



Third Year- Course Description 2026-2027



1. Course Name:	
Inorganic Pharmaceutical Chemistry	
2. Course Code:	
325 ChPIP	
3. Semester / Year:	
First Semester / Third Year	
4. Description Preparation Date:	
9-2026	
5. Available Attendance Forms:	
On campus	
6. Number of Credit Hours (Total) / Number of Units (Total)	
2 hours Theoretical + 2 hours Practical (60 hours) / 3 units	
7. Course administrator's name (mention all, if more than one name)	
Theory: Lecturer: Dr. Iman Muneeb Malik Email: imad.muneeb@bcms.edu.iq Practical: Lecturer Salsal Kamal Abdulrahman Email: salsal.kamal.abdulrahman@bcms.edu.iq	
8. Course Objectives	
Course Objectives	1) This course examines the clinical application of inorganic compounds, focusing on the relationship between chemical structure and therapeutic or diagnostic function. 2) Students will study the roles of key metals in medicine, including platinum anticancer agents and chelation therapy. 3) A significant component is dedicated to radiopharmacy, covering the principles, safe handling, and application of radiopharmaceuticals in advanced medical imaging and treatment.
9. Teaching and Learning Strategies	
Strategy	1- Theoretical Lectures 2- Conducting Scientific Experiments 3- Study Circles/Seminars 4- Daily Assignments 5- Written Examinations 6- Methodological and Supplementary Books 7- Illustrative Videos
10. Course Structure	



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Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2	Lithium, Sodium, Potassium: Electron configuration, chemical properties of metals, Advantages and disadvantages using lithium-based drugs, Sodium as an essential ion in the human body, Active transport of sodium ions, Drugs, diet and toxicity of sodium ions, Potassium and its clinical application.	Alkali Metals:	Lectures and practical laboratories	Daily, midterm and final exams, practical exam, reports
2	2	Magnesium, Calcium: Electron configuration of metals, Major uses and Chemical properties, Magnesium Biological importance and clinical applications and preparations. Calcium: the key to many human functions.	Alkaline Earth Metals:	Lectures and practical laboratories	Daily, midterm and final exams, practical exam, reports
3-4	4	Aluminum, Boron and Gallium:	Group 13:	Lectures and practical	Daily, midterm and final exams,



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		General chemistry of group 13 elements, pharmaceutical applications of boric acid, Bortezomib, Biological importance of Aluminum its adjuvants, Antacids, Aluminum-based therapeutics, Phosphate binders, Antiperspirant. Gallium Introduction, Chemistry, Pharmacology of gallium-based drugs and their uses		laboratories	practical exam, reports
5	2	General chemistry of group 14 elements, Silicon-based drugs versus carbon-based analogues, Introduction of silicon groups, Silicon isosteres, Organosilicon drugs.	The Carbon Group:	Lectures and practical laboratories	Daily, midterm and final exams, practical exam, reports
6-7	4	Electronic configurations, platinum anticancer agents, Iron and its role in biological systems,	Transition Metals and d-Block Metal Chemistry:	Lectures and practical laboratories	Daily, midterm and final exams, practical exam, reports



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		clinical applications. Copper-containing drugs, Silver: the future of antimicrobial agents? Gold: the fight against rheumatoid arthritis and zinc and its role in biological systems, clinical applications and toxicity.			
8	2	What is heavy-metal poisoning? What is chelation? Chelation therapy, Calcium disodium edetate, Dimercaprol (BAL), Dimercaptosuccinic acid (DMSA), 2,3-Dimercapto-1-propanesulfonic acid (DMPS), and Lipoic acid (ALA).	Chelation Therapy:	Lectures and practical laboratories	Daily, midterm and final exams, practical exam, reports
9-11	6	Protective adsorbents Topical agents Dental agents	Protective adsorbents Topical agents Dental agents	Lectures and practical laboratories	Daily, midterm and final exams, practical exam, reports
12	2	What is organometallic chemistry and metallocenes? Ferrocene derivatives as potential antimalarial agent and antibreast	Organometallic Chemistry:	Lectures and practical laboratories	Daily, midterm and final exams, practical exam, reports



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		cancer, Titanocenes in titanium-based anticancer agents and Vanadocene dichloride as anticancer agents, Further vanadium-based drugs: insulin mimetics.			
13-14	4	dispensing and protection, Therapeutic use of radiopharmaceuticals.	Radioactive Compounds and Their Clinical Application, Radiopharmacy:	Lectures and practical laboratories	Daily, midterm and final exams, practical exam, reports
15	2	Radiopharmaceuticals for imaging	Radiopharmaceuticals for imaging	Lectures and practical laboratories	Daily, midterm and final exams, practical exam, reports

- 20° Theoretical Part
- (Seminar + attendance + quiz + mid-term exam)
- 20 degrees practical part (practical technique + cob + presence)
- 60 Final Exam Marks
- Total 100 Marks

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	1) Essentials of Inorganic Chemistry for Students of Pharmacy, Pharmaceutical Sciences and Medicinal Chemistry by KATJA A. STROHFELDT, School of Pharmacy, University of Reading, UK 2) Inorganic Medicinal and Pharmaceutical Chemistry by Block, Roche Soine and Wilson, latest edition
Main references (sources)	
Recommended books and references (scientific journals, reports...)	
Electronic References, Websites	



