Republic of Iraq
Ministry of Higher Education & Scientific Research
Supervision and Scientific Evaluation Directorate
Quality Assurance and Academic Accreditation

Academic Program Specification Form For TheAcademic

University: Anbar University
College: Pharmacy
Department: Pharmacy
Date Of Form Completion: 1-6-2019-2020

Dean's Name	Dean's Assistant For Scientific Affairs	Head of Department
Prof. Dr. Zeina .M. Alsabti	Asst. Prof.Dr. Atheer Khalaf Zgier	Prof. Dr. Zeina.M. Alsabti
Date : 1-6-2019-2020	Date : 1-6-2019-2020	Date : 1-6-2019-2020
Signature	Signature	Signature

Quality Assurance And University Performance

Asst. prof. Dr. Nahidah Ibrahim hammadi

Manager Date /1-6-2019-2020

Signature

TEMPLATE FOR PROGRAMME SPECIFICATION

HIGHER EDUCATION PERFORMANCE REVIEW: PROGRAMME REVIEW

PROGRAMME SPECIFICATION

This Programme Specification provides a concise summary of the main features of the programme and the learning outcomes that a typical student might reasonably be expected to achieve and demonstrate if he/she takes full advantage of the learning opportunities that are provided. It is supported by a specification for each course that contributes to the programme.

1. Teaching Institution	University of Anbar
2. University Department/Centre	College of pharmacy
3. Programme Title	Pharmacy
4. Title of Final Award	Bachler of Pharmacy
5. Modes of Attendance offered	Courses
6. Accreditation	Pharmacy college
7. Other external influences	
8. Date of production/revision of this specification	1-6- 2019-2020

9. Aims of the Programme

A-Preparing graduates to practice pharmacy

B-Providing graduates with practical, applied skills and the necessary pharmaceutical background in accordance with the scientific developments in vocabulary

C- Preparing graduates for effective participation in building society and achieving health, economic and social benefits for society.

10. Learning Outcomes, Teaching, Learning and Assessment Methods

A. **Knowledge and Understanding**

A1. The ability of student to know and understand the principles and basics of the different pharmaceutical sciences.

A2. The student has the ability to understand the advanced and modern scientific topics in the field of pharmacy

A3. The student has the ability to understand the sciences related to the pharmacy such as: medical, biological and chemical sciences

A4. Communication between theoretical skills and basic sciences

A5. Training to differentiate between healthy person and the patient

A6. The ability of student to remember the theoretical part and link it with practical side

B. **Subject-specific skills**

B1. **Thinking skills:** Finding the appropriate diagnosis for simple medical conditions, as well as the ability to reach appropriate solutions related to the pharmaceutical, chemical and physical-pharmaceutical aspects.

B2. **Professional and practical skills:** The student has an active role in the health organization by providing and supporting health services in the health centers.

B3. **Scientific skills:** Build up the experience to the student to has ability to write research papers or articles as well as to make a scientific tests programme in various pharmaceutical sciences.

Teaching and Learning Methods

Theoretical lecture with power point presentations and white board clarifications, Laboratory practices. Seminars

Assessment methods

Quizzes
Oral exams
Midterm written exams
Final course exams
Practical exams

C. Thinking Skills
C1 Problem-solvingskills
C2.Strategic Thinking
C3.Ability to be leader
C4. Create scientific competition between students

Teaching and Learning Methods

Theoretical lecture with power point presentations and white board clarifications, Laboratory practices. Seminars
Assessment methods
Quizzes Oral exams Midterm written exams Final course exams Practical exams

D. General and Transferable Skills (other skills relevant to employability and personal development)
D1. Understand and follow the occupational, health and safety protocols within the laboratory
D2. Negotiate and accept compromises when working on group task
D3. Create effective materials, such as asides and posters, to support presentations

Teaching and Learning Methods

Theoretical lecture with power point presentations and white board clarifications, Laboratory practices. Seminars

Assessment Methods

Quizzes
Oral exams
Midterm written exams
Final course exams
Practical exams

11. Programme Structure

First Semester

Course title	Hours/week		Credit Hours	Code
	Theory	Practical		
Human biology	**2**	**2**	**3**	**ClHb101**
Principles of Pharmacy Practice	**2**	**----**	**2**	**PPpp102**
Analytical Chemistry	**3**	**2**	**4**	**PcAc103**
Medical Terminology	**1**	**----**	**1**	**PtMt104**
Mathematics and Biostatistics	**3**	**----**	**3**	**ClMb105**
Computer Sciences	**----**	**2**	**1**	**UOA 141**
English Language	**2**	**----**	**2**	**UOA 140**
Arabic Language	**2**	**----**	**2**	**UOA 137**

Second Semester

Course title	Hours/week		Credit Hours	Code
	Theory	Practical		
Human Anatomy	1	2	2	ClHa108
Pharmaceutical Calculations	2	2	3	PPhc109
Medical Physics	2	2	3	ClMp110
Organic Chemistry I	3	2	4	PcOc1111
Histology	2	2	3	ClHi112
Human Rights	1	----	1	UOA 135
Computer Sciences	----	2	1	UOA2 141

Second year/ Credit hours: 42

First Semester

Course title	Hours/week		Credit Hours	Code
	Theory	Practical		
Organic Chemistry II	3	2	4	PcOc2 216
Medical Microbiology I	3	2	4	ClMm 217
Physical Pharmacy I	3	2	4	PPp1 218
Physiology I	3	2	4	Ptph13 219
Democracy	1	---	1	UOA 201
Computer Sciences	----	2	1	UOA 241
English Language	2	----	2	UOA 240

Second Semester

Course title	Hours/week		Credit Hours	Code
	Theory	Practical		
Organic Chemistry III	2	2	3	PcOc3 223
Medical Microbiology II	3	2	4	ClMv 224
Physical Pharmacy II	3	2	4	PPp2 225
Physiology II	3	2	4	PtPh2 226
Pharmacognosy I	3	2	4	phpa1 227
Computer Sciences	----	2	1	UOA2 241
Arabic Language	2	-----	2	UOA 237

Third year / Credit hours: 39

t First Semester

Course title	Hours/week		Credit Hours	Code
	Theory	Practical		
Inorganic Pharmaceutical Chemistry	2	2	3	PcIc 330
Pharmacognosy II	2	2	3	phpa2 331
Pharmaceutical Technology I	3	2	4	PPt1 332
Biochemistry I	3	2	4	ClBi1 333
Pathophysiology	3	2	4	ClPy 334

Second Semester

Course title	Hours/week		Credit Hours	Code
	Theory	Practical		
Organic Pharm. Chemistry I	3	2	4	PcOp1 336
Pharmacology I	3	----	3	PtPc1 337
Pharm. Technology II	3	2	4	Ppt2 338
Biochemistry II	3	2	4	ClBi2 339
Pharmacognosy III	2	2	3	PhPa3 340
Medical Ethics	1	----	1	UOA 344
English Language	2	----	2	UOA 340

Fourth year/ Credit hours: 36

First Semester

Course title	Hours/week		Credit Hours	Code
	Theory	Practical		
Pharmacology II	3	2	4	PtPc3 444
Organic Pharm. Chemistry II	3	2	4	PcOp2 445
Clinical Pharmacy I	2	2	3	CpCp1 446
Biopharmaceutics	2	2	3	PBp 447
Public Health	2	----	2	ClPu 448

Second Semester

Course title	Hours/week		Credit Hours	Code
	Theory	Practical		
Pharmacology III	2	----	2	PtPc3 450
Organic Pharm. Chemistry III	3	2	4	PcOp3 451
Clinical Pharmacy II	2	2	3	CpCp2 452
General Toxicology	2	2	3	PtGt 453
Industrial Pharmacy I	3	2	4	PIp1 454
Communication Skills	2	----	2	CpCs 455
English Language	2	----	2	UOA 440

Fifth year / Credit hours: 35

First Semester

Course title	Hours/week		Credit Hours	Code
	Theory	Practical		
Organic Pharm. Chemistry IV	2	----	2	PcOp4 557
Industrial Pharmacy II	3	2	4	PIp2 558
Applied Therapeutics- I	3	-----	3	CpAt1 559
Clinical Chemistry	3	2	4	ClCc 560
Hospital Training	----	4	2	ClCi 561
Clinical Toxicology	2	2	3	PtCt 562

Second Semester

Course title	Hours/week		Credit Hours	Code
	Theory	Practical		
Pharmacoeconomic	2	----	2	CpPm 564
Applied Therapeutics- II	2	----	2	CpAt2 565
Therapeutic Drug Monitoring (TDM)	2	2	3	CpTd 566
Advanced Pharmaceutical Analysis	3	2	4	PcAp 567
Clinical Laboratory Training	----	4	2	CpHt 568
Dosage Form Design	2	----	2	PDf 569
Pharmaceutical Biotechnology	1	----	1	PPb 570
Graduation project	1	----	1	Pr 563

Total Credit Hours: 187

12 Award and credits

13. Personal Development Planning

To make a good practicing in pharmacy through the obtaining of scientific information

14. Admission criteria .

- ✓ Applied the admission requirements for students according to the conditions of the Ministry of Higher Education and Scientific Research (central admission)
- ✓ High school rate (Average of high school)
- ✓ Fit for medical test
- ✓ The college's capacity for the number of students

15. Key sources of information about the programme

- ✓ Textbooks in the specialty
- ✓ Vocabulary of the College of Pharmacy Deans' board based on the recommendations of specialized scientific committees
- ✓ The skills requirement to work in the Ministry of Health and the private part. under the Pharmacists Organization.

please tick in the relevant boxes where individual Programme Learning Outcomes are being assessed

				Programme Learning Outcomes															
Year / Level	Course Code	Course Title	Core (C) Title or Option (O)	Knowledge and understanding				Subject-specific skills				Thinking Skills				General and Transferable Skills (or) Other skills relevant to employability and personal development			
				A1	**A2**	**A3**	**A4**	**B1**	**B2**	**B3**	**B4**	**C1**	**C2**	**C3**	**C4**	**D1**	**D2**	**D3**	**D4**
First/ 1st semester		**Human biology**	Essential				√				√				√				√
		Principles of Pharmacy Practice	Essential				√				√				√				√
First/ 1st semester		**Analytical Chemistry**	Essential				√				√				√				√
		Medical Terminology	Essential				√				√				√				√
First/ 1st semester		**Mathematics and Biostatistics**	Essential				√				√				√				√
		Computer Sciences	Essential				√				√				√				√
First/ 1st semester		**English Language**	Essential				√				√				√				√

		Arabic Language	Essential				√				√				√				√
First / 2nd semester																			
		Human Anatomy	Essential				√				√				√				√
First /2nd semester		**Pharmaceutical Calculations**	Essential				√				√				√				√
		Medical Physics	Essential				√				√				√				√
		Organic Chemistry I	Essential				√				√				√				√
		Histology	Essential				√				√				√				√
		Human Rights	Essential				√				√				√				√
		Computer Sciences	Essential				√				√				√				√
Year / Level	Course Code	Course Title	Core (C) Title or Option (O)	Knowledge and understanding				Subject-specific skills				Thinking Skills				General and Transferable Skills (or) Other skills relevant to employability and personal development			
				A1	**A2**	**A3**	**A4**	**B1**	**B2**	**B3**	**B4**	**C1**	**C2**	**C3**	**C4**	**D1**	**D2**	**D3**	**D4**
Second/ 1st semester		**Organic Chemistry II**	Essential				√				√				√				√
		Medical Microbiology I	Essential				√				√				√				√

		Physical Pharmacy I	Essential				√				√				√			√
		Physiology I	Essential				√				√				√			√
		Democracy	Essential				√				√				√			√
		Computer Sciences	Essential				√				√				√			√
		English Language	Essential				√				√				√			√
			Essential				√				√				√			√
Second / 2nd semester		**Organic Chemistry III**																
		Medical Microbiology II	Essential				√				√				√			√
		Physical Pharmacy II	Essential				√				√				√			√
		Physiology II	Essential				√				√				√			√
		Pharmacognosy I	Essential				√				√				√			√
		Computer Sciences	Essential				√				√				√			√
		Arabic Language	Essential				√				√				√			√

Third / 1st semester		**Inorganic Pharmaceutical Chemistry**	Essential				√				√				√				√
		Pharmacognosy II	Essential				√				√				√				√
Third / 1st semester		**Pharmaceutical Technology I**	Essential				√				√				√				√
		Biochemistry I	Essential				√				√				√				√
Third / 1st semester		**Pathophysiology**	Essential				√				√				√				√
			Essential				√				√				√				√
Third / 2nd semester		**Organic Pharm. Chemistry I**	Essential				√				√				√				√
		Pharmacology I	Essential				√				√				√				√
Third /2nd semester		**Pharm. Technology II**	Essential				√				√				√				√
		Biochemistry II	Essential				√				√				√				√
Third / 2nd semester		**Pharmacognosy III**	Essential				√				√				√				√
		Medical Ethics	Essential				√				√				√				√
		English Language	Essential				√				√				√				√

Fourth / 1st semester		**Inorganic Pharmaceutical Chemistry**	Essential				√				√				√			√
		Pharmacognosy II	Essential				√				√				√			√
Fouth / 1st semester		**Pharmacology II**	Essential				√				√				√			√
		Organic Pharm. Chemistry II	Essential				√				√				√			√
Fourth / 1st semester		**Clinical Pharmacy I**	Essential				√				√				√			√
		Biopharmaceutics	Essential				√				√				√			√
		Public Health	Essential				√				√				√			√
Fourth / 2nd semester		**Pharmacology III**	Essential				√				√				√			√
Fourth / 2nd semester		**Organic Pharm. Chemistry III**	Essential				√				√				√			√
Fourth / 2nd semester		**Clinical Pharmacy II**	Essential				√				√				√			√

Fourth / 2nd semester		**General Toxicology**	Essential				√				√				√				√
Fourth / 2nd semester		**Industrial Pharmacy I**	Essential				√				√				√				√
Fourth / 2nd semester		**Communication Skills**	Essential				√				√				√				√
Fourth / 2nd semester		**English Language**	Essential				√				√				√				√
Fourth / 2nd semester		**Pharmacology III**	Essential				√				√				√				√
Fifth/ 1st semester		**Organic Pharm. Chemistry IV**	Essential				√				√				√				√
Fifth/ 1st semester		**Industrial Pharmacy II**	Essential				√				√				√				√
Fifth/ 1st semester		**Applied Therapeutics- I**	Essential				√				√				√				√
Fifth/ 1st semester		**Clinical Chemistry**	Essential				√				√				√				√
Fifth/ 1st semester		**Hospital Training**	Essential				√				√				√				√
Fifth/ 1st semester		**Clinical Toxicology**	Essential				√				√				√				√

Fifth/ 1st semester		**Organic Pharm. Chemistry IV**	Essential				√				√				√				√
Fifth / 2nd semester		**Pharmacoeconomic**	Essential				√				√				√				√
Fifth / 2nd semester		**Applied Therapeutics- II**	Essential				√				√				√				√
Fifth / 2nd semester		**Therapeutic Drug Monitoring (TDM)**	Essential				√				√				√				√
Fifth / 2nd semester		**Advanced Pharmaceutical Analysis**	Essential				√				√				√				√
Fifth / 2nd semester		**Clinical Laboratory Training**	Essential				√				√				√				√
Fifth / 2nd semester		**Dosage Form Design**	Essential				√				√				√				√
Fifth / 2nd semester		**Pharmaceutical Biotechnology**	Essential				√				√				√				√
Fifth / 2nd semester		**Graduation project**	Essential				√				√				√				√

TEMPLATE FOR COURSE SPECIFICATION

HIGHER EDUCATION PERFORMANCE REVIEW: PROGRAMME REVIEW

COURSE SPECIFICATION

This Course Specification provides a concise summary of the main features of the course and the learning outcomes that a typical student might reasonably be expected to achieve and demonstrate if he/she takes full advantage of the learning opportunities that are provided. It should be cross-referenced with the programme specification.

1. Teaching Institution	University of Anbar
2. University Department/Centre	Pharmacy /Pharmacognosy
3. Course title/code	II 3rd stage Pharmacognosy II 1 st course 3 rd stage Pharmacognosy III 2 nd course 1
4. Programme(s) to which it contributes	Bachelor of Pharmacy program
5. Modes of Attendance offered	Weekly
6. Semester/Year	Courses
7. Number of hours tuition (total)	٤٥hr.
8. Date of production/revision of this specification	1/6/2021
9. Aims of the Programme: Providing students with scientific and practical information in the following areas: Overview of drugs and definition concepts 2- Sources of natural medicines 3- Types of plants And animals and microorganisms that produce natural medicines 4- Classification and division of natural products 5 - Classification of medicines depending on their chemical and clinical nature 6- Scientific nomenclature of plants and methods for their classification 7- Methods for extracting medicines from their sources 8- Chemical composition of medicines 9- General effects of medicines on body systems 10- Effects of body systems on drugs 11- Toxic effects of drugs with clinical side effects 12- Drug separation techniques 13- Types of chromatography	

techniques used to separate, diagnose and purify medically active drug compounds. 14- Medicines use traditional plants as a source for the production of new medicines.

11. Course Structure					
Week	Hours	ILOs	Unit/Module or Topic Title	Teaching Method	Assessment Method
1	2hrs. Theoretical	Definition and using	Carbohydrates and natural products	Theoretical lectures	Oral exams and discussion
2	2hrs. Theoretical	Definition and using	Lignans and coumarins	Theoretical lectures	Oral exams and discussion
3	2hrs. Theoretical	Definition and using	Flavonoids	Theoretical lectures	Oral exams and discussion
4	2hrs. Theoretical	Definition and using	Glycosides	Theoretical lectures	Oral exams and discussion
5	2hrs. Theoretical	Definition and using	Tannins	Theoretical lectures	Oral exams and discussion
6	2hrs. Theoretical	Definition and using	Lipids	Theoretical lectures	Oral exams and discussion

12. Infrastructure	
Required reading: · CORE TEXTS · COURSE MATERIALS · OTHER	• **Pharmacognosy and Pharmacobiotechnology ،by Tyler, 1996.** • **Practical manual, college of pharmacy /. University Baghdad**
Special requirements (include for example workshops, periodicals, IT software, websites)	The course was revised in terms of the changes that should be made according to the percentages of change established by the university to keep pace with scientific development and enrich the educational process, as types of medicinal plants containing the active compounds that were studied in the previous year were added and changed for the purpose of expanding students' information about the presence of these compounds in more than one year. From the plant, communication and interaction with students was made in terms of their acceptance of the scientific material and the methods of explanation and clarification followed by the teaching staff and taking their opinions that were found to serve the educational process in line with the vocabulary of the course.
Community-based facilities (include for example, guest Lectures, internship, field studies)	A field study of the vegetable farm and the Iraqi medicinal herb in Baghdad

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COURSE SPECIFICATION

This Course Specification provides a concise summary of the main features of the course and the learning outcomes that a typical student might reasonably be expected to achieve and demonstrate if he/she takes full advantage of the learning opportunities that are provided. It should be cross-referenced with the programme specification.

