive a mark of zero for the course.
2	<p>(Tardy):</p> <p>Students will be allowed to in the class if he/she is late not more than 15 minutes with an acceptable excuse. If the student is late in attending the class for more than three times without an excuse he/she will be warned and will be asked to write undertaken for not repeating that, otherwise his guardian will be notified and the student will miss the classes and will be considered as failed.</p>

3	<p>(Exam Attendance/Punctuality):</p> <ul style="list-style-type: none"> Student will not be allowed to appear in the final exam if he/she is late 30 minutes from the beginning of the exam. Students will not be allowed to leave the exam room until unless half of the examination time is passed. If a student misses the final exam, he/she has to provide an accepted excuse he/she will be eligible to take the exam as first attempt. If the student misses the final exam he will be considered as failed and if the repeated exam will be calculated as the minimum of 50%. The student will be considered as failed if he broke the regulations and roles of examination. In the practical courses failing in either part is marked as failing in the course and student has to appear in the failing part and the marks will be given as the minimum mark. Using mobile phones is strictly prohibited in examination time and the student will be considered as failed if he did so.
4	<p>(Assignments and Projects):</p> <ul style="list-style-type: none"> The students have to submit the assignment or project on time. In late cases student has to provide an acceptable and written excuse to the lecturer before the lecturer has to submit the final marks to the department otherwise the student will not be given the marks of the project.
5	<p>(Cheating):</p> <ul style="list-style-type: none"> Cheating in examinations or tests is prohibited which may be in the form of copying from another student or bringing unauthorized materials into the exam room (e.g., crib notes, pagers or cell phones) etc. Midterm Exam cheating results in giving the student a mark of zero Cheating in the final exam will result in failing the student in that subject if he/she did not get benefits in that subject, if he/she gets benefits he/she will be considered as failed in two courses. If the cheating occur in the last day of exam the student will be considered as failed in that course and the previous one. If the students repeats cheating in a single examination period he will be discontinued for a full academic year or permanently if he repeated cheating more than twice.
6	<p>(Plagiarism):</p> <p>“To plagiarize is to take ideas or words of another person and pass them off as one’s own”.</p> <ul style="list-style-type: none"> Plagiarism will results in losing the marks of the assignments. If the students personates other at examination time both will be suspended for a full academic year



7	<p>(Other policies):</p> <ul style="list-style-type: none">• Using mobile or another electronic device capable of storing or transfer data in class during the lecture or the exam is forbidden.• Abnormal behavior is not acceptable and the student will face a punitive proceedings.• Eating or drinking is strictly prohibited.
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Course Specification of Instrumental Analysis

University: Al-Nasser University

Faculty: Medical Science

Department: Pharmacy

Program title: Pharmacy Program

I. General Information:					
1	Course Title:	Instrumental Analysis			
2	Credit hours:	C.H			
		Th.	Pr.	Tut.	Tr.
		3			
3	Study level/year at which this course is offered:	First semester/second year			
4	Pre –requisite :	Analytical Chemistry II			
5	Co –requisite :				
6	Program (s) in which the course is offered:	NONE			
7	Language of teaching the course:	English/ Arabic			
8	Prepared By:	Dr. Tawfeek Alobaidy			
9	Approved By:				

II. Course Description:
This course deal with the study of introduction to instrumental analysis, Physical methods, Spectrochemical methods, Nuclear Magnetic Resonance (NMR), X-ray crystallography, Chromatography. Also it covers some experiments for quantitative and qualitative determination of some pharmaceutical substances.

III. ILOs:
At the end of this course the student should be able:
1. Recognize the basic principles of instrumental analysis
2. Explain physical, spectroscopic and chromatographic method of analysis.
3. Illustrate instrumentation and interpretation of spectra obtained from different method.
4. Discuss the advantages and disadvantages of all types of analysis.

5. Identify the pharmaceutical application of different method of analysis.
6. Predict the qualitative and quantitative approach of each method of analysis.
7. Practice some quantitative determination of pharmaceutical substances.
8. Perform some qualitative determination of pharmaceutical substances.
9. Operate different equipment and instruments.
10. Manage and organize the time.
11. Use properly and safely the organic compounds and new tools in the laboratories.
12. Work independently or as a team.
13. Acquire an ethical attitude and approach.

I. Course Content:				
1 – Course Topics/Items:				
a – Theoretical Aspect:				
Order	Topic/ unit	Sub topic	Number of weeks	Contact hours
1	Introduction	Instrumental methods of analysis, advantages and comparison with classical methods of analysis	1	3
2	Physical methods	<u>Polarimetry</u> : optical and specific rotation, instrumentation and applications. <u>Refractometry</u> : refractive index, molar refraction, instrumentation and applications..	1	3
3	Spectrochemical methods:	Electromagnetic radiation: nature of electromagnetic radiation, the interaction between energy and matter, electromagnetic spectrum, absorption and emission of radiant energy by atoms and molecules.	1	3
4	UV-Visible spectroscopy:	Absorption spectrophotometry, Beer-Lambert;s law, methods of color development. Instrumentation, single-beam and double-beam spectrophotometers, single component analysis. Simultaneous spectrophotometry, derivative spectrophotometry and	2	6

		applications in pharmaceutical analysis.		
5	Fluorescence Spectroscopy	Fluorescence and phosphorescence, excitation and emission spectra, factors affecting the fluorescence intensity, instrumentation and applications.	1	3
6	Midterm		1	2
7	Flame Photometry and Atomic Absorption Spectroscopy	<u>Flame photometry</u> : Introduction, theory, instrumentation and applications. <u>Atomic absorption spectroscopy</u> : Introduction, theory, instrumentation and applications.	1	3
8	Electroanalytical Methods	Introduction <u>Potentiometric methods</u> : theory, instrumentation and applications. <u>Voltammetry</u> : introduction, theory, instrumentation, polarography and applications.	2	6
9	Separation Methods	Introduction <u>Solvent extraction</u> : distribution law, the distribution ratio, calculations of the percent extracted. <u>Chromatography</u> : principles of chromatographic separations, classification of chromatographic techniques, theory of column efficiency in chromatography and resolution in chromatography	2	6
10	Final Exam		1	2
	Total		13	37

II. Teaching Strategies:

Lectures using data show video animation, Practice session, Discussions, Solving Problem methods, Group assignments, Small group discussions and Practical classes.

III. Assignments and projects:

no	Assignment	Week Due	Mark
1	- Project	5	5

IV. Assessment Tasks:				
no	Assessment Method	Week Due	Mark	Proportion of Final Assessment
1	Project	2, 8	5	5%
2	Oral Tests and homework	5, 9	5	5%
3	Written Test (1)	7	10	20%
4	Final Exam (theoretical)	14	70	70%
5	Total		100	100%

V. Learning Resources:	
1-Required Textbook(s) (maximum two).	
	1- Lena Ohannesian, Anthony J Streeter, handbook of pharmaceutical analysis. 2002, V.117, Marcel Dekker, Inc. New York. 2- B.D. Mistry., A Handbook of Spectroscopic Data CHEMISTRY (UV, JR, PMR, JJC NMR and Mass Spectroscopy), 2009, Oxford Book Company, Jaipur.
2-Recommended Books and Reference Materials.	
	1- Francis Rouessac and Annick Rouessac, Chemical Analysis; Modern Instrumentation Methods and Techniques, 2007, 2NDEdition, John Wiley and Sons Ltd, Chichester, West Sussex, England. 2- S Ahuja, N Jespersen, modern instrumental analysis, 2006, first edition, Elsevier B.V. Oxford, UK.
3-Electronic Materials and Web Sites <i>etc.</i>	

VI. Course Policies: (including plagiarism, academic honesty, attendance etc)	
The University Regulations on academic misconduct will be strictly enforced. Please refer to Al-Nasser University student's regulations handbook	
1	Class Attendance: • Absence from lectures and/or practical shall not exceed 25 %. Students who exceed the 25% limit without a medical or emergency excuse acceptable to and approved by the Dean of the college shall not be allowed to take the final exam and shall receive a mark of zero for the course.

2	(Tardy): Students will be allowed to in the class if he/she is late not more than 15 minutes with an acceptable excuse. If the student is late in attending the class for more than three times without an excuse he/she will be warned and will be asked to write undertaken for not repeating that, otherwise his guardian will be notified and the student will miss the classes and will be considered as failed.
3	(Exam Attendance/Punctuality): <ul style="list-style-type: none"> • Student will not be allowed to appear in the final exam if he/she is late 30 minutes from the begging of the exam. • Students will not be allowed to leave the exam room until unless half of the examination time is passed. • If a student misses the final exam, he/she has to provide an accepted excuse he/she will be eligible to take the exam as first attempt. • If the student misses the final exam he will be considered as failed and if the repeated exam will be calculated as the minimum of 50%. • The student will be considered as failed if he broke the regulations and roles of examination. • In the practical courses failing in either part is marked as failing in the course and student has to appear in the failing part and the marks will be given as the minimum mark. • Using mobile phones is strictly prohibited in examination time and the student will be considered as failed if he did so.
4	(Assignments and Projects): <ul style="list-style-type: none"> • The students have to submit the assignment or project on time. • In late cases student has to provide an acceptable and written excuse to the lecturer before the lecturer has to submit the final marks to the department otherwise the student will not be given the marks of the project.
5	(Cheating): <ul style="list-style-type: none"> • Cheating in examinations or tests is prohibited which may be in the form of copying from another student or bringing unauthorized materials into the exam room (e.g., crib notes, pagers or cell phones) etc. • Midterm Exam cheating results in giving the student a mark of zero • Cheating in the final exam will result in failing the student in that subject if he/she did not get benefits in that subject, if he/she gets benefits he/she will be considered as failed in two courses. If the cheating occur in the last day of exam the student will be considered as failed in that course and the previous one. • If the students repeats cheating in a single examination period he will be discontinued for a full academic year or permanently if he repeated cheating more than twice.
6	(Plagiarism): “To plagiarize is to take ideas or words of another person and pass them off as one’s own”. <ul style="list-style-type: none"> • Plagiarism will results in losing the marks of the assignments. • If the students personates other at examination time both will be suspended for a full academic year
7	(Other policies):



- | | |
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| | <ul style="list-style-type: none">• Using mobile or another electronic device capable of storing or transfer data in class during the lecture or the exam is forbidden.• Abnormal behavior is not acceptable and the student will face a punitive proceedings.• Eating or drinking is strictly prohibited. |
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Course Specification of Medicinal Chemistry I

University: Al-Nasser University

Faculty: Medical Science

Department: Pharmacy

Program title: Pharmacy Program

I. General Information:					
1	Course Title:	Medicinal Chemistry I			
2	Credit hours:	C.H			
		Th.	Pr.	Tut.	Tr.
		2	1		
3	Study level/year at which this course is offered:	First semester/second year			
4	Pre –requisite :	Analytical Chemistry II and Pharmaceutical Organic Chemistry IV			
5	Co –requisite :	Pharmacology III			
6	Program (s) in which the course is offered:	None			
7	Language of teaching the course:	Arabic/English			
8	Prepared By:	Dr. Tawfeek Ahmed Alobaidy			
9	Approved By:				

II. Course Description:
<p>This course introduces students to chemistry of drugs with special emphasis to the physicochemical properties of the drug structure and its effect on the biological activity. The chemical structure and its effect on drugs-receptor interaction, drug metabolism and the basic principles of drug design and the medicinal chemistry of ANS drugs are demonstrated.</p>

III. ILOs:	
At the completion of this course the student should be able to:	
1- Recognize the basic principles of medicinal chemistry.	
2- Relate the physicochemical chemical properties of drug to the biological activity.	
3- Illustrate the drug metabolism and latention.	
4- Characterize the basic principle of drug design, SAR, biosynthesis, synthesis, metabolism of ANS drugs	
5- Determine the functional groups and their effect on absorption, distribution and excretion.	
6- Identify the predicted moieties of drug structure that are metabolized	
7- Diagram the schemes that describe bonds interaction	
8- Categorize drug of autonomic nervous system and synthesize some ANS drugs	
9- Practice the program used in drug design	
10- Calculate the log p for some drugs	
11- Determine the impurities limit in pharmaceutical preparation	
12- Perform assay of some ANS drugs	
13- Cooperate with his colleagues to prepare a scientific topic.	
14- Present some examples for drug design.	
15- Implement writing and presentation skills.	

IV. Course Content:				
1 – Course Topics/Items:				
a – Theoretical Aspect:				
Order	Topic/ unit	Sub topic	Number of weeks	Contact hours
1	Introduction to medicinal chemistry	Terminology related to medicinal chemistry and its orientation	1	2
2	Physicochemical properties	Hydrophobicity, electronic effect and steric effect	1	2
3	Application of QSAR	calculation of pc, Craig plot, toplless scheme and Hansch equation	1	2
4	Drug-receptor interaction	Types of bond in drug receptor interaction Application of D-R interaction	1	2
5	Drug design	sources of lead compound, strategies of drug design, introduction to graph theory, applications of quantum mechanics. Computer Aided Drug Designing (CADD), brief introduction to combinatorial chemistry. types of drug design	1	2

6	Prodrug and drug latenation	Types of prodrug Objectives of prodrug Examples of prodrug	1	2
7	Midterm exam		1	2
8	Drug metabolism	Site of drug biotransformation, <u>pathways of drug metabolism</u> : phase I (oxidation, reduction and hydrolysis) Phase II (conjugation with glucuronic acid, sulfate, amino acids and glutathione, acylation, methylation)	2	4
9	Sympathomimetic	Classification, SAR, biosynthesis, synthesis metabolism	1	2
10	Sympatholytic	Classification, synthesis metabolism	1	2
11	Parasympathatic	Classification, SAR, biosynthesis, synthesis metabolism	1	2
12	parasympatholytic	Classification, SAR, synthesis metabolism	1	2
13	Final exam		1	2
Number of Weeks/and Units Per First semester4				28

b - PracticalAspect:			
Order	Practical Experiment	Number of weeks	Contact hours
1	Limit Test For Chloride	1	3
2	Limit Test For Sulphate	1	3
3	Limit Test For iron	1	3
4	limit test for sulphate in sod thiosulphate	1	3
5	limit test for chloride in potassium bromide	1	3
6	limit test for chloride in colored compound (potassium permanganate)	1	3
7	limit test in sodium salicylate	1	3
8	Limit test for cl, SO4 and salicylic acid in aspirin	2	3
9	Final exam	1	3
Number of Weeks/and Units Per Semester			30

VI. Teaching Strategies:
Lectures using data show video animation, Practice session, Discussions, Solving Problem methods, Group assignments, Small group discussions and Practical classes

VII. Assignments and projects:			
no	Assignment	Week Due	Mark
1	- Project	5	5

VIII. Assessment Tasks:				
no	Assessment Method	Week Due	Mark	Proportion of Final Assessment
1	Project	2, 8	5	5%
2	Practical reports	1-9	10	10%
3	Oral Tests	5, 9	5	5%
4	Written Test (1)	7	10	10%
5	Final Exam (theoretical)	14	50	50%
6	Final Exam (practical)	11	20	20%
	Total		100	100%

IX. Learning Resources:
1-Required Textbook(s) (maximum two).
<p>1- John M. Beale, Jr. and John H. Block, "Text book of Organic Medicinal and Pharmaceutical Chemistry", 2011, 12th Edition, Wilson and Gisvold, Lippincott Williams and Wilkins, A Wolters Kluwer Company, Philadelphia.</p> <p>2- Graham L. Patrick, "An Introduction to Medicinal Chemistry", 2009, Fourth Edition, Oxford University Press Inc., New York</p>
2-Recommended Books and Reference Materials.
<p>1- Thomas Nogrady, Donald F. Weaver. Medicinal Chemistry A Molecular and Biochemical Approach, 2005, Third edition, Oxford University Press, Inc., New York.</p>

	<p>2- Donald J. Abraham, "BURGER'S Medicinal Chemistry and Drug Discovery" 6th edition, A John Wiley and Sons, Inc., Virginia.</p> <p>3- Thomas L. Lemke, Victoria F. Roche, David A. Willaiams and S. William Zito "Foye's Principles of Medicinal Chemistry", 2008, 6th, Edition, Lippincott Williams and Wilkins, a Wolters Kluwer business, Philadelphia.</p> <p>4- PovlKrogsgaard-Larsen, TommyLiljefors andUlf Madsen, "Textbook of Drug Design andDiscovery".2002, Third edition, Taylor and Francis, London.</p> <p>5- K.-H. Hellwich · C. D. Siebert, "Stereochemistry Workbook"2006, Springer-Verlag Berlin Heidelberg, Berlin.</p>
3-Electronic Materials and Web Sites <i>etc.</i>	
	<p>1- http://www.chemaxon/marvin</p> <p>2-http://www.webmolecules.com</p> <p>3-http://www.acdlabs.com</p> <p>4-PASSPrediction of Activity Spectra for Substance) (http://www.ibmh.msk.su/PASS).</p>

X. Course Policies: (including plagiarism, academic honesty, attendance etc)	
The University Regulations on academic misconduct will be strictly enforced. Please refer to Al-Nasser University student's regulations handbook	
1	<p>Class Attendance:</p> <ul style="list-style-type: none"> • Absence from lectures and/or practical shall not exceed 25 %. Students who exceed the 25% limit without a medical or emergency excuse acceptable to and approved by the Dean of the college shall not be allowed to take the final exam and shall receive a mark of zero for the course.
2	<p>(Tardy):</p> <p>Students will be allowed to in the class if he/she is late not more than 15 minutes with an acceptable excuse. If the student is late in attending the class for more than three times without an excuse he/she will be warned and will be asked to write undertaken for not repeating that, otherwise his guardian will be notified and the student will miss the classes and will be considered as failed.</p>
3	<p>(Exam Attendance/Punctuality):</p> <ul style="list-style-type: none"> • Student will not be allowed to appear in the final exam if he/she is late 30 minutes from the begging of the exam. • Students will not be allowed to leave the exam room until unless half of the examination time is passed.

	<ul style="list-style-type: none"> If a student misses the final exam, he/she has to provide an accepted excuse he/she will be eligible to take the exam as first attempt. If the student misses the final exam he will be considered as failed and if the repeated exam will be calculated as the minimum of 50%. The student will be considered as failed if he broke the regulations and roles of examination. In the practical courses failing in either part is marked as failing in the course and student has to appear in the failing part and the marks will be given as the minimum mark. Using mobile phones is strictly prohibited in examination time and the student will be considered as failed if he did so.
4	<p>(Assignments and Projects):</p> <ul style="list-style-type: none"> The students have to submit the assignment or project on time. In late cases student has to provide an acceptable and written excuse to the lecturer before the lecturer has to submit the final marks to the department otherwise the student will not be given the marks of the project.
5	<p>(Cheating):</p> <ul style="list-style-type: none"> Cheating in examinations or tests is prohibited which may be in the form of copying from another student or bringing unauthorized materials into the exam room (e.g., crib notes, pagers or cell phones) etc. Midterm Exam cheating results in giving the student a mark of zero Cheating in the final exam will result in failing the student in that subject if he/she did not get benefits in that subject, if he/she gets benefits he/she will be considered as failed in two courses. If the cheating occur in the last day of exam the student will be considered as failed in that course and the previous one. If the students repeats cheating in a single examination period he will be discontinued for a full academic year or permanently if he repeated cheating more than twice.
6	<p>(Plagiarism):</p> <p>“To plagiarize is to take ideas or words of another person and pass them off as one’s own”.</p> <ul style="list-style-type: none"> Plagiarism will results in losing the marks of the assignments. If the students personates other at examination time both will be suspended for a full academic year
7	<p>(Other policies):</p> <ul style="list-style-type: none"> Using mobile or another electronic device capable of storing or transfer data in class during the lecture or the exam is forbidden. Abnormal behavior is not acceptable and the student will face a punitive proceedings. Eating or drinking is strictly prohibited.



Course Specification of Pharmacology II

برنامج مساق بكالوريوس صيدلة - توصيف المقررات - كلية العلوم الطبية 142

University: Al-Nasser University

Faculty: Medical Science

Department: Pharmacy

Program title: Pharmacy Program

I. General Information:					
1	Course Title:	Pharmacology II			
2	Credit hours:	C.H			
		Th.	Pr.	Tut.	Tr.
		2			
3	Study level/year at which this course is offered:	Second Semester/second year			
4	Pre –requisite :	Pharmacology I			
5	Co –requisite :				
6	Program (s) in which the course is offered:				
7	Language of teaching the course:	English – Arabic			
8	Prepared By:	Dr/ Mohammad Abobakr Al-Ghazali			
9	Approved By:				

I. Course Description:
This course will provide the student with the essential pharmacological skills and knowledge of the symptoms, mechanism of actions, side effects and treatment of different Cardiovascular diseases, Respiratory disorders, Blood and renal diseases.

II. ILOs: After participation in this course students must be able to:
1- Classify the groups of drugs in each disease in this course. 2- Describe the mechanism of actions of drugs used in different disease discussed in this course. 3- Recognize the side effects that can occur with different drugs explained in this course. 4- Distinguish the actions, mechanisms and side effects of different drugs included in this course. 5- Foretell the pharmacological aspects of individual drugs, once provided with their pharmacological class. 6- Merge theory with professional practical. 7- Perform confident oral and written knowledge and skills gained from this course.

- 8- Demonstrate professional competence in selecting appropriate drugs from different groups that covered in this course.
- 9- Choose professional in selecting the convenient therapy for different diseases covered in this course.
- 10- Implement practical experiments to diagnose and describe the pharmacological aspects of unknown drugs.
- 11- Work effectively in a team and demonstrate creativity and time management abilities
- 12- Demonstrate critical thinking and decision making abilities.
- 13- Communicate professional with patients and other health care specialist by verbal and written means.