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1. Course Name:	
Pharmacognosy II (Theoretical+ Practical)	
2. Course Code:	
326 ChPP2	
3. Semester / Year:	
1st Semester/3rd year	
4. Description Preparation Date:	
9-2026	
5. Available Attendance Forms:	
On campus	
6. Number of Credit Hours (Total) Number of Units (Total):	
2 Theoretical Hours + 2 Practical Hours (60 Hours College) / 3 Units	
7. Course administrator's name (if more than one name)	
Prof. Maha Noori Hamad Email: mahanoori@bcms.edu.iq Lab instructors: Assist. Lect. Huda Saaran Hosny Email: Hsaaz16@bcms.edu.iq	
8. Course Objectives	
Course Objectives	Introducing students to the importance of medicinal plants and their scientific names and how to extract the active substances found in the most important medicinal plants And methods of separation, purification and detection to prepare them in the laboratory and make chemical changes to increase their effectiveness and reduce their side effects.
9. . Teaching and Learning Strategies	
Strategy	•Presentation and presentation •Interactive discussions • Brainstorming • Small aggregates • Research and induction • Panel discussions • Field visits to institutions and bodies associated with the work of the pharmacist • Volunteer work, seminars, workshops and exhibitions.
10. Course Structure	



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week	Hours	Required Learning Outcomes	Unit or Subject Name	Learning method	Evaluation method
1	2	recognize the general pathways of biosynthesis of natural by-products and their importance,	Introduction to biosynthesis by-product biosynthesis	Lectures and practical laboratories	Daily, midterm and final exams, practical exam, reports
2	2	Clarify and complete biosynthesis pathways in detail	Follow biosynthesis	Lectures and practical laboratories	Daily, midterm and final exams, practical exam, reports
3	2	understand the chemical composition and pharmacological properties of carbohydrates and glycosides,	Carbohydrates and glycosides	Lectures and practical laboratories	Daily, midterm and final exams, practical exam, reports
4	2	recognize the medicinal properties and uses of cardiac glycosides and anthraquinone glycosides	Cardiac glycosides and anthraquinone glycosides	Lectures and practical laboratories	Daily, midterm and final exams, practical exam, reports
5	2	Study of saponins and cyanophore glycosides and their medicinal properties	Saponins and cyanoforic glycosides	Lectures and practical laboratories	Daily, midterm and final exams, practical exam, reports
6	2	Identify flavonoid glycosides and their therapeutic importance	Flavonoid glycosides	Lectures and practical laboratories	Daily, midterm and final exams, practical exam, reports



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7	2	understand the composition and uses of isothiocyanates, alcohols, lactones, and phenol glycosides,	Isothiocyanate, Aldehyde, Alcohol, Lactone, Phenol Glycosides	Lectures and practical laboratories	Daily, midterm and final exams, practical exam, reports
8	2	Identify the chemistry and properties of volatile oils and their uses	Definition of volatile oils	Lectures and practical laboratories	Daily, midterm and final exams, practical exam, reports
9	2	Understand the chemical extraction processes and chemical composition of volatile oils	Extraction methods and chemistry of volatile oils	Lectures and practical laboratories	Daily, midterm and final exams, practical exam, reports
10	2	Distinguishing between types of volatile oils in terms of source and medical use	Types of volatile oils	Lectures and practical laboratories	Daily, midterm and final exams, practical exam, reports
11	2	Explain the methods of lipid biosynthesis and its importance in pharmaceutical applications,	Fat biosynthesis	Lectures and practical laboratories	Daily, midterm and final exams, practical exam, reports
12	2	Identify chemical and analytical evaluation methods for oils and fats	Analytical chemistry and evaluation of oils and fats	Lectures and practical laboratories	Daily, midterm and final exams, practical exam, reports
13	2	Study the importance of fixed oils and waxes and their pharmaceutical uses	Fixed oils and candles	Lectures and practical laboratories	Daily, midterm and final exams, practical exam, reports



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14	2	Understand the chemical composition of resins compounds, their groups and their medical significance,	Resins and resins groups, toxic non-medicinal plants	Lectures and practical laboratories	Daily, midterm and final exams, practical exam, reports
15	2	Recognize vitamins, their classification, therapeutic and nutritional functions	Vitamins	Lectures and practical laboratories	Daily, midterm and final exams, practical exam, reports
16	2	Review and summarize all the vocabulary of the subject and prepare the student for the final exam	Comprehensive review	Lectures and practical laboratories	Daily, midterm and final exams, practical exam, reports

11. Course Evaluation

- 20° Theoretical Part
- (Seminar + attendance + quiz + mid-term exam)
- 20 degrees practical part (practical technique + cob + presence)
- 60 Final Exam Marks
- Total 100 Marks

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	Pharmacognosy 9 th edition Varro E.Tyler, Lynn R.Brady.
Main references (sources)	Pharmacognosy 16 th edition Trease & Evans.
Recommended books and references (scientific journals, reports...)	Phytochemical methods 3th edition A guide to modern techniques of plant analysis 1998
Electronic References, Websites	Thin layer chromatography 2 nd edition Egon Stahl. 1990



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1. Course Name:					
Pharmaceutical Technology (Theoretical + Practical)					
2. Course Code:					
327 PhPT					
3. Semester / Year:					
1 st Semester/3 rd year					
4. Description Preparation Date:					
9-2026					
5. Available Attendance Forms:					
Students' signature on attendance sheet					
6. Number of Credit Hours (Total) / Number of Units (Total)					
3 hours Theoretical + 2 hours Practical (75) /4 units					
7. Course administrator's name					
Theory: Lecturer Eman Gameel					
Email: eman.gameel@bcms.edu.iq					
Practical: Assistant Lecturer Ruwayda Mohammed					
Email: ruwayda.mohamd@bcms.edu.iq					
8. Course Objectives					
1) Understand the fundamentals of pharmaceutical preformulation, including solubility, partitioning, powder, and compaction properties. 2) Learn the formulation, preparation, and administration of various solution dosage forms, both oral and topical. 3) Explore the principles and techniques involved in developing suspensions, including stability, rheology, and compounding methods. 4) Study the formulation and delivery mechanisms of aerosols and foams, with focus on metered-dose inhalers and topical/vaginal applications. 5) Gain knowledge of parenteral dosage forms, including types of injections, sterilization methods, and production standards. 6) Develop an understanding of storage, packaging, and labeling practices across all listed dosage forms to ensure quality and patient safety.					
9. Teaching and Learning Strategies					
Strategy			Lecturing Seminars Homework Quiz Practical laboratory demonstrations		
10. Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1-3	9+6	• The concept of preformulation • Solubility • Molecular	Pharmaceutical preformulation (Chapter 23) (Aulton's	Lectures and practical laboratories	Daily, midterm and final exams, practical exam, reports