1. Teaching Institution	Ministry of Higher Education and Scientific Research / University of Anbar
2. University Department/Centre	College of Pharmacy
3. Course title/code	Advanced Pharmaceutical Analysis
4. Programme(s) to which it contributes	Bachelor of Pharmacy
5. Modes of Attendance offered	weekly
6. Semester/Year	Second semester/ Fifth Year
7. Number of hours tuition (total)	48 theoretical + 32 practical
8. Date of production/revision of this specification	1/6/2021
9. Aims of the Course	
1- Providing students with important theoretical information related to the spectrochemical analysis of organic compounds using UV/Vis, IR, NMR and Mass spectra techniques.	
2- Enable students to understand the applications of these techniques in the quantitative and qualitative analysis of organic compounds.	
3- Enable students to learn the process of linking the results of the analysis with different devices with each other to know the composition of the sample.	

10· Learning Outcomes, Teaching ,Learning and Assessment Method

A- Knowledge and Understanding

A1. Knowledge of chemical analysis mechanisms and understanding of different spectroscopic methods of analysis.

B. Subject-specific skills

B1.Basic analysis learning.

B2. Learning the basic skills of spectroscopy

Teaching and Learning Methods

1- Theoretical lectures
2- Work paper
3- Laboratory activities

Assessment methods

1- Midterm exam
2- Class activity
3- Oral exam
4- Practical exam
5- Final exam

C. Thinking Skills

C1. Ability to interact with sources and references.
C2. Ability to know the accuracy and validity of the obtained results.
C3. Ability to link analytical laws together.
C4. Ability to devise new methods of chemical analysis.
C5. Ability to infer and compare various analytical problems.

D. General and Transferable Skills (other skills relevant to employability and personal development)

D1. Ability to deal with various analytical problems and find appropriate solutions.
D2. Correct identification of problems, sorting them and placing them in the correct context.
D3. Evaluate chemical analysis mechanisms and find solutions to problems that may arise during work.
D4. Develop a spirit of cooperation and teamwork.

11. Course Structure

Week	Hours	ILOs	Unit/Module orTopic Title	Teaching Method	Assessment Method
1	3	Knowledge of spectroscopy and electromagnetic spectrum	Spectroscopy and electromagnetic radiation, Introduction to UV/Vis	Lectures	Exam + Activities
2	3	Learn all concepts related to UV/Vis spectroscopy	Lambda max, Sample handling, Problems and solutions	Lectures	Exam + Activities
3	3	Learn concepts related to infrared spectroscopy	General introduction for IR	Lectures	Exam + Activities
4	3	Identify the frequencies of different functional groups	Characteristic group frequencies of organic compounds	Lectures	Exam + Activities
5	3	Understand the effect of hydrogen bonding	Effect of H bonding	Lectures	Exam + Activities
6	3	Learn how to handle solid, liquid and gaseous samples	Sample handling	Lectures	Exam + Activities
7	3	Learn how to apply the technology to organic compounds	Application of IR spectroscopy	Lectures	Exam + Activities
8	3	Learn the important concepts of H^1, C^{13}-NMR spectroscopy	H^1-NMR and C^{13}-NMR spectroscopy	Lectures	Exam + Activities
9	3	Identifying the nature of NMR absorption and the factors affecting.	The nature of NMR absorption, chemical shifts and factors affecting them	Lectures	Exam + Activities
10	3	Learn the information obtained from technology.	Information obtained from NMR spectra, more complex spin-spin splitting patterns	Lectures	Exam + Activities
11	3	Learn about the applications of H^1-NMR technology.	Application of H^1-NMR spectroscopy,	Lectures	Exam + Activities
12	3	Learn about mass spectrometry theory.	General Introduction about mass spectroscopy	Lectures	Exam + Activities
13	3	Learn how to interpret the results of a mass spectrometry analysis	Interpreting mass spectra	Lectures	Exam + Activities
14	3	Recognize the behavior of some important functional groups.	Mass behavior of some common functional groups	Lectures	Exam + Activities
15	3	Learn how to interpret the results of the analysis of the different parts of compounds.	Interpreting mass spectra fragmentation patterns	Lectures	Exam + Activities
16	3	Learn elemental analysis of CHNSO elements.	Elemental microanalysis CHNSO	Lectures	Exam + Activities

12. Infrastructure

Required reading: · CORE TEXTS · COURSE MATERIALS · OTHER	* Spectrometric Identification of Organic Compounds. by Silverstein, Bassler and Morrill. *Applications of absorption spectroscopy of organic compounds. by Dyer JR. * Organic Chemistry. by McMurry; 5th ed; Thomason learning CA, USA 2000.
Special requirements (include for example workshops, periodicals, IT software, websites)	
Community-based facilities (include for example, guest Lectures , internship , field studies)	• Hosting professors from other universities to teach some lectures as a matter of scientific cooperation. • Show some explanatory videos for some important topics

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COURSE SPECIFICATION

This Course Specification provides a concise summary of the main features of the course and the learning outcomes that a typical student might reasonably be expected to achieve and demonstrate if he/she takes full advantage of the learning opportunities that are provided. It should be cross-referenced with the programme specification.

1. Teaching Institution	Ministry of Higher Education and Scientific Research / University of Anbar
2. University Department/Centre	College of Pharmacy
3. Course title/code	Analytical Chemistry
4. Programme(s) to which it contributes	Bachelor of Pharmacy
5. Modes of Attendance offered	weekly
6. Semester/Year	First semester/ First Year
7. Number of hours tuition (total)	48 theoretical + 32 practical
8. Date of production/revision of this specification	1/6/2021
9. Aims of the Course	
1- Providing students with important theoretical information related to the chemical foundations necessary to practice chemical analysis.	
2- Enabling students to understand the importance of accurately and correctly predicting data from the results of chemical analysis and the technique of quantitative analysis	
3- Teaching students that theory is usually an important and useful guide for finding solutions to analytical problems.	

10· Learning Outcomes, Teaching ,Learning and Assessment Methode

A- Knowledge and Understanding
A1. Initial concepts of analysis
A2. Different methods of analysis
A3. The basics of analysis
A4. Result analysis interpretation
A5.
A6.

B. Subject-specific skills
B1.Basic analysis learning
B2. Different methods learning
B3. Results interpretation

Teaching and Learning Methods

4- Theoretical lectures
5- Work paper
6- Laboratory activities

Assessment methods

6- Midterm exam
7- Class activity
8- Oral exam
9- Practical exam
10- Final exam

C. Thinking Skills
C1. Ability to interact with sources and references.
C2. Ability to know the accuracy and validity of the obtained results.
C3. Ability to link analytical laws together.
C4. Ability to devise new methods of chemical analysis.
C5. Ability to infer and compare various analytical problems.

D. General and Transferable Skills (other skills relevant to employability and personal development)
D1. Ability to deal with various analytical problems and find appropriate solutions.
D2. Correct identification of problems, sorting them and placing them in the correct context.
D3. Evaluate chemical analysis mechanisms and find solutions to problems that may arise during work.
D4. Develop a spirit of cooperation and teamwork.

11. Course Structure

Week	Hours	ILOs	Unit/Module orTopic Title	Teaching Method	Assessment Method
1	3	Learn some important concepts of chemical analysis	Review of elementary concept important to analytical chemistry	Lectures	Exam + Activities
2	3	Learn all the concepts related to electrolytes	Strong and weak electrolytes; important weight and concen. units	Lectures	Exam + Activities
3	3	Learn concepts related to accuracy and validity of analytical results	The evaluation of the reliability of analytical data	Lectures	Exam + Activities
4	3	Learn about a general introduction to gravimetric analysis	Introduction to gravimetric analysis	Lectures	Exam + Activities
5	3	Solve mathematical examples of gravimetric analysis	Gravimetric analysis examples	Lectures	Exam + Activities
6	3	Learn about organic and inorganic precipitants	Inorganic and organic precipitating agents	Lectures	Exam + Activities
7	3	Learn the important concepts of volumetric analysis	Introduction to volumetric methods of analysis	Lectures	Exam + Activities
8	3	Learn equilibrium calculations for acids and bases	Volumetric calculations; acid-base equilibria and pH calculations	Lectures	Exam + Activities
9	3	Learn about equilibrium theory for simple systems	Buffer solutions: Theory of neutralization titrations of simple system	Lectures	Exam + Activities
10	3	Learn about the equilibrium theory of complex systems	Theory of neutralization titrations of complex system	Lectures	Exam + Activities
11	3	Learn to solve pH problems for complex systems	Calculation of pH in complex system	Lectures	Exam + Activities
12	3	Learn about the methods of volumetric analysis of complex systems	Volumetric methods based on complex system	Lectures	Exam + Activities
13	3	Learn how to calculate the resultant material in precipitation titrations	Precipitation titrations	Lectures	Exam + Activities
14	3	Learn about titrations of electronic transfer between materials	Oxidation-reduction titrations	Lectures	Exam + Activities
15	3	Learn about equilibrium in redox systems	Equilibria in oxidation-reduction system	Lectures	Exam + Activities
16	3	Learn about methods of analysis using spectroscopic instruments	Spectrophotometric analysis: An introduction to optical methods of analysis	Lectures	Exam + Activities

12. Infrastructure

Required reading: · CORE TEXTS · COURSE MATERIALS · OTHER	Fundamentals of Analytical Chemistry, by Stook and West.
Special requirements (include for example workshops, periodicals, IT software, websites)	
Community-based facilities (include for example, guest Lectures , internship , field studies)	• Hosting professors from other universities to teach some lectures as a matter of scientific cooperation. • Show some explanatory videos for some important topics

TEMPLATE FOR COURSE SPECIFICATION

HIGHER EDUCATION PERFORMANCE REVIEW: PROGRAMME REVIEW

COURSE SPECIFICATION

This Course Specification provides a concise summary of the main features of the course and the learning outcomes that a typical student might reasonably be expected to achieve and demonstrate if he/she takes full advantage of the learning opportunities that are provided. It should be cross-referenced with the programme specification.

1. Teaching Institution	Ministry of Higher Education and Scientific Research / University of Anbar
2. University Department/Centre	College of Pharmacy
3. Course title/code	Inorganic Pharmaceutical Chemistry
4. Programme(s) to which it contributes	Bachelor of Pharmacy
5. Modes of Attendance offered	weekly
6. Semester/Year	First semester/ Third Year
7. Number of hours tuition (total)	32 theoretical + 32 practical
8. Date of production/revision of this specification	1/6/2021
9. Aims of the Course	
1- Providing students with important theoretical information related to the basic principles of inorganic chemistry related to medicinal and pharmaceutical chemistry.	
2- Understand the atomic and molecular structure of inorganic compounds and the process of formation of these compounds.	
3- Providing students with basic information about inorganic compounds used as pharmaceutical materials.	

10· Learning Outcomes, Teaching ,Learning and Assessment Method

A- Knowledge and Understanding
A1. Knowledge of inorganics
A2. Formation process
A3. Pharmaceutical uses
A4. Detoxification
A5.
A6.

B. Subject-specific skills
B1.Basic skills of inorganics
B2. Preparing of inorganic medicine
B3.

Teaching and Learning Methods

7- Theoretical lectures
8- Work paper
9- Laboratory activities

Assessment methods

11- Midterm exam
12- Class activity
13- Oral exam
14- Practical exam
15- Final exam

C. Thinking Skills
C1. Ability to interact with sources and references.
C2. The ability to recognize the accuracy and validity of theories related to the formation of complexes.
C3. The ability to link theories of complex formation together.
C4. The ability to devise new methods in the preparation of inorganic pharmaceutical preparations.
C5. Ability to compare different pharmaceutical forms of inorganic complexes.

D. General and Transferable Skills (other skills relevant to employability and personal development)
D1. The ability to deal with various theoretical problems related to theories of formation of inorganic complexes.
D2. Distinguish between different pharmaceutical forms of inorganic complexes.
D3. Evaluate the mechanisms of inorganic chemical synthesis and find solutions to problems that may arise during work.
D4. Develop a spirit of cooperation and teamwork.

11. Course Structure

Week	Hours	ILOs	Unit/Module orTopic Title	Teaching Method	Assessment Method
1	2	Learn important concepts about atomic structure	Atomic structure	Lectures	Exam + Activities
2	2	Learn important concepts about molecular structure	Molecular structure	Lectures	Exam + Activities
3	2	Learn the concepts related to the formation of complexes	Complexation , complexes and chelating agents	Lectures	Exam + Activities
4	2	Recognize the importance of essential trace elements, the first of which is iron	Essential and trace ions: Iron	Lectures	Exam + Activities
5	2	Understand the importance of copper, sulfur and iodine elements	Essential and trace ions: copper, sulfur, iodine	Lectures	Exam + Activities
6	2	Recognize the non-essential elements and their importance	Non essential ions: Fluoride, bromide, lithium, gold, silver and mercury	Lectures	Exam + Activities
7	2	Learn about the important substances used in the treatment of the digestive system	Gastrointestinal agents: Acidifying agents	Lectures	Exam + Activities
8	2	Learn about important antacids	Antacids	Lectures	Exam + Activities
9	2	Learn about protective materials and adsorbents	Protectives and adsorbent	Lectures	Exam + Activities
10	2	Learn about important topical materials and how to use them	Topical agents	Lectures	Exam + **Activities**
11	2	Learn about materials used in dental treatment	Dental agents	Lectures	Exam + Activities
12	2	Understand the methods of radioactive decay of isotopes	Radiopharmaceuticals: Radioisotopes, Radioactive decay particles	Lectures	Exam + Activities
13	2	Learn how to give isotopes	Internal administration of radioisotopes	Lectures	Exam + Activities
14	2	Learn about radioactive products	Radiopharmaceutical preparations	Lectures	Exam + Activities
15	2	Learn about radiopaque and contrast medium	Radiopaque contrast media	Lectures	Exam + Activities
16	2	Learn about radiological contrast agents and how to use them atoms	Radiological contrast agents	Lectures	Exam + Activities

12. Infrastructure

Required reading: · CORE TEXTS · COURSE MATERIALS · OTHER	*** Inorganic Medicinal and Pharmaceutical Chemistry. by Block, Roche Soine and Wilson.** *** Wilson and Gisvold; Textbook of Organic medicinal and Pharmaceutical chemistry; Delgado JN, Remers WA**
Special requirements (include for example workshops, periodicals, IT software, websites)	
Community-based facilities (include for example, guest Lectures , internship , field studies)	• Hosting professors from other universities to teach some lectures as a matter of scientific cooperation. • Show some explanatory videos for some important topics

TEMPLATE FOR COURSE SPECIFICATION

HIGHER EDUCATION PERFORMANCE REVIEW: PROGRAMME REVIEW

COURSE SPECIFICATION

This Course Specification provides a concise summary of the main features of the course and the learning outcomes that a typical student might reasonably be expected to achieve and demonstrate if he/she takes full advantage of the learning opportunities that are provided. It should be cross-referenced with the programme specification.

1. Teaching Institution	Ministry of Higher Education and Scientific Research / University of Anbar
2. University Department/Centre	College of Pharmacy
3. Course title/code	Organic Chemistry I
4. Programme(s) to which it contributes	Bachelor of Pharmacy
5. Modes of Attendance offered	weekly
6. Semester/Year	Second semester/ First Year
7. Number of hours tuition (total)	48 theoretical + 32 practical
8. Date of production/revision of this specification	1/6/2021
9. Aims of the Course	
1- Enabling students to understand carbon chemistry.	
2- Enable students to understand the basic properties of some active groups of organic compounds.	
3- Introducing students to the stereochemistry of organic compounds.	

10· Learning Outcomes, Teaching ,Learning and Assessment Methode

A- Knowledge and Understanding
A1. Important constants
A2. Characteristics of organics
A3. Behavior of compounds
A4. Stereochemistry
A5.
A6.

B. Subject-specific skills
B1.Basic organic learning
B2. Dealing with organic compounds
B3. Orientation of organic compounds

Teaching and Learning Methods

10- Theoretical lectures
11- Work paper
12- Laboratory activities

Assessment methods

16- Midterm exam
17- Class activity
18- Oral exam
19- Practical exam
20- Final exam

C. Thinking Skills
C1. Ability to interact with sources and references.
C2. The ability to identify the physical constants of organic compounds.
C3. The ability to know the basic rules for naming organic compounds.
C4. The ability to devise new methods of preparing organic compounds
C5. The ability to recognize the basic stereotypes of organic compounds.

D. General and Transferable Skills (other skills relevant to employability and personal development)
D1. Ability to deal with various physical problems related to the properties of organic compounds.
D2. Correct identification of problems, sorting them and placing them in the correct context.
D3. Evaluation of the mechanisms of studying organic compounds.
D4. Develop a spirit of cooperation and teamwork.

11. Course Structure

Week	Hours	ILOs	Unit/Module or Topic Title	Teaching Method	Assessment Method
1	3	Learn some important concepts of organic chemistry	General introduction	Lectures	Exam + Activities
2	3	Learn all the concepts related to methane and its interactions	Methane	Lectures	Exam + Activities
3	3	Learn the properties of alkenes	Alkenes	Lectures	Exam + Activities
4	3	Getting to know a general introduction to nomenclature and physical properties	Alkenes: Nomenclature and properties	Lectures	Exam + Activities
5	3	Learn methods of preparation and reactions of alkenes	Alkenes: Peroration and reactions	Lectures	Exam + Activities
6	3	Learn the properties, nomenclature, physical properties, preparation and interactions of alkynes	Alkynes	Lectures	Exam + Activities
7	3	Learn the characteristics, naming, physical properties, preparation and interactions of dynes	Dienes	Lectures	Exam + Activities
8	3	Identify the steric positions of organic compounds	Stereochemistry I	Lectures	Exam + Activities
9	3	Recognize the behavior of organic compounds during the reaction and obtain results for the stereostructure	Stereochemistry II	Lectures	Exam + Activities
10	3	Understand the effect of qualitative selection of reactions	Stereochemistry II	Lectures	Exam + Activities
11	3	Learn the characteristics, nomenclature , physical properties, preparation and interactions of alcohols	Alcohols	Lectures	Exam + Activities
12	3	Learn the properties, nomenclature, physical properties, preparation and interactions of ethers	Ethers	Lectures	Exam + Activities
13	3	Learn the properties of alkyl halides, their nomenclature, their physical properties, their preparation and their reactions	Alkyl halides	Lectures	Exam + Activities
14	3	Understand the mechanics of first- and second-order substitution reactions	Alkyl halides	Lectures	Exam + Activities
15	3	To identify the nomenclature of cycloalkanes, their physical properties, methods of preparation and their interactions	Cycloalkanes	Lectures	Exam + Activities
16	3	To know the spatial positions of the rings and the angles between the atoms	Cycloalkanes	Lectures	Exam + Activities

12. Infrastructure

Required reading: · CORE TEXTS · COURSE MATERIALS · OTHER	* Organic Chemistry. by Robert T. Morrison and Robert N. Boyd. * Organic Chemistry. by McCurry; 5th ed. Thomason learning; CA, USA; 2000.
Special requirements (include for example workshops, periodicals, IT software, websites)	
Community-based facilities (include for example, guest Lectures , internship , field studies)	• Hosting professors from other universities to teach some lectures as a matter of scientific cooperation. • Show some explanatory videos for some important topics

HIGHER EDUCATION PERFORMANCE REVIEW: PROGRAMME REVIEW

COURSE SPECIFICATION

This Course Specification provides a concise summary of the main features of the course and the learning outcomes that a typical student might reasonably be expected to achieve and demonstrate if he/she takes full advantage of the learning opportunities that are provided. It should be cross-referenced with the programme specification.