III. Course Content:				
1 – Course Topics/Items:				
a – Theoretical Aspect:				
Order	Topic/ unit	Sub topic	Number of weeks	Contact hours
1	Cardiovascular System	Introduction	5	10
		Antihypertensive Drugs		
		Antianginal Drugs		
		Anti-arrhythmia		
		Anti- Congestive Heart Failure		
2	Drug Affecting Blood I	Antianaemic Drugs	1	2
3	Midterm Exam		1	2
4	Drug Affecting Blood II	Antihyperlipoprotein	2	4
		Management of Haemostatic Disorders		
5	Respiratory System	Anti-Asthmatic Drugs	2	4
		Anti-cough		
6	Renal System	Diuretics	2	4
		Renal disorders		
7	Final Exam		1	2
Number of Weeks/and Units Per First semester4				28

b - Practical Aspect:			
Order	Practical Experiment	Number of weeks	Contact hours
1	Process of organ isolation	2	6
2	In vivo effects of drugs	6	18
3	In vitro effects of drugs	5	15
4	Final Exam	1	3
Number of Weeks/and Units Per First semester4			28

IV. Teaching Strategies:	
-Lectures -Student oral and written presentation practical session	

V. Assignments and projects:			
no	Assignment	Week Due	Mark
1	- Presentation	6	5%

VI. Assessment Tasks:				
no	Assessment Method	Week Due	Mark	Proportion of Final Assessment
1	Presentation	6	5	5%
2	Practical Reports	All	10	10%
3	Quizzes and Exercises and Home works	4-8	5	5%
4	Written Test (1)	7	10	10%
5	Final Exam (theoretical)	15	50	50%
6	Final Exam (practical)	14	20	20%
	Total		100	100%

VII. Learning Resources:	
1-Required Textbook(s) (maximum two).	
	1- M.A. Clark, R. Finkel, J.A. Rey, K. Whalen (2009) Lippincott's Illustrated Reviews of Pharmacology, 11th edition, Lippincott's Williams and Wilkins, Philadelphia. 2- B.G. Katzung, S.B. Masters, A.J. Trevor (2012) Basic and Clinical Pharmacology, Fifth edition, Mc Graw Hill Lange, U.S.A.

2-Recommended Books and Reference Materials.	
	1- H.P. Rang, M.M. Dale, J.M. Ritter, R.J. Flower (2007) Rand and Dale's Pharmacology, 6th edition, Churchill Livingstone Elsevier, Philadelphia.
3-Electronic Materials and Web Sites etc.	
	1- www.who.int 2- www.drugs.com

VIII. Course Policies: (including plagiarism, academic honesty, attendance etc)	
The University Regulations on academic misconduct will be strictly enforced. Please refer to Al-Nasser University student's regulations handbook	
1	Class Attendance: <ul style="list-style-type: none"> Absence from lectures and/or practical shall not exceed 25 %. Students who exceed the 25% limit without a medical or emergency excuse acceptable to and approved by the Dean of the college shall not be allowed to take the final exam and shall receive a mark of zero for the course.
2	(Tardy): <p>Students will be allowed to in the class if he/she is late not more than 15 minutes with an acceptable excuse. If the student is late in attending the class for more than three times without an excuse he/she will be warned and will be asked to write undertaken for not repeating that, otherwise his guardian will be notified and the student will miss the classes and will be considered as failed.</p>
3	(Exam Attendance/Punctuality): <ul style="list-style-type: none"> Student will not be allowed to appear in the final exam if he/she is late 30 minutes from the begging of the exam. Students will not be allowed to leave the exam room until unless half of the examination time is passed. If a student misses the final exam, he/she has to provide an accepted excuse he/she will be eligible to take the exam as first attempt. If the student misses the final exam he will be considered as failed and if the repeated exam will be calculated as the minimum of 50%. The student will be considered as failed if he broke the regulations and roles of examination. In the practical courses failing in either part is marked as failing in the course and student has to appear in the failing part and the marks will be given as the minimum mark. Using mobile phones is strictly prohibited in examination time and the student will be considered as failed if he did so.

4	<p>(Assignments and Projects):</p> <ul style="list-style-type: none"> The students have to submit the assignment or project on time. In late cases student has to provide an acceptable and written excuse to the lecturer before the lecturer has to submit the final marks to the department otherwise the student will not be given the marks of the project.
5	<p>(Cheating):</p> <ul style="list-style-type: none"> Cheating in examinations or tests is prohibited which may be in the form of copying from another student or bringing unauthorized materials into the exam room (e.g., crib notes, pagers or cell phones) etc. Midterm Exam cheating results in giving the student a mark of zero Cheating in the final exam will result in failing the student in that subject if he/she did not get benefits in that subject, if he/she gets benefits he/she will be considered as failed in two courses. If the cheating occur in the last day of exam the student will be considered as failed in that course and the previous one. If the students repeats cheating in a single examination period he will be discontinued for a full academic year or permanently if he repeated cheating more than twice.
6	<p>(Plagiarism):</p> <p>“To plagiarize is to take ideas or words of another person and pass them off as one’s own”.</p> <ul style="list-style-type: none"> Plagiarism will results in losing the marks of the assignments. If the students personates other at examination time both will be suspended for a full academic year
7	<p>(Other policies):</p> <ul style="list-style-type: none"> Using mobile or another electronic device capable of storing or transfer data in class during the lecture or the exam is forbidden. Abnormal behavior is not acceptable and the student will face a punitive proceedings. Eating or drinking is strictly prohibited.

Course Specification of Biopharmaceutics and Pharmacokinetics II

University: Al-Nasser University

Faculty: Medical Science

Department: Pharmacy

Program title: Pharmacy Program

I. General Information:					
1	Course Title:	Biopharmaceutics and Pharmacokinetics II			
2	Credit hours: 3 hrs.	C.H			
		Th.	Pr.	Tut.	Tr.
		2			
3	Study level/year at which this course is offered:	Second Semester/second year			
4	Pre –requisite :	Biopharmaceutics and pharmacokinetics I			
5	Co –requisite :				
6	Program (s) in which the course is offered:				
7	Language of teaching the course:	English/Arabic			
8	Prepared By:	Dr. Mohammed Addoais			
9	Approved By:				

II. Course Description:
The course will introduce the student to the changes in the drug's absorption, distribution and elimination with time following one compartment I.V bolus, oral absorption and I.V infusion. It provides students with principle of the linear and non-linear pharmacokinetic models and their application. The principles of clinical pharmacokinetics are also introduced in order to be able to formulate or modify drug dose-regimens according to the need of patients.

III. ILOs: at end of the course students will be to:
<ol style="list-style-type: none"> 1. Define pharmacokinetics terms 2. Explain kinetics orders 3. Describe the pharmacokinetic models. 4. Differentiate between first order and zero order kinetics 5. Categorize factors affecting drug plasma level .

6. Distinguish between oral and intravenous infusion kinetics .
7. Design of bioavailability and bioequivalence studies
8. Calculate the pharmacokinetic parameters
9. Measures of bioavailability, Cmax, tmax and Area Under Curve (AUC)
10. Draw pharmacokinetic plasma-time level curve
11. Estimate the dose and dosing interval
12. Judge experimental data and write scientific conclusions

IV. Course Content:

1 – Course Topics/Items:

a – Theoretical Aspect:

No	Topic/ unit	Sub topic	Number of weeks	Contact hours
1	Introduction to pharmacokinetics	<ul style="list-style-type: none"> • Terminology and definitions • Rates and orders • Kinetic of drug absorption • Compartment models <ul style="list-style-type: none"> ○ Definition ○ Basis of Classification ○ Model selection criteria 	2	4
2	One compartment open model	<ul style="list-style-type: none"> • Calculation of the following parameters (for each model) <ul style="list-style-type: none"> ○ Volume of Distribution ○ Elimination Rate Constant ○ Clearance ○ Elimination half life ○ AUC ○ Concentration at zero time. • One Compartment I.V Bolus <ul style="list-style-type: none"> ○ Assumptions ○ First-order kinetics ○ Plasma data ○ Area under the Curve ○ Half-life • Pharmacokinetics of Oral Administration <ul style="list-style-type: none"> ○ Differential Equation ○ Integrated Equation ○ Absorption Rate Constant (K) <ul style="list-style-type: none"> ▪ Wagner nelson ▪ Method of residual 	4	8

		<ul style="list-style-type: none"> ○ Extent of Absorption • Calculation of Bioavailability Parameters: <ul style="list-style-type: none"> ○ Calculation of K_a ○ Calculation of F • Intravenous Infusion: <ul style="list-style-type: none"> ○ Continuous infusion – steady state ○ Combined infusion and bolus administration ○ Combined slow and fast infusion ○ Post infusion 		
3	Midterm exam		1	2
4	Two compartment open model with first order elimination kinetics	<ul style="list-style-type: none"> • Pharmacokinetics of single dose as oral and intravenous (rapid/bolus). • Intravenous infusion • Multiple oral and intravenous administrations. • Pharmacokinetic of sustained releases formulation 	2	4
5	Non-linear pharmacokinetics (dose dependent kinetics)	<ul style="list-style-type: none"> • Michaelis- Menten's kinetics • Pharmacokinetic characteristics. • In-vivo estimation of K_m and V_m 	2	4
6	Multiple Administration:	<ul style="list-style-type: none"> • Multiple I.V Bolus Dose <ul style="list-style-type: none"> ○ Independent doses ○ Accumulating doses ○ Development of general equation ○ C_{pmax} and C_{pmin} equations • Multiple Oral Dose Administration: <ul style="list-style-type: none"> ○ C_{pmin} equation ○ Average C_p equation 	2	4
7	Dosage regimen design	<ul style="list-style-type: none"> • Calculation the dose • Calculation dosing interval • Average concentration 	2	4
8		Final exam	1	2
Number of Weeks/and Units Per Semester			16	32

V. Teaching Strategies:
<ul style="list-style-type: none"> • Lectures using data show • Video animation and seminars • Laboratory work

- Directed reading
- Group discussion

VI. Assessment Tasks:

No	Assessment Method	Week Due	Mark	Proportion of Final Assessment
1	Practical Reports	6	10	10%
2	Oral Tests	12	5	5%
3	Quizzes	2, 5, 12	5	5%
4	Written Test (midterm exam)	8	10	10%
5	Final Exam (practical)	14	20	20%
6	Final Exam (theoretical)	16	50	50%
	Total		100	100%

VII. Learning Resources:

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

1. Leon Shargel Andrew (2012). Applied Biopharmaceutics and Pharmacokinetics, Sixth edition, lippincotts and William, Philadelphia.

1.

1. Michel E. Winter (2011). Basic clinical pharmacokinetics, Fifth edition, lippincotts and William, San Fransisco.

3-Electronic Materials and Web Sites *etc.*

1-www.boomer.org

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

The University Regulations on academic misconduct will be strictly enforced. Please refer to Al-Nasser University student's regulations handbook

- 1 Class Attendance:
 - Absence from lectures and/or practical shall not exceed 25 %. Students who exceed the 25% limit without a medical or emergency excuse acceptable to and approved by the Dean of the college shall not be allowed to take the final exam and shall receive a mark of zero for the course.
- 2 (Tardy):
Students will be allowed to in the class if he/she is late not more than 15 minutes with an acceptable excuse. If the student is late in attending the class for more than three times without an excuse he/she will be warned and will be asked to write undertaken for not

	repeating that, otherwise his guardian will be notified and the student will miss the classes and will be considered as failed.
3	<p>(Exam Attendance/Punctuality):</p> <ul style="list-style-type: none"> Student will not be allowed to appear in the final exam if he/she is late 30 minutes from the begging of the exam. Students will not be allowed to leave the exam room until unless half of the examination time is passed. If a student misses the final exam, he/she has to provide an accepted excuse he/she will be eligible to take the exam as first attempt. If the student misses the final exam he will be considered as failed and if the repeated exam will be calculated as the minimum of 50%. The student will be considered as failed if he broke the regulations and roles of examination. In the practical courses failing in either part is marked as failing in the course and student has to appear in the failing part and the marks will be given as the minimum mark. Using mobile phones is strictly prohibited in examination time and the student will be considered as failed if he did so.
4	<p>(Assignments and Projects):</p> <ul style="list-style-type: none"> The students have to submit the assignment or project on time. In late cases student has to provide an acceptable and written excuse to the lecturer before the lecturer has to submit the final marks to the department otherwise the student will not be given the marks of the project.
5	<p>(Cheating):</p> <ul style="list-style-type: none"> Cheating in examinations or tests is prohibited which may be in the form of copying from another student or bringing unauthorized materials into the exam room (e.g., crib notes, pagers or cell phones) etc. Midterm Exam cheating results in giving the student a mark of zero Cheating in the final exam will result in failing the student in that subject if he/she did not get benefits in that subject, if he/she gets benefits he/she will be considered as failed in two courses. If the cheating occur in the last day of exam the student will be considered as failed in that course and the previous one. If the students repeats cheating in a single examination period he will be discontinued for a full academic year or permanently if he repeated cheating more than twice.
6	<p>(Plagiarism):</p> <p>“To plagiarize is to take ideas or words of another person and pass them off as one’s own”.</p> <ul style="list-style-type: none"> Plagiarism will results in losing the marks of the assignments. If the students personates other at examination time both will be suspended for a full academic year
7	(Other policies):



- | | |
|--|--|
| | <ul style="list-style-type: none">• Using mobile or another electronic device capable of storing or transfer data in class during the lecture or the exam is forbidden.• Abnormal behavior is not acceptable and the student will face a punitive proceedings.• Eating or drinking is strictly prohibited. |
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Course Specification of Phytochemistry II

University: Al-Nasser University

Faculty: Medical Science

Department: Pharmacy

Program title: Pharmacy Program

I. General Information:					
1	Course Title:	Phytochemistry II			
2	Credit hours:	C.H			
		Th.	Pr.	Tut.	Tr.
		3	1		
3	Study level/year at which this course is offered:	Second Semester/second year			
4	Pre –requisite :	Phytochemistry I			
5	Co –requisite :				
6	Program (s) in which the course is offered:	None			
7	Language of teaching the course:	Arabic/English			
8	Prepared By:	Bushra Moharam and Wedad Mansour			
9	Approved By:				

II. Course Description:
The course provides information on the importance of naturally occurring products from their chemical, pharmaceutical to therapeutic applications. It also deals with their isolation and identification using chromatographic methods.

III. ILOs:

Upon completion of this course, the students should be able to

- 1- Identify the different classes of biologically active compounds of natural origin glycosides, volatile oils, tannins and phenylpropanoids their distribution in nature and classification.
- 2- Explain physico-chemical properties of substances of glycosides, volatile oils, tannins and phenylpropanoids
- 3- Recognize the methods of extraction, separation and purification of the constituents of natural products such as glycosides, volatile oils, tannins and phenylpropanoids
- 4- Describe the chemical structure of glycosides, volatile oils, tannins and phenylpropanoids, their pharmacological properties (biological activities) and contraindications of them.
- 5- Apply the chromatographic techniques in phytochemical analysis of natural products (glycosides, volatile oils, tannins and phenylpropanoids).
- 6- Correlate the chemical structure of natural products (glycosides, volatile oils, tannins and phenylpropanoids) with their pharmacological activity and predict of structural changes that modify the biological activity.
- 7- Research about suitable methods for extraction; isolation of different compounds from natural origin
- 8- Perform suitable methods for extraction; isolation of glycosides, volatile oils, tannins and phenylpropanoids
- 9- Carry out different assay procedures for quantitative determination of glycosides, volatile oils, tannins and phenylpropanoids in their origin or preparations
- 10- Write reports about the chemistry natural products such as glycosides, volatile oils, tannins and phenylpropanoids and their isolation and present them.
- 11- Cooperate effectively with other people, work in teamwork, team planning and manage times

IV. Course Content:

1 – Course Topics/Items:				
a – Theoretical Aspect:				
Order	Topic/ unit	Sub topic	Number of weeks	Contact hours
1	Glycosides	Definition, distribution, properties, classification and nomenclature, Cardiac glycosides; definition, structures, cardenolides, bufadienolids, structure of sugar moiety, structure activity relationship, Biogenesis of card. Gly.,	1	3
2		Cardiac gly; physicochemical properties, hydrolysis of card. Gly., isolation, pharmacological properties, mechanism of action Chemical test of card. Gly., drug containing card. Gly.; digitalis purpurea, digitalis lanata. Bufadienolids,	1	3
3		Saponin gly.; ; definition, classification, distribution, extraction, chemical and physical properties, characterization biological and pharmacological properties, drugs as expectorant and antitusive, anti-exudative, adaptogens and diuretic.	1	3
4		Anthracen gly; definition, classification, distribution, extraction, chemical and physical properties, characterization biological and pharmacological properties, drugs as Senna, Rhabarub, Aloe.	1	3
5		Flavonoid gly; classification, chemical structure, physico-chemical properties, extraction, characterization, biological properties, rutin, hesperidin, flavonoid containing drugs.	1	3
6		Cyanogenic gly; cyanogenesis, distribution, structure, properties, detection, extraction, pharmacological activities, cyanogenetic plants. Glucosinolates; definition, distribution, structure, biogenesis, hydrolysis, toxicity and drug containing glucosinolates	1	3
7	Mid exam		1	2
8	Volatile oils	Definition, distribution, physical properties, method of isolation, chemical composition, Pharmacological properties,	1	3

9		Drugs containing v.o. used as counter irritant agents, drug containing v.o. used as expectorants,	1	3
10		Drugs containing v.o. used as diuretic, drug containing v.o. used as stomachic and carminative.	1	3
11	Tannins	Definition, classification, structure, hydrolysable- and condensed-, complex and pseudo-tannins, distribution, biosynthesis, physico-chemical properties, extraction, characterization, biological properties, drug containing tannin	1	3
12	Phenylpropanoids	Definition, classification, biosynthesis, phenols and phenolic acids:, structure, physico-chemical properties, characterization, extraction, biological properties, drug containing phenols and phenolic acids. coumarins; definition, structure classification, biosynthesis, physico-chemical properties, characterization, extraction, biological properties, uses,	1	3
13		Drug containing coumarins, furocoumarin, pyranocoumarines. Lignans; definition, classification, biological properties, uses, drug containing lignans. Lignin: definition, structure, biological and pharmacological properties of some lignins	1	3
14		Final exam	1	2
Number of Weeks/and Units Per Semester			14	40

b - Practical Aspect:

Order	Practical Experiment	Number of weeks	Contact hours
1	Extraction and identification of cardiac gly. (Oleander)	1	2
2	Extraction and identification of saponin gly. (Christ's thorn, Fenugreek)	1	2
3	Extraction and identification of anthracene gly. (Senna, Aloe)	1	2
4	Extraction and identification of flavonoids (Orange, Ruta)	1	2

5	Extraction and identification of cyanogenic gly (Linseed)	1	2
6	Extraction and identification of glucosinolates gly (Mustard seeds)	1	2
7	Extraction and identification of volatile oils (1)(Thyme)	1	2
8	Extraction and identification of volatile oils (2) (Cinnamon)	1	2
9	Extraction and identification of tannins (Tea, Galls)	1	2
10	Extraction and identification of phenylpropanoids (Ammi visnaga)	1	2
11	Final exam	1	2
Number of Weeks/and Units Per First semester1			22

V. Teaching Strategies:

- Lectures using board and makers, data show, video animation and seminars
- Solving Problem method, Laboratory work, independent study and discussion

VI. Assignments and projects:

No	Assignment	Week Due	Mark
1	Seminar	3, 5, 9	5
2	Projects	11, 12, 13	

VII. Assessment Tasks:

No	Assessment Method	Week Due	Mark	Proportion of Final Assessment
1	Seminar and project	3, 5, 9, 11-13	5	5%
2	Practical Reports	1-10	10	10%
3	Quizzes	4, 6, 8, 10	5	5%
4	Written Test (1)	7	10	10%
5	Final Exam (practical)	12	20	20%
6	Final Exam (theoretical)	14	50	50%
	Total		100	100%

VIII. Learning Resources:	
1-Required Textbook(s) (maximum two).	
	<p>1- Evans W.C., Evans D. and Trease E., Saunders "Trease and Evans 'Pharmacognosy" (2009); 16th ed. Elsevier, New York</p> <p>2- Jarald E.E. and Jarald S. E., "Textbook of Pharmacognosy and Phytochemistry" (2009); CBS Publishers and Distributors, New Delhi</p>
2-Recommended Books and Reference Materials.	
	<p>1- Steven M. Colegate and Russell J. Molyneux. "Bioactive natural products : detection, isolation, and structural determination" (2008); Seconded, editor.</p> <p>2- Cordell G.A. "The alkaloids: Chemistry and Biology" (2002); Volume 59, Elsevier, New York</p>
3-Electronic Materials and Web Sites <i>etc.</i>	
	<p>1- http://www.Phytomania.org.</p> <p>2- http://www.medicalbotanyintroduction.html.</p> <p>3- http://www.botanical.com</p>

IX. Course Policies: (including plagiarism, academic honesty, attendance etc)	
The University Regulations on academic misconduct will be strictly enforced. Please refer to Al-Nasser University student's regulations handbook	
1	<p>Class Attendance:</p> <ul style="list-style-type: none"> Absence from lectures and/or practical shall not exceed 25 %. Students who exceed the 25% limit without a medical or emergency excuse acceptable to and approved by the Dean of the college shall not be allowed to take the final exam and shall receive a mark of zero for the course.
2	<p>(Tardy):</p> <p>Students will be allowed to in the class if he/she is late not more than 15 minutes with an acceptable excuse. If the student is late in attending the class for more than three times without an excuse he/she will be warned and will be asked to write undertaken for not repeating that, otherwise his guardian will be notified and the student will miss the classes and will be considered as failed.</p>
3	<p>(Exam Attendance/Punctuality):</p> <ul style="list-style-type: none"> Student will not be allowed to appear in the final exam if he/she is late 30 minutes from the begging of the exam. Students will not be allowed to leave the exam room until unless half of the examination time is passed.