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		dissociation • Partitioning • Dissolution rate • Hygroscopicity • Physical form • Powder properties • Compaction properties Practical: Introduction: Laboratory Safety and Good Laboratory Practice (GLP) Calibration curve and saturated solubility determination (UV and HPLC)	Pharmaceutics; The Design and Manufacture of Medicines; 6th edition, 2022)		
4-6	9+6	• Some Solvents for Liquid Preparations • Preparation of solutions • Mixing oral liquids • Oral solutions and preparations for oral solutions • Syrups • Elixirs • Tinctures • Proper administration and use of liquid	Solutions (Chapter 13) (Pharmaceutical Dosage Forms and Drug Delivery Systems by Howard A. Ansel; 11th edition, 2017)	Lectures and practical laboratories	Daily, midterm and final exams, practical exam, reports



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		peroral dosage forms • Topical Solutions and Tinctures • Vaginal and rectal solutions • Topical tinctures • Topical oral (dental) solutions • Miscellaneous solutions • Nonaqueous solutions • Extraction methods for preparing solutions Practical: Oral solutions: preparation methods and quality evaluation Syrups: materials, preparation methods and quality evaluation			
7-9	9+6	• Reasons for suspension • Features of desired in a pharmaceutical suspension • Sedimentation rate of the particles of a	Suspensions (Chapter 14: Pharmaceutical Dosage Forms and Drug Delivery Systems by Howard A. Ansel; 11th edition, 2017) (Chapter 26: Aulton's	Lectures and practical laboratories	Daily, midterm and final exams, practical exam, reports



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		suspension • Physical features of the dispersed phase • Dispersion medium • Rheology of suspensions • Preparation of suspensions • Sustained-release suspensions • Extemporaneous compounding of suspensions • Mixing solids in liquids • Packaging and storage of suspensions • Examples of pharmaceutical suspensions • Dry powders for oral suspension Practical: Elixirs: materials, preparation methods and quality evaluation Tinctures: materials, preparation methods and quality evaluation	Pharmaceutics; The Design and Manufacture of Medicines; 6th edition, 2022)		
10-11	6+4	• Types of aerosols	Aerosols and foams (Chapter 14)	Lectures and practical	Daily, midterm and final exams,



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	• Advantages of the aerosol dosage form • The aerosol principle • Aerosol systems • Aerosol container and valve assembly • Metered-dose inhalers • Filling operations • Packaging, labeling, and storage • Proper Administration and Use of • Proper administration and use of pharmaceutical aerosols • Examples of aerosols • Topical aerosols • Vaginal and rectal aerosols • Foams: Their types and preparation Practical: Aromatic waters: materials, preparation methods and quality evaluation Suspensions: materials,	(Pharmaceutical Dosage Forms and Drug Delivery Systems by Howard A. Ansel; 11th edition, 2017)	laboratories	practical exam, reports
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		preparation methods and quality evaluation- continued			
12-15	12+8	• Injections • Parenteral routes of administration • Official types of injections • Solvents and vehicles for injections • Colligative properties for injections • Methods of sterilization • Validation/verification of sterility • The industrial preparation of parenteral products • Packaging, labeling, and storage of injections • Available injections (examples) • Small volume parenteral • Large volume parenteral • Special considerations associated with	Parenterals (Chapter 15: Pharmaceutical Dosage Forms and Drug Delivery Systems by Howard A. Ansel; 11th edition, 2017) (Chapter 38: Aulton's Pharmaceutics; The Design and Manufacture of Medicines; 6th edition, 2022)	Lectures and practical laboratories	Daily, midterm and final exams, practical exam, reports



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		parenteral therapy Irrigation and dialysis solutions Practical: Suspensions: materials, preparation methods and quality evaluation Quality evaluation of parenteral preparations			
11. Course Evaluation					
20 M Theoretical assessment. (paper-based mid-term exam + quiz + attendance + seminar) 20 M practical assessment (attendance + quiz + practice) 60 M paper-based theoretical final exam 100 M total					
12. Learning and Teaching Resources					
Required textbooks			1) Aulton's Pharmaceutics; The Design and Manufacture of Medicines; 6th edition, 2022. 2) Pharmaceutical Dosage Forms and Drug Delivery Systems by Howard A. Ansel; 11th edition, 2017.		
Main references (sources)			1) Handbook of Extemporaneous Preparation by Mark Jackson and Andrew Lowey; 1st edition; 2010. 2) British Pharmacopeia (BP); 2025 edition. 3) United States Pharmacopeia- National Formulary (USP-NF); 2025 edition.		
Electronic References, Websites					



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1. Course Name:					
Biochemistry I					
2. Course Code:					
328 ACIBc1					
3. Semester / Year:					
1 st Semester / 3 rd year					
4. Description Preparation Date:					
9-2026					
5. Available Attendance Forms:					
In-person attendance					
6. Number of Credit Hours (Total) / Number of Units (Total)					
3 hours Theoretical + 2 hours Practical (75) /4 units					
7. Course administrator's name (mention all, if more than one name)					
Assist. Prof. Dr. Zainab A. Alshamma (Z.alshamma@bcms.edu.iq) Lecturer. Nawfal Ayad Mahmood (nawfal.ayad@bcms.edu.iq)					
8. Course Objectives					
Course Objectives		• Providing students with the principles of important biological molecules and preparation metabolism of these molecules. • Providing students with the necessary tech biochemistry.			
9. Teaching and Learning Strategies					
Strategy		• Presentation and recitation • Interactive discussions • Brainstorming • Research and induction			
10. Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	3	Familiarity with what biochemistry studies and the description of important macromolecules.	Biological molecules: An introduction	Lectures and practical laboratories	Daily, mid-term and final exams, practical exam, reports
2	3	Structure, classification, properties, and forms of amino acids.	Amino Acids	Lectures and practical laboratories	Daily, mid-term and final exams, practical exam, reports