1. Teaching Institution	Ministry of Higher Education and Scientific Research / University of Anbar
2. University Department/Centre	College of Pharmacy
3. Course title/code	Organic Chemistry II
4. Programme(s) to which it contributes	Bachelor of Pharmacy
5. Modes of Attendance offered	weekly
6. Semester/Year	First semester/ Second Year
7. Number of hours tuition (total)	48 theoretical + 32 practical
8. Date of production/revision of this specification	1/6/2021
9. Aims of the Course	
1- Enable students to understand aromatic chemistry, its properties and interactions.	
2- Enable students to understand the basic properties of some active groups of organic compounds such as carboxylic acids and their derivatives, aldehydes, ketones, amines and phenols.	
3- Enable students to identify these groups of compounds.	

10· Learning Outcomes, Teaching ,Learning and Assessment Methode

A- Knowledge and Understanding
A1. Important constants
A2. Characteristics of organics
A3. Behavior of compounds
A4. Reactions of compounds
A5. Preparations methods
A6.

B. Subject-specific skills
B1.Basic skills learning
B2. Dealing with organic compounds
B3. Specific skills learning

Teaching and Learning Methods

13- Theoretical lectures
14- Work paper
15- Laboratory activities

Assessment methods

21- Midterm exam
22- Class activity
23- Oral exam
24- Practical exam
25- Final exam

C. Thinking Skills
C1. Ability to interact with sources and references.
C2. The ability to identify the physical constants of organic compounds.
C3. The ability to know the basic rules for naming organic compounds.
C4. The ability to devise new methods of preparing organic compounds
C5. The ability to recognize the basic stereotypes of organic compounds.

D. General and Transferable Skills (other skills relevant to employability and personal development)
D1. Ability to deal with various physical problems related to the properties of organic compounds.
D2. Correct identification of problems, sorting them and placing them in the correct context.
D3. Evaluation of the mechanisms of studying organic compounds.
D4. Develop a spirit of cooperation and teamwork.

11. Course Structure

Week	Hours	ILOs	Unit/Module or Topic Title	Teaching Method	Assessment Method
1	3	Learn the structure of aromatic compounds, especially the benzene ring, and their physical properties	Aromatic Hydrocarbons (includes benzene)	Lectures	Exam + Activities
2	3	Understand the methods of preparing aromatic compounds and their reactions	Aromatic Hydrocarbons (includes benzene, electrophilic aromatic substitution).	Lectures	Exam + Activities
3	3	Recognize the resonance patterns of the electrophilic compensation of benzene, the steering and the energized and inactivated groups of the ring.	Aromatic Hydrocarbons (includes benzene, electrophilic aromatic substitution).	Lectures	Exam + Activities
4	3	Knowing the arenas, their composition, naming them, and identifying their physical properties	Aromatic Hydrocarbons (includes arenes and their derivatives)	Lectures	Exam + Activities
5	3	Study methods of preparing arenas and their reactions	Aromatic Hydrocarbons (includes arenes and their derivatives)	Lectures	Exam + Activities
6	3	General introduction to the nomenclature and physical properties of carboxylic acids and their interactions	Carboxylic acids: properties and reactions	Lectures	Exam + Activities
7	3	Identify the properties, preparation and reactions of chlorides of carboxylic acids	Functional derivatives of carboxylic acid (Acid chloride)	Lectures	Exam + Activities
8	3	Learn about the physical properties and methods of preparation and reactions of chlorides of carboxylic acids	Functional derivatives of carboxylic acids (Anhydrides)	Lectures	Exam + Activities
9	3	Learn about the physical properties, methods of preparation and reactions of amides	Functional derivatives of carboxylic acids (Amides)	Lectures	Exam + Activities
10	3	Understand the physical properties and methods of preparation and reactions of esters	Functional derivatives of carboxylic acids (Esters)	Lectures	Exam + Activities
11	3	Learn the characteristics, names, physical properties, preparation and interactions of amines	Amines I and II	Lectures	Exam + Activities
12	3	Learn the basic characteristics of diazonium salts derived from amines, their preparation methods and their interactions	Amines I and II	Lectures	Exam + Activities
13	3	Learn the structure of aldehydes and ketones and their physical properties and methods of preparation	Aldehydes and ketones properties	Lectures	Exam + Activities
14	3	To learn about their interactions, especially the reaction mechanisms of the important aldol condensation and claisin condensation	Aldehydes and ketones properties	Lectures	Exam + Activities
15	3	Full knowledge of the composition, nomenclature and properties of medicinally important phenols	Phenols	Lectures	Exam + Activities
16	3	Learn the methods of preparing phenolic compounds, their preparation and their interactions	Phenols	Lectures	Exam + Activities

12. Infrastructure

Required reading: · CORE TEXTS · COURSE MATERIALS · OTHER	* Organic Chemistry. by Robert T. Morrison and Robert N. Boyd. * Organic Chemistry. by McCurry; 5th ed. Thomason learning; CA, USA; 2000.
Special requirements (include for example workshops, periodicals, IT software, websites)	
Community-based facilities (include for example, guest Lectures , internship , field studies)	• Hosting professors from other universities to teach some lectures as a matter of scientific cooperation. • Show some explanatory videos for some important topics

TEMPLATE FOR COURSE SPECIFICATION

HIGHER EDUCATION PERFORMANCE REVIEW: PROGRAMME REVIEW

COURSE SPECIFICATION

This Course Specification provides a concise summary of the main features of the course and the learning outcomes that a typical student might reasonably be expected to achieve and demonstrate if he/she takes full advantage of the learning opportunities that are provided. It should be cross-referenced with the programme specification.

1. Teaching Institution	Ministry of Higher Education and Scientific Research / University of Anbar
2. University Department/Centre	College of Pharmacy
3. Course title/code	Organic Chemistry III
4. Programme(s) to which it contributes	Bachelor of Pharmacy
5. Modes of Attendance offered	weekly
6. Semester/Year	Second semester/ Second Year
7. Number of hours tuition (total)	32 theoretical + 32 practical
8. Date of production/revision of this specification	1/6/2021
9. Aims of the Course	
1- Enable students to familiarize themselves with the details of the chemistry of heterocyclic organic rings.	
2- Enable students to understand the basic properties of active groups of heterocyclic organic compounds.	
3- Enable students to understand the properties of cyclic organic compounds and study the drug structures that make up them.	

10· Learning Outcomes, Teaching ,Learning and Assessment Method

A- Knowledge and Understanding
A1. Important concepts
A2. Characteristics of heterocyclic
A3. The basics of heterocyclic
A4.
A5.
A6.

B. Subject-specific skills
B1.Basic skills of heterocyclic
B2. Chemistry of heterocyclic
B3.

Teaching and Learning Methods

16- Theoretical lectures
17- Work paper
18- Laboratory activities

Assessment methods

26- Midterm exam
27- Class activity
28- Oral exam
29- Practical exam
30- Final exam

C. Thinking Skills
C1. Ability to interact with sources and references.
C2. The ability to identify the physical constants of heterocyclic compounds.
C3. The ability to know the basic rules for naming heterocyclic nomenclature.
C4. The ability to devise new methods for preparing heterocyclic compounds.
C5. The ability to identify the basic stereotypes of heterocyclic compounds.

D. General and Transferable Skills (other skills relevant to employability and personal development)
D1. The ability to deal with various physical problems related to the properties of the organic compounds of heterocyclic rings, especially the most common and widespread in the manufacture of medicines.
D2. Correct identification of problems, sorting them and placing them in the correct context.
D3. Evaluation of the mechanisms of studying cyclic compounds in all its forms.
D4. Develop a spirit of cooperation and teamwork.

11. Course Structure

Week	Hours	ILOs	Unit/Module orTopic Title	Teaching Method	Assessment Method
1	2	Identify heterocyclic compounds, their structures and physical properties	Heterocyclic system: Classes, systems; general structures; properties; Occurrence in nature and in medicinal products	Lectures	Exam + Activities
2	2	To identify the presence of heterocyclic compounds, their sources, and their use in the pharmaceutical industry	Heterocyclic system: Classes, systems; general structures; properties; Occurrence in nature and in medicinal products	Lectures	Exam + Activities
3	2	Learn all the concepts related to the heterocyclic pentagonal organic pyrrole ring and its interactions	Five-membered ring heterocyclic compounds: pyrrole	Lectures	Exam + Activities
4	2	Learn all the concepts related to the heterogeneous five-shaped organic furan ring and their interactions	Five-membered ring heterocyclic compounds: furan	Lectures	Exam + Activities
5	2	Learn all the concepts related to the heterocyclic five-shaped organic thiophene ring and its interactions	Five-membered ring heterocyclic compounds: thiophen	Lectures	Exam + Activities
6	2	Identify the sources of cyclic compounds with a single heterogeneous atom, such as pyrrole, furan, and thiophene	Source of pyrrole, furan and thiophen	Lectures	Exam + Activities
7	2	Study of electrophilic compensation and orientation of the organic pyrrole ring	Electrophilic substitution in pyrrole: Reactivity and orientation.	Lectures	Exam + Activities
8	2	Electrophilic compensation and orientation study of the organic furan ring	Electrophilic substitution in furan: Reactivity and orientation	Lectures	Exam + Activities
9	2	Electrophilic compensation and orientation study of the organic thiophene ring	Electrophilic substitution in thiophen: Reactivity and orientation.	Lectures	Exam + Activities
10	2	Identification of hexacyclic heterocyclic compounds such as pyridine and study of its structure and properties.	Six-membered ring heterocyclic compounds: Structure & reactions of pyridine	Lectures	Exam + **Activities**
11	2	Learn the methods of preparing pyridine and their interactions	Six-membered ring heterocyclic compounds: Structure & reactions of pyridine	Lectures	Exam + Activities
12	2	Study of the properties of pentacyclic heterocyclic compounds	Saturated five-membered heterocyclic compounds	Lectures	Exam + Activities
13	2	Study behavior and interactions of five-membered heterocyclic compounds	Saturated five-membered heterocyclic compounds	Lectures	Exam + Activities
14	2	Study of the composition and properties of compounds and heterocyclic organic forms that contain two or three hetero atoms	Heterocyclic of five & six member rings with two & three heteroatoms	Lectures	Exam + Activities
15	2	Study of the composition and properties of compounds and heterocyclic organic forms that contain two or three hetero atoms	Heterocyclic of five & six member rings with two & three heteroatoms	Lectures	Exam + Activities
16	2	Study of the composition and properties of compounds and heterocyclic organic forms that contain two or three hetero atoms	Heterocyclic of five & six member rings with two & three heteroatoms	Lectures	Exam + Activities

12. Infrastructure

Required reading: · CORE TEXTS · COURSE MATERIALS · OTHER	*** Organic Chemistry by Robert T. Morrison and Robert N. Boyed, latest edition.** ***Organic Chemistry by J. McMurry, latest ed., Thomason learning, CA, USA. 3_ An introduction to the chemistry of heterocyclic compound by Acheson, R. M. latest**
Special requirements (include for example workshops, periodicals, IT software, websites)	
Community-based facilities (include for example, guest Lectures , internship , field studies)	• Hosting professors from other universities to teach some lectures as a matter of scientific cooperation. • Show some explanatory videos for some important topics

TEMPLATE FOR COURSE SPECIFICATION

HIGHER EDUCATION PERFORMANCE REVIEW: PROGRAMME REVIEW

COURSE SPECIFICATION

This Course Specification provides a concise summary of the main features of the course and the learning outcomes that a typical student might reasonably be expected to achieve and demonstrate if he/she takes full advantage of the learning opportunities that are provided. It should be cross-referenced with the programme specification.

1. Teaching Institution	Ministry of Higher Education and Scientific Research / University of Anbar
2. University Department/Centre	College of Pharmacy
3. Course title/code	Organic Pharmaceutical Chemistry I
4. Programme(s) to which it contributes	Bachelor of Pharmacy
5. Modes of Attendance offered	weekly
6. Semester/Year	Second semester/ Third Year
7. Number of hours tuition (total)	48 theoretical + 32 practical
8. Date of production/revision of this specification	1/6/2021
9. Aims of the Course	
1- Enable students to understand the mechanisms of drug action at the molecular level, and the role of medicinal chemistry in the discovery and development of synthetic elements of therapeutic value.	
2- Enable students to understand the relationship between drug composition and efficacy and its application in the design and synthesis of new compounds or derivatives.	

10· Learning Outcomes, Teaching ,Learning and Assessment Method

A- Knowledge and Understanding
A1. Knowledge of organics pharmaceuticals
A2. Knowledge of the way they work
A3. Knowing factors affecting their pharmacological effeteness
A4.
A5.
A6.

B. Subject-specific skills
B1. Teaching the student to differentiate between compounds with acidic or basic properties
B2.
B3.

Teaching and Learning Methods

19- Theoretical lectures
20- Work paper
21- Laboratory activities

Assessment methods

31- Midterm exam
32- Class activity
33- Oral exam
34- Practical exam
35- Final exam

C. Thinking Skills
C1. Ability to interact with sources and references.
C2. The ability to identify organic pharmaceutical compounds.
C3. Ability to know the sites of breakdown and metabolism of pharmaceutically active organic compounds.
C4. The ability to understand the mechanism of action of each chemical compound in pharmaceutical form.
C5. The ability to conclude and compare the effectiveness and position of each medicinal compound within the biological system.

D. General and Transferable Skills (other skills relevant to employability and personal development)
D1. Ability to deal with various chemical compounds and know the useful ones.
D2. Correct identification of active groups with therapeutic effect in each compound.
work.
D3. Develop a spirit of cooperation and teamwork.

11. Course Structure

Week	Hours	ILOs	Unit/Module orTopic Title	Teaching Method	Assessment Method
1	3	Learn about drug distribution	Drug distribution.	Lectures	Exam + Activities
2	3	Learn about the acidic and basic properties	Acid- base properties.	Lectures	Exam + Activities
3	3	Understand the statistical calculations of drug efficacy	Statistical prediction of pharmacological activity.	Lectures	Exam + Activities
4	3	A study of the quantitative relationship between drug design and its efficacy	QSAR models.	Lectures	Exam + Activities
5	3	Molecular drug design	Molecular modeling (Computer aided drug design).	Lectures	Exam + Activities
6	3	Recognize the drug's interaction with its receptors and the bonds involved	Drug receptor interaction: force involved.	Lectures	Exam + Activities
7	3	Understand the properties of stereotactic drugs	Steric features of drugs.	Lectures	Exam + Activities
8	3	To identify the biological efficacy of the drug and its relationship with other analogues	Optical isomerism and biological activity.	Lectures	Exam + Activities
9	3	Identifying drug analogues by mathematical methods	Calculated conformation.	Lectures	Exam + Activities
10	3	Recognize the information derived from studying the quantitative relationship between drug design and its efficacy	Three- dimensional quantitative structure activity relationships and databases.	Lectures	Exam + **Activities**
11	3	Understanding the term Isosterism of drugs	Isosterism.	Lectures	Exam + Activities
12	3	Identify drug interactions with its receptors and the factors affecting them	Drug-receptor interaction and subsequent events.	Lectures	Exam + Activities
13	3	Identify the ways of metabolizing drugs and the reality of changing them into ineffective compounds	General pathways of drug metabolism: Sites of drug biotransformation;	Lectures	Exam + Activities
14	3	Knowledge of the enzymes involved in the metabolism of drugs and the most important of them.	Role of cytochrome P450 mono-oxygenases in oxidative biotransformation; reductive reaction	Lectures	Exam + Activities
15	3	Identify the methods of drug metabolism by decomposition reactions and the second stage of the biological changes of drugs	Hydrolytic reactions; Phase II reactions.	Lectures	Exam + Activities
16	3	Identify the methods of drug metabolism by decomposition reactions and the second stage of the biological changes of drugs	Hydrolytic reactions; Phase II reactions.	Lectures	Exam + Activities

12. Infrastructure

Required reading: · CORE TEXTS · COURSE MATERIALS · OTHER	*** Wilson and Gisvold Textbook of Organic medicinal and Pharmaceutical chemistry, Delgado JN, Remers WA, (Eds); 10th ed, 2004WA**
Special requirements (include for example workshops, periodicals, IT software, websites)	
Community-based facilities (include for example, guest Lectures , internship , field studies)	• Hosting professors from other universities to teach some lectures as a matter of scientific cooperation. • Show some explanatory videos for some important topics

HIGHER EDUCATION PERFORMANCE REVIEW: PROGRAMME REVIEW

COURSE SPECIFICATION

This Course Specification provides a concise summary of the main features of the course and the learning outcomes that a typical student might reasonably be expected to achieve and demonstrate if he/she takes full advantage of the learning opportunities that are provided. It should be cross-referenced with the programme specification.

1. Teaching Institution	Ministry of Higher Education and Scientific Research / University of Anbar
2. University Department/Centre	College of Pharmacy
3. Course title/code	Organic Pharmaceutical Chemistry II
4. Programme(s) to which it contributes	Bachelor of Pharmacy
5. Modes of Attendance offered	weekly
6. Semester/Year	First semester/ FourthYear
7. Number of hours tuition (total)	48 theoretical + 32 practical
8. Date of production/revision of this specification	1/6/2021
9. Aims of the Course	
1- Providing students with basic and important information to know the nature of the drug's action inside the body and its relationship to the chemical composition of treatment, as well as enabling them to discover and develop new drugs to treat diseases.	
2- It also enables them to translate the structural formula of the drug into a medicinal effect.	
3- In addition, it focuses on the methods of preparing some suitable pharmaceutical treatments, classifying organic compounds according to their biological efficacy.	

10· Learning Outcomes, Teaching ,Learning and Assessment Method

A- Knowledge and Understanding

A1. Knowledge of the mechanisms and methods of drug action inside the body.

A2. Enabling students to link the relationship between drug action and its chemical composition.

A3. Identify the effects of drugs on body systems and vice versa.

B. Subject-specific skills

B1. The student learned the basic skills to link the biological effectiveness with the chemical composition of the drug, as well as to find a close chemical relationship between a group of compounds with the same biological activity, as well as to derive the biological activity of some organic compounds.

Teaching and Learning Methods

22- Theoretical lectures
23- Work paper
24- Laboratory activities

Assessment methods

36- Midterm exam
37- Class activity
38- Oral exam
39- Practical exam
40- Final exam

C. Thinking Skills

C1. Ability to interact with sources and references.

C2. The ability to distinguish between different compounds with the same biological activity and the ability to find common factors that bind compounds to give the same medicinal effect.

C3. The ability to link the results of the effectiveness of some organic compounds and their relationship with each other and study the effect of adding or deleting some active groups of the main active compounds.

D. General and Transferable Skills (other skills relevant to employability and personal development)

D1.The ability to deal with medicines and organic compounds in the correct scientific manner.

D2. Experience and ability to study and discover new medicines to treat many incurable diseases.

D3. The ability to discover new ways to manufacture bioactive compounds useful for humans.