	<ul style="list-style-type: none"> • If a student misses the final exam, he/she has to provide an accepted excuse he/she will be eligible to take the exam as first attempt. • If the student misses the final exam he will be considered as failed and if the repeated exam will be calculated as the minimum of 50%. • The student will be considered as failed if he broke the regulations and roles of examination. • In the practical courses failing in either part is marked as failing in the course and student has to appear in the failing part and the marks will be given as the minimum mark. • Using mobile phones is strictly prohibited in examination time and the student will be considered as failed if he did so.
4	<p>(Assignments and Projects):</p> <ul style="list-style-type: none"> • The students have to submit the assignment or project on time. • In late cases student has to provide an acceptable and written excuse to the lecturer before the lecturer has to submit the final marks to the department otherwise the student will not be given the marks of the project.
5	<p>(Cheating):</p> <ul style="list-style-type: none"> • Cheating in examinations or tests is prohibited which may be in the form of copying from another student or bringing unauthorized materials into the exam room (e.g., crib notes, paggers or cell phones) etc. • Midterm Exam cheating results in giving the student a mark of zero • Cheating in the final exam will result in failing the student in that subject if he/she did not get benefits in that subject, if he/she gets benefits he/she will be considered as failed in two courses. If the cheating occur in the last day of exam the student will be considered as failed in that course and the previous one. • If the students repeats cheating in a single examination period he will be discontinued for a full academic year or permanently if he repeated cheating more than twice.
6	<p>(Plagiarism):</p> <p>“To plagiarize is to take ideas or words of another person and pass them off as one’s own”.</p> <ul style="list-style-type: none"> • Plagiarism will results in losing the marks of the assignments. • If the students personates other at examination time both will be suspended for a full academic year
7	<p>(Other policies):</p> <ul style="list-style-type: none"> • Using mobile or another electronic device capable of storing or transfer data in class during the lecture or the exam is forbidden. • Abnormal behavior is not acceptable and the student will face a punitive proceedings. • Eating or drinking is strictly prohibited.



Course Specification of Pharmaceutical Microbiology II

University: Al-Nasser University

Faculty: Medical Science

Department: Pharmacy

Program title: Pharmacy Program

I. General Information:					
1	Course Title:	Pharmaceutical Microbiology II			
2	Credit hours:	C.H			
		Th.	Pr.	Tut.	Tr.
		3	1		
3	Study level/year at which this course is offered:	Second Semester/second year			
4	Pre –requisite :	Pharmaceutical Microbiology I			
5	Co –requisite :				
6	Program (s) in which the course is offered:				
7	Language of teaching the course:	English/ Arabic			
8	Prepared By:	Dr. Ebtisam Almoayad			
9	Approved By:				

II. Course Description:
<p>This course provides the students with knowledge about viruses (structure, replication, diseases, clinical manifestation, prevention, diagnosis and treatment). Also it focuses on immunity, host defenses mechanisms, and immune system disorders. During this course the students will study the relevance of microbiology and infection control to the manufacture and handling of pharmaceutical agents, sterilization, and disinfection. Moreover, how to prevent pharmaceutical product from microbial contamination. The practical part will be concerned with the laboratory diagnosis of</p>

viruses. In addition, the students will be able to perform the serological tests for the diagnosis of infectious diseases.

III. Intended Learning Outcomes (ILOs):				
At the end of this course the students will be able to:				
1. Describe the structure, replication, diseases, clinical manifestation, control of the disease, diagnosis and treatment of viruses.				
2. Recognize the host defenses mechanisms, and immune system disorders.				
3. List the sources of microbial contamination of pharmaceuticals products.				
4. Explain the different sterilization and disinfection techniques.				
5. Correlate laboratory findings with disease processes/pathophysiology and physiological factors affecting the results.				
6. Apply the laboratory diagnostic test of viruses.				
7. Perform the serological tests for the diagnosis of infectious diseases.				
8. Operate different equipment's and instruments and use emerging technologies in medical laboratory practice.				
9. Practice the principle of infection control, biosafety measures and aseptic precautions.				
10. Manage a lab which employs a team of specialists and administrative aspects of that lab.				
11. Show the appropriate responsibility, self-confidence, and ethical attitudes and behaviors.				
12. Implement writing and presentation skills and demonstrate critical thinking and decision making abilities and long life learning.				

IV. Course Content:				
1 – Course Topics/Items:				
a – Theoretical Aspect:				
Order	Topic/ unit	Sub topic	Number of weeks	Contact hours
1	Viruses	Structure, viral replication	1	3
2	Viruses	Viral diseases, clinical manifestation,	1	3

		transmission routes,		
3	Viruses	Control of the disease, diagnosis and treatment	1	3
4	Immunity	Innate immunity	1	3
5	Immunity	Adaptive immunity	1	3
6	Immunity	Immune system disorders	1	3
7	Introduction to pharmaceutical microbiology		1	3
8	Middle exam		1	3
9	Sterilization and Disinfection		1	3
10	Sterilization and Disinfection		1	3
11	Microbiological aspects of pharmaceutical processing		1	3
12	Microbial spoilage and preservation of pharmaceutical products		1	3
13	Contamination of non-sterile pharmaceutical in hospital	Nosocomial infection	1	3
14	Factory and hospital hygiene and good manufacturing practice		1	3
15	Factory and hospital hygiene and good manufacturing practice		1	3
16	Final exam		1	2
Number of Weeks/and Units Per Semester				44

b - Practical Aspect:			
Order	Practical Experiment	Number of weeks	Contact hours
1	<i>Infection control policies in microbiology lab</i>	1	2
2	<i>Laboratory diagnosis of viruses</i>	1	2
3	<i>Laboratory diagnosis of viruses</i>	1	2
4	Serological techniques for the diagnosis	1	2

	of infectious diseases.		
5	Serological techniques for the diagnosis of infectious diseases.	1	2
6	Sterilization and disinfection techniques	1	2
7	Sterilization and disinfection techniques	1	2
8	Sources of microbial contamination	1	2
9	Sterility testing of pharmaceutical products	1	2
10	Sterility testing of pharmaceutical products	1	2
11	Final exam	1	2
Number of Weeks/and Units Per Semester			22

V. Teaching Strategies:
<ul style="list-style-type: none"> - Lectures using data show, video animation and seminars - Solving Problem method, Laboratory work, directed reading, independent study, discussion, and report.

VI. Assignments and projects:			
No	Assignment	Week Due	Mark
1	Sources of pharmaceutical products contamination	4	5

VII. Assessment Tasks:				
No	Assessment Method	Week Due	Mark	Proportion of Final Assessment
1	Exercises and Home works Quizzes	2	5	5%
2	Project	4	5	5%
3	Practical Reports	5	10	10%
4	Written Test	6	10	10%
5	Final Exam (theoretical)	16	50	50%
6	Final Exam (practical)	15	20	20%

7	Total		100	100%
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VIII. Learning Resources:	
1-Required Textbook(s) (maximum two).	
	<ol style="list-style-type: none">1. Harvey RA, Champe PA, Strol WA, Rouse H, Fisher BD. Lippincott's Illustrated Reviews Microbiology (2001). Lippincott Williams and Wilkins. Philadelphia.2. Kar A. Pharmaceutical Microbiology. (2008). New age international publisher. New Delhi.
2-Recommended Books and Reference Materials.	
	<ul style="list-style-type: none">• Winn W, Allen S, Janda W, Koneman E, Procop G, Schreckenberger P, and Woods G. Koneman's Color Atlas and Textbook of Diagnostic Microbiology (2006). 6th edition.Lippincott Williams and Wilkins.• Cheesbrough M. Medical laboratory manual for tropical countries. ELBS with Butterworth-Heinemann, University press, Cambridge, UK. Vol. II. Microbiology.
3-Electronic Materials and Web Sites <i>etc.</i>	
	<p>www.ncbi.nlm.nih.gov/books/NBK7627/ www.cdc.gov/ www.textbookofbacteriology.net/ www.wsmicrobiology.com www.microbiologyonline.org.uk www.asm.org</p>

IX. Course Policies: (including plagiarism, academic honesty, attendance etc)	
The University Regulations on academic misconduct will be strictly enforced. Please refer to Al-Nasser University student's regulations handbook	
1	<p>Class Attendance:</p> <ul style="list-style-type: none"> • Absence from lectures and/or practical shall not exceed 25 %. Students who exceed the 25% limit without a medical or emergency excuse acceptable to and approved by the Dean of the college shall not be allowed to take the final exam and shall receive a mark of zero for the course.
2	<p>(Tardy):</p> <p>Students will be allowed to in the class if he/she is late not more than 15 minutes with an acceptable excuse. If the student is late in attending the class for more than three times without an excuse he/she will be warned and will be asked to write undertaken for not repeating that, otherwise his guardian will be notified and the student will miss the classes and will be considered as failed.</p>

3	<p>(Exam Attendance/Punctuality):</p> <ul style="list-style-type: none"> Student will not be allowed to appear in the final exam if he/she is late 30 minutes from the beginning of the exam. Students will not be allowed to leave the exam room until unless half of the examination time is passed. If a student misses the final exam, he/she has to provide an accepted excuse he/she will be eligible to take the exam as first attempt. If the student misses the final exam he will be considered as failed and if the repeated exam will be calculated as the minimum of 50%. The student will be considered as failed if he broke the regulations and roles of examination. In the practical courses failing in either part is marked as failing in the course and student has to appear in the failing part and the marks will be given as the minimum mark. Using mobile phones is strictly prohibited in examination time and the student will be considered as failed if he did so.
4	<p>(Assignments and Projects):</p> <ul style="list-style-type: none"> The students have to submit the assignment or project on time. In late cases student has to provide an acceptable and written excuse to the lecturer before the lecturer has to submit the final marks to the department otherwise the student will not be given the marks of the project.
5	<p>(Cheating):</p> <ul style="list-style-type: none"> Cheating in examinations or tests is prohibited which may be in the form of copying from another student or bringing unauthorized materials into the exam room (e.g., crib notes, pagers or cell phones) etc. Midterm Exam cheating results in giving the student a mark of zero Cheating in the final exam will result in failing the student in that subject if he/she did not get benefits in that subject, if he/she gets benefits he/she will be considered as failed in two courses. If the cheating occur in the last day of exam the student will be considered as failed in that course and the previous one. If the students repeats cheating in a single examination period he will be discontinued for a full academic year or permanently if he repeated cheating more than twice.
6	<p>(Plagiarism):</p> <p>“To plagiarize is to take ideas or words of another person and pass them off as one’s own”.</p> <ul style="list-style-type: none"> Plagiarism will results in losing the marks of the assignments. If the students personates other at examination time both will be suspended for a full academic year
7	<p>(Other policies):</p> <ul style="list-style-type: none"> Using mobile or another electronic device capable of storing or transfer data in class during the lecture or the exam is forbidden. Abnormal behavior is not acceptable and the student will face a punitive proceedings. Eating or drinking is strictly prohibited.

Course Specification of Pathology

University: Al-Nasser University

Faculty: Medical Science

Department: Pharmacy

Program title: Pharmacy Program

I. General Information:					
1	Course Title:	Pathology			
2	Credit hours:	C.H. م			
		Th.	Pr.	Tut.	Tr.
		3			
3	Study level/year at which this course is offered:	Second Semester/second year			
4	Pre –requisite :	Histology			
5	Co –requisite :				
6	Program (s) in which the course is offered:				
7	Language of teaching the course:	Arabic/English			
8	Prepared By:	Ammar Saleh Omar			
9	Approved By:				

II. Course Description:

This course will provide the students with the general concept of Pathophysiology discussed with appropriate reference to the general pathologic process due to cellular stress. An organized system review of the commonest diseases with adequate insight into causes, clinical manifestations, and diagnosis will be covered.

III. ILOs: مخرجات تعلم المقرر

after participation in this course student must be able to:

1. Describe the mechanism of diseases and their progress
2. Recognize the principles of general pathology.
3. List abnormal pathological laboratory results and their causes
4. Illustrate the fate and complications of different disease processes
5. Interpret a pathology report in an accurate manner.
6. Analyze gross and microscopic pictures aiming at correct diagnosis.
7. Predict the diagnosis of different diseases based on the underlying gross and microscopic pictures.
8. Apply the principles of good experimental design and analysis
9. Use a ranged specialist techniques, for diagnostic procedures.
10. Show the appropriate responsibility, self-confidence, and ethical attitudes and behaviors
11. Communicate clearly with patients and other health care professionals by verbal and written means.
12. Implement writing and presentation skills and demonstrate critical thinking and decision making abilities and long life learning.

I. Course Content:

1 – Course Topics/Items:

a – Theoretical Aspect:

Order	Topic/ unit	Sub topic	Number of weeks	Contact hours
1	Introduction		1	3
2	, Disease management - Cell and tissue injury, heat injury, degeneration, necrosis, apoptosis		1	3
3	Acute inflammation	causes, types	1	3
4	Chronic inflammation	causes and types Granulation tissue	1	3

5	Tissue repair		1	3
6	Circulatory disorders	ischemia, congestion, gangrene, edema	2	6
7	Mid Term Exam	.	1	2
8	Immune disorders	hypersensitivity reactions, auto-immune diseases	1	3
9	Genetic disorders		1	3
10	Growth Disorders Genetic basis and tests for tumors		1	3
11	Neoplasia	Causes and types of tumors	2	6
12	Malignant tumors		1	3
13	Final exam		1	2
Number of Weeks/and Units Per Semester				42

II. Teaching Strategies:
Lectures using data show, video animation and seminars Solving Problem method, Laboratory work, directed reading, independent study and discussion

III. Assignments and Projects			
no	Assignments	Week due	Mark
1	Project	5	5

IV. Assessment Tasks:				
no	Assessment Method	Week Due	Mark	Proportion of Final Assessment
1	Exercises and Home works and Quizzes	All	5	5%
2	Project (single\group)	4	5	5%

3	Midterm Exam	7	30	30%
4	Final Exam (theoretical)	14	60	60%
	Total		100	100%

V. Learning Resources:	
1-Required Textbook(s) (maximum two).	
	1- Kumar Abbas and Fausto Mitchel 2007. Robbins basic pathology 8th edition Philadelphia, PA 19103-2899. 2- Robin Reid, Fiona Robertand Elaine Macduff 2011. Pathology Illustrated 7th edition ISBN 9780702033766 Churchill Livingston.
2-Recommended Books and Reference Materials.	
	1- Lecture notes on general pathology 2-lecture notes on systemic pathology
3-Electronic Materials and Web Sites <i>etc.</i>	
	1- www.google general pathology 2- www.google systemic pathology

VI. Course Policies: (including plagiarism, academic honesty, attendance etc)	
The University Regulations on academic misconduct will be strictly enforced. Please refer to Al-Nasser University student's regulations handbook	
1	Class Attendance: <ul style="list-style-type: none"> Absence from lectures and/or practical shall not exceed 25 %. Students who exceed the 25% limit without a medical or emergency excuse acceptable to and approved by the Dean of the college shall not be allowed to take the final exam and shall receive a mark of zero for the course.
2	(Tardy): Students will be allowed to in the class if he/she is late not more than 15 minutes with an acceptable excuse. If the student is late in attending the class for more than three times without an excuse he/she will be warned and will be asked to write undertaken for not repeating that, otherwise his guardian will be notified and the student will miss the classes and will be considered as failed.
3	(Exam Attendance/Punctuality): <ul style="list-style-type: none"> Student will not be allowed to appear in the final exam if he/she is late 30 minutes from the begging of the exam.

	<ul style="list-style-type: none"> Students will not be allowed to leave the exam room until unless half of the examination time is passed. If a student misses the final exam, he/she has to provide an accepted excuse he/she will be eligible to take the exam as first attempt. If the student misses the final exam he will be considered as failed and if the repeated exam will be calculated as the minimum of 50%. The student will be considered as failed if he broke the regulations and roles of examination. In the practical courses failing in either part is marked as failing in the course and student has to appear in the failing part and the marks will be given as the minimum mark. Using mobile phones is strictly prohibited in examination time and the student will be considered as failed if he did so.
4	<p>(Assignments and Projects):</p> <ul style="list-style-type: none"> The students have to submit the assignment or project on time. In late cases student has to provide an acceptable and written excuse to the lecturer before the lecturer has to submit the final marks to the department otherwise the student will not be given the marks of the project.
5	<p>(Cheating):</p> <ul style="list-style-type: none"> Cheating in examinations or tests is prohibited which may be in the form of copying from another student or bringing unauthorized materials into the exam room (e.g., crib notes, pagers or cell phones) etc. Midterm Exam cheating results in giving the student a mark of zero Cheating in the final exam will result in failing the student in that subject if he/she did not get benefits in that subject, if he/she gets benefits he/she will be considered as failed in two courses. If the cheating occur in the last day of exam the student will be considered as failed in that course and the previous one. If the students repeats cheating in a single examination period he will be discontinued for a full academic year or permanently if he repeated cheating more than twice.
6	<p>(Plagiarism):</p> <p>“To plagiarize is to take ideas or words of another person and pass them off as one’s own”.</p> <ul style="list-style-type: none"> Plagiarism will results in losing the marks of the assignments. If the students personates other at examination time both will be suspended for a full academic year

7	<p>(Other policies):</p> <ul style="list-style-type: none"> Using mobile or another electronic device capable of storing or transfer data in class during the lecture or the exam is forbidden. Abnormal behavior is not acceptable and the student will face a punitive proceedings. Eating or drinking is strictly prohibited.
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Course Specification of Medicinal Chemistry II

University: Al-Nasser University

Faculty: Medical Science

Department: Pharmacy

Program title: Pharmacy Program

I. General Information:					
1	Course Title:	Medicinal Chemistry II			
2	Credit hours:	C.H			
		Th.	Pr.	Tut.	Tr.
		2	1		
3	Study level/year at which this course is offered:	Second Semester/second year			
4	Pre –requisite :	Medicinal chemistry I			
5	Co –requisite :	Pharmacology IV			
6	Program (s) in which the course is offered:	None			
7	Language of teaching the course:	Arabic/English			
8	Prepared By:	Dr. Tawfeek Ahmed Alobaidy			
9	Approved By:				

II. Course Description:

The course covers the medicinal chemistry of cardiovascular agents, central nervous system drugs, diuretics, anti-inflammatory and antihistamines. The course also practices the qualitative and quantitative analysis of some drugs.

III. ILOs:

At the end of this course the students should be able to:

1. Describe the mechanism of action of studied classes of drugs
2. Recognize the synthesis of some studied classes of drugs
3. Illustrate the SAR of studied categories
4. Explain the metabolism of studied classes of drugs.
5. Suggest possible metabolites of different classes of drugs
6. Identify the SAR of studied categories of drugs
7. Analyze the result of assay of some studied drugs
8. Design and evaluate qualitative and quantitative analysis of some drugs
9. Handle and dispose the chemical and pharmaceutical preparations safely and effectively.
10. Operate different equipment used in the lab
11. Determine the quantitative assay of some drugs
12. Carry out the qualitative analysis of some drugs
13. Cooperate with his colleagues to prepare a scientific topic.
14. Implement writing and presentation skills
15. Work effectively in a team.
16. Demonstrate creativity and time management

IV. Course Content:

1 – Course Topics/Items:

a – Theoretical Aspect:

Order	Topic/ unit	Sub topic	Number of weeks	Contact hours
1	Cardiovascular drug I	Antihypertensive agents	1	2
2	Cardiovascular drug II	Antiarrhythmic drugs	1	2
3	Cardiovascular drug III	Antiarrhythmic drugs and Antihyperlipidemic agents.	1	2
4	Cardiovascular drug IV	Anti-coagulant, Haemostatics and Cardiotonics.	1	2
5	Diuretics	CAI, Thiazides, Osmotics, Loop and K-Sparing Diuretics.	1	2
6	CNS Drugs I	Sedatives and hypnotics	1	2



7	Midterm Exam		1	2
8	CNS Drugs II	Skeletal Muscle Relaxants and anticonvulsants	1	2
9	CNS Drugs III	Anti-psychotic drugs [Neuroleptics] [Major tranquilizer]	1	2
10	CNS Drugs IV	Antidepressants agents and antiparkinsonism	1	2
11	Anti-inflammatory agents	Salicylates, anthranilates, arylacetic acids, arylpropionic acid pyrazolidiones, oxicams, cox-II inhibitor, analgesics antipyretics and antigout	2	4
12	Opioids and local anesthetics	<u>Opioids</u> classification, opioid receptor SAR, <u>local anesthetics</u> ester local anesthetic, amide local anesthetic, synthesis, SAR	1	2
13	antihistamines	<u>H1- antihistamines</u> <u>SAR</u> first generation, Second generation <u>H2- antihistamines</u>	2	4
14	Final Exam		1	2
Number of Weeks/and Units Per Semester				32

b - Practical Aspect:

Order	Practical Experiment	Number of weeks	Contact hours
1	Identification of aspirin	1	3
2	Assay of aspirin	1	3

3	Qualitative and quantitative analysis of chloral hydrate	1	3
4	Synthesis of aspirin	2	6
5	Assay of naproxen	1	3
6	Assay of ibuprofen tab	1	3
7	Identification of ranitidine	1	3
8	Assay of ranitidine	1	3
9	Identification of Propranolol	1	3
10	Assay of Propranolol	1	3
11	Final Exam	1	3
Number of Weeks/and Units Per Semester			36

V. Teaching Strategies:

Lectures using data show video animation, Practice session, Discussions, Solving Problem methods, Group assignments, Small group discussions, Tutorials and Practical classes

VI. Assignments and projects:

no	Assignment	Week Due	Mark
1	- Project	5	5

VII. Assessment Tasks:

no	Assessment Method	Week Due	Mark	Proportion of Final Assessment
1	Project (single\group)	2, 8	5	5%
2	Practical reports	1-9	10	10%
3	Oral Tests	5, 9	5	5%
4	Written Test (1)	7	10	10%
5	Final Exam (theoretical)	14	50	50%
6	Final Exam (practical)	11	20	20%
7			100	100%

VIII. Learning Resources:

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

	<ol style="list-style-type: none"> 1- John M. Beale, Jr. and John H. Block, "Text book of Organic Medicinal and Pharmaceutical Chemistry", 2011, 12th Edition, Wilson and Gisvold, Lippincott Williams and Wilkins, A Wolters Kluwer Company, Philadelphia. 2- Graham L. Patrick, "An Introduction to Medicinal Chemistry", 2009, Fourth Edition, Oxford University Press Inc., New York
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2-Recommended Books and Reference Materials.