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3	3	Chemical reactions, zwitterion, titration equation and calculation of the isoelectric pH, non- proteogenic amino acids, and clinical importance	Amino Acids	Lectures and practical laboratories	Daily, midterm and final exams, practical exam, reports
4	3	Peptide bond, backbone torsion angles, nomenclature of peptides, structure and function of some important peptides in human.	Peptides	Lectures and practical laboratories	Daily, midterm and final exams, practical exam, reports
5	3	Order of protein structure, bonds in proteins of different order of structure, classification of proteins based on the function, chemical nature, and nutritional value.	Proteins	Lectures and practical laboratories	Daily, midterm and final exams, practical exam, reports
6	3	Determination of the amino acids sequence in primary order proteins, determination of the N and C termini.	Proteins	Lectures and practical laboratories	Daily, midterm and final exams, practical exam, reports
7	Mid-term examination				



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8	3	Chemistry, classification of carbohydrates, stereochemistry of monosaccharides, physiological importance.	Carbohydrates	=	=
9	3	Clinical importance and classification, saturated and unsaturated fatty acids nomenclature, physical properties, the effects of free radicals on body tissues, the effects of free radical scavengers in protection of lipids.	Lipids	=	=
10	3	Enzymes structure, nomenclature, and classification, how enzymes work, models of enzyme-substrate interaction, clinical applications of enzymes.	Enzymes	=	=



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11	3	General principles, factors affecting the rate of enzyme catalyzed reaction (substrate concentration, temperature, and pH), Michaelis-Menten equation and Lineweaver-Burk plot, Michaelis constant.	Enzymes kinetics	=	=
12	3	The competitive and noncompetitive inhibitors, irreversible inhibition, the kinetic effects of inhibitors and how to determine the mechanism of inhibition.	Enzyme inhibitors	=	=
13	3	The effect of substrate concentration on regulation, the effect of compartmentation in facilitating the regulation, the ideal enzyme-catalyzed step for regulation of a metabolic pathway, regulation of enzyme amount, regulation of enzyme efficiency	Enzymes regulation	=	=



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		via reversible and irreversible covalent modifications.			
14	3	The basic principles of endocrine hormone action, the broad diversity and mechanisms of action of endocrine hormones, the complex steps involved in the production, transport, and storage of hormones.	The diversity of the Endocrine system	=	=
15	3	The roles of stimulus, hormone release, signal generation, and effector response in hormone-regulated physiological processes, the role of receptors and guanosine nucleotide-binding G- proteins in hormone signal transduction, coordinating the work of hormones and their effect on physiological outcomes, the mechanism of the hormone's effect	Hormone action	=	=



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		on cells			
23.Course Evaluation					
Mid-term examination (15 marks) Quiz and homework (5 marks) Practical work (20 marks) Final examination (60 marks)					
24.Learning and Teaching Resources					
Required textbooks (curricular books, if any)		Harper's Illustrated Biochemistry, 32 ed.			
Main references (sources)		Lippincott Illustrated Reviews: Biochemistry Lehninger Principles of Biochemistry, 8 th ed.			
Recommended books and references (scientific journals, reports...)					
Electronic References, Websites					



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1. Course Name:					
Pathophysiology					
2. Course Code:					
329 ACIPa					
3. Semester / Year					
1 st Semester/ 3 rd Year					
4. Description Preparation Date:					
9-2026					
5. Available Attendance Forms:					
In-person attendance					
6. Number of Credit Hours (Total) / Number of Units (Total)					
3 hours Theoretical + 2 hours Practical (75) /4 units					
7. Course administrator's name (mention all, if more than one name)					
Theory and Practical: Assistant Lecturer Zainab Nazar Email: zainab.nazar@bcms.edu.iq					
8. Course Objectives					
Course Objectives		• Providing students with theoretical and practical knowledge and technical skills necessary in the field of studying and understanding pathophysiology.			
9. Teaching and Learning Strategies					
Strategy		• Presentation and recitation • Interactive discussions • Brainstorming • Research and induction			
10. Course Structure					
Week	Hours	Required Learning Outcomes	Unit	Learning method	Evaluation method
1	3	Introducing pathophysiology and its relationship to related sciences such as immunity and histology; and presenting some terms used in describing pathological	Introduction to pathophysiology	Lectures and practical laboratories	Daily, midterm and final exams, practical exam, reports



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		cellular changes In the practical part, identifying the histopathological Changes in cell necrosis			
2	3	Disturbances of electrolytes and water distribution, alkalosis and acidosis	Electrolytes and water	Lectures and practical laboratories	Daily, midterm and final exams, practical exam, reports
3	3	Pathophysiology of the heart and vascular system disorders in the practical part, identifying the histopathological changes in some cardiovascular diseases In the practical part, identifying the histopathological changes in some cardiovascular diseases	The circulatory system diseases	Lectures and practical laboratories	Daily, midterm and final exams, practical exam, reports
4	3	Pathophysiology of the respiratory system diseases. In the practical part, identifying the histopathological changes in some respiratory diseases	Respiratory system diseases	Lectures and practical laboratories	Daily, midterm and final exams, practical exam, reports



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5	3	Pathophysiology of the urinary system diseases In the practical part, identifying the histopathological changes in some urinary diseases	Urinary system diseases	Lectures and practical laboratories	Daily, midterm and final exams, practical exam, reports
6	3	Pathophysiology of digestive system diseases In the practical part, identifying the histopathological changes in the gastrointestinal tract	Digestive system diseases	Lectures and practical laboratories	Daily, midterm and final exams, practical exam, reports
7	Mid-term examination				
8	3	Disorder of the liver, pancreas, gall bladder, and salivary glands In the practical part, identifying the histopathological lesions in some liver and pancreatic diseases	Diseases of organs and glands associated with the digestive system	=	=