11. Course Structure

Week	Hours	ILOs	Unit/Module orTopic Title	Teaching Method	Assessment Method
1	3	Knowing the parasympathetic system and its effect on the body.	Cholinergic agents, cholinergic receptors and their subtypes.	Lectures	Exam + Activities
2	3	Learn all the concepts related to the study of the chemical properties of compounds that affect the stimulation of the parasympathetic system.	Cholinergic agonists; stereochemistry and structure-activity relationships (SAR);	Lectures	Exam + Activities
3	3	Cholinesterase inhibitors study	Products; cholinesterase inhibitors.	Lectures	Exam + Activities
4	3	Learn all the concepts related to studying the chemical properties of compounds that affect the inhibition of the parasympathetic system.	Cholinergic blocking agent; structure-activity relationships (SAR); Solanaceous alkaloid and analogues; synthetic cholinergic blocking agents	Lectures	Exam + Activities
5	3	Compounds that affect striated muscles.	Products; ganglionic blocking agents (neuromuscular blocking agents).	Lectures	Exam + Activities
6	3	Learn all the concepts related to the study of the chemical character of opium compounds and the ways of their effect on the human body.	Analgesic agents (SAR of morphine, SAR of meperidine type molecules; SAR of methadone type compounds; N-methylbezomorphans, antagonist type analgesics in benzomorphans).	Lectures	Exam + Activities
7	3	Learn all the concepts related to the study of the chemical character of opium compounds and the ways of their effect on the human body.	Analgesic agents (SAR of morphine, SAR of meperidine type molecules; SAR of methadone type compounds; N-methylbezomorphans, antagonist type analgesics in benzomorphans).	Lectures	Exam + Activities
8	3	Identify the opiate receptors inside the body and their analgesic effect on pain.	Analgesic receptors, endogenous opioids; Products; Antitusive agents; Anti-inflammatory analgesics.	Lectures	Exam + Activities
9	3	Identify the opiate receptors inside the body and their analgesic effect on pain.	Analgesic receptors, endogenous opioids; Products; Antitusive agents; Anti-inflammatory analgesics.	Lectures	Exam + Activities
10	3	Knowing the sympathetic system and its effect on the body.	Adrenergic agents (Adrenergic neurotransmitters); Adrenergic receptors; Drugs affecting Adrenergic neurotransmission;	Lectures	Exam + **Activities**
11	3	Study of the chemical properties of compounds that affect the stimulation or inhibition of the sympathetic system.	Sympathomimetic agents; Adrenergic receptor antagonists.	Lectures	Exam + Activities
12	3	Knowing the central nervous system and studying its depressants as treatments for epilepsy, psychological conditions or muscle relaxants.	CNS depressant; Benzodiazepines and related compounds; Barbiturates; CNS depressant with skeletal muscle relaxant properties; Antipsycotics; Anticonvulsants.	Lectures	Exam + Activities
13	3	Knowing the central nervous system and studying its depressants as treatments for epilepsy, psychological conditions or muscle relaxants.	CNS depressant; Benzodiazepines and related compounds; Barbiturates; CNS depressant with skeletal muscle relaxant properties; Antipsycotics; Anticonvulsants.	Lectures	Exam + Activities
14	3	Knowing the central nervous system and studying its stimulants.	CNS Stimulants	Lectures	Exam + Activities
15	3	Study of steroidal and non-steroidal anti-inflammatory drugs and their medical benefits.	Steroidal & nonsteroidal hormones	Lectures	Exam + Activities
16	3	Study of steroidal and non-steroidal anti-inflammatory drugs and their medical benefits	Steroidal & nonsteroidal hormones	Lectures	Exam + Activities

12. Infrastructure

Required reading: · CORE TEXTS · COURSE MATERIALS · OTHER	Reference text: Wilson and Gisvold Textbook of Organic Medicinal and Pharmaceu Delgado JN, Remers WA, (Eds.); 1٢th ed., 20١٠. Beale, John M. , Block, John H. Publisher: Lippincott Williams & Wilkins (Mar. 31st, 2010) An Introduction to Medicinal Chemistry FIFTH EDITION 2013 Graham L. Patrick Great Clarendon Street, Oxford
Special requirements (include for example workshops, periodicals, IT software, websites)	
Community-based facilities (include for example, guest Lectures , internship , field studies)	• Hosting professors from other universities to teach some lectures as a matter of scientific cooperation. • Show some explanatory videos for some important topics

HIGHER EDUCATION PERFORMANCE REVIEW: PROGRAMME REVIEW

COURSE SPECIFICATION

This Course Specification provides a concise summary of the main features of the course and the learning outcomes that a typical student might reasonably be expected to achieve and demonstrate if he/she takes full advantage of the learning opportunities that are provided. It should be cross-referenced with the programme specification.

1. Teaching Institution	Ministry of Higher Education and Scientific Research / University of Anbar
2. University Department/Centre	College of Pharmacy
3. Course title/code	Organic Pharmaceutical Chemistry III
4. Programme(s) to which it contributes	Bachelor of Pharmacy
5. Modes of Attendance offered	weekly
6. Semester/Year	Second semester/ Fourth Year
7. Number of hours tuition (total)	48 theoretical + 32 practical
8. Date of production/revision of this specification	1/6/2021
9. Aims of the Course	
1- Providing students with basic and important information to know the nature of drug action inside the body and its relationship to the chemical composition of treatment, as well as enabling them to discover and develop new drugs to treat diseases.	
2- It also enables them to translate the structural formula of the drug into a medicinal effect.	
3- In addition, it focuses on the methods of preparing some suitable pharmaceutical treatments, classifying organic compounds according to their biological efficacy.	

10· Learning Outcomes, Teaching ,Learning and Assessment Method

A- Knowledge and Understanding

A1. Knowledge of the mechanisms and methods of drug action inside the body.

A2. Enabling students to link the relationship between drug action and its chemical composition.

A3. Identify the effects of drugs on body systems and vice versa.

B. Subject-specific skills

B1. The student learned the basic skills to link the biological effectiveness with the chemical composition of the drug, as well as to find a close chemical relationship between a group of compounds with the same biological activity, as well as to derive the biological activity of some organic compounds.

Teaching and Learning Methods

25- Theoretical lectures
26- Work paper
27- Laboratory activities

Assessment methods

41- Midterm exam
42- Class activity
43- Oral exam
44- Practical exam
45- Final exam

C. Thinking Skills

C1. Ability to interact with sources and references.

C2. The ability to distinguish between different compounds with the same biological activity and the ability to find common factors that bind compounds to give the same medicinal effect.

C3. The ability to link the results of the effectiveness of some organic compounds and their relationship with each other and study the effect of adding or deleting some active groups of the main active compounds.

D. General and Transferable Skills (other skills relevant to employability and personal development)

D1.The ability to deal with medicines and organic compounds in the correct scientific manner.

D2. Experience and ability to study and discover new medicines to treat many incurable diseases.

D3. The ability to discover new ways to manufacture bioactive compounds useful for humans.

11. Course Structure

Week	Hours	ILOs	Unit/Module orTopic Title	Teaching Method	Assessment Method
1	3	Learn about antibiotics and how to make them. Study of penicillins, cephalosporins and monobactam.	β-Lactam antibiotics (Penicillins); β-Lactamase inhibitors; Cephalosporins and Monobactams.	Lectures	Exam + Activities
2	3	Learn about antibiotics and how to make them. Study of penicillins, cephalosporins and monobactam	β-Lactam antibiotics (Penicillins); β-Lactamase inhibitors; Cephalosporins and Monobactams.	Lectures	Exam + Activities
3	3	Learn about antibiotics and how to make them. Study of penicillins, cephalosporins and monobactam	β-Lactam antibiotics (Penicillins); β-Lactamase inhibitors; Cephalosporins and Monobactams.	Lectures	Exam + Activities
4	3	Learn about antibiotics and how to make them. Study of aminoglycosides, tetracyclines, lincomycins and polypeptides, as well as study of antivirals and their methods of action and classification.	Aminoglycosides and Chloramphenicol; Tetracylines; Macrolides; Lincomycins and Polypeptides; Antiviral agents (properties of viruses, viral classification, products).	Lectures	Exam + Activities
5	3	Learn about antibiotics and how to make them. Study of aminoglycosides, tetracyclines, lincomycins and polypeptides, as well as study of antivirals, methods of action and classification.	Aminoglycosides and Chloramphenicol; Tetracylines; Macrolides; Lincomycins and Polypeptides; Antiviral agents (properties of viruses, viral classification, products).	Lectures	Exam + Activities
6	3	Learn about antibiotics and how to make them. Study of aminoglycosides, tetracyclines, lincomycins and polypeptides, as well as study of antivirals, methods of action and classification.	Aminoglycosides and Chloramphenicol; Tetracylines; Macrolides; Lincomycins and Polypeptides; Antiviral agents (properties of viruses, viral classification, products).	Lectures	Exam + Activities
7	3	Identifying antibiotics and their manufacturing methods, such as sulfonamide (Sulfa), methods of naming them, mode of action, toxicity and bacterial resistance to them.	Sulfonamides (chemistry, nomenclature, mechanism of action, resistance, toxicity, side effects, metabolism, protein binding, distribution and SAR); products; Sulfones.	Lectures	Exam + Activities
8	3	Identify and classify anti-cancer agents and their modes of action, such as alkyl drugs, anti-metabolites, and antibiotics, as well as plant extracts.	Anti-neoplastic agents: Alkylating agents; Antimetabolites; Antibiotics; Plant products; Miscellaneous compounds.	Lectures	Exam + Activities
9	3	Identify and classify anti-cancer agents and their modes of action, such as alkyl drugs, anti-metabolites, and antibiotics, as well as plant extracts.	Anti-neoplastic agents: Alkylating agents; Antimetabolites; Antibiotics; Plant products; Miscellaneous compounds.	Lectures	Exam + Activities
10	3	Identify and classify anti-cancer agents and their modes of action, such as alkyl drugs, anti-metabolites, and antibiotics, as well as plant extracts.	Anti-neoplastic agents: Alkylating agents; Antimetabolites; Antibiotics; Plant products; Miscellaneous compounds.	Lectures	Exam + **Activities**
11	3	Identify and classify anti-cancer agents and their modes of action, such as alkyl drugs, anti-metabolites, and antibiotics, as well as plant extracts.	Anti-neoplastic agents: Alkylating agents; Antimetabolites; Antibiotics; Plant products; Miscellaneous compounds.	Lectures	Exam + Activities

12	3	Identify and classify anti-cancer agents and their modes of action, such as alkyl drugs, anti-metabolites, and antibiotics, as well as plant extracts.	Anti-neoplastic agents: Alkylating agents; Antimetabolites; Antibiotics; Plant products; Miscellaneous compounds.	Lectures	Exam + Activities
13	3	Identify and classify anti-cancer agents and their modes of action, such as alkyl drugs, anti-metabolites, and antibiotics, as well as plant extracts.	Anti-neoplastic agents: Alkylating agents; Antimetabolites; Antibiotics; Plant products; Miscellaneous compounds.	Lectures	Exam + Activities
14	3	Identify and classify anti-cancer agents and their modes of action, such as alkyl drugs, anti-metabolites, and antibiotics, as well as plant extracts.	Anti-neoplastic agents: Alkylating agents; Antimetabolites; Antibiotics; Plant products; Miscellaneous compounds.	Lectures	Exam + Activities
15	3	The study of hormones and their use for cancer treatment, and the last study of modern anti-cancer agents such as monoclonal antibody.	Hormones and related compounds; Future anti-neoplastic agents; Monoclonal antibodies; Gene therapy of cancer.	Lectures	Exam + Activities
16	3	The study of hormones and their use for cancer treatment, and the last study of modern anti-cancer agents such as monoclonal antibody.	Hormones and related compounds; Future anti-neoplastic agents; Monoclonal antibodies; Gene therapy of cancer.	Lectures	Exam + Activities

12. Infrastructure	
Required reading: · CORE TEXTS · COURSE MATERIALS · OTHER	Reference text: Wilson and Gisvold Textbook of Organic Medicinal and Pharmaceu Delgado JN, Remers WA, (Eds.); 1٢th ed., 20١٠. Beale, John M. , Block, John H. Publisher: Lippincott Williams & Wilkins (Mar. 31st, 2010) An Introduction to Medicinal Chemistry FIFTH EDITION 2013 Graham L. Patrick Great Clarendon Street, Oxford
Special requirements (include for example workshops, periodicals, IT software, websites)	
Community-based facilities (include for example, guest Lectures , internship , field studies)	• Hosting professors from other universities to teach some lectures as a matter of scientific cooperation. • Show some explanatory videos for some important topics

TEMPLATE FOR COURSE SPECIFICATION

HIGHER EDUCATION PERFORMANCE REVIEW: PROGRAMME REVIEW

COURSE SPECIFICATION

This Course Specification provides a concise summary of the main features of the course and the learning outcomes that a typical student might reasonably be expected to achieve and demonstrate if he/she takes full advantage of the learning opportunities that are provided. It should be cross-referenced with the programme specification.

1. Teaching Institution	Ministry of Higher Education and Scientific Research / University of Anbar
2. University Department/Centre	College of Pharmacy
3. Course title/code	Organic Pharmaceutical Chemistry IV
4. Programme(s) to which it contributes	Bachelor of Pharmacy
5. Modes of Attendance offered	weekly
6. Semester/Year	First semester/ Fifth Year
7. Number of hours tuition (total)	32 theoretical
8. Date of production/revision of this specification	1/6/2021
9. Aims of the Course	
1- Providing students with basic and important information to know the nature of the drug's action inside the body and its relationship to the chemical composition of treatment, as well as enabling them to discover and develop new drugs to treat diseases through the use of Prodrag technology as a way to reduce drug problems and increase its effectiveness	
2- The use of modern manufacturing methods such as combinatorial chemistry as a way to manufacture pharmaceutical compounds in huge numbers in less time and superior quality	
3- Classification of organic compounds according to their biological activity using	

computer techniques to discover new pharmaceutical compounds by using advanced computer programs.

10· Learning Outcomes, Teaching ,Learning and Assessment Method

A- Knowledge and Understanding

A1. Knowledge of the mechanisms and methods of drug action inside the body, as well as enabling students to link the relationship between drug action and its chemical composition and the impact of changing some effective groups to improve drug action

A2. Identifying the side effects of drugs on the body's systems and how to reduce them by converting the drug to Prodrag

B. Subject-specific skills

B1. The student learned the basic skills to link the biological effectiveness with the chemical composition of the drug, as well as to find a chemical means to improve the effectiveness of a group of compounds with the same biological activity and how to reduce their negative effects and increase their biological activity, as well as to elicit the biological activity of some organic compounds.

Teaching and Learning Methods

28- Theoretical lectures
29- Work paper

Assessment methods

46- Midterm exam
47- Class activity
48- Oral exam
49- Final exam

C. Thinking Skills

C1. Ability to interact with sources and references.

C2. The ability to distinguish between different compounds with the same biological activity and the ability to find the determinants of the action of the drug and how to improve the work of the drug inside the body.

C3. The ability to link the results of the effectiveness of some organic compounds and their relationship with each other and study the effect of adding or deleting some active groups of the main active compounds.

D. General and Transferable Skills (other skills relevant to employability and personal development)

D1.The ability to deal with medicines and organic compounds in the correct scientific manner.

D2. Experience and ability to study and discover new medicines to treat many incurable diseases.

D3. The ability to discover new ways to manufacture bioactive compounds useful for humans.

11. Course Structure

Week	Hours	ILOs	Unit/Module orTopic Title	Teaching Method	Assessment Method
1	2	Understand the concept of prodrag and study the types of prodrag, their classification and benefits.	Basic concept of prodrugs; Covalent bonds (cleavable); Prodrugs of functional groups; Types of prodrugs.	Lectures	Exam + Activities
2	2	Understand the concept of prodrag and study the types of prodrag, their classification and benefits.	Basic concept of prodrugs; Covalent bonds (cleavable); Prodrugs of functional groups; Types of prodrugs.	Lectures	Exam + Activities
3	2	Understand the concept of prodrag and study the types of prodrag, their classification and benefits.	Basic concept of prodrugs; Covalent bonds (cleavable); Prodrugs of functional groups; Types of prodrugs.	Lectures	Exam + Activities
4	2	Identify the chemical drug delivery system responsible for delivering the drug to its workplace in the correct manner, as well as studying the use of polymers in the Prodrag technique	Chemical delivery systems; Polymeric prodrugs; Types and structure of polymers; Cross-linking reagents.	Lectures	Exam + Activities
5	2	Identify the chemical drug delivery system responsible for delivering the drug to its workplace in the correct manner, as well as studying the use of polymers in the Prodrag technique	Chemical delivery systems; Polymeric prodrugs; Types and structure of polymers; Cross-linking reagents.	Lectures	Exam + Activities
6	2	Identify the chemical drug delivery system responsible for delivering the drug to its workplace in the correct manner, as well as studying the use of polymers in the Prodrag technique	Chemical delivery systems; Polymeric prodrugs; Types and structure of polymers; Cross-linking reagents.	Lectures	Exam + Activities
7	2	Recognize and understand modern drug delivery methods.	Drug targeting.	Lectures	Exam + Activities
8	2	Recognize and understand modern drug delivery methods.	Drug targeting.	Lectures	Exam + Activities
9	2	Understand how a research project works	Project.	Lectures	Exam + Activities
10	2	Understand how a research project works	Project.	Lectures	Exam + **Activities**
11	2	Study of combinatorial chemistry and its use in the manufacture of peptides as well as studying and understanding drug discovery methods.	Combinatorial chemistry; Peptides and other linear structures; Drug like molecules; Support and linker; Solution-phase combinatorial chemistry.	Lectures	Exam + Activities
12	2	Study of combinatorial chemistry and its use in the manufacture of peptides as well as studying and understanding drug discovery methods.	Combinatorial chemistry; Peptides and other linear structures; Drug like molecules; Support and linker; Solution-phase combinatorial chemistry.	Lectures	Exam + Activities
13	2	Study of combinatorial chemistry and its use in the manufacture of peptides as well as studying and understanding drug discovery methods.	Combinatorial chemistry; Peptides and other linear structures; Drug like molecules; Support and linker; Solution-phase combinatorial chemistry.	Lectures	Exam + Activities
14	2	Classification of organic compounds according to their biological activity using computer techniques to discover new pharmaceutical compounds by using advanced computer programs.	Detection, purification and analgesics; Encoding combinatorial libraries; High-throughput screening; Virtual screening; Chemical diversity and library design.	Lectures	Exam + Activities

15	2	Classification of organic compounds according to their biological activity using computer techniques to discover new pharmaceutical compounds by using advanced computer programs.	Detection, purification and analgesics; Encoding combinatorial libraries; High-throughput screening; Virtual screening; Chemical diversity and library design.	Lectures	Exam + Activities
16	2	Classification of organic compounds according to their biological activity using computer techniques to discover new pharmaceutical compounds by using advanced computer programs.	Detection, purification and analgesics; Encoding combinatorial libraries; High-throughput screening; Virtual screening; Chemical diversity and library design.	Lectures	Exam + Activities

12. Infrastructure	
Required reading: · CORE TEXTS · COURSE MATERIALS · OTHER	Reference text: Wilson and Gisvold Textbook of Organic Medicinal and Pharmaceu Delgado JN, Remers WA, (Eds.); ١٢th ed., ٢٠١٠. Beale, John M. , Block, John H. Publisher: Lippincott Williams & Wilkins (Mar. 31st, 2010) An Introduction to Medicinal Chemistry FIFTH EDITION 2013 Graham L. Patrick Great Clarendon Street, Oxford
Special requirements (include for example workshops, periodicals, IT software, websites)	
Community-based facilities (include for example, guest Lectures , internship , field studies)	• Hosting professors from other universities to teach some lectures as a matter of scientific cooperation. • Show some explanatory videos for some important topics

TEMPLATE FOR COURSE SPECIFICATION

HIGHER EDUCATION PERFORMANCE REVIEW: PROGRAMME REVIEW

COURSE SPECIFICATION

This Course Specification provides a concise summary of the main features of the course and the learning outcomes that a typical student might reasonably be expected to achieve and demonstrate if he/she takes full advantage of the learning opportunities that are provided. It should be cross-referenced with the programme specification.