	<ol style="list-style-type: none"> 1- Thomas Nogrady, Donald F. Weaver. Medicinal Chemistry A Molecular and Biochem Approach, 2005, Third edition, Oxford University Press, Inc., New York. 2- Donald J. Abraham, "BURGER'S Medicinal Chemistry and Drug Discovery" 6th edition, A John Wiley and Sons, Inc., Virginia. 3- Thomas L. Lemke, Victoria F. Roche, David A. Willaiams and S. William Zito "Foye's Principles of Medicinal Chemistry", 2008, 6th, Edition, Lippincott Williams and Wilkins, a Wolters Kluwer business, Philadelphia. 4- Povl Krogsgaard-Larsen, Tommy Liljefors and Ulf Madsen, "Textbook of Drug Design and Discovery". 2002, Third edition, Taylor and Francis, London. 5- K.-H. Hellwich · C. D. Siebert, "Stereochemistry Workbook" 2006, Springer-Verlag Berlin Heidelberg, Berlin.
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3-Electronic Materials and Web Sites etc.

	<ol style="list-style-type: none"> 1- http://www.chemaxon/marvin 2- http://www.webmolecules.com 3- http://www.acdlabs.com 4- PASS Prediction of Activity Spectra for Substance) (http://www.ibmh.msk.su/PASS).
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IX. Course Policies: (including plagiarism, academic honesty, attendance etc)

The University Regulations on academic misconduct will be strictly enforced. Please refer to Al-Nasser University student's regulations handbook

1	<p>Class Attendance:</p> <ul style="list-style-type: none"> • Absence from lectures and/or practical shall not exceed 25 %. Students who exceed the 25% limit without a medical or emergency excuse acceptable to and approved by the Dean of the college shall not be allowed to take the final exam and shall receive a mark of zero for the course.
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2	<p>(Tardy):</p> <p>Students will be allowed to in the class if he/she is late not more than 15 minutes with an acceptable excuse. If the student is late in attending the class for more than three times without an excuse he/she will be warned and will be asked to write undertaken for not repeating that, otherwise his guardian will be notified and the student will miss the classes and will be considered as failed.</p>
3	<p>(Exam Attendance/Punctuality):</p> <ul style="list-style-type: none"> • Student will not be allowed to appear in the final exam if he/she is late 30 minutes from the begging of the exam. • Students will not be allowed to leave the exam room until unless half of the examination time is passed. • If a student misses the final exam, he/she has to provide an accepted excuse he/she will be eligible to take the exam as first attempt. • If the student misses the final exam he will be considered as failed and if the repeated exam will be calculated as the minimum of 50%. • The student will be considered as failed if he broke the regulations and roles of examination. • In the practical courses failing in either part is marked as failing in the course and student has to appear in the failing part and the marks will be given as the minimum mark. • Using mobile phones is strictly prohibited in examination time and the student will be considered as failed if he did so.
4	<p>(Assignments and Projects):</p> <ul style="list-style-type: none"> • The students have to submit the assignment or project on time. • In late cases student has to provide an acceptable and written excuse to the lecturer before the lecturer has to submit the final marks to the department otherwise the student will not be given the marks of the project.
5	<p>(Cheating):</p> <ul style="list-style-type: none"> • Cheating in examinations or tests is prohibited which may be in the form of copying from another student or bringing unauthorized materials into the exam room (e.g., crib notes, pagers or cell phones) etc. • Midterm Exam cheating results in giving the student a mark of zero • Cheating in the final exam will result in failing the student in that subject if he/she did not get benefits in that subject, if he/she gets benefits he/she will be considered as failed in two courses. If the cheating occur in the last day of exam the student will be considered as failed in that course and the previous one. • If the students repeats cheating in a single examination period he will be discontinued for a full academic year or permanently if he repeated cheating more than twice.

6	<p>(Plagiarism):</p> <p>“To plagiarize is to take ideas or words of another person and pass them off as one’s own”.</p> <ul style="list-style-type: none">• Plagiarism will results in losing the marks of the assignments.• If the students personates other at examination time both will be suspended for a full academic year
7	<p>(Other policies):</p> <ul style="list-style-type: none">• Using mobile or another electronic device capable of storing or transfer data in class during the lecture or the exam is forbidden.• Abnormal behavior is not acceptable and the student will face a punitive proceedings.• Eating or drinking is strictly prohibited.





Third year first semester

Course Specification of Applied PharmacognosyI

University: Al-Nasser University

Faculty: Medical Science

Department: Pharmacy

Program title: Pharmacy Program

I. General Information:						
1	Course Title:	Applied Pharmacognosy				
2	Credit hours:	C.H				Total
		Th.	Pr.	Tut.	Tr.	
		4				
3	Study level/year at which this course is offered:	first Semester/ third year				
4	Pre –requisite :	Pharmacognosy II Phytochemistry II				
5	Co –requisite :	None				
6	Program (s) in which the course is offered:	None				
7	Language of teaching the course:	English/Arabic				
8	Prepared By:	Wedad Mansour and Bushra Moharam				
9	Approved By:					

II. Course Description:
<p>The course introduces the student to a variety of complementary and alternative medicine topics including phytotherapy, homeopathy, aromatherapy, cauterization and bloodletting therapy. Special attention will be focused on plants that have been used for the treatment of human diseases such as constipation, asthma, and peptic ulcer, and other diseases. The course will cover the different methods for quality control of medicinal plants to ensure that the highest degree of safety</p>

and effectiveness is achieved. The students will have a good basic in plant tissue culture and its application in the production of active constituents.

III. ILOs:

After participating in the course, students would be able to

- 1- Recognize the principles of the various fields of traditional medicine.
- 2- Explain the principles of using some herbal medications to relief some common health problems e.g. constipation, asthma, and peptic ulcer, and other diseases.
- 3- Illustrate the principles of the standardization and evaluation of herbal drugs.
- 4- Define plant tissue culture and describe the application of plant tissue culture in pharmacy.
- 5- Formulate the herbal medicine to treat and prevent some common diseases
- 6- Design the methods for standardization and evaluation of herbal drugs
- 7- Assess reliably scientific data, analyzes published literature and collaborates with others in the herbal pharmacy practice.
- 8- Research about herbal drug interactions and adverse drug reactions.
- 9- Investigate the application of plant tissue culture in pharmacy.
- 10- Undertake risk assessments concerning herbal drugs interactions, adverse reactions, toxicity profile and incompatibilities in different herbal preparations.
- 11- Prescribe the methods for standardization and evaluation of active substances using analytical, structural and physical standers.
- 12- Use different abbreviations and medical terms belonging to tissue culture and biotransformation.
- 13- Conduct research studies and analyze results.
- 14- Perform effective communication and positive relation with others and be able to work as an effective member in a team.
- 15- Implement technology skills including word processing, power point presentation and spreadsheets, in addition to online net search.
- 16- Use technology in analyzing data and information.

IV. Course Content:				
1 – Course Topics/Items: Applied pharmacognosy				
a – Theoretical Aspect:				
Order	Topic/ unit	Sub topic	Number of weeks	Contact hours
1	Traditional medicine	-Main fields of traditional medicine, herbal medicine, virtues and shortcomings of phytotherapy, the scientific basis of herbal medicine.	1	4
		-Treatment of constipation, asthma, inflammation and peptic ulcer and therapeutic effects of ginseng.	1	4
		-synergism and antagonism in the phytopharmacology	1	4
		-Renewed interest in some old remedies.	1	4
		-Factors influencing the activity of medicinal plant; ecological, allelopathy, biological and polyploidy.	1	4
		-Standardization of phytopharmaceuticals	1	4
2		Mid exam	1	2
3	Evaluation of herbal drugs	Intruduction, methods of evaluating the herbal drug; organoleptic and microscopical methods	1	4
		Physicochemical and chromatographic methods in evaluation of herbal drug	1	4
		Immunological and Microbiological quality of medicinal plants methods	1	4
4	Plant tissue culture	Introduction and materials of plant tissue cultures	1	4
		Methods of plants tissue culture	1	4
		Phytopharmaceutical produced by plant tissue culture	1	4

5		Final exam	1	2
Number of Weeks/and Units Per Semester				52

V. Teaching Strategies:
- Lectures using board and makers, data show, video animation and seminars - Solving Problem method, independent study and discussion

VI. Assignments and projects:			
No	Assignment	Week Due	Mark
1	Seminar	10, 11	5
2	Project	5, 8	
3	Micro assignments	3-11	

VII.Assessment Tasks:				
No	Assessment Method	Week Due	Mark	Proportion of Final Assessment
1	Assignments	3-11	5	5%
2	Exercises and Home works Quizzes	3, 6, 11	5	5%
3	Written Test (1)	7	30	30%
4	Final Exam (theoretical)	14	60	60%
5	Total		100	100%

VIII. Learning Resources:
1-Required Textbook(s) (maximum two).
1- Evans W.C., Evans D. and Trease E., Saunders "Trease and Evans 'Pharmacognosy" (2009); 16th ed. Elsevier, New York. 2- Steven M. Colegate and Russell J. Molyneux. "Bioactive natural products: detection, isolation, and structural determination" (2008); Seconded, editor.
2-Recommended Books and Reference Materials.
1- Paul M. Dewick. "Medicinal Natural Products. (A Biosynthetic approach)" (2001). 2- Silverstein and Webster. "Spectroscopic Identification of organic compounds" (1996); 6th Ed.

3-Electronic Materials and Web Sites <i>etc.</i>	
	<p>1-http://pages.intnet.mu/webpam/Pharmacognosy.htm</p> <p>2- http://www.phcog.org/</p> <p>3- http://www.botanical.com</p>

IX. Course Policies: (including plagiarism, academic honesty, attendance etc)	
The University Regulations on academic misconduct will be strictly enforced. Please refer to Al-Nasser University student's regulations handbook	
1	<p>Class Attendance:</p> <ul style="list-style-type: none"> Absence from lectures and/or practical shall not exceed 25 %. Students who exceed the 25% limit without a medical or emergency excuse acceptable to and approved by the Dean of the college shall not be allowed to take the final exam and shall receive a mark of zero for the course.
2	<p>(Tardy):</p> <p>Students will be allowed to in the class if he/she is late not more than 15 minutes with an acceptable excuse. If the student is late in attending the class for more than three times without an excuse he/she will be warned and will be asked to write undertaken for not repeating that, otherwise his guardian will be notified and the student will miss the classes and will be considered as failed.</p>
3	<p>(Exam Attendance/Punctuality):</p> <ul style="list-style-type: none"> Student will not be allowed to appear in the final exam if he/she is late 30 minutes from the begging of the exam. Students will not be allowed to leave the exam room until unless half of the examination time is passed. If a student misses the final exam, he/she has to provide an accepted excuse he/she will be eligible to take the exam as first attempt. If the student misses the final exam he will be considered as failed and if the repeated exam will be calculated as the minimum of 50%. The student will be considered as failed if he broke the regulations and roles of examination. In the practical courses failing in either part is marked as failing in the course and student has to appear in the failing part and the marks will be given as the minimum mark. Using mobile phones is strictly prohibited in examination time and the student will be considered as failed if he did so.

4	<p>(Assignments and Projects):</p> <ul style="list-style-type: none"> • The students have to submit the assignment or project on time. • In late cases student has to provide an acceptable and written excuse to the lecturer before the lecturer has to submit the final marks to the department otherwise the student will not be given the marks of the project.
5	<p>(Cheating):</p> <ul style="list-style-type: none"> • Cheating in examinations or tests is prohibited which may be in the form of copying from another student or bringing unauthorized materials into the exam room (e.g., crib notes, pagers or cell phones) etc. • Midterm Exam cheating results in giving the student a mark of zero • Cheating in the final exam will result in failing the student in that subject if he/she did not get benefits in that subject, if he/she gets benefits he/she will be considered as failed in two courses. If the cheating occur in the last day of exam the student will be considered as failed in that course and the previous one. • If the students repeats cheating in a single examination period he will be discontinued for a full academic year or permanently if he repeated cheating more than twice.
6	<p>(Plagiarism):</p> <p>“To plagiarize is to take ideas or words of another person and pass them off as one’s own”.</p> <ul style="list-style-type: none"> • Plagiarism will results in losing the marks of the assignments. • If the students personates other at examination time both will be suspended for a full academic year
7	<p>(Other policies):</p> <ul style="list-style-type: none"> • Using mobile or another electronic device capable of storing or transfer data in class during the lecture or the exam is forbidden. • Abnormal behavior is not acceptable and the student will face a punitive proceedings. • Eating or drinking is strictly prohibited.



Course Specification of Industrial Pharmacy I

University: Al-Nasser University

Faculty: Medical Science

Department: Pharmacy

Program title: Pharmacy Program

I. General Information:					
1	Course Title:	Industrial Pharmacy I			
2	Credit hours:	C.H			
		Th.	Pr.	Tut.	Tr.
		3			
3	Study level/year at which this course is offered:	first Semester/ third year			
4	Pre –requisite :	Pharmaceutics III			
5	Co –requisite :	----			
6	Program (s) in which the course is offered:				
7	Language of teaching the course:	English and Arabic			
8	Prepared By:	Dr. Abdulkarim Alzomor			
9	Approved By:				

II. Course Description:
This course provides an overview of FDA guidelines and cGMP's. The course imparts to the student the principles of drug development and production and equips the student with basic skills in the good manufacture of pharmaceuticals process validation and packaging selection and evaluation. Demonstrations and training will provide first-hand experience in the use of equipment and procedures employed to manufacture sterile products.
III. ILOs: After participating in the course, students would be able to
<ol style="list-style-type: none"> 1- Identify the concept and scope of good manufacturing practice. 2- Define the concept of QC, GMP, QA and validation. 3- Recognize the principles of validation, packaging materials, sterilization. 4- Design diagram for pharmaceutical factory. 5- Investigate the risk during manufacturing. 6- Appraise pharmaceutical system and validation process.

- 7- Implement GLP and GMP guidelines in pharmacy practice.
- 8- Operate different pharmaceutical materials, equipment and instruments and developing technologies
- 9- Evaluate using technology in analyzing data and writing report.
- 10- Cooperate and possess positive relation with others and be able to work in a team.
- 11- Have ethical values in professional work.

IV. Course Content:

1 – Course Topics/Items:

a – Theoretical Aspect:

Order	Topic/ unit	Sub topic	Number of weeks	Contact hours
1	Good Manufacture Practice (GMP)	<ul style="list-style-type: none"> - Introduction. - Quality, principles, quality assurance, GMP and quality control - Quality management and total quality management. 	1	3
2	Current Good Manufacture Practice (cGMP)	<ul style="list-style-type: none"> - Premises (location of factory, design and different areas in factory (weighing area, sampling area, storage area, maintenance area, ancillary area, production area and quality control area 	2	6
3	_Good Manufacture Practice (cGMP)	<ul style="list-style-type: none"> - Personnel and training: principles, training and hygiene. - Key persons - Documentation: principles, specification, records and batch (SOP). 	1	3
4	_Good Manufacture Practice (cGMP)	<ul style="list-style-type: none"> - Manufacture: principles, validation, contamination, starting and intermediate materials, packaging material and finished product. - Master-formula - Recovered materials, complaints procedures and product recall. Good laboratory practices 	2	6

5	Mid Exam		1	2hr
6	Sterile Products	<ul style="list-style-type: none">- Introduction- Types of sterile products- Parentrals.- Advantages and disadvantages.- Total parenteral nutrition - (TPN)- Powders for injection.- Pyrogens.- Vehicles.(Purified water preparation)- Added substances (preservatives, antioxidants, solubilizer. suspending agents, buffers, stabilizers etc.)	1	3
7	Sterilization	Sterilization techniques; moist heat and dry heat sterilization, radiation, gaseous, filtration, etc.	1	3
8	Sterile preparation (continue)	<ul style="list-style-type: none">- Design of Sterile Area.- Sterile area and its classification;- Air control, (Laminar flow etc).- Air locks, environmental monitoring methods.	1	3
9	Sterile preparation (continue)	<ul style="list-style-type: none">- Filling/ packaging (plastic and glass containers).- Validation of equipment; e.g autoclave filters, etc.- Validation of filling and packing machines.	1	3
10	Packaging Technology	<ul style="list-style-type: none">- Influence of packaging materials, Type of pharmaceutical packaging, Manufacturing packaging, Problems of packaging, Advantage and disadvantage of packaging materials.	2	6
11	Final exam		1	2
Number of Weeks/and Units Per Semester			14	40

V. Teaching Strategies:
<ul style="list-style-type: none"> - Lectures using data show, video. - Discussion of Training reportand presentation.

VI. Assessment Tasks:				
No	Assessment Method	Week Due	Mark	Proportion of Final Assessment
1	Quizzes	8	10	10%
2	Written Test (1) Mid exam	6	30	30%
3	Final Exam (theoretical)	14	60	60%
5	Total		100	100%

VII. Learning Resources:	
1-Required Textbook(s) (maximum two).	
	1- Michael E. Aulton; (2006). Pharmaceutics; the Science of Dosage Form Design. 2- Jhon Sharp;(2006). Good pharmaceutical manufacture practice, rational and compliance.
2-Recommended Books and Reference Materials.	
	1- Williams and Wilkins (2005). Remington; the Science and Practice of Pharmacy (2first edition). Publisher: Lippincott. 2- Patrick J. Sinko (2006). Martin's Physical Pharmacy and Pharmaceutical Sciences.
3-Electronic Materials and Web Sites <i>etc.</i>	
	1- www. Pharmaceutical manufacturing process.com 2- CD production lines and Quality control in different factory

VIII. Course Policies: (including plagiarism, academic honesty, attendance etc)	
The University Regulations on academic misconduct will be strictly enforced. Please refer to Al-Nasser University student's regulations handbook	
1	Class Attendance: • Absence from lectures and/or practical shall not exceed 25 %. Students who exceed the 25% limit without a medical or emergency excuse acceptable to and approved by the Dean of the college shall not be allowed to take the final exam and shall receive a mark of zero for the course.
2	(Tardy): Students will be allowed to in the class if he/she is late not more than 15 minutes with an acceptable excuse. If the student is late in attending the class for more than three times without an excuse he/she will be warned and will be asked to write undertaken for not

	repeating that, otherwise his guardian will be notified and the student will miss the classes and will be considered as failed.
3	<p>(Exam Attendance/Punctuality):</p> <ul style="list-style-type: none"> • Student will not be allowed to appear in the final exam if he/she is late 30 minutes from the begging of the exam. • Students will not be allowed to leave the exam room until unless half of the examination time is passed. • If a student misses the final exam, he/she has to provide an accepted excuse he/she will be eligible to take the exam as first attempt. • If the student misses the final exam he will be considered as failed and if the repeated exam will be calculated as the minimum of 50%. • The student will be considered as failed if he broke the regulations and roles of examination. • In the practical courses failing in either part is marked as failing in the course and student has to appear in the failing part and the marks will be given as the minimum mark. • Using mobile phones is strictly prohibited in examination time and the student will be considered as failed if he did so.
4	<p>(Assignments and Projects):</p> <ul style="list-style-type: none"> • The students have to submit the assignment or project on time. • In late cases student has to provide an acceptable and written excuse to the lecturer before the lecturer has to submit the final marks to the department otherwise the student will not be given the marks of the project.
5	<p>(Cheating):</p> <ul style="list-style-type: none"> • Cheating in examinations or tests is prohibited which may be in the form of copying from another student or bringing unauthorized materials into the exam room (e.g., crib notes, pagers or cell phones) etc. • Midterm Exam cheating results in giving the student a mark of zero • Cheating in the final exam will result in failing the student in that subject if he/she did not get benefits in that subject, if he/she gets benefits he/she will be considered as failed in two courses. If the cheating occur in the last day of exam the student will be considered as failed in that course and the previous one. • If the students repeats cheating in a single examination period he will be discontinued for a full academic year or permanently if he repeated cheating more than twice.
6	<p>(Plagiarism):</p> <p>“To plagiarize is to take ideas or words of another person and pass them off as one’s own”.</p> <ul style="list-style-type: none"> • Plagiarism will results in losing the marks of the assignments. • If the students personates other at examination time both will be suspended for a full academic year
7	(Other policies):



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| <ul style="list-style-type: none">• Using mobile or another electronic device capable of storing or transfer data in class during the lecture or the exam is forbidden.• Abnormal behavior is not acceptable and the student will face a punitive proceedings.• Eating or drinking is strictly prohibited. |
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Course Specification of Clinical Pharmacy I

University: Al-Nasser University

Faculty: Medical Science

Department: Pharmacy

Program title: Pharmacy Program

I. General Information:					
1	Course Title:	Clinical Pharmacy I			
2	Credit hours:	C.H			
		Th.	Pr.	Tut.	Tr.
		3			
3	Study level/year at which this course is offered:	first Semester/ third year			
4	Pre –requisite :	Pharmacology IV			
5	Co –requisite :				
6	Program (s) in which the course is offered:				
7	Language of teaching the course:	English and Arabic			
8	Prepared By:	Salah Abdullah Ahmed			
9	Approved By:				

II. Course Description:
This course provides an understanding of the principles of clinical pharmacy and information on the etiology, clinical signs and symptoms, investigations and principles of treatment of disease important to pharmacists in their development of patient-oriented practice.
III. ILOs: Upon successful completion of this course, the students should be able to:
1-Identify the clinical presentations of diseases. 2- List the finding of different laboratory tests and its relation to disease management. 3-Explain the clinical management of various clinical cases. 4- Recognize the pharmacotherapy-related problems such as drug side effects, interactions, disease contraindication. 5-Illustrate the drug use and management of disease of special populations. 6-Analyze and appraise clinical cases 7-Create therapeutic plan for certain diseases 8-Investigate different drug-related problems in clinical and/or pharmacy settings

- 9-Explore relevant information for clinical case notes and discuss problems in therapeutic management of patients
- 10-Interpret signs and symptoms of certain diseases
- 11-Perform different diagnosis of diseases
- 12- Implement therapeutic plans for treatment of certain diseases
- 13-Solve drug-related and patient-related problems
- 14-Monitor drug regimen therapeutic outcomes
- 15- Assess patient cases and evaluate the overall treatment outcomes
- 16-Write reports and give oral presentations
- 17-Use web browsing to locate and use online data bases

IV. Course Content:

1 – Course Topics/Items:

a – Theoretical Aspect:

Order	Topic/ unit	Sub topic	Number of weeks	Contact hours
1	Introduction	SOAP notes	1	2
		Lab data. Normal v/s abnormal values and significance	1	2
2	Cardiovascular disorders	Hypertension	1	2
		Dyslipidemias	1	2
		Stable angina	1	2
		Acute coronary syndrome	1	2
		Heart failure	1	2
		Mid-term exam	1	2
		Strokes	1	2
		Dysrhythmia	1	2
		Venous thromboembolism	1	2
3	Respiratory disorders	Bronchial asthma	1	2
		Chronic obstructive pulmonary disease and upper respiratory infections	1	2
4	Gastrointestinal tract disorders	Peptic ulcer	1	2

5	Revision and practical exam	-	1	2
6	Final exam	-	1	2
Number of Weeks/and Units Per First semester6				32

b - PracticalAspect:			
Order	Practical Experiment	Number of weeks	Contact hours
1	Case discussion according SOAP notes, and interpretation of laboratory data.	1	2
2	Introduction to cardiovascular testing	1	2
3	Case-studies on hypertension	1	2
4	Case-studies on ischemic heart disease	1	2
5	Case-studies on acute coronary syndrome	1	2
6	Case-studies on heart failure	1	2
7	Case-studies on strokes	1	2
8	Case-studies on dysrhythmias	1	2
9	Case-studies on venous thromboembolism	1	2
10	Case-studies on bronchial asthma	1	2
11	Case-studies on chronic obstructive pulmonary disease.	1	2
12	Case-studies on upper respiratory infections	1	2
13	Case-studies on peptic ulcer disease	1	2
14	Final Practical exam	1	2
Number of Weeks/and Units Per Semester			28

V. Teaching Strategies:
Lectures using data show, presentations, problem solving method, case-studies and discussion, assignments and laboratory work.