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9	3	Endocrine disorders and autoimmune diseases: thyroid disorder, diabetes mellitus, and metabolic syndrome in the practical part, identifying the histopathological lesions in some endocrine glands	Autoimmune and glandular disorder	=	=
10	3	Pathophysiology of some neurological disorders In the practical part, identifying the histopathological lesions in neuro-endocrine tissue	Disease of the nervous system	=	=
11	3	Pathophysiology of some male and female reproductive system diseases	Disease of the reproductive system	=	=
12	3	Pathophysiology of blood disease In the practical part, identifying the histopathological lesions in blood cells	Blood diseases	=	=



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13	3	Pathophysiology of some skin and musculoskeletal system diseases In the practical part, identifying the histopathological lesions in muscles, ligaments, tendons, and bone	Disease of skin and muscle-skeletal system	=	=
14	3	Theories and pathophysiology of cancer In the practical part, identifying the histopathological lesions in some tumor tissues	Cancerous diseases	=	=
15	3	Pathophysiology of cellular changes In the practical part, identifying the histological changes in apoptosis, necrosis, hyperplasia, atrophy, and metaplasia	Cellular changes	=	=
47.Course Evaluation					
Mid-term examination 20 marks Practical work 20 marks Final examination 60 marks					



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48. Learning and Teaching Resources

Required textbooks (curricular books, if any)	
Main references (sources)	-Study Guide for Understanding Pathophysiology 7th Ed; 2021 Pathophysiology of Disease, An Introduction to Clinical Medicine, 6th Ed; 2010
Recommended books and references (scientific journals, reports...)	McCance & Huethers Pathophysiology ,9th Ed 2022
Electronic References, Websites	



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1. Course Name:	
Organic Pharmaceutical Chemistry I	
2. Course Code:	
330 ChPOp1	
3. Semester / Year:	
Second Semester / Third Year	
4. Description Preparation Date:	
9-2026	
5. Available Attendance Forms:	
On campus	
6. Number of Credit Hours (Total) / Number of Units (Total)	
3 hours Theoretical + 2 hours Practical (75 hours) / 4 units	
7. Course administrator's name (mention all, if more than one name)	
Theory: Asst. Prof. Dr. Marwan Imad (marwan.imad.ijihad@bcms.edu.iq) Theory: Asst. Lecturer Dr. Farah Abdulhaleem(farah.abdulahaleem@bcms.edu.iq) Practical: Lecturer Salsal Kamal Abdulrahman (salsal.kamal.abdulrahman@bcms.edu.iq)	
8. Course Objectives	
Course Objectives	1. Highlighting the concept of drug journeys inside the body (ADME) 2. Studying drug and chemical metabolism 3. Studying factors affecting drug metabolism 4. Studying Stereochemical Aspects of Drug Metabolism.
9. Teaching and Learning Strategies	
Strategy	1. Theoretical Lectures 2. Conducting Scientific Experiments 3. Study Circles/Seminars 4. Daily Assignments 5. Written Examinations 6. Methodological and Supplementary Books 7. Illustrative Videos
10. Course Structure	



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Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1-2	2	Introduction to drug journeys inside the body	Drug distribution	Lectures and practical laboratories	Daily, midterm and final exams, practical exam, reports
3	4	Effect of drug pKa vs. environmental pH	Acid-base properties of drugs	Lectures and practical laboratories	Daily, midterm and final exams, practical exam, reports
4	2	Basic knowledge of drug design	Computer-aided drug design	Lectures and practical laboratories	Daily, midterm and final exams, practical exam, reports
5	3	Influence of forces and drug-receptor interaction	Molecular forces in drug-receptor interaction	Lectures and practical laboratories	Daily, midterm and final exams, practical exam, reports
6	4	Spatial features of drugs	Stereochemical complementarity to receptor	Lectures and practical laboratories	Daily, midterm and final exams, practical exam, reports
7	4	Effect of isosteric replacements on drug structure	Bioisosterism	Lectures and practical laboratories	Daily, midterm and final exams, practical exam, reports
8-12	1	Types & sites of metabolism	General drug metabolism pathways & biotransformation sites	Lectures and practical laboratories	Daily, midterm and final exams, practical exam, reports
	1	Role of Cytochrome P450 monooxygenase	Oxidative biotransformation via CYP450	Lectures and practical laboratories	Daily, midterm and final exams, practical exam, reports
9	—	Oxidation of benzene-containing compounds	Oxidative reactions Lecture		Oral & written exam



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	—	- Olefin oxidation- Benzylic carbon oxidation- Allylic carbon oxidation			Oral & written exam
	—	- α-carbon to carbonyl/imine oxidation- Aliphatic and alicyclic carbon oxidation			Oral & written exam
	—	- Heteroatom oxidation (C-N, C- O, C-S)- Alcohol & aldehyde oxidation- Misc. oxidation pathways			Oral & written exam
13	2	Reduction of carbonyls, nitro & azo compounds- Misc. reduction reactions	Reductive metabolism	Lecture	Oral & written exam
	—	Hydrolysis of esters/amides- Misc. hydrolytic reactions- Prodrug activation	Hydrolytic reactions & bioactivation	Lecture	Oral & written exam
14	2	- Glucuronidation- Sulfation- Conjugation with glycine, glutathione, amino acids	Phase II metabolism (conjugation reactions)	Lecture	Oral & written exam
15	—	Study of factors affecting drug metabolism	Influencing factors on metabolism	Lecture	Oral & written exam
	2	Study of stereochemistry's impact on metabolism	Stereochemical aspects of metabolism	Lecture	Oral & written exam