1. Teaching Institution	Ministry of Higher Education and Scientific Research
2. University Department/Centre	University of Anbar/ Clinical Lab. Science
3. Course title/code	Medical physics/(**1 1 0 ClM p**)
4. Programme(s) to which it contributes	Courses
5. Modes of Attendance offered	Weekly
6. Semester/Year	Level: 1st Class, 2nd Semester
7. Number of hours tuition (total)	36 hrs theory + 30 hrs practical
8. Date of production/revision of this Specification	10/ 6/ 2021
9. Aims of the Course	
Teaching students the most important scientific foundations of physics and ways to link them to the exact medical aspect and to all fields that serve the student in his work and future research in line with his need as a pharmacist to work in the medical fields.	

10· Learning Outcomes, Teaching ,Learning and Assessment Methode

A- Knowledge and Understanding

- To give students the ability to deal with concepts of physics

B. Subject-specific skills

B1. Lectures by google classroom (power point and Pdf).
B2. Lectures by hangout meeting.
B3. Recorder lectures and download by (you tube) channel.

Teaching and Learning Methods

- Theory lecture.
- Laboratory practices.
- Seminars

Assessment methods

- Midterm Exams.
- Final course exams.
- Quizzes.

C. Thinking Skills

C1. Ability to interact with sources and references
C2.The ability to identify the accuracy and validity of laboratory results obtained
C3.The ability to link the results obtained from laboratory equipment with the vital functions of the human being
C4.The ability to devise new methods of testing to examine samples
C5.The ability to conclude and compare the various results obtained from laboratory equipment

Teaching and Learning Methods

- Theory lecture.
- Laboratory practices.
- Seminars

Assessment methods

1 midterm exam
2 Theoretical exam - 25 marks
3 practical exam - 15 marks
4 daily exam - 5 marks
5 weekly practical reports -5 degrees
6 Final Exam - 50 marks

D. General and Transferable Skills (other skills relevant to employability and personal development)

1.Ability to deal with various analytical problems and find appropriate solutions

2- Correct identification of problems, sorting them and placing them in the correct context

3- Evaluating the laboratory results obtained from the physical devices and knowing their compliance with the medical specialties and finding solutions to the problems that may appear during work.

4- Develop the spirit of cooperation and teamwork.

11. Course Structure

Week	Hours	ILOs	Unit/Module or Topic Title	Teaching Method	Assessment Method
1	2hrs. Theory		General concepts: Method of physics and standards; thermodynamics system and system properties; conservation of energy principle; application of thermodynamics; the Zeroth law.	Theory lectures	Quiz and discussion
2	2hrs. Theory		Pressure; temperature in medicine and temperature scales	Theory lectures	Quiz and discussion
3	2hrs. Theory		Equation of state; ideal gas and real gas; general law of gases. equilibrium and types of equilibrium; compressibility factor, coefficient of volume expansion	Theory lectures	Quiz and discussion
4	2hrs. Theory		Heat and energy; work and mechanical forms of work; power; the 1st law of thermodynamics; Boyles and Charles law; practice exercises.	Theory lectures	Quiz and discussion
5	2hrs. Theory		The 2nd law of thermodynamics; reversible and irreversible process; entropy and enthalpy;	Theory lectures	Quiz and discussion
6	2hrs. Theory		IR &Thermal therapy	Theory lectures	Theory lectures
7	2hrs. Theory		Internal energy; heat capacity and adiabatic process; the relation between pressure, volume, and temperature in adiabatic process.	Theory lectures	Quiz and discussion
8	2hrs. Theory		Fundamental of physics: Kinetic theory of a gas; electromagnetic waves; physical optics.	Theory lectures	Quiz and discussion

9	2hrs. Theory		Radiation effects on human body. Heat transfer	Theory lectures	Quiz and discussion
10	2hrs. Theory		U.V and IR effects; medical and biological effects of radiation; radiotherapy	Theory lectures	Quiz and discussion
11	2hrs. Theory		Production of X-Ray and X-Ray spectra; absorption of X-Ray	Theory lectures	Quiz and discussion
12	2hrs. Theory		General concepts: Method of physics and standards; thermodynamics system and system properties; conservation of energy principle; application of thermodynamics; the Zeroth law.	Theory lectures	Quiz and discussion
13	2hrs. Theory		Pressure; temperature in medicine and temperature scales	Theory lectures	Quiz and discussion
14	2hrs. Theory		Equation of state; ideal gas and real gas; general law of gases. equilibrium and types of equilibrium; compressibility factor, coefficient of volume expansion	Theory lectures	Quiz and discussion
15	2hrs. Theory		Heat and energy; work and mechanical forms of work; power; the 1st law of thermodynamics; Boyles and Charles law; practice exercises.	Theory lectures	Quiz and discussion
16	2hrs. Theory		The 2nd law of thermodynamics; reversible and irreversible process; entropy and enthalpy;	Theory lectures	Quiz and discussion
17	2hrs. Theory		IR &Thermal therapy	Theory lectures	Quiz and discussion
18	2hrs. Theory		Internal energy; heat capacity and adiabatic process; the relation between pressure, volume, and temperature in adiabatic process.	Theory lectures	Quiz and discussion
19	1hrs. Theory		Fundamental of physics: Kinetic theory of a gas; electromagnetic waves; physical optics.	Theory lectures	Theory lectures
20	2hrs. Theory		Radiation effects on human body. Heat transfer	Theory lectures	Quiz and discussion
21	2hrs. Theory		U.V and IR effects; medical and biological effects of radiation; radiotherapy	Theory lectures	Quiz and discussion

12. Infrastructure	
Required reading: · CORE TEXTS · COURSE MATERIALS · OTHER	**Physics for Biology and Medical Students, 2nd ed.**
Special requirements (include for example workshops, periodicals, IT software, websites)	
Community-based facilities (include for example, guest Lectures , internship , field studies)	• Hosting lecturers to teach some lectures as a matter of scientific cooperation • View some videos explaining some important topics

TEMPLATE FOR COURSE SPECIFICATION

HIGHER EDUCATION PERFORMANCE REVIEW: PROGRAMME REVIEW

COURSE SPECIFICATION

This Course Specification provides a concise summary of the main features of the course and the learning outcomes that a typical student might reasonably be expected to achieve and demonstrate if he/she takes full advantage of the learning opportunities that are provided. It should be cross-referenced with the programme specification.

1. Teaching Institution	Ministry of Higher Education and Scientific Research
2. University Department/Centre	University of Anbar/Clinical Lab. Science
3. Course title/code	**Physical pharmacy I (PPp1 218)+ Physical pharmacy II (225 PPp2)**
4. Programme(s) to which it contributes	Courses
5. Modes of Attendance offered	Weekly
6. Semester/Year	Level: 2nd Class, 1st +2nd Semesters
7. Number of hours tuition (total)	(45 hrs theory + 30 hrs practical)+(45hrs theory+ 30 hrs practical)
8. Date of production/revision of this Specification	10/ 6/ 2021
9. Aims of the Course	
Teaching students the most important scientific foundations of physical pharmacy and ways to link it to the exact medical aspect and to all fields that serve the student in his work and future research in line with his need as a pharmacist to work in the medical fields.	

10· Learning Outcomes, Teaching ,Learning and Assessment Method

A- Knowledge and Understanding

- Giving students the ability to deal with the concepts of physical pharmacy

B. Subject-specific skills

- Emphasize the knowledge and skills required to efficiently perform the duties and responsibilities of a pharmacist.

Teaching and Learning Methods

- Theory lecture.
- Laboratory practices.
- Seminars

Assessment methods

- Midterm Exams.
- Final course exams.
- Quizzes.

C. Thinking Skills

C1. Ability to interact with sources and references
C2.The ability to identify the accuracy and validity of laboratory results obtained
C3.The ability to link the results obtained from laboratory equipment with the vital functions of the human being
C4.The ability to devise new methods of testing to examine samples
C5.The ability to conclude and compare the various results obtained from laboratory equipment

Teaching and Learning Methods

- Theory lecture.
- Laboratory practices.
- Seminars

Assessment methods

1 midterm exam
2 Theoretical exam - 25 marks
3 practical exam - 15 marks
4 daily exam - 5 marks
5 weekly practical reports -5 degrees
6 Final Exam - 50 marks

D. General and Transferable Skills (other skills relevant to employability and personal development)

1.Ability to deal with various analytical problems and find appropriate solutions

2- Correct identification of problems, sorting them and placing them in the correct context

3- Evaluating the laboratory results obtained from the physical devices and knowing their compliance with the medical specialties and finding solutions to the problems that may appear during work.

4- Develop the spirit of cooperation and teamwork.

11. Course Structure

Week	Hours	ILOs	Unit/Module or Topic Title	Teaching Method	Assessment Method
1	3hrs. Theory		States of matter, binding forces between molecules, gases, liquids, solid and crystalline matters; phase equilibria and phase rule; thermal analysis	Theory lectures	Quiz and discussion
2	3hrs. Theory		Thermodynamics, first law, thermochemistry, second law, third law, free energy function and applications.	Theory lectures	Quiz and discussion
3	3hrs. Theory		Solutions of non-electrolytes, properties, ideal and real colligative properties, molecular weight determination.	Theory lectures	Quiz and discussion
4	3hrs. Theory		Solution of electrolytes, properties, Arrhenius theory of dissociation theory of strong electrolytes, ionic strength, Debye-Huchle theory, coefficients for expressing colligative properties.	Theory lectures	Quiz and discussion
5	3hrs. Theory		Ionic equilibria, modern theories of acids, bases and salts, acid-base	Theory lectures	Quiz and discussion
6	2hrs. Theory		equilibria, calculation of pH, acidity constants, the effect of ionic strength and free energy.	Theory lectures	Theory lectures
7	3hrs. Theory		Buffered and isotonic solutions: Buffer equation; buffer capacity;	Theory lectures	Quiz and discussion
8	3hrs. Theory		Solubility and distribution phenomena, solvent-solute interactions, solubility of gases in liquids, solubility of	Theory lectures	Quiz and discussion

			liquids in liquids, solubility of non-ionic solids in liquids, distribution of solutes between immiscible solvents.		
9	3hrs. Theory		Complexation, classification of complexes, methods of analysis, thermodynamic treatment of stability constants.	Theory lectures	Quiz and discussion
10	3hrs. Theory		Kinetics, rate and orders of reactions, influence of temperature and other factors on reactions rate, decomposition of medicinal agents and accelerated stability analysis.	Theory lectures	Quiz and discussion
11	3hrs. Theory		Interfacial phenomena, liquid interfaces, surface free energy, measurement of interfacial tension, spreading coefficient, surface active agents and wetting phenomena.	Theory lectures	Quiz and discussion
12	3hrs. Theory		Colloids, dispersed system and its pharmaceutical application, types of colloidal systems, kinetic properties, diffusion, zeta potential, solubilization	Theory lectures	Quiz and discussion
13	3hrs. Theory		Micrometrics, particle size, methods of determining particle size, particle shape and surface area, porosity, density.	Theory lectures	Quiz and discussion
14	3hrs. Theory		Rheology, Newtonian systems, thixotropy measurement, negative thixotropy, determination of thixotropy.	Theory lectures	Quiz and discussion
15	3hrs. Theory		Polymer science, definitions pharmaceutical applications, molecular weight averages.	Theory lectures	Quiz and discussion

12. Infrastructure	
Required reading: · CORE TEXTS · COURSE MATERIALS · OTHER	**Physical Pharmacy by Alfred Martin et al**

Special requirements (include for example workshops, periodicals, IT software, websites)	
Community-based facilities (include for example, guest Lectures , internship , field studies)	• Hosting lecturers to teach some lectures as a matter of scientific cooperation • View some videos explaining some important topics

TEMPLATE FOR COURSE SPECIFICATION

HIGHER EDUCATION PERFORMANCE REVIEW: PROGRAMME REVIEW

COURSE SPECIFICATION

This Course Specification provides a concise summary of the main features of the course and the learning outcomes that a typical student might reasonably be expected to achieve and demonstrate if he/she takes full advantage of the learning opportunities that are provided. It should be cross-referenced with the programme specification.

1. Teaching Institution	University of anbar
2. University Department/Centre	College of Pharmacy
3. Course title/code	(ClPy 334)
4. Programme(s) to which it contributes	Courses
5. Modes of Attendance offered	Weekly
6. Semester/Year	Level: 3rd Class, 1st semester
7. Number of hours tuition (total)	66hrs (36hrs Theory +30hrs practical)
8. Date of production/revision of this Specification	1-6-2021
9. Aims of the Course	
Objectives: To give the students theoretical and practical information of pathophysiology To study the pathophysiological structure of the human body. It is meant primarily to give the student a foundation for advanced study in health care, physiology, pathology, and other fields related to health and fitness. To learn students how determine the source of disses At the end of the course the student should be familiar with the histopathological description of the human	

10· Learning Outcomes, Teaching ,Learning and Assessment Methode

A- Knowledge and Understanding
A1. To study principle of histology
A2. To study structural features of human body
A3. To know the fine structures of organs
A4. To study the function of organs
A5. Explain how to use microscope to identify the structures and magnification
A6 . to learn the normal tissues and compare it with histopathology

B. Subject-specific skills
B1. Lectures by meeting
B2. Recorder lectures and download u-tube channel
B3. download by google classroom (power point and Pdf

Teaching and Learning Methods

Theoretical lecture. • Laboratory practices. • Seminars.

Assessment methods

Midterm Exams.
Quizzes
Course exam
Oral exam
Written exam

C. Thinking Skills
C1 resolve the problem
C3. Ability to be leader
C4. Create scientific competition between students

Teaching and Learning Methods

Theoretical lecture. • Laboratory practices. • Seminars

Assessment methods

Midterm Exams.
Quizzes
Course exam

D. General and Transferable Skills (other skills relevant to employability and personal development)
D1. Initiate students to attends workshops inside and outside of college
D2.
D3.
D4.

11. Course Structure

Week	Hours	ILOs	Unit/Module orTopic Title	Teaching Method	Assessment Method
1	1.	Introduction	Introduction	Practical lectures	Quiz and discussion
2	6hrs		**Disorders of respiratory system: Pneumonias; Tuberculosis; Respiratory distress syndrome; Bronchial asthma; Emphysema and bronchiectasis; Cystic fibrosis; Pulmonary embolism; Pulmonary hypertension**	Practical lectures	Quiz and discussion
3	4hrs.		**Disorders of electrolytes and water and acid–base balances: Hyper andHyponatremia; Hyper and Hypokalemia; Syndrome of inappropriate secretion of ADH; Diabetes insipidus; Metabolic acidosis and alkalosis; Respiratory acidosis and alkalosis.**	practical lectures	Quiz and discussion
4	4hrs		**Disorders of cardiovascular system: Hyperemia; Congestion and edema.Thrombosis; embolism and infarction; Shock; Coronary heart disease and MI; Rheumatic heart disease; Heart failure; Acute pulmonary edema; Essential hypertension; Secondary hypertension; Malignant hypertension; Hypotension; Aneurysm versus varicose veins;**	Practical lectures	Quiz and discussion
5	3hrs.		**. Disorders of respiratory system: Pneumonias; Tuberculosis; Respiratory distress syndrome; Bronchial asthma; Emphysema and bronchiectasis; Cystic fibrosis; Pulmonary embolism; Pulmonary hypertension**	practical lectures	Quiz and discussion
6	4hrs		**Disorders of the renal system: Nephrotic syndrome; Glomerulonephritis; Diabetic glomerulosclerosis;**	Practicallecture	Quiz and discussion

			Hypertensive glomerular disease; Pyelonephritis; Drug related nephropathies; Acute renal failure; Chronic renal failure.		
7 `	4hrs.		Disorders of GI and hepatobiliary systems: Peptic ulcer and Zollinger Ellison syndrome; Irritable bowel syndrome; Crohn's disease; Diarrhea; Celiac disease; Viral hepatitis; Primary biliary cirrhosis; Liver failure; Cholelithiasis	P. lectures	Quiz and discussion
8	2hrs		**Disorders of thyroid function: Hypothyroidism.Hyperthyroidism. Graves's disease.Thyrotoxicosis**	P. lectures	Quiz and discussion
9	2hrs		**. Disorders of adrenal function: Cushing syndrome. Adrenal cortical insufficiency (primary and secondary). Congenital adrenal hyperplasia. Pheochromocytoma**	P. lectures	Quiz and discussion
10	2hrs		**Diabetes mellitus and metabolic syndrome; Dyslipoproteinemia**	P. lectures	Quiz and discussion

12. Infrastructure	
Required reading: · CORE TEXTS · COURSE MATERIALS · OTHER	□ Essentials in Pathophysiology by: Carol Mattson Porth 2nd Ed.
Special requirements (include for example workshops, periodicals, IT software, websites)	Pharmacy
Community-based facilities (include for example, guest Lectures , internship , field studies)	Community services (clinical laboratory and pharma in factory

TEMPLATE FOR COURSE SPECIFICATION

HIGHER EDUCATION PERFORMANCE REVIEW: PROGRAMME REVIEW

COURSE SPECIFICATION

This Course Specification provides a concise summary of the main features of the course and the learning outcomes that a typical student might reasonably be expected to achieve and demonstrate if he/she takes full advantage of the learning opportunities that are provided. It should be cross-referenced with the programme specification.