VI. Assignments and projects:

no	Assignment	Week Due	Mark
1	Presentations	8	5
2	Case discussions	All	
3	Drug fact sheet	9	5
4	Websites search	12	

VII. Assessment Tasks:

no	Assessment Method	Week Due	Mark	Proportion of Final Assessment
1	Practical reports	1-13	10	10%
2	Assignments	all	5	5%
3	Written Test (1) homework and oral test	8	15	15%
4	Final Exam (theoretical)	16	50	50%
5	Final Exam (practical)	15	20	20%
6	Total		100	100%

VIII. Learning Resources:

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

- 1-Dipiro et al, Pharmacotherapy Handbook, 7th edition 2008, McGraw Hill
- 2-Koda-Kimble and Young's, Applied therapeutics "the clinical use of drugs", 10th edition 2013, Lippincott Williams and Wilkins.

2-Recommended Books and Reference Materials.

- 1- Dipiro et al, Pharmacotherapy A pathophysiologic Approach, 7th edition 2008, McGraw Hill.
- 2- Dipiro et al, Pharmacotherapy Principles and Practice, 7th edition 2008 McGraw Hill.

3-Electronic Materials and Web Sites etc.

- 1- www.dynamed.ebscohost.com
- 2- www.drugs.com
- 3- www.drugdigest.com
- 4- www.pharmacistletter.com
- 5- www.rxlist.com

IX. Course Policies: (including plagiarism, academic honesty, attendance etc)	
The University Regulations on academic misconduct will be strictly enforced. Please refer to Al-Nasser University student's regulations handbook	
1	<p>Class Attendance:</p> <ul style="list-style-type: none"> Absence from lectures and/or practical shall not exceed 25 %. Students who exceed the 25% limit without a medical or emergency excuse acceptable to and approved by the Dean of the college shall not be allowed to take the final exam and shall receive a mark of zero for the course.
2	<p>(Tardy):</p> <p>Students will be allowed to in the class if he/she is late not more than 15 minutes with an acceptable excuse. If the student is late in attending the class for more than three times without an excuse he/she will be warned and will be asked to write undertaken for not repeating that, otherwise his guardian will be notified and the student will miss the classes and will be considered as failed.</p>
3	<p>(Exam Attendance/Punctuality):</p> <ul style="list-style-type: none"> Student will not be allowed to appear in the final exam if he/she is late 30 minutes from the begging of the exam. Students will not be allowed to leave the exam room until unless half of the examination time is passed. If a student misses the final exam, he/she has to provide an accepted excuse he/she will be eligible to take the exam as first attempt. If the student misses the final exam he will be considered as failed and if the repeated exam will be calculated as the minimum of 50%. The student will be considered as failed if he broke the regulations and roles of examination. In the practical courses failing in either part is marked as failing in the course and student has to appear in the failing part and the marks will be given as the minimum mark. Using mobile phones is strictly prohibited in examination time and the student will be considered as failed if he did so.
4	<p>(Assignments and Projects):</p> <ul style="list-style-type: none"> The students have to submit the assignment or project on time. In late cases student has to provide an acceptable and written excuse to the lecturer before the lecturer has to submit the final marks to the department otherwise the student will not be given the marks of the project.

5	<p>(Cheating):</p> <ul style="list-style-type: none"> Cheating in examinations or tests is prohibited which may be in the form of copying from another student or bringing unauthorized materials into the exam room (e.g., crib notes, pagers or cell phones) etc. Midterm Exam cheating results in giving the student a mark of zero Cheating in the final exam will result in failing the student in that subject if he/she did not get benefits in that subject, if he/she gets benefits he/she will be considered as failed in two courses. If the cheating occur in the last day of exam the student will be considered as failed in that course and the previous one. If the students repeats cheating in a single examination period he will be discontinued for a full academic year or permanently if he repeated cheating more than twice.
6	<p>(Plagiarism):</p> <p>“To plagiarize is to take ideas or words of another person and pass them off as one’s own”.</p> <ul style="list-style-type: none"> Plagiarism will results in losing the marks of the assignments. If the students personates other at examination time both will be suspended for a full academic year
7	<p>(Other policies):</p> <ul style="list-style-type: none"> Using mobile or another electronic device capable of storing or transfer data in class during the lecture or the exam is forbidden. Abnormal behavior is not acceptable and the student will face a punitive proceedings. Eating or drinking is strictly prohibited.

Course Specification of Medicinal chemistry III

University: Al-Nasser University

Faculty: Medical Science



Department: Pharmacy

Program title: Pharmacy Program

I. General Information:					
1	Course Title:	Medicinal Chemistry III			
3	Credit hours:	C.H			
		Th.	Pr.	Tut.	Tr.
		3			
4	Study level/year at which this course is offered:	first Semester/ third year			
5	Pre –requisite :	Medicinal chemistry II			
6	Co –requisite :				
7	Program (s) in which the course is offered:	None			
8	Language of teaching the course:	Arabic/English			
9	Prepared By:	Dr. Tawfeek Ahmed Alobaidy			
10	Approved By:				

II. Course Description:
<p>This course introduces students to medicinal chemistry of antibacterial, antibiotic Antimycobacterial, antifungal, antiviral, anticancer and antimalarial agents.</p> <p>The course also practices the qualitative and quantitative analysis of some drugs.</p>

III. ILOs:
<div></div>

IV. Course Content:				
1 – Course Topics/Items:				
a – Theoretical Aspect:				
Order	Topic/ unit	Sub topic	Number of weeks	Contact hours
1	Antibacterial agents	Sulfonamides	1	3
2	Antibiotics I	Penicillins	1	3
3	Antibiotics II	Cephalosopins	1	3
4	Antibiotics III	Tetracyclines, Aminoglycosides	1	3
5	Antibiotics IV	Lincosamide, macrolide and chlormphenicol	1	3
6	Quinolones	Ist generation Second generation and 3dr generation	1	3
7	midterm exam		1	2
8	Anti mycobacterial agents	<u>Anti T.B:</u> first line Secondline <u>antileprosy</u>	1	3
9	Antifungal agent	Antibiotics, azoles, allylamines and morpholines, antimetabolites, fatty acids and dyes	1	3
10	Antiviral agent	Medically significant viruses, DNA viral replication, The building blocks of DNA nucleosides, Agents interfere with viral nucleic acid replication Anti-Retroviral [AntiHIV] Agents Agents inhibit the uncoating process, Neuraminidase Inhibitors, Non-Nucleoside Reverse Transcriptase [RT] Inhibitors HIV Protease Inhibitors	1	3

11	Anticancer I	Types of Neoplasm Mechanism of Cancer formation <i>Chemotherapeutic Agents</i> Alkylating agents. Anti-metabolites [Specific S]	1	3
12	Anticancer II	DNA intercalating agents. Antibiotics. Antimitotic agents [Specific M]. Hormones. Miscellaneous compounds.	1	3
13	Antimalarial agents	Life cycle of the parasite, naturally occurring compounds, quinolone derivatives, aminoacridine, tetrahydrofolate synthesis inhibitors, biguinides, polycyclic antimalarial agents	1	3
14	final exam		1	2
Number of Weeks/and Units Per Semester				34

b - PracticalAspect:			
Order	Practical Experiment	Number of weeks	Contact hours
1	Qualitative analysis of nicotinic acid	1	3
2	Quantitative analysis of nicotinic acid	1	3
3	Quantitative estimation of nalidixic acid	1	3
4	Quantitative estimation of cyclophosphamide	1	3
5	Quantitative estimation of busulfan	1	3
6	Quantitative estimation of penicillin capsules	1	3
7	Identification of tetracyclines	1	3
8	Identification and assay of chloroquine	1	3
9	Identification of gresoflavins	1	3
10	Final Exam	1	3

Number of Weeks/and Units Per Semester	33
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V. Teaching Strategies:
Lectures using data show video animation, Practice session, Discussions, Solving Problem methods, Group assignments, Small group discussions, and Practical classes

VI. Assignments and projects:			
No	Assignment	Week Due	Mark
1	- Project	5	5

VII. Assessment Tasks:				
No	Assessment Method	Week Due	Mark	Proportion of Final Assessment
1	Project (single\group)	2, 8	5	5%
2	Practical reports	1-9	10	10%
3	Oral Tests	5, 9	5	5%
4	Written Test (1)	7	10	10%
5	Final Exam (theoretical)	14	50	50%
6	Final Exam (practical)	11	20	20%
7	Total		100	100%

VIII. Learning Resources:
1-Required Textbook(s) (maximum two).
1- John M. Beale, Jr. and John H. Block, "Text book of Organic Medicinal and Pharmaceutical Chemistry", 2011, 12th Edition, Wilson and Gisvold, Lippincott Williams and Wilkins, A Wolters Kluwer Company, Philadelphia.
2- Graham L. Patrick, "An Introduction to Medicinal Chemistry", 2009, Fourth Edition, Oxford University Press Inc., New York
2-Recommended Books and Reference Materials.
1- Thomas Nogrady, Donald F. Weaver. Medicinal Chemistry A Molecular and Biochemical Approach, 2005, Third edition, Oxford University Press, Inc., New York.

	<p>2- Donald J. Abraham, "BURGER'S Medicinal Chemistry and Drug Discovery" 6th edition, A John Wiley and Sons, Inc., Virginia.</p> <p>3- Thomas L. Lemke, Victoria F. Roche, David A. Willaiams and S. William Zito "Foye's Principles of Medicinal Chemistry", 2008, 6th, Edition, Lippincott Williams and Wilkins, a Wolters Kluwer business, Philadelphia.</p> <p>4- PovlKrogsgaard-Larsen, TommyLiljefors andUlf Madsen, "Textbook of Drug Design andDiscovery".2002, Third edition, Taylor and Francis, London.</p> <p>5- K.-H. Hellwich · C. D. Siebert, "Stereochemistry Workbook"2006, Springer-Verlag Berlin Heidelberg, Berlin.</p>
3-Electronic Materials and Web Sites <i>etc.</i>	
	<p>1- http://www.chemaxon/marvin</p> <p>2- http://www.webmolecules.com</p> <p>3- http://www.acdlabs.com</p> <p>4- PASSPrediction of Activity Spectra for Substance) (http://www.ibmh.msk.su/PASS).</p>

IX. Course Policies: (including plagiarism, academic honesty, attendance etc)	
The University Regulations on academic misconduct will be strictly enforced. Please refer to Al-Nasser University student's regulations handbook	
1	<p>Class Attendance:</p> <ul style="list-style-type: none"> Absence from lectures and/or practical shall not exceed 25 %. Students who exceed the 25% limit without a medical or emergency excuse acceptable to and approved by the Dean of the college shall not be allowed to take the final exam and shall receive a mark of zero for the course.
2	<p>(Tardy):</p> <p>Students will be allowed to in the class if he/she is late not more than 15 minutes with an acceptable excuse. If the student is late in attending the class for more than three times without an excuse he/she will be warned and will be asked to write undertaken for not repeating that, otherwise his guardian will be notified and the student will miss the classes and will be considered as failed.</p>
3	<p>(Exam Attendance/Punctuality):</p> <ul style="list-style-type: none"> Student will not be allowed to appear in the final exam if he/she is late 30 minutes from the begging of the exam.

	<ul style="list-style-type: none"> Students will not be allowed to leave the exam room until unless half of the examination time is passed. If a student misses the final exam, he/she has to provide an accepted excuse he/she will be eligible to take the exam as first attempt. If the student misses the final exam he will be considered as failed and if the repeated exam will be calculated as the minimum of 50%. The student will be considered as failed if he broke the regulations and roles of examination. In the practical courses failing in either part is marked as failing in the course and student has to appear in the failing part and the marks will be given as the minimum mark. Using mobile phones is strictly prohibited in examination time and the student will be considered as failed if he did so.
4	<p>(Assignments and Projects):</p> <ul style="list-style-type: none"> The students have to submit the assignment or project on time. In late cases student has to provide an acceptable and written excuse to the lecturer before the lecturer has to submit the final marks to the department otherwise the student will not be given the marks of the project.
5	<p>(Cheating):</p> <ul style="list-style-type: none"> Cheating in examinations or tests is prohibited which may be in the form of copying from another student or bringing unauthorized materials into the exam room (e.g., crib notes, pagers or cell phones) etc. Midterm Exam cheating results in giving the student a mark of zero Cheating in the final exam will result in failing the student in that subject if he/she did not get benefits in that subject, if he/she gets benefits he/she will be considered as failed in two courses. If the cheating occur in the last day of exam the student will be considered as failed in that course and the previous one. If the students repeats cheating in a single examination period he will be discontinued for a full academic year or permanently if he repeated cheating more than twice.
6	<p>(Plagiarism):</p> <p>“To plagiarize is to take ideas or words of another person and pass them off as one’s own”.</p> <ul style="list-style-type: none"> Plagiarism will results in losing the marks of the assignments. If the students personates other at examination time both will be suspended for a full academic year.
7	<p>(Other policies):</p> <ul style="list-style-type: none"> Using mobile or another electronic device capable of storing or transfer data in class during the lecture or the exam is forbidden. Abnormal behavior is not acceptable and the student will face a punitive proceedings. Eating or drinking is strictly prohibited.



Course Specification of Toxicology

University: Al-Nasser University

Faculty: Medical Science

Department: Pharmacy

Program title: Pharmacy Program

I. General Information:						
1	Course Title:	Toxicology				
2	Credit hours:	C.H				Total
		Th.	Pr.	Tut.	Tr.	
		2	1	-	-	
3	Study level/year at which this course is offered:	first Semester/ third year				
4	Pre –requisite :					
5	Co –requisite :	Pharmacology IV				
6	Program (s) in which the course is offered:					
7	Language of teaching the course:	English/Arabic				
8	Prepared By:	Dr. Ali Al-Mehdar				
9	Approved By:					

II. Course Description:
<p>The course designed to provide the student with the general principles of toxicology, prevention and management of poisoning, the mechanism(s) of toxicity of the drugs commonly used, different chemicals, radiation and radioactive materials and drugs affecting maternal, foetal and neonatal health. Also, signs and symptoms of toxicity and management of the cases are stressed. The different methods for identification of toxic substances are performed practically by the student.</p>

III. ILOs: At the end of this course student must be able to:

- 1- Recognize the general principles of poisoning management, actions, interactions, uses and toxicity of certain medications and chemicals.
- 2- Illustrate toxic profile of various drugs and other chemicals including sources, identification, symptoms, management, control and first aid measures.
- 3- Explain an overview of protocols for managing various toxic ingestions, the antidotes, and treatments associated with their pathology and appropriate medical intervention in emergency situations.
- 4- Identify clinical features of diseases regarding genetic abnormalities and toxicology of addiction.
- 5- Classify the consequences of ingesting prescription medicines, of exposure of non-therapeutic compounds and of the risk from environmental and biological threats to public safety.
- 6- Analyze the serious consequences of ingestion of toxic drugs and exposure to different chemicals.
- 7- Differentiate between different toxic agents regarding their clinical symptoms, as well as their main lines of toxicity management.
- 8- Evaluate the different methods for the management of poisoning in individual cases of toxicity.
- 9- Design a therapeutic plan for management of poisoning patient.
- 10- Observe, record and analyze the toxic effects of different drugs and chemical substances.
- 11- Handle safely with corrosive substances and other toxic compounds.
- 12- Determine the toxicity profiles of different chemicals and detect poisons in biological specimens.
- 13- Perform the different techniques for identification of toxic substances.
- 14- Plan and implement efficient and effective modes of working to manage patient toxicity through group discussions and participation in laboratory sessions.
- 15- Communicate effectively with other healthcare professionals in selection the suitable treatment of toxic cases.
- 16- Present information related to the patient's therapy clearly in written, electronic and verbal forms.
- 17- Adopt the principles of lifelong learning needed for continuous professional development and use computer effectively in reaching up to date information.

I.Course Content:				
1 – Course Topics/Items:				
a – Theoretical Aspect:				
Order	Topic/ unit	Sub topic	Number of weeks	Contact hours
1	General principles of toxicology:	- Toxicity, hazard, risk. - Branches of toxicology: Occupational, Environmental, Ecotoxicology, Analytical and Clinical.	1	2
2	Poisons:	- Types of exposure and toxic responses. - Spectrum of toxicity. - Evaluation of safety of chemicals and drugs.	1	2
3	Prevention and management of poisoning:	- Poisoning episodes: Accidental, Suicidal, Homicidal, Non-accidental, Maintenance of vital functions	1	2
		- Antidotes: non-specific and specific Prevention of absorption of poisons, Enhanced elimination of poisons, Supportive management	1	2
4	Poisoning with common drugs:	- Selected OTC Products: Aspirin, Paracetamol, Iron.	2	4
		- CNS Depressants: Barbiturates and Benzodiazepines.		
		- CNS Stimulants: Amphetamine and Cocaine.		
5	Corrosive acids:	- Sulphuric acid, hydrochloric acid, nitric acid (Characters, fatal dose and fatal period, mode of poisoning and picture of poisoning).	1	2
6	Irritant poisons & Corrosive alkalies:	- Arsenic, lead, mercury and iron (Characters, sources, fatal dose and fatal period, mode of poisoning and picture of poisoning). Mode of poisoning - Picture of poisoning	1	2

		- Fatal dose and fatal period		
7	Midterm exam		1	2
8	Pesticides & Plant poisons:	Halogenated and cholinesterase inhibitor insecticides Rodenticides, Herbicides, Fungicides Atropine, opium, nicotine, cannabis, and cocaine (Source, fatal dose and fatal period, mode of poisoning and picture of poisoning).	1	2
9	Gas and volatile poisons & Animal poison:	- Cyanide, ethyl alcohol and methyl alcohol (Characters, fatal dose and fatal period, mode of poisoning and picture of poisoning). - Carbon monoxide (CO-Hb) (detection, and Met-Hb –detection) Snake bite and scorpion sting. (Fatal dose and fatal period, mode of poisoning and picture of poisoning).	1	2
10	Teratogenic and toxic effects of drugs and chemicals on reproduction:	- Possible site of action of teratogens: Effects on father, mother, feto-placental unit and fetus. Principles of teratology as applied to man: Stages of pregnancy, drug dosage, placental transfer, use of drugs during pregnancy.	1	2
11	Final Exam		1	2
Number of Weeks/and Units Per Semester				26

b - Practical Aspect:			
Order	Practical Experiment	Number of weeks	Contact hours
1	Introduction to the different ways and techniques for identification of different toxic substances (extraction and detection) Supportive measures in poisoned patients (Gastric lavage, induction of emesis,etc)	1	2

2	Detection of corrosive acids Detection of corrosive alkalis	1	2
3	Detection of carbolic acid (phenols) Detection of heavy metals	1	2
4	Detection of some analgesic drugs (aspirin and paracetamol) Detection of sedatives and hypnotics (barbiturates and benzodiazepines)	1	2
5	Detection of CNS depressants (opioids) Detection of CNS stimulants (amphetamine)	1	2
6	Detection of pesticides Detection of volatile poisons	1	2
7	Final Exam	1	2
Number of Weeks/and Units Per Semester			14

II. Teaching Strategies:
1- Lectures using PowerPoint and data show 2- Laboratory sessions (Practical training). 4- Group discussion. 5- Seminars.