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	—	Study of pharmacologically active metabolites	Active drug metabolites	Lecture	Oral & written exam
11. Course Evaluation					
• 20 M Theoretical assessment. □ (paper-based mid-term exam + quiz + attendance + seminar) • 20 M practical assessment (attendance + quiz + practice) • 60 M paper-based theoretical final exam • total 100 M					
12. Learning and Teaching Resources					
Required textbooks (curricular books any)		Wilson and Gisvold Textbook of Organic medicinal and Pharmaceu chemistry, Delgado JN, Remers WA, (Eds); 12th ed, 2011			
Main references (sources)		Wilson and Gisvold Textbook of Organic medicinal and Pharmaceu chemistry, Delgado JN, Remers WA, (Eds); 12th ed, 2011			
Recommended books and references (scientific journals, reports...)					
Electronic References, Websites		https://www.sciencedirect.com/book/9780128128381/organic-chemistry			



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1. Course Name	
Pharmacology I	
2. Course Code	
331 ACIPha1	
3. Semester / Year	
2nd semester/ 3rd year	
4. Description Preparation Date:	
9-2026	
5. Available Attendance Forms	
In campus.	
6. Number of Credit Hours (Total) / Number of Units (Total)	
3 hours theoretical (45 hours) / 3 units	
7. Course administrator's name (if more than one name)	
Lecturer: Humam Tawfiq Hadi (humam.hadi@bcms.edu.iq)	
8. Course Objectives	
Course Objectives	Introduce pharmacy students to general pharmacokinetics, drug receptor interaction, pharmacodynamics including the autonomic nervous system (ANS), cholinergic system, adrenergic system, antimicrobial drugs, and various drug groups used in the treatment of infections. Furthermore, the course will cover antibacterial drugs, antifungal drugs, antiprotozoal drugs, and anthelmintic drugs.
9. Teaching and Learning Strategies	
Strategy	Types of teaching methods include lecture-based teaching, group learning, individual learning, and interactive/participatory methods using point solution devices.
10. Course Structure	



Third Year- Course Description 2026-2027



week	Hours	Required Learning Outcomes	Unit or Subject Name	Learning method	Evaluation method
1	3	Introducing pharmacy students to general pharmacokinetics.	Pharmacokinetics.	Lectures and seminars	Daily, midterm and final exams, reports and seminars
2	3	Introducing pharmacy students to drug receptor interaction and pharmacodynamics.	Drug receptor interaction and pharmacodynamics.	Lectures and seminars	Daily, midterm and final exams, reports and seminars
3-4	6	Introducing pharmacy students to the autonomic nervous system (ANS), cholinergic system, and adrenaline.	Autonomic nervous system (ANS), cholinergic and adrenaline systems	Lectures and seminars	Daily, midterm and final exams, reports and seminars
5	3	Introducing pharmacy students to the basics of antimicrobial therapy.	Head of antimicrobial therapy.	Lectures and seminars	Daily, midterm and final exams, reports and seminars



Third Year- Course Description 2026-2027



6-7	6	Introducing pharmacy students to beta-lactam antibiotics and other antibiotics that inhibit cell wall synthesis.	Beta-lactam and other antibiotics that inhibit cell wall formation	Lectures and seminars	Daily, midterm and final exams, reports and seminars
8	3	Introducing pharmacy students to protein synthesis inhibitors.	Protein synthesis inhibitors	Lectures and seminars	Daily, midterm and final exams, reports and seminars
9	3	Introducing pharmacy students to quinolone, antifolate and urinary tract disinfectants.	Quinolones, folic acid antagonists, urinary tract disinfectants.	Lectures and seminars	Daily, midterm and final exams, reports and seminars
10	3	Introducing pharmacy students to antibacterial drugs.	Antibacterial drugs	Lectures and seminars	Daily, midterm and final exams, reports and seminars
11	3	Introducing pharmacy students to antifungal drugs.	Antifungal drugs.	Lectures and seminars	Daily, midterm and final exams, reports and seminars



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12	3	Introducing pharmacy students to anti-protozoal drugs.	Antiprotozoal drugs.	Lectures and seminars	Daily, midterm and final exams, reports and seminars
13	3	Introducing pharmacy students to anthelmintic drugs.	Anthelmintic drugs.	Lectures and seminars	Daily, midterm and final exams, reports and seminars
11. Course Evaluation					
25 marks depending on the midterm exam score 5-degree daily preparation and daily exams Final exams score 70 Total = 100					
12. Learning and Teaching Resources					
Required textbooks (curricular books, if any)			Pharmacology Lippincott Latest Edition		
Main references (sources)			Pharmacology by Ren Latest Edition		
Recommended books and references (scientific journals, reports...)			• British Pharmacopoeia • Pharmacopoeia in the United States • European Pharmacopoeia		
Electronic References, Websites					



Third Year- Course Description 2026-2027



1. Course Name:	
Pharmaceutical and Cosmetic Preparation	
2. Course Code:	
332 PhPc	
3. Semester / Year:	
2 nd Semester/3 rd year	
4. Description Preparation Date:	
9-2026	
5. Available Attendance Forms:	
Students' signature on attendance sheet	
6. Number of Credit Hours (Total) / Number of Units (Total)	
3 hours Theoretical + 2 hours Practical (75) /4 units	
7. Course administrator's name	
Theory: Lecturer Eman Gameel Email: eman.gameel@bcms.edu.iq Practical: Assistant Lecturer Ruwayda Mohammed Email: ruwayda.mohamd@bcms.edu.iq	
8.Course Objectives	
1) Understand the principles, preparation, and stability of pharmaceutical emulsions, including surfactant systems and microemulsions. 2) Study the formulation, compounding, and use of semisolid dosage forms such as ointments, creams, gels, and dermatologic preparations. 3) Explore the design and clinical applications of suppositories, vaginal inserts, and medication sticks, including manufacturing and quality control. 4) Learn the physicochemical and therapeutic considerations for selecting appropriate bases and packaging for topical and rectal formulations. 5) Examine the formulation strategies and clinical uses of cosmetic products, including sunscreens, exfoliants, and anti-aging preparations. 6) Apply knowledge of formulation science to ensure safety, effectiveness, and patient acceptability of pharmaceutical and cosmetic products.	
9.Teaching and Learning Strategies	
Strategy	Lecturing, Seminars, Homework, Quiz, and Practical laboratory demonstrations