1. Teaching Institution	University of Anbar
2. University Department/Centre	College of Pharmacy
3. Course title/code	2nd stage Medical Virology and Parasitology - 2nd Course / 223 PcOc3
4. Programme(s) to which it contributes	Courses
5. Modes of Attendance offered	Weekly
6. Semester/Year	Level: 1st Class, 2nd Semester
7. Number of hours tuition (total)	45 hours
8. Date of production/revision of this Specification	1-6-2021
9. Aims of the Course: Providing students with scientific and applied information in the following fields.	
Objectives: 1-An overview of viruses, parasites, medical immunity and defining concepts about these microorganisms 2- Sources of these materials 3- Types of viruses, pathogenic parasites, and components of the immune system 4- Classification and division of these microorganisms 5- Classification of diseases caused by these pathogens depending on their clinical nature 6- Scientific terminology of living organisms and methods of their classification 7- Methods of diagnosing these pathogens 8- Knowing the clinical and pathological symptoms of these organisms 9- Understanding the mechanism of injury and human pathological events 10- Knowing the drugs used against these pathogens	

10· Learning Outcomes, Teaching ,Learning and Assessment Method

To provide the student with knowledge of the pathogenesis, morphology, laboratory diagnosis, identification, pathology, and clinical features of medically important parasitic and viral diseases and the basic concepts of immunizing procedure against these diseases.
1- Understand the basic principles of virology, parasitology and immunology.
2- Identify important characteristics such as vectors and infection methods.
3- Identify the pathways and paths of infection and how infection and injury occur.
4- Identify methods for diagnosing these pathogens.
5- Learn about treatment and prevention methods
6- Get to know the latest and best medicines for treatment

B. Subject-specific skills : E-learning on campus (using the Internet) + Student groups
B1. Lectures by hangout meeting
B2. Recorder lectures and download by Youtube channel
B3. Lectures by Google classroom (Power point and PDF)

Teaching and Learning Methods

E-learning on campus (using the Internet) + Student groups

Theoretical lecture. • Practical lecture (Laboratory) • Seminars and Small teaching group.

Assessment methods

Midterm Exams.
Theoretical and practical quizzes Course exam
Oral exam
Written exam and reports

C. Thinking Skills

C1 resolve the problem
C3. Ability to be leader
C4. Create scientific competition between students

Teaching and Learning Methods

Theoretical lecture. • Laboratory practices. • Seminars

Assessment methods

Midterm Exams.
Quizzes
Course exam

D. General and Transferable Skills (other skills relevant to employability and personal development)

D1. Initiate students to attends workshops inside and outside of college

D2.

D3.

D4.

11. Course Structure

Week	Hours	ILOs	Unit/Module orTopic Title	Teaching Method	Assessment Method
1	2hrs. Theoretical	Definition	Introduction of medical parasitology	Theoretical lectures	Quiz and discussion
2	5hr. Theoretical	Definition	Intestinal protozoa (Amoeba, Balantidium, Giardia, Chilomastix)	Theoretical lectures	Quiz and discussion
3	4hrs. Theoretical	Definition	Haemoflagellates: Leshmania spp.; Trypanosome spp.	Theoretical lectures	Quiz and discussion
4	4hrs. Theoretical	-Conducting portion (Nose, Nasopharynx, Trachea Bronchus & Bronchioles).	Sporozoa: Malarial parasites of human; Toxoplasma.	Theoretical lectures	Quiz and discussion
5	8hrs. Theoretical	-General structure of the digestive tract (GIT) (Oral cavity, Mouth, Esophagus & Stomach)	Helminthes: Classification, Flukes: Hepatic flukes, Blood flukes (Schistosoma spp).Tap worms: Taenia spp., Echinococcus (Hydatid cyst).Nematods: Ascaris, Entrobius.	Theoretical lectures	Quiz and discussion
6	7 hrs. Theoretical	General structure of the pituitary gland - Histophysiologies of the pituitary gland.	Virology: Introduction, Comparison between viruses and bacteria and other microbes; Classification of viruses; Replication; Chemotherapy; *Herpes viridae*; Orthomyxo viruses; Paramyxo viruses; Retro viruses; Hepato	Theoretical lectures	Quiz and discussion

			viruses; Oncogenic viruses.		

12. Infrastructure	
Required reading: · CORE TEXTS · COURSE MATERIALS · OTHER	• **Medical Virology and Parasitology Course number:** ***Animal Agents and Vectors of Human Disease. P.C. Beaver & R.C. Jung; (Latest edition).*** • **Practical Medical Virology and Parasitology,** ***Lab Manual for Practical Virology and Parasitology Adopted by the Department.*** **College of pharmacy / University Baghdad**
Special requirements (include for example workshops, periodicals, IT software, websites)	Pharmacy
Community-based facilities (include for example, guest Lectures , internship , field studies)	Community services (clinical laboratory and pharma in factory

TEMPLATE FOR COURSE SPECIFICATION

HIGHER EDUCATION PERFORMANCE REVIEW: PROGRAMME REVIEW

COURSE SPECIFICATION

This Course Specification provides a concise summary of the main features of the course and the learning outcomes that a typical student might reasonably be expected to achieve and demonstrate if he/she takes full advantage of the learning opportunities that are provided. It should be cross-referenced with the programme specification.

1. Teaching Institution	Ministry of Higher Education and Scientific Research
2. University Department/Centre	University of Anbar
3. Course title/code	Anatomy (108 ClHa)
4. Programme(s) to which it contributes	Courses
5. Modes of Attendance offered	Weekly
6. Semester/Year	Level: 1st Class, 2nd Semester
7. Number of hours tuition (total)	(45 hrs)/ 15 hrs (theory)+ 30 hrs (practice)
8. Date of production/revision of this specification	1/ 6/ 2021
9. Aims of the Course	
1. Providing students with important theoretical information related to the anatomical structure of the human body.	
2. Enabling students to understand the locations and anatomy of the different organs and organs of the human body.	
3. Enabling students to learn the anatomical description of the organs of the human body and the locations of the different organs.	
4. Teaching the student a foundation for advanced study in health care, physiology, pathology, and other fields related to health.	

5. By end of the course, the student should be familiar with the gross anatomical description of the human body.

10· Learning Outcomes, Teaching ,Learning and Assessment Methode

A- Knowledge and Understanding

A1. Study the principle of anatomy
A2. Understand anatomical locations of Various organs and systems of the human body
A3. Knowing the anatomical structure of Various human body.
A4. Study of blood supply, lymphatic drainig and innervation a of Various organs
A5. Study the function of body organs
A6 .

B. Subject-specific skills

B1. Lectures by google classroom (power point and Pdf).
B2. Lectures by hangout meeting.
B3. Recorder lectures and download by (y- tube) channel.

Teaching and Learning Methods

- Theory lecture.
- Laboratory practices.
- Seminars

Assessment methods

- Midterm Exams.
- Final course exams.
- Quizzes.

C. Thinking Skills

C1. Ability to interact with sources and references
C2. The ability to recognize the anatomy of the organs and organs of the body
C3. The ability to perform the correct method of autopsy
C4.

Teaching and Learning Methods

- Theory lecture.
- Laboratory practices.
- Seminars

Assessment methods

- Midterm Exams.
- Final course exams.
- Quizzes.

D. General and Transferable Skills (other skills relevant to employability and personal development)

D1.
D2.
D3.
D4.

11. Course Structure

Week	Hours	ILOs	Unit/Module or Topic Title	Teaching Method	Assessment Method
1	1hrs. Theory	Introduction	General introduction of anatomy	Theory lectures	Quiz and discussion
2	1hrs. Theory	Circulatory system	Location of vascular system (Heart, Arteries, Veins)	Theory lectures	Quiz and discussion
3	1hrs. Theory	Lymphatic system	Location of lymphatic system (Lymphatic capillary)	Theory lectures	Quiz and discussion
4	1hrs. Theory	Lymphoid tissue	location of the (Thymus gland, Spleen & Lymph nodes)	Theory lectures	Quiz and discussion
5	1hrs. Theory	Lymphatic system	Lymphoid nodule (MALT) & Tonsils	Theory lectures	Quiz and discussion
6	1hrs. Theory	Nervous system	Central & Peripheral nervous system by location	Theory lectures	Theory lectures
7	1hrs. Theory	Respiratory system	Conducting portion (Nose, Nasopharynx, Trachea Bronchus & Bronchioles). -Respiratory portion (Lung)	Theory lectures	Quiz and discussion
8	1hrs. Theory	Digestive system	location of different parts of digestive tract (GIT) (Oral cavity, Mouth, Esophagus & Stomach)&Small intestine, Large intestine, Rectum & Anus.	Theory lectures	Quiz and discussion
9	1hrs. Theory	Digestive system	Glands associated with the digestive tract by location (Salivary glands, Pancreas, Liver & Gall bladder).	Theory lectures	Quiz and discussion
10	1hrs. Theory	Endocrine system	Location of the pituitary gland & location of the Adrenal, Thyroid, Parathyroid, Islet of Langerhans & Pineal glands.	Theory lectures	Quiz and discussion
11	1hrs. Theory	Male reproductive system	location of the testes & Excretory genital ducts , Excretory genital glands (Seminal vesicles, Prostate & Cowper's glands)	Theory lectures	Quiz and discussion
12	1hrs. Theory	Female reproductive system	Location of ovary, Oviduct, Uterus & Vagina.	Theory lectures	Quiz and discussion
13	1hrs. Theory	Urinary system	Location of the (kidney & nephrone)&location of the (Ureter,Bladder& Urethra).	Theory lectures	Quiz and discussion

12. Infrastructure	
Required reading: · CORE TEXTS · COURSE MATERIALS · OTHER	* Clinical anatomy by region, 10th ed. 2010, by Richard S. Snell * Principles of Human Anatomy, 13th ed. 2014, by Tortora
Special requirements (include for example workshops, periodicals, IT software, websites)	
Community-based facilities (include for example, guest Lectures , internship , field studies)	• Hosting lecturers to teach some lectures as a matter of scientific cooperation • View some videos explaining some important topics

TEMPLATE FOR COURSE SPECIFICATION

HIGHER EDUCATION PERFORMANCE REVIEW: PROGRAMME REVIEW

COURSE SPECIFICATION

This Course Specification provides a concise summary of the main features of the course and the learning outcomes that a typical student might reasonably be expected to achieve and demonstrate if he/she takes full advantage of the learning opportunities that are provided. It should be cross-referenced with the programme specification.

1. Teaching Institution	University of Anbar
2. University Department/Centre	College of Pharmacy
3. Course title/code	Computer Sciences II (114CICs)
4. Programme(s) to which it contributes	Courses
5. Modes of Attendance offered	Weekly
6. Semester/Year	Level: 2nd Class, 2nd Semester
7. Number of hours tuition (total)	30hrs practical
8. Date of production/revision of this Specification	1-6-2021
9. Aims of the Course	
Objectives: Gives students the ability to deal with the concept of computer science, emphasizes the knowledge and skill required to efficiently discharge the duties and responsibilities of the pharmacist. The course deals with the concept of basic computer and application of it in human life and medical field. Upon completion of the course students will be able to understand the computer terminology and abbreviations used to describe the lecture, and the application programming languages. Microsoft Word 2013 is a powerful word processing application. This is a hands-on workshop to help University faculty and staff become more proficient with Microsoft Word in creating and editing documents. Topics covered include: Working with the Ribbon, Accessing available templates, Document formatting, Spell and Grammar checking, Inserting and formatting graphic images, Working	

with page layouts, Using track changes, creating and formatting tables, and Printing a document.

10· Learning Outcomes, Teaching ,Learning and Assessment Methode

A- Knowledge and Understanding

1. This course aims to teach the student about the field of computer leadership.
2. Knowing the methods of dealing with the computer.
3. Teaching this subject aims to prepare people with the ability to write courses for lessons on computer systems.
4. Develop mental skills to diagnose problems and find solutions.
5. The student knows new skills and new ways of dealing with the computer

B. Subject-specific skills

1. Knowledge skills - remembering.
2. Reminding and analysis skills.
3. Skills of use and development.
4. Lectures by hangout meeting
5. Recorder lectures and download by y tube channel
6. Lectures by google classroom (power point and Pdf

Teaching and Learning Methods

Theoretical lecture. • Laboratory practices. • Seminars.

Assessment methods

Midterm Exams.
Quizzes
Course exam
Oral exam
Written exam

C. Thinking Skills C1 resolve the problem C3. Ability to be leader C4. Create scientific competition between students
Teaching and Learning Methods
Theoretical lecture. • Laboratory practices. • Seminars
Assessment methods
Midterm Exams. Quizzes Course exam

D. General and Transferable Skills (other skills relevant to employability and personal development)

1. Initiate students to attends workshops inside and outside of college

11. Course Structure

Week	Hours	ILOs	Unit/Module orTopic Title	Teaching Method	Assessment Method
1	2hrs. Theoretical	Definition and using	Introduction to Computer	Theoretical+ practical lectures	Quiz and discussion
2	2hr. Theoretical	Definition and using	Computer Components	Theoretical+ practical lectures	Quiz and discussion
3	2hrs. Theoretical	Definition and using	Computers classification	Theoretical+ practical lectures	Quiz and discussion
4	2hrs. Theoretical	Definition and using	Computer Viruses	Theoretical+ practical lectures	Quiz and discussion
5	2hrs. Theoretical	Definition and using	Introduction to Microsoft word 2013	Theoretical+ practical lectures	Quiz and discussion
6	2hrs. Theoretical	Definition and using	Microsoft word 2013 (open, Quick Access Toolbar, Title Bar…)	Theoretical+ practical lectures	Quiz and discussion
7 `	2hrs. Theoretical	Definition and using	Ribbon (Home, pages, Clipboard, Font, Paragraph, Drawing, Editing)	Theoretical+ practical lectures	Quiz and discussion
8	2hrs. Theoretical	Definition and using	Ribbon (INSERT, pages , Tables, Images, Illustration, Apps, Link, Comments, Text, Symbols, Media)	Theoretical+ practical lectures	Quiz and discussion
9	2hrs Theoretical	Definition and using	Ribbon (DESIGN, Themes, Variants, Customize)	Theoretical+ practical lectures	Quiz and discussion
10	2hrs Theoretical	Definition and using	REVIEW, VIEW) Ribbon(	Theoretical+ practical lectures	Quiz and discussion

12. Infrastructure

Required reading: · CORE TEXTS · COURSE MATERIALS · OTHER	1. Computer basics and office applications 2. Microsoft Office - word 2013 3. GCFLearnFree.org
Special requirements (include for example workshops, periodicals, IT software, websites)	Microsoft Office – word 2013 (Application)

Community-based facilities (include for example, guest Lectures , internship , field studies)	Some videos show illustrations of some important topics

TEMPLATE FOR COURSE SPECIFICATION

HIGHER EDUCATION PERFORMANCE REVIEW: PROGRAMME REVIEW

COURSE SPECIFICATION

This Course Specification provides a concise summary of the main features of the course and the learning outcomes that a typical student might reasonably be expected to achieve and demonstrate if he/she takes full advantage of the learning opportunities that are provided. It should be cross-referenced with the programme specification.

1. Teaching Institution	University of anbar
2. University Department/Centre	College of Pharmacy
3. Course title/code	CIHi
4. Programme(s) to which it contributes	Courses
5. Modes of Attendance offered	Weekly
6. Semester/Year	Level: 1st Class, 2nd Semester
7. Number of hours tuition (total)	30hrs Theory +30hrs practical
8. Date of production/revision of this Specification	1-6-2021
9. Aims of the Course	
Objectives: To study the histological and anatomical structure of the human body. It is meant primarily to give the student a foundation for advanced study in health care, physiology, pathology, and other fields related to health and fitness. At the end of the course the student should be familiar with the gross anatomical and the histological description of the human	

10· Learning Outcomes, Teaching ,Learning and Assessment Methode

A- Knowledge and Understanding
A1. To study principle of histology
A2. To study structural features of human body
A3. To know the fine structures of organs
A4. To study the function of organs
A5. Explain how to use microscope to identify the structures and magnification
A6 . to learn the normal tissues and compare it with histopathology

B. Subject-specific skills
B1. Lectures by hangout meeting
B2. Recorder lectures and download by y tube channel
B3 download lectures by classroom (power point and Pdf

Teaching and Learning Methods

Theoretical lecture. • Laboratory practices. • Seminars.

Assessment methods

Midterm Exams.
Quizzes
Course exam
Oral exam
Written exam

C. Thinking Skills
C1 resolve the problem
C3. Ability to be leader
C4. Create scientific competition between students

Teaching and Learning Methods

Theoretical lecture. • Laboratory practices. • Seminars

Assessment methods

Midterm Exams.
Quizzes
Course exam

D. General and Transferable Skills (other skills relevant to employability and personal development)

D1. Initiate students to attends workshops inside and outside of college

D2.

D3.

D4.

11. Course Structure

Week	Hours	ILOs	Unit/Module orTopic Title	Teaching Method	Assessment Method
1	3hrs. Theoretical	the vascular system (Heart wall, Arteries, Veins & Capillaries)	Circulatory system::	Theoretical lectures	Quiz and discussion
2	2hr. Theoretical	Structure & function of the (Thymus gland, Spleen & Lymph nodes)	Lymphoid tissue:	Theoretical lectures	Quiz and discussion
3	3hrs. Theoretical	Central & Peripheral nervous system	Nervous system:	Theoretical lectures	Quiz and discussion
4	3hrs. Theoretical	-Conducting portion (Nose, Nasopharynx, Trachea Bronchus & Bronchioles).	Respiratory system:	Theoretical lectures	Quiz and discussion
5	4hrs. Theoretical	-General structure of the digestive tract (GIT) (Oral cavity, Mouth, Esophagus & Stomach)	Digestive system:	Theoretical lectures	Quiz and discussion
6	4hrs. Theoretical	General structure of the pituitary gland - Histophysiologies of the pituitary gland.	Endocrine system:	Theoretical lectures	Quiz and discussion
7 `	3hrs. Theoretical	-General structure of the testes.	Male reproductive system:	Theoretical lectures	Quiz and discussion
8	3hrs. Theoretical	-General structure of ovary, Oviduct, Uterus & Vagina.	Female reproductive system:	Theoretical lectures	Quiz and discussion
9	3hrs Theoretical	-Structure & Function of the (kidney & nephrone)	Urinary system:	Theoretical lectures	Quiz and discussion
10	2hrs Theoretical	Thick & Thin skin	The skin	Theoretical lectures	Quiz and discussion

12. Infrastructure

Required reading: · CORE TEXTS · COURSE MATERIALS · OTHER	• 1- Basic Histology by Luiz Carlos 11th ed. (2005) 2-Basic Histology by Junqueira TEXT AND ATLAS, 14th ed. (2016) Anthony L. Mescher, PhD Professor of Anatomy and Cell Biology Indiana University School of Medicine Bloomington, Indiana
Special requirements (include for example workshops, periodicals, IT software, websites)	Pharmacy
Community-based facilities (include for example, guest Lectures , internship , field studies)	Community services (clinical laboratory and pharma in factory

TEMPLATE FOR COURSE SPECIFICATION

HIGHER EDUCATION PERFORMANCE REVIEW: PROGRAMME REVIEW

COURSE SPECIFICATION

This Course Specification provides a concise summary of the main features of the course and the learning outcomes that a typical student might reasonably be expected to achieve and demonstrate if he/she takes full advantage of the learning opportunities that are provided. It should be cross-referenced with the programme specification.

1. Teaching Institution	University Of Anbar
2. University Department/Centre	College of Pharmacy
3. Course title/code	
4. Programme(s) to which it contributes	Courses
5. Modes of Attendance offered	Weekly
6. Semester/Year	Level: 5st Class, 2nd Semester
7. Number of hours tuition (total)	60 hrs. (theory + practical)
8. Date of production/revision of this Specification	1-6-2021
9. Aims of the Course	
1 . Studying the structure of the human body.	
2. Identifying the types of cells and their composition, the tissues that make up the human body, in addition to studying the cellular structure, joints, bonds and supporting muscles.	
3. The students are learning the structure and function of the organs that make up the body, in addition to a broad understanding of genomes and inheritance of traits.	