III. Assignments and projects:			
No	Assignment	Week Due	Mark
1	- Project	12	5

IV. Assessment Tasks:				
no	Assessment Method	Week Due	Mark	Proportion of Final Assessment
1	Practical reports	1-12	10	10%

2	Written Med-term Test	8	15	15%
3	Final Exam (practical)	14	20	20%
4	Project	12	5	5%
5	Final Exam (theoretical)	16	50	50%
6	Total		100	100%

V. Learning Resources:	
1-Required Textbook(s) (maximum two).	
	1- Curtis Klaassen (2013), Casarett and Doull's Toxicology: Basic Science of Poisons. 8 th Edition, McGraw Hill, New York.
2-Recommended Books and Reference Materials.	
	1- Ernest Hodgson (2010), A Textbook of Modern Toxicology, Fourth Edition. WILEY interscience. 2- Kent Olson (2011), Poisoning and Drug Overdose, Sixth Edition McGraw Hill Professional
3-Electronic Materials and Web Sites <i>etc.</i>	
	1- http://toxnet.nlm.nih.gov/ 2- http://www.ncbi.nlm.nih.gov/entrez/query.fcgi 3- http://www.PubMed.com

VI. Course Policies: (including plagiarism, academic honesty, attendance etc)	
The University Regulations on academic misconduct will be strictly enforced. Please refer to Al-Nasser University student's regulations handbook	
1	Class Attendance: <ul style="list-style-type: none"> Absence from lectures and/or practical shall not exceed 25 %. Students who exceed the 25% limit without a medical or emergency excuse acceptable to and approved by the Dean of the college shall not be allowed to take the final exam and shall receive a mark of zero for the course.

2	<p>(Tardy):</p> <p>Students will be allowed to in the class if he/she is late not more than 15 minutes with an acceptable excuse. If the student is late in attending the class for more than three times without an excuse he/she will be warned and will be asked to write undertaken for not repeating that, otherwise his guardian will be notified and the student will miss the classes and will be considered as failed.</p>
3	<p>(Exam Attendance/Punctuality):</p> <ul style="list-style-type: none"> • Student will not be allowed to appear in the final exam if he/she is late 30 minutes from the begging of the exam. • Students will not be allowed to leave the exam room until unless half of the examination time is passed. • If a student misses the final exam, he/she has to provide an accepted excuse he/she will be eligible to take the exam as first attempt. • If the student misses the final exam he will be considered as failed and if the repeated exam will be calculated as the minimum of 50%. • The student will be considered as failed if he broke the regulations and roles of examination. • In the practical courses failing in either part is marked as failing in the course and student has to appear in the failing part and the marks will be given as the minimum mark. • Using mobile phones is strictly prohibited in examination time and the student will be considered as failed if he did so.
4	<p>(Assignments and Projects):</p> <ul style="list-style-type: none"> • The students have to submit the assignment or project on time. • In late cases student has to provide an acceptable and written excuse to the lecturer before the lecturer has to submit the final marks to the department otherwise the student will not be given the marks of the project.
5	<p>(Cheating):</p> <ul style="list-style-type: none"> • Cheating in examinations or tests is prohibited which may be in the form of copying from another student or bringing unauthorized materials into the exam room (e.g., crib notes, pagers or cell phones) etc. • Midterm Exam cheating results in giving the student a mark of zero • Cheating in the final exam will result in failing the student in that subject if he/she did not get benefits in that subject, if he/she gets benefits he/she will be considered as failed in two courses. If the cheating occur in the last day of exam the student will be considered as failed in that course and the previous one. • If the students repeats cheating in a single examination period he will be discontinued for a full academic year or permanently if he repeated cheating more than twice.
6	<p>(Plagiarism):</p> <p>“To plagiarize is to take ideas or words of another person and pass them off as one’s own”.</p>



	<ul style="list-style-type: none">• Plagiarism will results in losing the marks of the assignments.• If the students personates other at examination time both will be suspended for a full academic year.
7	<p>(Other policies):</p> <ul style="list-style-type: none">• Using mobile or another electronic device capable of storing or transfer data in class during the lecture or the exam is forbidden.• Abnormal behavior is not acceptable and the student will face a punitive proceedings.• Eating or drinking is strictly prohibited.



Course Specification of Community Pharmacy

University: Al-Nasser University

Faculty: Medical Science

Department: Pharmacy

Program title: Pharmacy Program

I. General Information:					
1	Course Title:	Community Pharmacy			
2	Credit hours:	C.H			
		Th.	Pr.	Tut.	Tr.
		3			
3	Study level/year at which this course is offered:	first Semester/ third year			
4	Pre –requisite :				
5	Co –requisite :	Pharmacology 4			
6	Program (s) in which the course is offered:				
7	Language of teaching the course:	English/Arabic			
8	Prepared By:	Dr. Mohammed Addoais			
9	Approved By:				

II. Course Description:
This course is designed to provide students with a detailed knowledge and understanding on the pathogenesis, clinical features, and management and treatment outcomes of some minor ailments. Assessment and management of some minor respiratory, gastrointestinal, skin, eye, ear and infestation ailments will be studied.

III. ILOs: at end of the course students will be to:
<ol style="list-style-type: none"> 1. Enumerate the non-prescription drugs. 2. Identify signs and symptoms of minor illnesses. 3. Describe the management of some minor illnesses by OTC drugs. 4. Differentiate the symptoms of different causing diseases. 5. Investigate the drug related problems. 6. Compare between different family planning methods 7. Diagnose minor ailments in community pharmacy

8. Manage minor ailments in community pharmacy
9. Prescribe the right OTC drugs for the ailment condition .
10. Solve any drug related problems in community pharmacy
11. Communicate effectively with patients, the public and health professionals.
12. Justify treatment options to patients.

IV. Course Content:				
1 – Course Topics/Items:				
a – Theoretical Aspect:				
No	Topic/ unit	Sub topic	Number of weeks	Contact hours
1	Community pharmacy services	<ul style="list-style-type: none"> Self-care and self-medication . Drug use in special populations Activities of the community pharmacist Prescription and over-the counter (OTC) medications Assessment of patient Physical assessment skills 	2	6
2	OTC For treatment of GIT disorders	<ul style="list-style-type: none"> Mouth ulcers Heart burn Indigestion Nausea and vomiting Constipation Diarrhea Haemorrhoids 	2	6
3	OTC For treatment of respiratory disorders	<ul style="list-style-type: none"> Cold and flu Cough Sore throat Allergic rhinitis 	2	6
4	Midterm exam		1	2
5	OTC For treatment of skin disorders	<ul style="list-style-type: none"> Eczema/dermatitis/common childhood rashes Acne Athlete's foot Warts and verrucae Hair loss Dandruff Psoriasis Cold sores Warts and verrucas Corns and calluses Fungal infections 	3	9

6	OTC For treatment of pain and headache OTC For treatment of Eye and ear disorders	<ul style="list-style-type: none">• Headache and migraine• Dental pain• Musculoskeletal problems• Ear problems<ul style="list-style-type: none">○ Earache○ Ear wax○ Otitis externa• Eye conditions<ul style="list-style-type: none">○ Conditions of the cornea○ Conditions of the eyelid○ Other eye problems	1	3
7	OTC For treatment of Women's conditions OTC For treatment of Infestations	<ul style="list-style-type: none">• Cystitis• Dysmenorrhoea• Premenstrual syndrome (PMS)• Vaginal thrush <ul style="list-style-type: none">• Head lice• Scabies• Threadworm	1	3
8	Community role	<ul style="list-style-type: none">• The role of the pharmacist in family planning• Smoking cessation	1	3
9	Final exam		1	2
Number of Weeks/and Units Per Semester			14	40

V. Teaching Strategies:

- Lectures using data show
- Video animation and seminars
- Directed reading
- Independent study
- Tutorial

VI. Assessment Tasks:

no	Assessment Method	Week Due	Mark	Proportion of Final Assessment
1	Oral Tests	5, 10	5	5%
2	Quizzes	6, 9	5	5%
3	Written Test (midterm exam)	7	20	20%
4	Final Exam (theoretical)	16	70	70%
Total			100	100%

VII. Learning Resources:	
1-Required Textbook(s) (maximum two).	
	1- Alan Nathan (2008). Managing symptoms in pharmacy. Second edition Pharmaceutical press. London. 2- Paul Rutter (2008).Community Pharmacy: Symptoms, Diagnosis and Treatment, second edition, Elsevier, London.
2-Recommended Books and Reference Materials.	
	1. Daniel L. Krinsky, Rosemary R. Berardi, Stefanie P. Ferreri, Anne L. Hume, Gail D. Newton, Carol J. Rollins, Karen J. Tietze (2011). Handbook of Non-Prescription drugs, 17th edition. American pharmaceutical association. Washington.
3-Electronic Materials and Web Sites <i>etc.</i>	

VIII. Course Policies: (including plagiarism, academic honesty, attendance etc)	
The University Regulations on academic misconduct will be strictly enforced. Please refer to Al-Nasser University student's regulations handbook	
1	Class Attendance: <ul style="list-style-type: none"> Absence from lectures and/or practical shall not exceed 25 %. Students who exceed the 25% limit without a medical or emergency excuse acceptable to and approved by the Dean of the college shall not be allowed to take the final exam and shall receive a mark of zero for the course.
2	(Tardy): Students will be allowed to in the class if he/she is late not more than 15 minutes with an acceptable excuse. If the student is late in attending the class for more than three times without an excuse he/she will be warned and will be asked to write undertaken for not repeating that, otherwise his guardian will be notified and the student will miss the classes and will be considered as failed.
3	(Exam Attendance/Punctuality): <ul style="list-style-type: none"> Student will not be allowed to appear in the final exam if he/she is late 30 minutes from the begging of the exam. Students will not be allowed to leave the exam room until unless half of the examination time is passed. If a student misses the final exam, he/she has to provide an accepted excuse he/she will be eligible to take the exam as first attempt.

	<ul style="list-style-type: none"> • If the student misses the final exam he will be considered as failed and if the repeated exam will be calculated as the minimum of 50%. • The student will be considered as failed if he broke the regulations and roles of examination. • In the practical courses failing in either part is marked as failing in the course and student has to appear in the failing part and the marks will be given as the minimum mark. • Using mobile phones is strictly prohibited in examination time and the student will be considered as failed if he did so.
4	<p>(Assignments and Projects):</p> <ul style="list-style-type: none"> • The students have to submit the assignment or project on time. • In late cases student has to provide an acceptable and written excuse to the lecturer before the lecturer has to submit the final marks to the department otherwise the student will not be given the marks of the project.
5	<p>(Cheating):</p> <ul style="list-style-type: none"> • Cheating in examinations or tests is prohibited which may be in the form of copying from another student or bringing unauthorized materials into the exam room (e.g., crib notes, pagers or cell phones) etc. • Midterm Exam cheating results in giving the student a mark of zero • Cheating in the final exam will result in failing the student in that subject if he/she did not get benefits in that subject, if he/she gets benefits he/she will be considered as failed in two courses. If the cheating occur in the last day of exam the student will be considered as failed in that course and the previous one. • If the students repeats cheating in a single examination period he will be discontinued for a full academic year or permanently if he repeated cheating more than twice.
6	<p>(Plagiarism):</p> <p>“To plagiarize is to take ideas or words of another person and pass them off as one’s own”.</p> <ul style="list-style-type: none"> • Plagiarism will results in losing the marks of the assignments. • If the students personates other at examination time both will be suspended for a full academic year.
7	<p>(Other policies):</p> <ul style="list-style-type: none"> • Using mobile or another electronic device capable of storing or transfer data in class during the lecture or the exam is forbidden. • Abnormal behavior is not acceptable and the student will face a punitive proceedings. • Eating or drinking is strictly prohibited.

Course Specification of Pharmacology III

University: Al-Nasser University

Faculty: Medical Science

Department: Pharmacy

Program title: Pharmacy Program

IX. General Information:					
1	Course Title:	Pharmacology III			
2	Credit hours:	C.H			
		Th.	Pr.	Tut.	Tr.
		3			
3	Study level/year at which this course is offered:	first Semester/ third year			
4	Pre –requisite :	Pharmacology II			
5	Co –requisite :				
6	Program (s) in which the course is offered:				
7	Language of teaching the course:	English – Arabic			
8	Prepared By:	Dr/ Mohammad Abobakr Al-Ghazali			
9	Approved By:				

II. Course Description:
The course will provide the student with the essential pharmacological knowledge including the symptoms, mechanism of actions, side effects and treatment in the different C.N.S diseases, G.I.T disorders and muscle relaxant drugs.

III. ILOs: After participation in this course students must be able to:
1- Classify the groups of drugs in each disease in this course. 2- Describe the mechanism of actions of drugs used in different disease discussed in this course. 3- Recognize the side effects that can occur with different drugs explained in this course. 4- Distinguish the actions, mechanisms and side effects of different drugs included in this course. 5- Foretell the pharmacological aspects of individual drugs, once provided with their pharmacological class. 6- Merge theory with professional practical. 7- Perform confident oral and written knowledge and skills gained from this course.

- 8- Demonstrate professional competence in selecting appropriate drugs from different groups that covered in this course.
- 9- Choose professional in selecting the convenient therapy for different diseases covered in this course.
- 10- Implement practical experiments to diagnose and describe the pharmacological aspects of unknown drugs.
- 11- Communicate professional with patients and other health care specialist by verbal and written means.
- 12- Demonstrate critical thinking and decision making abilities.
- 13- Work effectively in a team and demonstrate creativity and time management abilities.

V. Course Content:				
1 – Course Topics/Items:				
a – Theoretical Aspect:				
Order	Topic/ unit	Sub topic	Number of weeks	Contact hours
1	Central Nervous System I (C.N.S)	Introduction	6	18
		Anesthetics		
		Antidepressant Drugs		
		Sedatives ,Anxiolytics and Hypnotics		
		C.N.S Stimulants		
		Opioid Analgesics		
2	Midterm Exam		1	2
3	Central Nervous System II(C.N.S)	Anti-Epilepsy	2	6
		Anti-Parkinson's		
4	Skeletal Muscle Relaxants		1	3
5	Local Anesthetics		1	3
6	Gastro-Intestinal Tract	Anti-Peptic Ulcer	3	9
		Anti-Constipation		
		Anti-Diarrhea		
7	Final Exam		1	2
Number of Weeks/and Units Per First semester5				43

VI. Teaching Strategies:
-Lectures -Student oral and written presentation - Practical sessions

VII. Assignments and projects:			
No	Assignment	Week Due	Mark
1	- Presentation	6	5%

VIII. Assessment Tasks:				
No	Assessment Method	Week Due	Mark	Proportion of Final Assessment
1	Assignment/ Presentation	6	5	5%
2	Practical Reports	All	10	10%
3	Quizzes and Exercises and Home works	4-8	5	5%
4	Written Test (1)	7	10	10%
5	Final Exam (theoretical)	15	50	50%
6	Final Exam (practical)	14	20	20%
	Total		100	100%

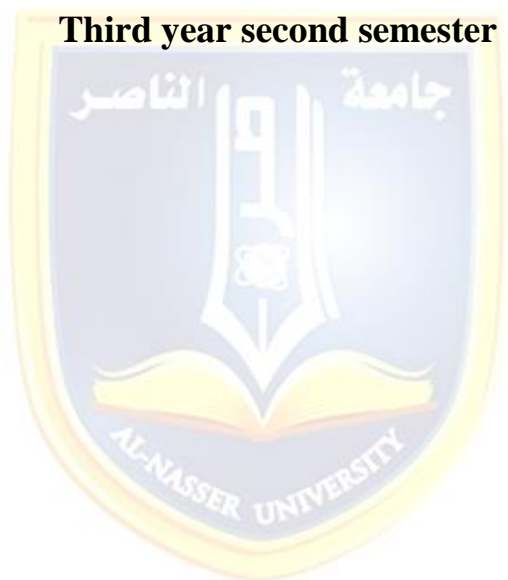
IX. Learning Resources:
1-Required Textbook(s) (maximum two).
1- M.A. Clark, R. Finkel, J.A. Rey, K. Whalen (2009)Lippincott's Illustrated Reviews of Pharmacology, 11th edition, Lippincott's Williams and Wilkins, Philadelphia. 2- B.G. Katzung, S.B. Masters, A.J. Trevor (2012) Basic and Clinical Pharmacology, Fifth edition, Mc Graw Hill Lange, U.S.A.
2-Recommended Books and Reference Materials.
1- H.P. Rang, M.M. Dale, J.M. Ritter, R.J. Flower (2007) Rand and Dale's Pharmacology, 6th edition, Churchill Livingstone Elsevier, Philadelphia.
3-Electronic Materials and Web Sites etc.
1- www.who.int 2- www.drugs.com

X. Course Policies: (including plagiarism, academic honesty, attendance etc)	
The University Regulations on academic misconduct will be strictly enforced. Please refer to Al-Nasser University student's regulations handbook	
1	<p>Class Attendance:</p> <ul style="list-style-type: none"> Absence from lectures and/or practical shall not exceed 25 %. Students who exceed the 25% limit without a medical or emergency excuse acceptable to and approved by the Dean of the college shall not be allowed to take the final exam and shall receive a mark of zero for the course.
2	<p>(Tardy):</p> <p>Students will be allowed to in the class if he/she is late not more than 15 minutes with an acceptable excuse. If the student is late in attending the class for more than three times without an excuse he/she will be warned and will be asked to write undertaken for not repeating that, otherwise his guardian will be notified and the student will miss the classes and will be considered as failed.</p>
3	<p>(Exam Attendance/Punctuality):</p> <ul style="list-style-type: none"> Student will not be allowed to appear in the final exam if he/she is late 30 minutes from the begging of the exam. Students will not be allowed to leave the exam room until unless half of the examination time is passed. If a student misses the final exam, he/she has to provide an accepted excuse he/she will be eligible to take the exam as first attempt. If the student misses the final exam he will be considered as failed and if the repeated exam will be calculated as the minimum of 50%. The student will be considered as failed if he broke the regulations and roles of examination. In the practical courses failing in either part is marked as failing in the course and student has to appear in the failing part and the marks will be given as the minimum mark. Using mobile phones is strictly prohibited in examination time and the student will be considered as failed if he did so.
4	<p>(Assignments and Projects):</p> <ul style="list-style-type: none"> The students have to submit the assignment or project on time. In late cases student has to provide an acceptable and written excuse to the lecturer before the lecturer has to submit the final marks to the department otherwise the student will not be given the marks of the project.
5	<p>(Cheating):</p>

	<ul style="list-style-type: none"> Cheating in examinations or tests is prohibited which may be in the form of copying from another student or bringing unauthorized materials into the exam room (e.g., crib notes, pagers or cell phones) etc. Midterm Exam cheating results in giving the student a mark of zero Cheating in the final exam will result in failing the student in that subject if he/she did not get benefits in that subject, if he/she gets benefits he/she will be considered as failed in two courses. If the cheating occur in the last day of exam the student will be considered as failed in that course and the previous one. If the students repeats cheating in a single examination period he will be discontinued for a full academic year or permanently if he repeated cheating more than twice.
6	<p>(Plagiarism):</p> <p>“To plagiarize is to take ideas or words of another person and pass them off as one’s own”.</p> <ul style="list-style-type: none"> Plagiarism will results in losing the marks of the assignments. If the students personates other at examination time both will be suspended for a full academic year
7	<p>(Other policies):</p> <ul style="list-style-type: none"> Using mobile or another electronic device capable of storing or transfer data in class during the lecture or the exam is forbidden. Abnormal behavior is not acceptable and the student will face a punitive proceedings. Eating or drinking is strictly prohibited.



Third year second semester



Course Specification of Applied pharmacognosy II

University: Al-Nasser University

Faculty: Medical Science

Department: Pharmacy

Program title: Pharmacy Program

I. General Information:					
1	Course Title:	Applied pharmacognosy 2			
2	Credit hours:	C.H			
		Th.	Pr.	Tut.	Tr.
		4			
3	Study level/year at which this course is offered:	second semester/third year			
4	Pre –requisite :	Pharmacognosy I & II courses Phytochemistry I & II courses Applied Pharmacognocyt			
5	Co –requisite :	None			
6	Program (s) in which the course is offered:	None			
7	Language of teaching the course:	English/Arabic			
8	Prepared By:	Wedad Mansour			
9	Approved By:				

II. Course Description:
<p>The course provides students with information about clinical effectiveness of herbs in the prevention and/or treatment of the diseases affecting digestive system, cardiovascular system, respiratory system, non-specific enhancement of resistance, urinary system, rheumatic conditions, nervous system, gynaecological conditions, cancer, skin diseases, eye diseases, wounds and other injuries. Also provides students with information about botanical or herbal products that will allow them to make judgments about clinical effectiveness and potential for adverse consequences in patients.</p>

III. ILOs:

After completion of this course, the students should be able to

- 1- Recognize the medicinal plants in prevention and healing of diseases.
- 2- Summarize the principles of using some herbal medications to relief some common health problems e.g. GIT, cardiovascular, respiratory, urinary,etc
- 3- Identify pharmacological properties, adverse reactions and contraindications of some herbal medications used in some specific health problems.
- 4- Suggest appropriate formulas for treatment of common diseases
- 5- Design implementation, monitoring, assessment and intervention in drug therapy to obtain the most effective, most safe and economic drug regimen.
- 6- Contribute to the development of the profession through applied study, analysis of the published literature, drug information and evaluation of medicinal plants and their uses in improving health.
- 7- Diagnose simple health problems.
- 8- Prescribe a herbal remedy for treatment of common health problems.
- 9- Create and dispense herbal medicine prescriptions as well as reviewing written prescriptions for accuracy and to reduce medication errors.
- 10- Work effectively as a member of a team
- 11- Write reports and presents it.
- 12- Communicate effectively with other health care professionals, patients and publics.
- 13- Demonstrate decision making and problem solving in using of herbal medicine as an alternative medicine.
- 14- Acquire good knowledge about herbal medicine as one of the most common alternative therapies.
- 15- Advise patients and publics to enhance recovery and achieve positive therapeutic outcomes.