Third Year- Course Description 2026-2027



10. Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1-3	9	• Purpose of emulsion and emulsification • Theories of emulsification • Gibbs free energy in an emulsion • Preparation of emulsions • Emulsifying agents • HLB system • Blending of surfactants • Surface area of globules • Methods of emulsion preparation • Mixing immiscible liquids • • Microemulsions • Stability of emulsions • Examples of oral emulsions • Examples of topical emulsions	Emulsions (Chapter 14) (Pharmaceutical Dosage Forms and Drug Delivery Systems by Howard A. Ansel; 11th edition, 2017)	Lectures and practical laboratories	Daily, midterm and final exams, practical exam, reports
4-6	9	• Ointments • Ointment bases • Selection of the appropriate base	Ointments, creams and gels (Chapter 10) (Pharmaceutical Dosage Forms and Drug Delivery	Lectures and practical laboratories	Daily, midterm and final exams, practical exam, reports



Third Year- Course Description 2026-2027



		• Compendial requirements for ointments • Preparation of ointments • Creams • Preparation of creams • Gels: preparation, packaging and storage • Miscellaneous semisolid preparations: pastes, plasters, and glycerogelatin • Packaging semisolid preparations • Examples of ointments, creams and gels • Features and uses of dermatologic preparations • Features and uses of ophthalmic ointments and gels • Features and uses of nasal	Systems by Howard A. Ansel; 11th edition, 2017)		
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Third Year- Course Description 2026-2027



		ointments and gels • Features and uses of rectal preparations • Features and uses of vaginal preparations • Drug release from semisolid dosage forms			
7-9	9	• Suppositories • Uses and applications • Some factors of drug absorption from rectal suppositories • Suppository bases • Formulation variables • Preparation of suppositories (dose replacement calculations) • Manufacturing suppositories • Quality control • Packaging	Suppositories, inserts and sticks (Chapter 12) (Pharmaceutical Dosage Forms and Drug Delivery Systems by Howard A. Ansel; 11th edition, 2017)	Lectures and practical laboratories	Daily, midterm and final exams, practical exam, reports



Third Year- Course Description 2026-2027



		and storage • Stability • Rectal suppositories (with examples) • Urethral suppositories (with examples) • Vaginal inserts • Vaginal inserts (tablets) • Medication sticks • Special types of suppositories • Clinical considerations			
10	3	Physical incompatibilities, chemical incompatibilities, correction of incompatibilities	Pharmaceutical Incompatibilities (chapter 21) (Pharmaceutical Dosage Forms and Drug Delivery Systems by Howard A. Ansel; 11th edition, 2017)	Lectures and practical laboratories	Daily, midterm and final exams, practical exam, reports
10-15	16	• Introduction • Cosmetic formulation of skin care products (Chapter 1) • Toners and astringents (Chapter 5) • Antiperspirants	Cosmetic Formulations (Cosmetic Formulation of Skin Care Products; by Zoe Diana Draelos and Lauren A. Thaman; Taylor and Francis Group; 2006)	Lectures and practical laboratories	Daily, midterm and final exams, practical exam, reports



Third Year- Course Description 2026-2027



		(Chapter 8) • Sunscreens (Chapter 9) • Anti-aging skin care formulations (Chapter 11) • Topical exfoliation—clinical effects and formulating considerations (Chapter 15) Herbs in cosmeceuticals (Chapter 19)			
11. Course Evaluation					
• 20 M Theoretical assessment (paper-based mid-term exam + quiz + attendance + seminar) • 20 M practical assessment (attendance + quiz + practice) • 60 M paper-based theoretical final exam • total 100 M					
12. Learning and Teaching Resources					
Required textbooks		1) Pharmaceutical Dosage Forms and Drug Delivery Systems by Howard A. Ansel; 11 th edition, 2017. 2) Cosmetic Formulation of Skin Care Products; by Zoe Diana Draelos and Lauren A. Thaman; Taylor and Francis Group; 2006			
Main references (sources)					
Electronic References, Websites					



Third Year- Course Description 2026-2027



1. Course Name:					
Biochemistry II					
2. Course Code:					
333 ACIBc2					
3. Semester / Year:					
Second Semester / Third year					
4. Description Preparation Date:					
9-2026					
5. Available Attendance Forms:					
In-person attendance					
6. Number of Credit Hours (Total) / Number of Units (Total)					
3 hours Theoretical + 2 hours Practical (75) /4 units					
7. Course administrator's name (mention all, if more than one name)					
Assist. Prof. Dr. Zainab A. Alshamma (Z.alshamma@bcms.edu.iq)					
Lecturer. Nawfal Ayad Mahmood (nawfal.ayad@bcms.edu.iq)					
8. Course Objectives					
Course Objectives		• Learning of the fundamentals of cellular metabolism of carbohydrates, lipids, and amino acids and their association with various metabolic diseases. • Providing students with the necessary technical skills in the field of biochemistry.			
9. Teaching and Learning Strategies					
Strategy		• Presentation and recitation • Interactive discussions • Brainstorming • Research and induction			
10. Course Structure					
Week	Hours	Required Learning Outcomes	Unit	Learning method	Evaluation method
1	1	The application of the laws of thermo- dynamics in biological systems, the relationship between endothermic and exothermic reactions, the	Bioenergetics: The Role of ATP	Lectures and practical laboratories	Daily, midterm and final exams, practical exam, reports