10· Learning Outcomes, Teaching ,Learning and Assessment Method

A- Knowledge and Understanding
A1. To knowledge the deep structure of genomic material
A2. Knowing the fine details of human body
A3. To knowledge the mutations and their types
A4. Students acquire the skill of preparing sample sections in the laboratory and examining them microscopically.

B. Subject-specific skills
B1. Meeting by using Google meet
B2. Home works & Quizzes
B3. Download lectures on google classroom (power points and Pdf)

Teaching and Learning Methods

Theoretical lectures, Reports, sections preparation.

Assessment methods

Midterm Exams.
Quizzes
Course exam
Oral exam
Written exam

C. Thinking Skills
C1 Using online programs
C2. Classrooms

Teaching and Learning Methods

Theoretical lecture. • Reports, practical videos

Assessment methods

Midterm Exams.
Quizzes
Course exam

D. General and Transferable Skills (other skills relevant to employability and personal development)

D1. Initiate students to attends workshops inside and outside of college

D2. Knowing the importance of maintaining public health and how to protect the body from the possibility of transmission of infection while dealing with laboratory models

D3. Proficiency in handling laboratory tools that are used in preparing samples

D4. Develop the spirit of cooperation and teamwork

11. Course Structure

Week	Hours	ILOs	Unit/Module orTopic Title	Teaching Method	Assessment Method
1	2hrs. Theoretical	Biology	Biology	Theoretical lectures	Quiz and discussion
2	2hr. Theoretical	Cell	Cell	Theoretical lectures	Quiz and discussion
3	3hrs. Theoretical	Tissues, bone and cartilages	Tissues, bone and cartilages	Theoretical lectures	Quiz and discussion
4	4hrs. Theoretical	Nervous system (central & peripheral)	Nervous system (central & peripheral)	Theoretical lectures	Quiz and discussion
5	2hrs.	Nutrition	Nutrition	Theoretical lectures	Quiz and discussion
6	2hrs.	Digestive system (Mouth, Esophagus, Stomach)	Digestive system (Mouth, Esophagus, Stomach)	Theoretical lectures	Quiz and discussion
7	1hrs.	Digestive system (intestine)	Digestive system (intestine)	Theoretical lectures	Quiz and discussion
8	3hrs.	Excretory system & respiration	Excretory system & respiration	Theoretical lectures	Quiz and discussion
9	3hrs	Human genetics (chromosomes & semi-lethal genes)	Human genetics (chromosomes & semi-lethal genes)	Theoretical lectures	Quiz and discussion
10	2hrs.	Skin	Skin	Theoretical lectures	Quiz and discussion
11	2hrs.	Circulatory system	Circulatory system	Theoretical lectures	Quiz and discussion
12	3hrs.	Immunity (Inflammation, immunity & the blood , immunity to disease)	Immunity (Inflammation, immunity & the blood , immunity to disease)	Theoretical lectures	Quiz and discussion

12. Infrastructure

Required reading: · CORE TEXTS · COURSE MATERIALS · OTHER	Johnks and Lnglis (eds.), Text Book of Human Biology, latest edition
Special requirements (include for example workshops, periodicals, IT software, websites)	Pharmacy
Community-based facilities (include for example, guest Lectures , internship , field studies)	

TEMPLATE FOR COURSE SPECIFICATION

HIGHER EDUCATION PERFORMANCE REVIEW: PROGRAMME REVIEW

COURSE SPECIFICATION

This Course Specification provides a concise summary of the main features of the course and the learning outcomes that a typical student might reasonably be expected to achieve and demonstrate if he/she takes full advantage of the learning opportunities that are provided. It should be cross-referenced with the programme specification.

1. Teaching Institution	University of Anbar
2. University Department/Centre	College of Pharmacy
3. Course title/code	5th stage ***Clinical Laboratory Training*** 2nd course / 561 ClCi
4. Programme(s) to which it contributes	Courses
5. Modes of Attendance offered	Weekly
6. Semester/Year	Level: 5th Class, 2nd Semester
7. Number of hours tuition (total)	45 hours
8. Date of production/revision of this Specification	1-6-2021
9. Aims of the Course: Providing students with scientific and applied information in the following fields.	
Objectives: It provides general information about the biochemical basis of disease and about the principles of laboratory diagnosis; it supplies specific guidance on the clinical value of chemical investigations, indicating their range of application and limitations as well as relating results of laboratory tests to the process of clinical diagnosis and management as these might applied to individual patients. The course includes the curriculum vocabulary for the medical laboratory training material, its definition, its development history, the role of medicine in the process and development of common diagnostic methods and advanced methods, and how to conduct pathological tests and analyzes to detect, diagnose and treat diseases.	

10· Learning Outcomes, Teaching ,Learning and Assessment Method

A1- Learn about the basic principles in clinical laboratory training
A2- Identify the main and sub-units of laboratories
A3- Learn about diagnostic methods and how to collect clinical samples from patients
A4- Learn about methods and mastery of contact with patients and how to deal with collecting disease samples
A5- Knowing the methods of testing and analysis, and interpreting the results
A6- Identifying the effects of drugs and the variables that affect the results of analyzes for the disease and the work of standards

B. Subject-specific skills : E-learning on campus (using the Internet) + Student groups
B1. Lectures by hangout meeting
B2. Recorder lectures and download by Youtube channel
B3. Lectures by Google classroom (Power point and PDF)

Teaching and Learning Methods

E-learning on campus (using the Internet) + Student groups

• Practical lecture (Laboratory) • Seminars and Small teaching group.

Assessment methods

Midterm Exams.
Theoretical and practical quizzes Course exam
Oral exam
Written exam and reports

C. Thinking Skills
C1 Resolve the problem
C3. Ability to be leader
C4. Create scientific competition between students

Teaching and Learning Methods

Theoretical lecture. • Laboratory practices. • Seminars

Assessment methods

Final Exams.
Quizzes
Course exam
Tutorial Exam

D. General and Transferable Skills (other skills relevant to employability and personal development)

D1. Initiate students to attends workshops inside and outside of college

D2. D1-Laboratory training and practices.

D3-Computer skills, teaching the students how to prepare power point presentations.

D4-Give confidence to students by presenting the seminars in front of students and teaching staff and discuss the laboratory class.

D5- Rotate on all lab units to cover most diseases diagnosis.

11. Course Structure

Week	Hours	ILOs	Unit/Module orTopic Title	Teaching Method	Assessment Method
1	4hrs. Practical	Definition and using	Diagnostic test basics, collecting &transporting specimens, venipuncture, urine specimen, stool specimen.	Practical in the lab	Oral exams and discussion
2	4hrs. Practical	Definition and using	Biochemical tests: Fasting blood glucose, Post-prandial glucose, Oral glucose tolerance test.	Practical in the lab	Oral exams and discussion
3	4hrs. Practical	Definition and using	Blood urea, Blood creatinine, Creatinine clearance, Uric acid.	Practical in the lab	Oral exams and discussion
4	4hrs. Practical	Definition and using	Lipid Profile: Cholesterol, Lipoproteins, triglycerides.	Practical in the lab	Oral exams and discussion
5	4hrs. Practical	Definition and using	Blood proteins, Bilirubin.	Practical in the lab	Oral exams and discussion
6	4hrs. Practical	Definition and using	Calcium, Inorganic phosphate, Serum chloride viruses; Retro viruses; Hepato viruses; Oncogenic viruses.	Practical in the lab	Oral exams and discussion
7	4hrs. Practical	Definition and using	Alkaline phosphatase, Acid phosphatase, Alanine amiotransferase, Aspartate aminotransferase, Lactate dehydrogenase, Creatine phosphokinase.	Practical in the lab	Oral exams and discussion

8	4hrs. Practical	Definition and using	Serological tests: VDRL, ASO-Titer, Hepatitis tests.	Practical in the lab	Oral exams and discussion
9	4hrs. Practical	Definition and using	C-reactive protein test, Rheumatic factor test, Rosebengal test, Typhoid fever test(Widal test), Pregnancy Test.	Practical in the lab	Oral exams and discussion
10	4hrs. Practical	Definition and using	General urine examination, urine specimen collection.	Practical in the lab	Oral exams and discussion
11	4hrs. Practical	Definition and using	Hematological tests: RBC count, Hb, PCV, RBC indices, WBC count, Platelets count.	Practical in the lab	Oral exams and discussion
12	4hrs. Practical	Definition and using	Blood typing, Coombs test, Bleeding time, ESR.	Practical in the lab	Oral exams and discussion
13	4hrs. Practical	Definition and using	Microbiological tests: culture and sensitivity tests, Staining methods	Practical in the lab	Oral exams and discussion
14	4hrs. Practical	Definition and using	Culture media, Enriched culture media for general use	Practical in the lab	Oral exams and discussion
15	4hrs. Practical	Definition and using	Tests for identification of bacteria, Disk diffusion tests of sensitivity to antibiotics, Choice of drugs for disk test, bacterial disease and their laboratory diagnosis.	Practical in the lab	Oral exams and discussion

12. Infrastructure

Required reading: · CORE TEXTS · COURSE MATERIALS · OTHER	• ***Clinical Laboratory Training*** **Course number: 515 Manual for Laboratory Training Adopted by the Department** **Medical laboratory books**
Special requirements (include for example workshops, periodicals, IT software, websites)	Pharmacy
Community-based facilities (include for example, guest Lectures , internship , field studies)	Community services (Clinical laboratory and Hospital

TEMPLATE FOR COURSE SPECIFICATION

HIGHER EDUCATION PERFORMANCE REVIEW: PROGRAMME REVIEW

COURSE SPECIFICATION

This Course Specification provides a concise summary of the main features of the course and the learning outcomes that a typical student might reasonably be expected to achieve and demonstrate if he/she takes full advantage of the learning opportunities that are provided. It should be cross-referenced with the programme specification.

1. Teaching Institution	University of Anbar
2. University Department/Centre	**Department of Clinical Laboratories Sciences**
3. Course title/code	second stage Microbiology I 1 st course
4. Programme(s) to which it contributes	Bachelor of Pharmacy program
5. Modes of Attendance offered	Weekly
6. Semester/Year	Courses
7. Number of hours tuition (total)	45 hr.
8. Date of production/revision of this specification	1/6/2021
9. Aims of the Programme: Providing students with scientific and practical information in the following areas: Medical bacteriology is concerned with knowing the different types of bacteria, the shape and naming of all microorganisms, parts of the microscope and how it can be used to diagnose different types of bacteria, and the classification of bacteria according to their livelihood, for example into aerobic and non-aerobic and according to their shape as bacillary and spherical, as well as according to their interaction with the dye such as Gram negative And Gram-positive. How to cultivate bacteria in circles and how to sterilize. It provides a basic understanding of the shape, anatomy,	

organ functions and genetics of bacteria in addition to methods of dealing, visualizing, and identifying of bacterial disease.

11. Course Structure					
Week	Hours	ILOs	Unit/Module or Topic Title	Teaching Method	Assessment Method
1	2hrs. Theoretical	Definition and using	Importance of microbiology, History of microbiology	Theoretical lectures	Oral exams and discussion
2	2hrs. Theoretical	Definition and using	Anatomy of bacteria: Surface appendage, Capsule, Cell wall of G +ve & G –ve bacteria, Cytoplasmic membrane.	Theoretical lectures	Oral exams and discussion
3	2hrs. Theoretical	Definition and using	Bacterial physiology: Physical and chemical growth determinate, growth and growth curves, bacterial reproduction.	Theoretical lectures	Oral exams and discussion
4	2hrs. Theoretical	Definition and using	Genetics: Definition, genetic, element, mutation (spontaneous, gene transfer, transformation, conjugation, and gene transduction).	Theoretical lectures	Oral exams and discussion
5	2hrs. Theoretical	Definition and using	Recombinant DNA biotechnology.	Theoretical lectures	Oral exams and discussion
6	2hrs. Theoretical	Definition and using	Sporulation and germination	Theoretical lectures	Oral exams and discussion

12. Infrastructure	
Required reading: · CORE TEXTS · COURSE MATERIALS · OTHER	**Jawetz Melnick & Adelbergs Medical Microbiology 27 E (Lange) 27th Edition** by Karen Carroll (Author), Janet Butel (Author), Stephen Morse (Author) ●**Bailey & Scott's Diagnostic Microbiology 14th Edition** by **Patricia Tille (Author)**
Special requirements (include for example workshops, periodicals, IT software, websites)	The course was reviewed in terms of changes to be made according to the percentage of change determined by the university to keep pace with the scientific development and enrich the educational process for the purpose of expanding students' information. Communication and interaction with students in terms of their acceptance of the scientific material and methods of explanation and

	clarification followed by the teaching staff and taking their opinions that were found to serve The educational process and in line with the vocabulary of the course
Community-based facilities (include for example, guest Lectures, internship, field studies)	A field study the diagnosis and treatment of bacteria

TEMPLATE FOR COURSE SPECIFICATION

HIGHER EDUCATION PERFORMANCE REVIEW: PROGRAMME REVIEW

COURSE SPECIFICATION

This Course Specification provides a concise summary of the main features of the course and the learning outcomes that a typical student might reasonably be expected to achieve and demonstrate if he/she takes full advantage of the learning opportunities that are provided. It should be cross-referenced with the programme specification.

1. Teaching Institution	University of Anbar
2. University Department/Centre	College of Pharmacy
3. Course title/code	Pharmacology I
4. Programme(s) to which it contributes	Courses
5. Modes of Attendance offered	Weekly
6. Semester/Year	Level: 3rd Year, 2nd Semester
7. Number of hours tuition (total)	45 hrs Theory
8. Date of production/revision of this Specification	27-6-2021
9. Aims of the Course	
Objectives: To familiarize pharmacy students with the fundamentals of general pharmacology. The student will gain knowledge of numerous body systems and the medicines that impact them in health and disease. The course will also examine the drugs that are used to treat microbiological infections.	

10· Learning Outcomes, Teaching, Learning and Assessment Methods

A- Knowledge and Understanding.

A1. Recognize basic pharmacological concepts as a starting point for understanding medication mechanisms of action.
A2. Understanding the fundamentals of drug pharmacokinetics.
A3. Understanding the basics of drug receptor interaction and pharmacodynamics.
A4. Study the biochemical and cellular processes that occur in cholinergic and adrenergic nerve terminals, as well as at target organ junctions, when they are stimulated. In addition identify proto type drugs that act to mimic, stimulate or block the: synthesis, storage, release, receptor binding, or removal of acetylcholine, norepinephrine at nerve terminals.
A5. Studying the principal of Antimicrobial Agents and understanding the mechanism of action of each group of which in addition to resistance mechanisms.

B. Subject-specific skills

B1. Apply, analyze and integrate information to generate evidence-based solutions to pharmacological problems.
B2. Communicate pharmacology in writing targeting a broad range of audiences from scientific experts to the public.
B3. Accurately collect and record pharmacological data, appreciating the limitations of the measurements and instrumentation

Teaching and Learning Methods

Theoretical lecture with power point presentations and white board clarifications. • Seminars.

Assessment methods

Quizzes
Oral exams
Midterm written exams.
Final course exams.

C. Thinking Skills
C1 Problem solving skills
C3. Ability to be leader
C4. Create scientific competition between students

Teaching and Learning Methods

Theoretical lectures by power point presentations and white board clarifications. • Seminars.

Assessment methods

Quizzes
Oral exams
Midterm written exams.
Final course exams.
Practical exams

D. General and Transferable Skills (other skills relevant to employability and personal development)

D1. Be familiar with the local, national, and international codes and guidelines for the ethical treatment of experimental animals and human subjects

D2. Negotiate and accept compromises when working on a group task

D3. Create effective materials, such as slides and posters, to support presentations

11. Course Structure

Week	Hours	ILOs	Unit/Module orTopic Title	Teaching Method	Assessment Method
1-3	10	A1-A3, B and C1	General introduction to Pharmacology. Pharmacokinetics. Drug Receptor interaction and Pharmacodynamics.	Lecturing	Quizzes and discussions
4-8	14	A4 and B	The autonomic nervous system (ANS). Cholinergic system. Adrenergic system.	Lecturing	Quizzes and discussions
9-15	21	A5 and B	Principal of antimicrobial therapy. β- lactam and other cell wall synthesis inhibitor antibiotics Protien synthesis inhibitors Quinolones, Folate antagonists, and urinary tract antiseptics. Antimycobacterium drugs Antifungal drugs. Antiprotozoal drugs. Anthelmintic drugs. Antiviral drugs.	Lecturing	Quizzes and discussions

12. Infrastructure

Required reading: · CORE TEXTS · COURSE MATERIALS · OTHER	1. Lippincott Illustrated Reviews: Pharmacology – 7th Ed. 2. Katzung: Basic & Clinical Pharmacology -13th Ed.
Special requirements (include for example workshops, periodicals, IT software, websites)	Successful accomplishment of the course of pharmacology
Community-based facilities (include for example, guest Lectures , internship , field studies)	None

TEMPLATE FOR COURSE SPECIFICATION

HIGHER EDUCATION PERFORMANCE REVIEW: PROGRAMME REVIEW

COURSE SPECIFICATION

This Course Specification provides a concise summary of the main features of the course and the learning outcomes that a typical student might reasonably be expected to achieve and demonstrate if he/she takes full advantage of the learning opportunities that are provided. It should be cross-referenced with the programme specification.

1. Teaching Institution	University of Anbar
2. University Department/Centre	College of Pharmacy
3. Course title/code	Pharmacology III
4. Programme(s) to which it contributes	Courses
5. Modes of Attendance offered	Weekly
6. Semester/Year	Level: 4th Year, 2nd Semester
7. Number of hours tuition (total)	30 hrs Theory
8. Date of production/revision of this Specification	27-6-2021
9. Aims of the Course	
Objectives: To introduce pharmacy students to several medication groups that impact endocrine systems and how they might be used to repair endocrine function problems. In addition, the course will discuss the medicines used to treat cancer, bone problems, obesity, and erectile dysfunction. This course will also discuss inflammatory agents and anti-inflammatory medications.	

10· Learning Outcomes, Teaching, Learning and Assessment Methods

A- Knowledge and Understanding.

A1. Recognize the Endocrine system and hormones like: Hormones of the pituitary and thyroid glands. In addition to Insulin and oral hypoglycemic drugs. Also adreno-corticosteroids. Finally, the gonadal hormones and inhibitors.
A2. Studying Autacoids and autacoid antagonists.
A3. Studying Non-steroidal anti-inflammatory drugs (NSAIDs) and other anti-inflammatory agents..
A4. Studying miscellaneous drug actions such as: Drugs used in erectile dysfunction, Drugs used in osteoporosis, Drugs used in the management of obesity, and Cancer Chemotherapy: Anticancer drugs and immunosuppressants.
A5.

B. Subject-specific skills

B1. Apply, analyze and integrate information to generate evidence-based solutions to pharmacological problems.
B2. Communicate pharmacology in writing targeting a broad range of audiences from scientific experts to the public.
B3. Accurately collect and record pharmacological data, appreciating the limitations of the measurements and instrumentation

Teaching and Learning Methods

Theoretical lecture with power point presentations and white board clarifications. • Seminars.