IV. Course Content:

1 – Course Topics/Items: Complementary & alternative medicine

a – Theoretical Aspect:

Order	Topic/ unit	Sub topic	Number of weeks	Contact hours
1	Introduction	- Definitions of complementary and alternative medicine - Concepts of complementary and alternative medicine - Comparison with Integrative medicine - Classification of complementary and alternative medicine.	1	4
2	Types of complementary and alternative medicine	- Alternative medical systems - Definitions, concepts, and applications of * Traditional Chinese medicine. * Indian medicine (Ayuveda).	1	4
3		- Mind-body therapies - Biologically Based Practices	1	4
4		- Manipulative therapies - Energy medicine	1	4
5	Evidence based therapies	Definitions, concepts, applications of: * Homoeopathy * Anthroposophical medicine	1	4
6		* Aromatherapy * Flower remedy therapy * Phytotherapy (Herbal medicine)	1	4
7	Mid- term exam		1	2
8	Phytotherapy	- Herbs and herbal combinations, preparations and doses used in treatment of: * Central Nervous System disorders	1	4
9		* Urinary tract disorders * Skin diseases * Respiratory system	1	4
10		* Digestive system disorders * Rheumatic Diseases	1	4
11		* Cardiovascular system	1	4
12		* Gynecological disorders	1	4

		* Endocrine and metabolic problems * Performance and immune deficiencies		
13	Non-medicinal based therapies	- Hydrotherapy - Apitherapy	1	4
14	Final exam		1	2
Number of Weeks /and Units Per Semester				48

No	Assignment	Week Due	Mark
1	Seminar	10, 11	3
2	Project	5, 8	4
3	Micro assignments	3-11	3

V. Assessment Tasks:				
No	Assessment Method	Week Due	Mark	Proportion of Final Assessment
1	Assignments	3-11	10	10%
2	Exercises and Home works	3, 6, 11	3	3%
3	Oral Tests	2, 7, 9, 12	3	3%
4	Quizzes	4, 8	4	4%
5	Written Test (1)	7	20	20%
6	Final Exam (theoretical)	14	60	60%
7	Total		100	100%

VI. Learning Resources:	
1- Required Textbook(s) (maximum two).	
	1- Steven B Kayne. "Complementary and alternative medicine" (2009); Pharmaceutical Press. 2- Henrich M., Barends j. and Gibbons S.A. "Fundamentals of Pharmacognosy and Phytotherapy" (2004); Churchill Livingstone, New York. 3- Karin Kraft. "Pocket guide to herbal medicine" (2004); Georg Thieme Verlag.
2- Recommended Books and Reference Materials.	
	1- Brun L. and Cohen M. "Herbs & Natural Supplements" (2010); 3rd ed., Elsevier, London 2- Tracy T.S. & Kingston R.L. "Herbal Products" (2007); 2nd ed., Humana Press, New Jersey. 3- Evans W.C., Evans D. & Trease E., Saunders "Trease and Evans 'Pharmacognosy" (2009); 16th ed. Elsevier, New York.

3- Electronic Materials and Web Sites <i>etc.</i>	
	1- http://www.holisticonline.com/Herbal-Med/hol_herb-forms.htm 2- http://www.mothenature.com/Library/Bookshelf/Books/15/1.cfm 3- http://www.rain-tree.com/prepmethod.htm

VII. Learning Resources:	
1-Required Textbook(s) (maximum two).	
	1- Henrich M., Barends j. and Gibbons S.A. "Fundamentals of Pharmacognosy and Phytotherapy" (2004); Churchill Livingstone, New York 2- Evans W.C., Evans D. and Trease E., Saunders "Trease and Evans 'Pharmacognosy" (2009); 16th ed. Elsevier, New York.
2-Recommended Books and Reference Materials.	
	1- Brun L. and Cohen M. "Herbs and Natural Supplements" (2010); Third ed., Elsevier, London 2- Tracy T.S. and Kingston R.L. "Herbal Products" (2007); Second ed., Humana Press, New Jersey.
3-Electronic Materials and Web Sites <i>etc.</i>	
	1- http://www.holisticonline.com/Herbal-Med/hol_herb-forms.htm 2- http://www.mothenature.com/Library/Bookshelf/Books/15/1.cfm 3- http://www.rain-tree.com/prepmethod.htm

VIII. Course Policies: (including plagiarism, academic honesty, attendance etc)	
The University Regulations on academic misconduct will be strictly enforced. Please refer to Al-Nasser University student's regulations handbook	
1	Class Attendance: <ul style="list-style-type: none"> Absence from lectures and/or practical shall not exceed 25 %. Students who exceed the 25% limit without a medical or emergency excuse acceptable to and approved by the Dean of the college shall not be allowed to take the final exam and shall receive a mark of zero for the course.
2	(Tardy): Students will be allowed to in the class if he/she is late not more than 15 minutes with an acceptable excuse. If the student is late in attending the class for more than three times without an excuse he/she will be warned and will be asked to write undertaken for not repeating that, otherwise his guardian will be notified and the student will miss the classes and will be considered as failed.
3	(Exam Attendance/Punctuality): <ul style="list-style-type: none"> Student will not be allowed to appear in the final exam if he/she is late 30 minutes from the begging of the exam. Students will not be allowed to leave the exam room until unless half of the examination time is passed.

	<ul style="list-style-type: none"> • If a student misses the final exam, he/she has to provide an accepted excuse he/she will be eligible to take the exam as first attempt. • If the student misses the final exam he will be considered as failed and if the repeated exam will be calculated as the minimum of 50%. • The student will be considered as failed if he broke the regulations and roles of examination. • In the practical courses failing in either part is marked as failing in the course and student has to appear in the failing part and the marks will be given as the minimum mark. • Using mobile phones is strictly prohibited in examination time and the student will be considered as failed if he did so.
4	<p>(Assignments and Projects):</p> <ul style="list-style-type: none"> • The students have to submit the assignment or project on time. • In late cases student has to provide an acceptable and written excuse to the lecturer before the lecturer has to submit the final marks to the department otherwise the student will not be given the marks of the project.
5	<p>(Cheating):</p> <ul style="list-style-type: none"> • Cheating in examinations or tests is prohibited which may be in the form of copying from another student or bringing unauthorized materials into the exam room (e.g., crib notes, pagers or cell phones) etc. • Midterm Exam cheating results in giving the student a mark of zero • Cheating in the final exam will result in failing the student in that subject if he/she did not get benefits in that subject, if he/she gets benefits he/she will be considered as failed in two courses. If the cheating occur in the last day of exam the student will be considered as failed in that course and the previous one. • If the students repeats cheating in a single examination period he will be discontinued for a full academic year or permanently if he repeated cheating more than twice.
6	<p>(Plagiarism):</p> <p>“To plagiarize is to take ideas or words of another person and pass them off as one’s own”.</p> <ul style="list-style-type: none"> • Plagiarism will results in losing the marks of the assignments. • If the students personates other at examination time both will be suspended for a full academic year.
7	<p>(Other policies):</p> <ul style="list-style-type: none"> • Using mobile or another electronic device capable of storing or transfer data in class during the lecture or the exam is forbidden. • Abnormal behavior is not acceptable and the student will face a punitive proceedings. • Eating or drinking is strictly prohibited.



Course Specification of Industrial Pharmacy II

University: Al-Nasser University

Faculty: Medical Science

Department: Pharmacy

Program title: Pharmacy Program

I. General Information:					
1	Course Title:	Industrial Pharmacy II			
2	Credit hours:	C.H			
		Th.	Pr.	Tut.	Tr.
		3			
3	Study level/year at which this course is offered:	second semester/third year			
4	Pre –requisite :	Industrial Pharmacy I			
5	Co –requisite :	----			
6	Program (s) in which the course is offered:				
7	Language of teaching the course:	English and Arabic			
8	Prepared By:	Dr. Abdulkarim Alzomor			
9	Approved By:				

II. Course Description:
Students are to be introduced to the basic concepts involved in the manufacture of various drug dosage forms on large scale efficiently and economically. Moreover, they will be provided with the essential unit operation involved in the production of pharmaceuticals such as heat transfer, evaporation, drying, size reduction and separation, extraction, filtration, centrifugation, size enlargement and mixing process.
III. ILOs: After participating in the course, students would be able to
<ol style="list-style-type: none"> 1- Name and define the unit operations involved during industrial scale production of different dosage forms. 2- List the different equipment utilized to carry out different unit operations. 3- Describe the components and the operation of various equipment used during the manufacture of different dosage forms. 4- Compare between different equipment and select the suitable equipment used efficiently to perform the required operation during pharmaceutical manufacturing. 5- Design appropriate chart for manufacturing of different dosage forms. 6- Estimate the product quantity by applying the rules of material balance. 7- Solve the problems commonly encounter during the large scale production of pharmaceuticals. 8- Handle the strategy for working in pharmaceutical plants.

9- Have ethical values in professional work.

IV. Course Content:

1 – Course Topics/Items:

a – Theoretical Aspect:

Order	Topic/ unit	Sub topic	Number of weeks	Contact hours
1	Heat transfer and Flow of heat	<ul style="list-style-type: none"> -Classification of heat flow process. -Overall coefficient of heat transfer. - Mechanisms of heat transfer, conduction, convection and radiation. -Design of heating equipment. -Tubular heaters; heat transfer by radiation and convection. -Tubular heaters; heat interchangers, inductive heating. 	1	3
2	Drying	<ul style="list-style-type: none"> - Introduction, definition, factor affecting drying - Classification of dryers <ul style="list-style-type: none"> - dryers for dilute solutions and suspensions. - Dryers for solid materials. - Convectional and conduction dryers. - Theory of drying loss on drying and moisture content, equilibrium moisture content. - Principles of freeze drying, freeze dryers. 	2	6
3	Evaporation	<ul style="list-style-type: none"> - General principals of evaporation. Factor affecting evaporation - Classification of Evaporator – - jacketed kettles, tube evaporators, - forced circulation evaporators and evaporator accessories. - Evaporation under reduced pressure. - Multiple effect evaporation. 	1	3
4	Mid Exam		1	2hrs
5	Mixing process	<ul style="list-style-type: none"> - Introduction, factor affecting mixing, type of mixture - Fundamentals and mechanism. -Type of mixer used in <ul style="list-style-type: none"> - liquid/liquid, - liquid/solid, - semisolid 	2	6

		- -solid/solid mixing.		
6	Size enlargement	- Methods and mechanisms of granule formation. - Reasons for size enlargement. - Pharmaceutical granulation equipments; high speed mixer granulator, oscillating granulator, extruder.	1	3
7	Size Reduction	- Theory and reasons of size reduction - Factors influencing size reduction. - Pharmaceutical applications. - Mechanisms and equipments used for size reduction; e.g. roller mill, ball mill, hammer mill, fluid energy mill, colloid mill.	1	3
8	Filtration	-Theory of filtration and filtration media. - Darcy's equation. - Filter aids. - Classification of filtration filters (e.g. plate and frame filter, leaf filter, filter press, rotary filter.....).	1	3
9	Distillation	- Theory of distillation, definition, uses - type of distillation: (a) for miscible liquids, (b) for immiscible liquids, (c) Steam distillation d) fractional distillation. and ...ect.	1	3
10	Extraction process	- Theory of extraction, definition, uses, factor affecting extraction - Type of extraction: - Liquid/ solid extraction - Liquid/ liquid extraction	1	3
11	Crystallization	- Classification, batch crystallizers, simple vacuum crystallizers. - Nucleation and crystal growth - critical humidity prevention of caking, material and energy balances	1	3
12	Final exam		1	2hrs
Number of Weeks/and Units Per Semester			14week	40hr

V. Teaching Strategies:

- Lectures using data show, video.
- Discussion of Training report and presentation.

VI. Assessment Tasks:

no	Assessment Method	Week Due	Mark	Proportion of Final Assessment
1	Quizzes	5	5	5%
2	Written Test (1) Mid exam	6	30	30%
3	Homework	10	5	5%
4	Final Exam (theoretical)	14	60	60%
5	Total		100	100%

VII. Learning Resources:

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

- 1- Badger, WL. and Banchero, J.T., (1995). Introduction to chemical engineering, McGRAW- HILL book publishing company INC., KOGAKUSHA company, LTD Tokyo.
- 2- Warren McCabe. Julian Smith, Peter Harriot (2000). Unit Operations, McGraw-Hill Publishing science. New Delhi, sixth edition.

2-Recommended Books and Reference Materials.

- 1- Williams and Wilkins (2005). Remington; the Science and Practice of Pharmacy (2first edition). Publisher: Lippincott.
- 2- Bhatt NB, Panchal VM, Panchal VM, (2005). Machine Drawing. Charotar Publishing House PVT Ltd.

3-Electronic Materials and Web Sites etc.

- 1- - McGraw-Hill web site page
- 2- CD Operation pharmaceutical production machine in different factory

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

The University Regulations on academic misconduct will be strictly enforced. Please refer to Al-Nasser University student's regulations handbook	
1	<p>Class Attendance:</p> <ul style="list-style-type: none"> Absence from lectures and/or practical shall not exceed 25 %. Students who exceed the 25% limit without a medical or emergency excuse acceptable to and approved by the Dean of the college shall not be allowed to take the final exam and shall receive a mark of zero for the course.
2	<p>(Tardy):</p> <p>Students will be allowed to in the class if he/she is late not more than 15 minutes with an acceptable excuse. If the student is late in attending the class for more than three times without an excuse he/she will be warned and will be asked to write undertaken for not repeating that, otherwise his guardian will be notified and the student will miss the classes and will be considered as failed.</p>
3	<p>(Exam Attendance/Punctuality):</p> <ul style="list-style-type: none"> Student will not be allowed to appear in the final exam if he/she is late 30 minutes from the begging of the exam. Students will not be allowed to leave the exam room until unless half of the examination time is passed. If a student misses the final exam, he/she has to provide an accepted excuse he/she will be eligible to take the exam as first attempt. If the student misses the final exam he will be considered as failed and if the repeated exam will be calculated as the minimum of 50%. The student will be considered as failed if he broke the regulations and roles of examination. In the practical courses failing in either part is marked as failing in the course and student has to appear in the failing part and the marks will be given as the minimum mark. Using mobile phones is strictly prohibited in examination time and the student will be considered as failed if he did so.
4	<p>(Assignments and Projects):</p> <ul style="list-style-type: none"> The students have to submit the assignment or project on time. In late cases student has to provide an acceptable and written excuse to the lecturer before the lecturer has to submit the final marks to the department otherwise the student will not be given the marks of the project.

5	<p>(Cheating):</p> <ul style="list-style-type: none"> Cheating in examinations or tests is prohibited which may be in the form of copying from another student or bringing unauthorized materials into the exam room (e.g., crib notes, pagers or cell phones) etc. Midterm Exam cheating results in giving the student a mark of zero Cheating in the final exam will result in failing the student in that subject if he/she did not get benefits in that subject, if he/she gets benefits he/she will be considered as failed in two courses. If the cheating occur in the last day of exam the student will be considered as failed in that course and the previous one. If the students repeats cheating in a single examination period he will be discontinued for a full academic year or permanently if he repeated cheating more than twice.
6	<p>(Plagiarism):</p> <p>“To plagiarize is to take ideas or words of another person and pass them off as one’s own”.</p> <ul style="list-style-type: none"> Plagiarism will results in losing the marks of the assignments. If the students personates other at examination time both will be suspended for a full academic year.
7	<p>(Other policies):</p> <ul style="list-style-type: none"> Using mobile or another electronic device capable of storing or transfer data in class during the lecture or the exam is forbidden. Abnormal behavior is not acceptable and the student will face a punitive proceedings. Eating or drinking is strictly prohibited.

Course Specification of Hospital Pharmacy

University: Al-Nasser University

Faculty: Medical Science

Department: Pharmacy

Program title: Pharmacy Program

I. General Information:					
1	Course Title:	Hospital Pharmacy			
2	Credit hours: 2hrs.	C.H			
		Th.	Pr.	Tut.	Tr.
		3			
3	Study level/year at which this course is offered:	second semester/third year			
4	Pre –requisite :	Health Managment			
5	Co –requisite :				
6	Program (s) in which the course is offered:				
7	Language of teaching the course:	English/Arabic			
8	Prepared By:	Dr. Mohammed Addoais			
9	Approved By:				

II. Course Description:
An introductory course to the practice of pharmacy in a hospital setting will include organizational structure of the pharmacy department and its relation to other departments. It covers the different drug distribution systems, bulk compounding methods, parenteral admixtures, practice standards, pharmacy and therapeutics committee and general pharmacy administration

III. ILOs: at end of the course students will be to:
<ol style="list-style-type: none"> 1. Explain hospitals and organization 2. list the pharmacy and therapeutic committee functions 3. Describe proper aseptic technique in IV admixture compounding 4. Mention the process of adverse drug reaction reporting and analysis 5. Compare between different drug distribution systems 6. Solve the drug relating problems. 7. Investigate the drug related problems.

8. Prepare intravenous admixture
9. Perform therapeutic drug monitoring
10. Solve any drug related problems in community pharmacy
11. Communicate effectively with patients, the public and health professionals.
12. Cooperate with health professionals

IV. Course Content:

1 – Course Topics/Items:

a – Theoretical Aspect:

No	Topic/ unit	Sub topic	Number of weeks	Contact hours
1	Introduction	<ul style="list-style-type: none"> Organization and Structure Organization of a hospital and hospital pharmacy Responsibilities of a hospital pharmacist Pharmacy and therapeutic committee Budget preparation and Implementation. Hospital formulary Contents, preparation and revision of hospital formula 	2	6
2	Drug Store Management and Inventory Control:	<ul style="list-style-type: none"> Organization of a drug store Types of materials stocked Storage conditions. Purchase and Inventory Control <ul style="list-style-type: none"> Principles purchase procedures Purchase order Procurement and stocking 	2	6
3	Drug Distribution Systems in Hospitals:	<ul style="list-style-type: none"> Outpatient dispensing - methods adopted. Dispensing of drugs to inpatients . Types of drug distribution systems . <ul style="list-style-type: none"> Floor stock DDS Unit dose DDS Prescription DDS Automation in drug distribution <ul style="list-style-type: none"> Goals Automated dispensing systems Charging policy – labeling Dispensing of drugs to ambulatory patients. Dispensing of controlled drugs. 	4	12
4	Midterm exam		1	2

5	Pharmacy services	<ul style="list-style-type: none"> Inpatient pharmacy services <ul style="list-style-type: none"> Dose adjustment. Intravenous admixture (TPN) principles of lamina air flow (LAF) hood operation principles of aseptic technique, as well as policies and procedures for parenteral drug administration Practice the appropriate aseptic technique used in the preparation of intravenous admixture calculations associated in all aspects of intravenous admixture preparation appropriately and accurately Therapy drug monitoring (TDM) Evaluation of medication orders for drug allergy, interactions, and contraindications according to specific patient profiles Outpatient pharmacy services <ul style="list-style-type: none"> Care of patients with chronic illnesses Smoke cessation Family planning 	6	18
6		Final exam	1	2
Number of Weeks/and Units Per Semester			16	46

V. Teaching Strategies:
<ul style="list-style-type: none"> Lectures using data show Video animation and seminars Directed reading Independent study Group discussion Solving problem methods

VI. Assignments and projects:			
no	Assignment	Week Due	Mark
1	Project	11	5

VII. Assessment Tasks:

no	Assessment Method	Week Due	Mark	Proportion of Final Assessment
1	Project	11	5	5%
2	Quizzes and oral test	6, 8	5	5%
3	Written Test (midterm exam)	9	30	30%
4	Final Exam (theoretical)	16	60	60%
	Total		100	100%

VIII. Learning Resources:

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

- 1- M. C.Allwood and J. T. Fell (2010)."Textbook of Hospital Pharmacy" Fourth edition. Blackwell Scientific Publications, Oxford, UK.

2-Recommended Books and Reference Materials.

1. W.E. Hassan (1986)."Hospital Pharmacy" Fifthed. Lea and Febiger, Philadelphia.

3-Electronic Materials and Web Sites *etc.*

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

The University Regulations on academic misconduct will be strictly enforced. Please refer to Al-Nasser University student's regulations handbook

1	<p>Class Attendance:</p> <ul style="list-style-type: none"> • Absence from lectures and/or practical shall not exceed 25 %. Students who exceed the 25% limit without a medical or emergency excuse acceptable to and approved by the Dean of the college shall not be allowed to take the final exam and shall receive a mark of zero for the course.
2	<p>(Tardy):</p> <p>Students will be allowed to in the class if he/she is late not more than 15 minutes with an acceptable excuse. If the student is late in attending the class for more than three times without an excuse he/she will be warned and will be asked to write undertaken for not repeating that, otherwise his guardian will be notified and the student will miss the classes and will be considered as failed.</p>
3	<p>(Exam Attendance/Punctuality):</p> <ul style="list-style-type: none"> • Student will not be allowed to appear in the final exam if he/she is late 30 minutes from the begging of the exam. • Students will not be allowed to leave the exam room until unless half of the examination time is passed.