Assessment methods

Quizzes
Oral exams
Midterm written exams.
Final course exams.

C. Thinking Skills
C1 Problem solving skills
C3. Ability to be leader
C4. Create scientific competition between students

Teaching and Learning Methods

Theoretical lectures by power point presentations and white board clarifications. • Seminars.

Assessment methods

Quizzes
Oral exams
Midterm written exams.
Final course exams.
Practical exams

D. General and Transferable Skills (other skills relevant to employability and personal development)

D1. Be familiar with the local, national, and international codes and guidelines for the ethical treatment of experimental animals and human subjects

D2. Negotiate and accept compromises when working on a group task

D3. Create effective materials, such as slides and posters, to support presentations

11. Course Structure

Week	Hours	ILOs	Unit/Module orTopic Title	Teaching Method	Assessment Method
1-6	13	A1 and B	Hormones of the pituitary and thyroid glands. Insulin and oral hypoglycemic drugs. Adreno-corticosteroids. The gonadal hormones and inhibitors.	Lecturing	Quizzes and discussions
7-9	6	A2, A3 and B	Autacoids and autacoid antagonists Non-steroidal anti-inflammatory drugs (NSAIDs) and other anti-inflammatory agents.	Lecturing	Quizzes and discussions
10-15	11	A4 and B	Drugs used in erectile dysfunction. Drugs used in osteoporosis. Drugs used in the management of obesity. Cancer Chemotherapy: Anticancer drugs and immunosuppressants. Antiviral drugs.	Lecturing	Quizzes and discussions

12. Infrastructure

Required reading: · CORE TEXTS · COURSE MATERIALS · OTHER	1. Lippincott Illustrated Reviews: Pharmacology – 7th Ed. 2. Katzung: Basic & Clinical Pharmacology -13th Ed.
Special requirements (include for example workshops, periodicals, IT software, websites)	Successful accomplishment of the course of pharmacology
Community-based facilities (include for example, guest Lectures , internship , field studies)	None

TEMPLATE FOR PROGRAMME SPECIFICATION

HIGHER EDUCATION PERFORMANCE REVIEW: PROGRAMME REVIEW

PROGRAMME SPECIFICATION

This Programmed Specification provides a concise summary of the main features of the programmed and the learning outcomes that a typical student might reasonably beexpected to achieve and demonstrate if he/she takes full advantage of the learning opportunities that are provided. It is supported by a specification for each course that contributes to the programmed.

1. Teaching Institution	University of Anbar
2. University Department/Centre	Pharmacy /Pharmacology & Toxicology
3. Programmed Title	4th Class, 2nd Semester General Toxicology and 5th Class, 1st Semester Clinical Toxicology
4. Title of Final Award	Bachelor of Pharmacy program
5. Modes of Attendance offered	Weekly
6. Accreditation	Courses
7. Other external influences	٤٥hr.
8. Date of production/revision of this specification	25/6/2021

9. Aims of the Programmed: Providing students with scientific and practical information in the following areas:

The main aim of the pharmacy University of Anbar is to prepare students to become pharmacist and pharmaceutical scientists who are leaders in any setting. The faculty provides quality education that effectively integrates critical thinking, problem solving and leadership skills. Research in the pharmaceutical, social and clinical sciences and translation in to healthcare is a key component of our mission. In addition, this programmed will: 1. Provides students with principles of Toxicology and Clinical Toxicology in wellness promotion and illness prevention and treatment. 2. Express knowledge of General Toxicology science concerning classifications, LD50, Lethal doses, and side effects and also To study the principle of exposure to different chemicals and environmental factors, their sources, mechanisms of toxicity and their risk to human being; it enables students to understand the required measures to protect living organisms against the suspected toxic hazards.

10. Learning Outcomes, Teaching, Learning and Assessment Methods

A1-Preparing the student and making him familiar with all kinds of drugs used in the treatment of various diseases
A 2- Studying the mechanism of action of different medicines
A3 - pharmacokinetic study
A4- Studying the side effects and drug interactions of different treatments
A5 - Studying the toxicological effects of different treatments

A. Knowledge and Understanding

Introduction: general consideration; host factor, environmental factors of toxic effects
Carcinogenesis
Target organs and systemic toxicology; Respiratory system, Liver, Kidney, Nervous system, cardiovascular system, Blood
Toxic substances: Food additive and contaminants, Pesticides, Metals, Solvents
Environmental toxicology: Air pollution, water and soil pollutants, Gases (Tear gas, Pepper spray), CO, Cyanide (H2S).

B. Subject-specific kills

B1 - Lots of examples

B2 - Solve the exercises from the textbook

B3 - Solve exercises from external sources and the Internet

Teaching and Learning Methods

Using the smart board
Use slideshows
Requesting periodic reports

Assessment methods

1- Quarterly exams (Midterm Exams.)
2- Daily Sudden Exams (Quizzes)
3- Discussions and dialogues inside the classroom
Weekly reports with practical lessons

C. Thinking Skills

C1. Thinking skills according to the student's ability
C2.
C3.

Teaching and Learning Methods

- Theoretical lecture. • Laboratory practices. • Seminars.

Assessment methods

Theoretical and practical quizzes, reports, oral examinations.

D. General and Transferable Skills (other skills relevant to employability and personal development):

D1-Laboratory experiments.

D2-Computer skills, teaching the students how to prepare power point presentations.

D3-Give confidence to students by presenting the seminars in front of students and teaching staff.

11. Programme Structure

Level/Year	Course or Module Code	Course or Module Title	Credit rating	
			T	P
5th Class, 1st Semester	Clinical Toxicology	516	2hr	2hr
4th Class, 2nd Semester	General Toxicology	429	2hr	2hr

12. Awards and Credits

Personal development and increase in personal knowledge with scholarly discussions

Bachelor Degree Requires (x) credits

13. Personal Development Planning

Academic rate and health infrastructure

Suggest and discuss new topics

Some of the curriculum vocabulary has been slightly changed to keep pace with modern scientific developments

Conducting seminars and seminars within the branch to present modern scientific topics

11. Course Structure					
Week	Hours	ILOs	Unit/Module or Topic Title	Teaching Method	Assessment Method
1	2hrs. Theoretical	Definition and using	Introduction: general consideration; host factor, environmental factors of toxic effects	Theoretical lectures	Oral exams and discussion
2	2hrs. Theoretical	Definition and using	Carcinogenesis.	Theoretical lectures	Oral exams and discussion
3	2hrs. Theoretical for each title	Definition and using	Target organs and systemic toxicology; Respiratory system, Liver, Kidney, Nervous system, cardiovascular system, Blood	Theoretical lectures	Oral exams and discussion
4	2hrs. Theoretical	Definition and using	Toxic substances: Food additive and contaminants, Pesticides, Metals, Solvents	Theoretical lectures	Oral exams and discussion
5	2hrs. Theoretical	Definition and using	Environmental toxicology: Air pollution, water and soil pollutants, Gases (Tear gas, Pepper spray), CO, Cyanide (H2S).	Theoretical lectures	Oral exams and discussion

12. Infrastructure	
Required reading: · CORE TEXTS · COURSE MATERIALS · OTHER	Textbooks: Gossel TA, Bricker TD, (EDS.); ١-Principles of clinical toxicology; lasts edition. Casarett and Doull, Toxicology, the Basic Science of Poisons; latest edition.
Special requirements (include for example workshops, periodicals, IT software, websites)	Casarett and Doull, Toxicology, the Basic) Science of Poisons; latest edition. Viccellio P, (ED.); Handbook of medical toxicology; lasts edition
Community-based facilities (include for example, guest Lectures, internship, field studies)	Sources related to the toxicity of new drugs from the Internet or recent books the other

TEMPLATE FOR COURSE SPECIFICATION

HIGHER EDUCATION PERFORMANCE REVIEW: PROGRAMME REVIEW

COURSE SPECIFICATION

This Course Specification provides a concise summary of the main features of the course and the learning outcomes that a typical student might reasonably be expected to achieve and demonstrate if he/she takes full advantage of the learning opportunities that are provided. It should be cross-referenced with the programme specification.

1. Teaching Institution	University of Anbar
2. University Department/Centre	College of Pharmacy
3. Course title/code	PhPa3 340
4. Programme(s) to which it contributes	Courses
5. Modes of Attendance offered	Weekly
6. Semester/Year	Level: 3rd Year, 2nd Semester
7. Number of hours tuition (total)	45 hrs Theory + 30 hrs practical
8. Date of production/revision of this Specification	1-6-2021
9. Aims of the Course	
Objectives: To teach theoretical bases for the technology of preparing different dosage forms with respect to their raw materials, compositions, methods of preparation, stability, storage and uses; in addition to define and characterize the possible incompatibilities that may occur in dosage forms.	

10· Learning Outcomes, Teaching, Learning and Assessment Methods

A- Knowledge and Understanding.

A1. Application of scientific knowledge or technology to pharmacy, pharmacology, and the pharmaceutical industry.
A2. Understanding methods, techniques, and instrumentation in the manufacture, preparation, compounding, dispensing, packaging, and storing of drugs and other preparations used in diagnostic and determinative procedures and in the treatment of patients.

B. Subject-specific skills

B1. Problem solving skills: Students should learn how to solve and integrate limitations in formulation design for the delivery of drugs.
B2. Communicate pharmaceutical technology issues in writing and verbal methods targeting a broad range of audiences from scientific experts to the public.
B3. Accurately collect and record data, appreciating the limitations of the measurements and instrumentation.

Teaching and Learning Methods

Theoretical lecture with power point presentations and white board clarifications. • Laboratory practices. • Seminars.

Assessment methods

Quizzes
Oral exams
Midterm written exams.
Final course exams.
Practical exams

C. Thinking Skills
C1. Problem solving skills
C2. Strategic Thinking.
C3. Ability to be leader
C4. Create scientific competition between students

Teaching and Learning Methods

Theoretical lectures by power point presentations and white board clarifications. • Laboratory practices. • Seminars.

Assessment methods

Quizzes
Oral exams
Midterm written exams.
Final course exams.
Practical exams

D. General and Transferable Skills (other skills relevant to employability and personal development)

D1. Understand and follow the occupational, health and safety protocols within the laboratory

D2. Negotiate and accept compromises when working on a group task

D3. Create effective materials, such as slides and posters, to support presentations

11. Course Structure					
Week	Hours	ILOs	Unit/Module orTopic Title	Teaching Method	Assessment Method
1	10	A, B, and C	Emulsions; purpose of emulsification; methods of emulsification; emulsifying agents; HLB system; stability of emulsions.	Lecturing	Quizzes and discussions
2	5	A, B, and C	Lotions; liniments and collodions.	Lecturing	Quizzes and discussions
3	6	A, B, and C	Suppositories	Lecturing	Quizzes and discussions
4	10	A, B, and C	Powdered dosage forms.	Lecturing	Quizzes and discussions
5	10	A, B, and C	Semisolid dosage forms.	Lecturing	Quizzes and discussions
6	4	A, B, and C	Incompatibilities in pharmaceutical dosage forms.	Lecturing	Quizzes and discussions

12. Infrastructure	
Required reading: · CORE TEXTS · COURSE MATERIALS · OTHER	• 1- Pharmaceutical Dosage forms and Drug Delivery Systems By Haward A. Ansel; latest edition 2-Sprowel's American Pharmacy
Special requirements (include for example workshops, periodicals, IT software, websites)	Successful accomplishment of the course of Physical Pharmacy
Community-based facilities (include for example, guest Lectures , internship , field studies)	None

TEMPLATE FOR COURSE SPECIFICATION

HIGHER EDUCATION PERFORMANCE REVIEW: PROGRAMME REVIEW

COURSE SPECIFICATION

This Course Specification provides a concise summary of the main features of the course and the learning outcomes that a typical student might reasonably be expected to achieve and demonstrate if he/she takes full advantage of the learning opportunities that are provided. It should be cross-referenced with the programme specification.

1. Teaching Institution	University of Anbar
2. University Department/Centre	College of Pharmacy
3. Course title/code	PtPh2 226
4. Programme(s) to which it contributes	Courses
5. Modes of Attendance offered	Weekly
6. Semester/Year	Level: 2nd Year, 2nd Semester
7. Number of hours tuition (total)	45 hrs Theory + 30 hrs practical
8. Date of production/revision of this Specification	1-6-2021
9. Aims of the Course	
Objectives: To enable students understanding the basic principles of physiological functions of different tissues and organs of the human being, and how to evaluate these functions and correlate them with the normal and abnormal conditions. It also emphasizes on the role of homeostatic and hemodynamic changes in the integration of physiological status.	

10· Learning Outcomes, Teaching, Learning and Assessment Methods

A- Knowledge and Understanding.

A1. Basic principles of physiological functions of different tissues and organs.
A2. Evaluation of physiological functions and correlate them with normal and abnormal conditions.
A3. Understanding the role of homeostatic and hemodynamic changes in the integration of physiological status.
A4. Combine knowledge from more than one organ system to explain complex physiological scenarios including case studies.
A5. Explain the physiological mechanisms underlying experimental data from the whole body to the cellular level.

B. Subject-specific skills

B1. Apply, analyze and integrate information to generate evidence-based solutions to physiological problems.
B2. Communicate physiology in writing targeting a broad range of audiences from scientific experts to the public.
B3. Accurately collect and record physiological data, appreciating the limitations of the measurements and instrumentation

Teaching and Learning Methods

Theoretical lecture with power point presentations and white board clarifications. • Laboratory practices. • Seminars.

Assessment methods

Quizzes
Oral exams
Midterm written exams.
Final course exams.
Practical exams

C. Thinking Skills
C1 Problem solving skills
C3. Ability to be leader
C4. Create scientific competition between students

Teaching and Learning Methods

Theoretical lectures by power point presentations and white board clarifications. • Laboratory practices. • Seminars.

Assessment methods

Quizzes
Oral exams
Midterm written exams.
Final course exams.
Practical exams

D. General and Transferable Skills (other skills relevant to employability and personal development)

D1. Understand and follow the occupational, health and safety protocols within the physiology laboratory

D2. Be familiar with the local, national, and international codes and guidelines for the ethical treatment of experimental animals and human subjects

D3. Negotiate and accept compromises when working on a group task

D4. Create effective materials, such as slides and posters, to support presentations

11. Course Structure

Week	Hours	ILOs	Unit/Module orTopic Title	Teaching Method	Assessment Method
1	10	A and B	Gastrointestinal function: Digestion and absorption of carbohydrates; proteins; lipids; absorption of water and electrolytes; vitamins and minerals; gastrointestinal hormones; mouth and esophagus; stomach; exocrine portion of the pancreas; liver and biliary system; small intestine; colon.	Lecturing	Quizzes and discussions
2	15	A, B, and C1	Circulatory body fluid: Introduction; blood; bone marrow; white blood cells; immunity; platelets; red blood cells; anemia; polycythemia; blood group and Rh factor; hemostasis; The clotting mechanism / blood coagulation tests; anti clotting mechanism; the plasma; the lymph; abnormalities of hemostasis	Lecturing	Quizzes and discussions
3	20	A, B, and C1	Endocrinology: Introduction; energy balance, metabolism and nutrition; the pituitary gland; the	Lecturing	Quizzes and discussions

			thyroid gland; development and function of the reproductive system; the adrenal medulla and adrenal cortex; hormonal control of calcium metabolism and the physiology of the bone; endocrine functions of the pancreas and regulation of carbohydrate metabolism		

12. Infrastructure	
Required reading: · CORE TEXTS · COURSE MATERIALS · OTHER	• 1- Review of Medical Physiology; Ganong W.F (Ed.); 2005 2-Textbook of Medical Physiology by Guyton AC; latest edition
Special requirements (include for example workshops, periodicals, IT software, websites)	Successful accomplishment of the course of Histology
Community-based facilities (include for example, guest Lectures , internship , field studies)	None

TEMPLATE FOR COURSE SPECIFICATION

HIGHER EDUCATION PERFORMANCE REVIEW: PROGRAMME REVIEW

COURSE SPECIFICATION

This Course Specification provides a concise summary of the main features of the course and the learning outcomes that a typical student might reasonably be expected to achieve and demonstrate if he/she takes full advantage of the learning opportunities that are provided. It should be cross-referenced with the programme specification.

1. Teaching Institution	University Of Anbar
2. University Department/Centre	College of Pharmacy
3. Course title/code	
4. Programme(s) to which it contributes	Courses
5. Modes of Attendance offered	Weekly
6. Semester/Year	Level: 5st Class, 2nd Semester
7. Number of hours tuition (total)	14 hrs Theory
8. Date of production/revision of this Specification	1-6-2021
9. Aims of the Course	
1. Study & understand the main concepts in Molecular Biology and Biomolecules.	
2. Learning the conditions and steeps for manufacturing of therapeutic proteins.	
3. Study in details the differences between small molecules & Biopharmaceuticals.	
4. Learning the principles of using fermenters and bioreactors.	

10· Learning Outcomes, Teaching ,Learning and Assessment Method

A- Knowledge and Understanding
A1. To knowledge the deep structure of genomic material
A2. Learning the principles of drugs formulation
A3. To knowledge the databases & softwares associated with protein sequences
A4. To study the expressions, host in biotechnology process
A5. Learning the principles & functions of restriction enzymes.
A6. Understanding the importance of Biopharmaceuticals.

B. Subject-specific skills
B1. Meeting by using Google meet
B2. Home works & Quizzes
B3. Download lectures on google classroom (power points and Pdf)

Teaching and Learning Methods

Theoretical lecture, Reports.

Assessment methods

Midterm Exams.
Quizzes
Course exam
Oral exam
Written exam

C. Thinking Skills
C1 Using online programs

C2. Glassrooms

Teaching and Learning Methods

Theoretical lecture. • Reports

Assessment methods

Midterm Exams.
Quizzes
Course exam

D. General and Transferable Skills (other skills relevant to employability and personal development)
D1. Initiate students to attends workshops inside and outside of college
D2.
D3.
D4.

11. Course Structure

Week	Hours	ILOs	Unit/Module orTopic Title	Teaching Method	Assessment Method
1	1hrs. Theoretical	Biotechnology - introduction	Biotechnology	Theoretical lectures	Quiz and discussion
2	4hr. Theoretical	(biopharmaceutical consideration) Microbial consideration-sterility-pyrogen viral decontamination Excipients of parentral products - solubility enhancer-anti adsorption agents buffer components-preservatives – osmotic agents	Formulation of biotechnology products	Theoretical lectures	Quiz and discussion
3	5hrs. Theoretical	Route of administration Parentral route Oral route Alternative routes (nasal-pulmonary-rectal-buccal transderma	Route of administration	Theoretical lectures	Quiz and discussion
4	5hrs. Theoretical	Pharmacokinetic of peptides and proteins Introduction Elimination of proteins (proteolysis-excretion-metabolism)	Respiratory system:	Theoretical lectures	Quiz and discussion

12. Infrastructure

Required reading: · CORE TEXTS · COURSE MATERIALS · OTHER	1- **Pharmaceutical biotechnology(5th edition)** J . A . Crommelin , Robert D. Syinder **2. Biophrmaceuticals** Walsh

Special requirements (include for example workshops, periodicals, IT software, websites)	Pharmacy
Community-based facilities (include for example, guest Lectures , internship , field studies)	