	<ul style="list-style-type: none"> If a student misses the final exam, he/she has to provide an accepted excuse he/she will be eligible to take the exam as first attempt. If the student misses the final exam he will be considered as failed and if the repeated exam will be calculated as the minimum of 50%. The student will be considered as failed if he broke the regulations and roles of examination. In the practical courses failing in either part is marked as failing in the course and student has to appear in the failing part and the marks will be given as the minimum mark. Using mobile phones is strictly prohibited in examination time and the student will be considered as failed if he did so.
4	<p>(Assignments and Projects):</p> <ul style="list-style-type: none"> The students have to submit the assignment or project on time. In late cases student has to provide an acceptable and written excuse to the lecturer before the lecturer has to submit the final marks to the department otherwise the student will not be given the marks of the project.
5	<p>(Cheating):</p> <ul style="list-style-type: none"> Cheating in examinations or tests is prohibited which may be in the form of copying from another student or bringing unauthorized materials into the exam room (e.g., crib notes, pagers or cell phones) etc. Midterm Exam cheating results in giving the student a mark of zero Cheating in the final exam will result in failing the student in that subject if he/she did not get benefits in that subject, if he/she gets benefits he/she will be considered as failed in two courses. If the cheating occur in the last day of exam the student will be considered as failed in that course and the previous one. If the students repeats cheating in a single examination period he will be discontinued for a full academic year or permanently if he repeated cheating more than twice.
6	<p>(Plagiarism):</p> <p>“To plagiarize is to take ideas or words of another person and pass them off as one’s own”.</p> <ul style="list-style-type: none"> Plagiarism will results in losing the marks of the assignments. If the students personates other at examination time both will be suspended for a full academic year
7	<p>(Other policies):</p> <ul style="list-style-type: none"> Using mobile or another electronic device capable of storing or transfer data in class during the lecture or the exam is forbidden. Abnormal behavior is not acceptable and the student will face a punitive proceedings. Eating or drinking is strictly prohibited.

Course Specification of Clinical Pharmacy II

University: Al-Nasser University

Faculty: Medical Science

Department: Pharmacy

Program title: Pharmacy Program

I. General Information:					
1	Course Title:	Clinical Pharmacy II			
2	Credit hours:	C.H			
		Th.	Pr.	Tut.	Tr.
		3			
3	Study level/year at which this course is offered:	second semester/third year			
4	Pre –requisite :	Clinical Pharmacy I			
5	Co –requisite :				
6	Program (s) in which the course is offered:				
7	Language of teaching the course:	English and Arabic			
8	Prepared By:	Salah Abdullah Ahmed			
9	Approved By:				

II. Course Description:
This course provides an understanding of the principles of clinical pharmacy and information on the etiology, clinical signs and symptoms, investigations and principles of treatment of disease important to pharmacists in their development of patient-oriented practice.
III. ILOs:
<p>Upon successful completion of this course, the students should be able to:</p> <ol style="list-style-type: none"> 1-Identify the clinical presentations of diseases. 2- List the finding of different laboratory tests and its relation to disease management. 3-Explain the clinical management of various clinical cases. 4-Recognize the pharmacotherapy-related problems such as drug side effects, interactions, disease contraindication. 5-Illustrate the drug use and management of disease of special populations 6-Analyze and appraise clinical cases 7-Create therapeutic plan for certain diseases 8-Investigate different drug-related problems in clinical and/or pharmacy settings

- 9-Explore relevant information for clinical case notes and discuss problems in therapeutic management of patients
- 10-Perform different diagnosis of diseases
- 11-Implement therapeutic plans for treatment of certain diseases
- 12-Solve drug-related and patient-related problems
- 13-Monitor drug regimen therapeutic outcomes
- 14- Assess patient cases and evaluate the overall treatment outcomes
- 15-Write reports and give oral presentations

I.Course Content:

1 – Course Topics/Items:

a – Theoretical Aspect:

Order	Topic/ unit	Sub topic	Number of weeks	Contact hours
1	Renal disorders	Acute renal failure	1	2
2		Urinary tract infections	1	2
3	Endocrinology disorders	Type 1 diabetes mellitus	1	2
4		Type 2 diabetes mellitus	1	2
5		Hyperthyroidism	1	2
6		Hypothyroidism	1	2
7	Gynecologic disorders	Pregnancy and lactation "therapeutic consideration"	1	2
8	Mid-term		1	2
9	Gynecologic disorders (continuation)	Pregnancy and lactation "therapeutic consideration"	1	2
10	Infectious disorders	Pneumonia	1	2
		Sepsis and septic shock		
11	Neurological disorders	Parkinson's disease	1	2
		Epilepsy	1	2
12	Psychological disorders	Depression	1	2
13	Final exam	-	1	2
Number of Weeks/and Units Per First semester				26

b - Practical Aspect:			
Order	Practical Experiment	Number of weeks	Contact hours
1	Case studies on acute renal failure	1	2
2	Case studies on acute pyelonephritis	1	2
3	Case-studies on type 1 diabetes	1	2
4	Case-studies on type 2 diabetes	1	2
5	Case-studies on hyperthyroidism	1	2
6	Case-studies on hypothyroidism	1	2
7	Case-studies on benign cases during pregnancy	1	2
8	Case-studies on certain disorders during pregnancy	1	2
9	Case-studies on pneumonia	1	2
10	Case-studies on sepsis and septic shock	1	2
11	Case-studies on Parkinson's disease	1	2
12	Case-studies on epilepsy	1	2
13	Case-studies on depression	1	2
14	Final Practical exam	1	2
Number of Weeks/and Units Per First semester4			28

II. Teaching Strategies:
Lectures using data show, presentations, problem solving method, case-studies, Practical work and discussion, assignments.

III. Assignments and projects:			
no	Assignment	Week Due	Mark
1	Presentations	8	10
2	Case discussions	All	
3	Drug fact sheet	9	
4	Websites search	12	

IV. Assessment Tasks:

no	Assessment Method	Week Due	Mark	Proportion of Final Assessment
1	Assignments	all	10	10%
2	Practical Reports	all	10	10%
3	Written Test (1)	8	10	10%
4	Final Exam (theoretical)	16	50	50%
5	Final Exam (practical)	14	20	20%
7	Total		100	100%

V. Learning Resources:	
1-Required Textbook(s) (maximum two).	
	1-Dipiro et al, Pharmacotherapy Handbook, 7th edition 2008, McGraw Hill 2-Koda-Kimble and Young's, Applied therapeutics "the clinical use of drugs", 10th edition 2013, Lippincott Williams and Wilkins.
2-Recommended Books and Reference Materials.	
	1- Dipiro et al, Pharmacotherapy A pathophysiologic Approach, 7th edition 2008, McGraw Hill. 2- Dipiro et al, Pharmacotherapy Principles and Practice, 7th edition 2008 McGraw Hill.
3-Electronic Materials and Web Sites <i>etc.</i>	
	1- www.dynamed.ebscohost.com 2- www.drugs.com 3- www.drugdigest.com 4- www.pharmacistletter.com 5- www.rxlist.com

VI. Course Policies: (including plagiarism, academic honesty, attendance etc)	
The University Regulations on academic misconduct will be strictly enforced. Please refer to Al-Nasser University student's regulations handbook	
1	Class Attendance: • Absence from lectures and/or practical shall not exceed 25 %. Students who exceed the 25% limit without a medical or emergency excuse acceptable to and approved by the Dean of the college shall not be allowed to take the final exam and shall receive a mark of zero for the course.
2	(Tardy): Students will be allowed to in the class if he/she is late not more than 15 minutes with an acceptable excuse. If the student is late in attending the class for more than three times without an excuse he/she will be warned and will be asked to write undertaken for not repeating that, otherwise his guardian will be notified and the student will miss the classes and will be considered as failed.

3	<p>(Exam Attendance/Punctuality):</p> <ul style="list-style-type: none"> Student will not be allowed to appear in the final exam if he/she is late 30 minutes from the beginning of the exam. Students will not be allowed to leave the exam room until unless half of the examination time is passed. If a student misses the final exam, he/she has to provide an accepted excuse he/she will be eligible to take the exam as first attempt. If the student misses the final exam he will be considered as failed and if the repeated exam will be calculated as the minimum of 50%. The student will be considered as failed if he broke the regulations and roles of examination. In the practical courses failing in either part is marked as failing in the course and student has to appear in the failing part and the marks will be given as the minimum mark. Using mobile phones is strictly prohibited in examination time and the student will be considered as failed if he did so.
4	<p>(Assignments and Projects):</p> <ul style="list-style-type: none"> The students have to submit the assignment or project on time. In late cases student has to provide an acceptable and written excuse to the lecturer before the lecturer has to submit the final marks to the department otherwise the student will not be given the marks of the project.
5	<p>(Cheating):</p> <ul style="list-style-type: none"> Cheating in examinations or tests is prohibited which may be in the form of copying from another student or bringing unauthorized materials into the exam room (e.g., crib notes, pagers or cell phones) etc. Midterm Exam cheating results in giving the student a mark of zero Cheating in the final exam will result in failing the student in that subject if he/she did not get benefits in that subject, if he/she gets benefits he/she will be considered as failed in two courses. If the cheating occur in the last day of exam the student will be considered as failed in that course and the previous one. If the students repeats cheating in a single examination period he will be discontinued for a full academic year or permanently if he repeated cheating more than twice.
6	<p>(Plagiarism):</p> <p>“To plagiarize is to take ideas or words of another person and pass them off as one’s own”.</p> <ul style="list-style-type: none"> Plagiarism will results in losing the marks of the assignments. If the students personates other at examination time both will be suspended for a full academic year
7	<p>(Other policies):</p> <ul style="list-style-type: none"> Using mobile or another electronic device capable of storing or transfer data in class during the lecture or the exam is forbidden. Abnormal behavior is not acceptable and the student will face a punitive proceedings.

	• Eating or drinking is strictly prohibited.
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Course Specification of Quality Control and Quality Assurance

University: Al-Nasser University

Faculty: Medical Science

Department: Pharmacy

Program title: Pharmacy Program

I. General Information:					
1	Course Title:	Quality Control and Quality Assurance			
2	Credit hours:	C.H			
		Th.	Pr.	Tut.	Tr.
		3			
3	Study level/year at which this course is offered:	second semester/third year			
4	Pre –requisite :				
5	Co –requisite :				
6	Program (s) in which the course is offered:	none			
7	Language of teaching the course:	English/ arabic			
8	Prepared By:	Dr. Tawfik Alobaidy			
9	Approved By:				

II. Course Description:
This course deals with the study of Introduction to quality control, Documentation, Sampling, Errors In Pharmaceutical Analysis, Method of Validation, Drug stability and stability indication. Also it covers the Application of QC.

III. ILOs:
At the end of this course the student should be able:
1. Recognize some QC terminology and describe documentation.
2. Explain errors, their causes, types and how to overcome the errors in pharmaceutical analysis.
3. Illustrate validation method and drug stability.
4. Describe sampling types, handling and preservation.

5. Identify indicator for drug stability
6. Predict how to minimize errors and enhance quality of pharmaceutical preparation.
7. Diagram the schemes that relate all steps of for quality control of all dosage forms.
8. Manage and organize the time..
9. Work independently or as a team.
10. Acquire an ethical attitude and approach.

1. Course Content:				
1 – Course Topics/Items:				
a – Theoretical Aspect:				
Order	Topic/ unit	Sub topic	Number of weeks	Contact hours
1	Introduction to quality control	Definitions of quality, basic principle of quality control. Component of Quality Control, General Quality System Requirements, The main part of the ISO standard is made up of three separate standards, Pharmaceutical Quality Control System, Control Charts,	2	6
2	Documentation	The purposes of documentation, Good documentation in QA system, Types of documentation for QA.	1	3
3	Sampling	Types, Handling the Sample in the Laboratory, the information that may be taken in consideration during sampling, Sampling Procedures And Errors, sampling of solid, liquid and gas, <u>Sample preservation:</u> Why Sample preservation? Common steps in sample preservation <u>Sample preparation</u>	1	3
4	Errors In Pharmaceutical Analysis	Meaning of errors, Classification of Errors.	2	6
5	Midterm exam		1	2
6	Method Validation	Meaning, method of validation Validation approaches, Method of validation according to USP or ICH, Some Important Terminology	1	3
7	Drug stability and stability indication	Definition, Purpose of stability testing, The type of stability studies depends on the different phases of drug and use, Degradation and stability of drugs, Routes	1	3

		of drug instability in dosage form, Chemical degradation routes, Stability Indicating Assay Methods (SIAMs),		
8	Application of QC	Quality control of raw, material and pharmaceutical dosage forms	1	3
9	Physicochemical properties	Physicochemical properties of drug Spectroscopic method for analysis	1	3
10	Chromatographic		1	3
11	Final exam		1	2
Number of Weeks/and Units Per Semester				37

II. Teaching Strategies:

Lectures using data show video animation, Practice session, Discussions, Solving Problem methods, Group assignments, Small group discussions, and Practical classes.

III. Assignments and projects:

no	Assignment	Week Due	Mark
1	- Project	5	5

IV. Assessment Tasks:

no	Assessment Method	Week Due	Mark	Proportion of Final Assessment
1	Project	2, 8	5	5%
2	Oral Tests	5, 9	5	5%
3	Written Test (1)	7	30	30%
4	Final Exam (theoretical)	14	60	60%
	Total		100	100%

V. Learning Resources:

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

	<p>1- SomenathMitra, Sample Preparation Techniques in Analytical Chemistry, 2003, A John Wiley and Sons, Inc., Publication, Canada.</p> <p>2- Satinder Ahuja, Stephen Scypinski, Handbook Of ModernPharmaceutical Analysis, 2001, Academic Press, San Diego, USA.</p>
2-Recommended Books and Reference Materials.	
	<p>1- J. Ermer and J. H. McB. Miller, Method Validation in Pharmaceutical Analysis, 2005, WILEY-VCH Verlag GmbH and Co. KGaA, Weinheim.</p> <p>2- Robert A. Nash, Alfred H. Wachter, Pharmaceutical Process Validation, Volume 129, Marcel Dekker Inc.</p> <p>3- Andrew J Fletcher, Lionel D Edward, Anthony W Fox Peter Stonie, Princible and practice of medicine, 2002, John Wiley and Sons Ltd. London, UK.</p>
3-Electronic Materials and Web Sites <i>etc.</i>	

VI. Course Policies: (including plagiarism, academic honesty, attendance etc)	
The University Regulations on academic misconduct will be strictly enforced. Please refer to Al-Nasser University student's regulations handbook	
1	<p>Class Attendance:</p> <ul style="list-style-type: none"> Absence from lectures and/or practical shall not exceed 25 %. Students who exceed the 25% limit without a medical or emergency excuse acceptable to and approved by the Dean of the college shall not be allowed to take the final exam and shall receive a mark of zero for the course.
2	<p>(Tardy):</p> <p>Students will be allowed to in the class if he/she is late not more than 15 minutes with an acceptable excuse. If the student is late in attending the class for more than three times without an excuse he/she will be warned and will be asked to write undertaken for not repeating that, otherwise his guardian will be notified and the student will miss the classes and will be considered as failed.</p>
3	<p>(Exam Attendance/Punctuality):</p> <ul style="list-style-type: none"> Student will not be allowed to appear in the final exam if he/she is late 30 minutes from the begging of the exam.

	<ul style="list-style-type: none"> Students will not be allowed to leave the exam room until unless half of the examination time is passed. If a student misses the final exam, he/she has to provide an accepted excuse he/she will be eligible to take the exam as first attempt. If the student misses the final exam he will be considered as failed and if the repeated exam will be calculated as the minimum of 50%. The student will be considered as failed if he broke the regulations and roles of examination. In the practical courses failing in either part is marked as failing in the course and student has to appear in the failing part and the marks will be given as the minimum mark. Using mobile phones is strictly prohibited in examination time and the student will be considered as failed if he did so.
4	<p>(Assignments and Projects):</p> <ul style="list-style-type: none"> The students have to submit the assignment or project on time. In late cases student has to provide an acceptable and written excuse to the lecturer before the lecturer has to submit the final marks to the department otherwise the student will not be given the marks of the project.
5	<p>(Cheating):</p> <ul style="list-style-type: none"> Cheating in examinations or tests is prohibited which may be in the form of copying from another student or bringing unauthorized materials into the exam room (e.g., crib notes, pagers or cell phones) etc. Midterm Exam cheating results in giving the student a mark of zero Cheating in the final exam will result in failing the student in that subject if he/she did not get benefits in that subject, if he/she gets benefits he/she will be considered as failed in two courses. If the cheating occur in the last day of exam the student will be considered as failed in that course and the previous one. If the students repeats cheating in a single examination period he will be discontinued for a full academic year or permanently if he repeated cheating more than twice.
6	<p>(Plagiarism):</p> <p>“To plagiarize is to take ideas or words of another person and pass them off as one’s own”.</p> <ul style="list-style-type: none"> Plagiarism will results in losing the marks of the assignments. If the students personates other at examination time both will be suspended for a full academic year.
7	<p>(Other policies):</p> <ul style="list-style-type: none"> Using mobile or another electronic device capable of storing or transfer data in class during the lecture or the exam is forbidden. Abnormal behavior is not acceptable and the student will face a punitive proceedings. Eating or drinking is strictly prohibited.



Course Specification of Histology

University: Al-Nasser University

Faculty: Medical Sciences

Department: Pharmacy

Program title: Pharmacy Program

I. General Information:						
1	Course Title:	Histology				
2	Credit hours:	C.H				Total
		Th.	Pr.	Tut.	Tr.	
		2	1			
3	Study level/year at which this course is offered:	First Semester/Second Year				
4	Pre –requisite :	Human Anatomy				
5	Co –requisite :					
6	Program (s) in which the course is offered:	None				
7	Language of teaching the course:	English/Arabic				
8	Prepared By:	Ammar Saleh Omar				
9	Approved By:					

II. Course Description:
<p>This course introduces the student to the structure of the human body and its relationship to function. Following an introduction to basic human histology, the course uses a systemic approach to the study of human anatomy.</p>

III. ILOs:

after participation in this course student must be able to:

1. Describe normal histological structure of various systems
2. Illustrate the distinguishing structural features of organs, regions and cell types present in each system and relate the structural variations to differences in organ function.
3. Identify pathology of cells, tissues and organs based on enough knowledge of their normal structure.
4. Correlate between histological structure and function of different organs of all studied systems.
5. Differentiate between different organs in histological slide seen under the microscope.
6. Predict the functional deficit that can arise from certain structural disorders of an organ or tissue element.
7. Compare between the blood supply of some organs and their structure and specialized functions.
8. Draw and label histological slides seen during the course.
9. Show the appropriate responsibility, self-confidence, and ethical attitudes and behaviors.
10. Communicate clearly with patients and other health care professionals by verbal and written means.
11. Implement writing and presentation skills and demonstrate critical thinking and decision making abilities and long life learning.

IV. Course Content:

1 – Course Topics/Items:

a – Theoretical Aspect:

Order	Topic/ unit	Sub topic	Number of weeks	Contact hours
1	Microscopy and Microtechniques		1	2
2	Epithelial tissue	Simple epithelium	2	4
		Stratified epithelium		
		Glandular epithelium		
		Neuroepithelium		
3	Connective tissue	Connective tissue proper	2	4
		Cartilage		

		Bone		
4	Blood	Granular leukocyte	1	2
		Non granular leukocyte		
		Platelet		
		Heamopoiesis		
5	Mild term exam		1	2
6	Muscular tissue	Skeletal muscle	1	2
		Cardiac muscle		
		Smooth muscle		
7	Nervous tissue	Neuron	1	2
		Peripheral nervous system		
8	Circulatory system	The blood vessels	1	2
9	Lymphatic and macrophage system	Lymphatic vessels	1	2
		Lymph node		
		The spleen		
		The tonsils		
		The thymus		
		The macrophage system		
10	Integumentary system	Skin Thick skin Thin skin Skin appendages	1	2
11	Revision		1	2
12	Final exam		1	2
Number of Weeks/and Units Per Semester				28

V. Teaching Strategies:

Lectures using data show, video animation and seminars
Solving Problem method, Laboratory work, directed reading, independent study and discussion

VI. Assignments and projects:

no	Assignment	Week Due	Mark
1	Assignment	9	5

VII. Assessment Tasks:

no	Assessment Method	Week Due	Mark	Proportion of Final Assessment
1	Exercises & Home works	3	2.5	2.5%
2	Project (single\group)	4	2.5	2.5%
3	Practical reports	1-10	10	10%
4	Mid Exam	8	15	15%
5	Final Exam (theoretical)	14	50	50%
6	Final Exam (practical)	11	20	20%
7			100	100%

VII. Learning Resources:

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

b - Practical Aspect:

Order	Practical Experiment	Number of weeks	Contact hours
1	Microscopy and Microtechniques	1	2
2	Epithelial tissue	1	2
3	Connective tissue	1	2
4	Blood	1	2
5	Muscular tissue	1	2
6	Nervous tissue	1	2
7	Circulatory system	1	2

8	Lymphatic and macrophage system	1	2
9	Integumentary system	1	2
10	Revision	1	2
11	Final exam	1	2
Number of Weeks /and Units Per Semester			22
	<p>-Histology and cell biology for medical students part 1 and part 2, 2013 staff members of histology department faculty of medicine Cairo university. 2- Anthony Mescher 2013. Basic Histology: Text and Atlas, Thirteenth Edition: 9780071780339, 2013.</p>		
2-Recommended Books and Reference Materials.			
	<p>1- Functional histology 2- Histological techniques</p>		
3-Electronic Materials and Web Sites <i>etc.</i>			
	<p>1- www.histology.com</p>		

VIII. Course Policies: (including plagiarism, academic honesty, attendance etc)	
The University Regulations on academic misconduct will be strictly enforced. Please refer to Al-Nasser University student's regulations handbook	
1	<p>Class Attendance:</p> <ul style="list-style-type: none"> Absence from lectures and/or practical shall not exceed 25 %. Students who exceed the 25% limit without a medical or emergency excuse acceptable to and approved by the Dean of the college shall not be allowed to take the final exam and shall receive a mark of zero for the course.
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	<ul style="list-style-type: none"> The student will be considered as failed if he broke the regulations and roles of examination. In the practical courses failing in either part is marked as failing in the course and student has to appear in the failing part and the marks will be given as the minimum mark. Using mobile phones is strictly prohibited in examination time and the student will be considered as failed if he did so.
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