Third Year- Course Description 2026-2027



		function of adenosine triphosphate as the “energy currency” for cells.			
1	2	Explain what is meant by anabolic, catabolic and combined metabolic pathways; A description of the metabolic process at the tissue, organ, and subcellular levels; Methods of regulating the flow of metabolites through metabolic pathways; How to provide metabolic fuel supply in both the fed and the fasting states.	Overview of metabolism and the provision of metabolic fuels	Lectures and practical laboratories	Daily, midterm and final exams, practical exam, reports
2	3	Description of the pathway of glycolysis, its regulation, and the possibility of its occurrence under anaerobic conditions. The differences between the roles of glucokinase and hexokinase in glycolysis; Description of the pyruvate	Glycolysis and the oxidation of pyruvate	Lectures and practical laboratories	Daily, midterm and final exams, practical exam, reports



Third Year- Course Description 2026-2027



		dehydrogenase reaction and its regulation.			
3	3	Description of the citric acid cycle reactions, its regulation, and emphasizing the reactions that lead to the production of reducing equivalents; Explain the importance of vitamins in citric acid cycle; Explain how the cycle provides a pathway for amino acid catabolism and a pathway for their synthesis.	The citric acid cycle	Lectures and practical laboratories	Daily, midterm and final exams, practical exam, reports
4	3	Description of the four protein complexes involved in the transfer of electrons through the respiratory chain; How electron transfer through the respiratory chain generates ATP through the process of oxidative phosphorylation; List examples of the common toxins	The respiratory chain and oxidative phosphorylation	Lectures and practical laboratories	Daily, midterm and final exams, practical exam, reports



Third Year- Course Description 2026-2027



		that interfere with electron transport or oxidative phosphorylation and identify their sites of action.			
5	3	Description of the structure of glycogen and its importance as a carbohydrate store; The synthesis and catabolism of glycogen and how the two processes are regulated; Description of the different types of glycogen storage diseases.	Metabolism of glycogen	Lectures and practical laboratories	Daily, midterm and final exams, practical exam, reports
6	3	The importance of gluconeogenesis in glucose homeostasis; the pathway of gluconeogenesis, and how glycolysis and gluconeogenesis are mutually regulated; how plasma glucose concentration is maintained within certain limits in the fed and the fasting states.	Gluconeogenesis and the control of blood glucose	Lectures and practical laboratories	Daily, midterm and final exams, practical exam, reports
7	Mid-term examination				



Third Year- Course Description 2026-2027



8	3	The pentose phosphate pathway and its importance; the uronic acid pathway and its importance; the consequences of consuming large amounts of fructose; the structure and physiological importance of galactose; the consequences of genetic defects of glucose-6- phosphate dehydrogenase deficiency, the uronic acid pathway, and fructose and galactose metabolism.	The Pentose Phosphate Pathway and other pathways of hexose metabolism	=	=
9	3	Indicate the intermediate compounds of the citric acid cycle and glycolysis that are precursors of certain amino acids, the key role of transaminases in amino acid metabolism. Explain the process by which 4- hydroxyproline, 5- hydroxylysine and the synthesis of some amino acids through the selenocysteine are formed in some proteins. assimilation of free ammonia; the synthesis of some amino acids using	Biosynthesis of nutritionally nonessential amino acids Catabolism of proteins and of amino acid nitrogen Catabolism of the carbon skeletons of amino acids Conversion of amino acids to specialized products	=	



Third Year- Course Description 2026-2027



		other amino acids.			
9	2	Description of protein metabolism, its functions, its speed determinants, and cellular protein catabolism pathways. The central roles of transaminases, glutamate dehydrogenase, and glutaminase in nitrogen metabolism; description of the cycle of urea synthesis, its regulation, and its metabolic defects.			=
10	1	Illustration of the catabolic pathways of amino acids' carbon skeletons and their major metabolic fates; the clinically important metabolic disorders in this regard.		=	
10	2	The involvement of amino acids as precursors in the biosynthesis variety of biological molecules other than proteins. The structure and nomenclature of porphyrin. the pathway of heme synthesis and its catabolism. the causes and general clinical features of different porphyries.	Porphyrins and bile pigments	= = =	= =



Third Year- Course Description 2026-2027



11	3	Fatty acids transportation in the blood. activation of fatty acids and their transportation into mitochondria for oxidation. the beta oxidation pathway. ketone bodies formation and the pathological conditions that accompany their excessive formation.	Oxidation of fatty acids	=	
12	3	Description of the acetyl-CoA acetylase reaction and the mechanisms of regulating its activity to control the rate of fatty acid synthesis; the synthesis of long-chain fatty acids and required cofactors; the synthesis of polyunsaturated fatty acids.	Biosynthesis of fatty acids and eicosanoids	=	
13	3	The catabolism of triacylglycerols and the fate of the resulting metabolites; the synthesis of triacylglycerols, inositol phosphoglycerols, cardiolipin, triacylglycerols, plasmogens, and platelet-activating factor;	Metabolism of acylglycerols and sphingolipids	=	



Third Year- Course Description 2026-2027



		the role of different phospholipases in the degradation and remodeling of phospholipids; the synthesis of sphingolipids.			
14	3	Description of the four main plasma lipoproteins and their structure; the transport of lipoproteins to and from the liver and the role of the liver in their metabolism; the metabolism of lipoproteins in the blood and the delivery of cholesterol from the liver to extrahepatic tissues. the mechanisms by which cholesterol is delivered from extrahepatic tissues and returned to the liver by reverse cholesterol transport; The processes by which fatty acids are released from triacylglycerol stored in adipose tissue and the role of brown adipose tissue in generating body heat.	Lipid transport and storage	=	=



Third Year- Course Description 2026-2027



15	3	The importance of cholesterol as a basic structural component in the body, and its pathological role; the pathway of cholesterol biosynthesis and its regulation. the role of plasma lipoproteins in transporting cholesterol among tissues.	Cholesterol synthesis, transport, and excretion	=	=
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11. Course Evaluation

Mid-term examination (15 marks)
 Quiz and homework (5 marks)
 Practical work (20 marks)
 Final examination (60 marks)

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	Harper's Illustrated Biochemistry, 32 ed.
Main references (sources)	Lippincott Illustrated Reviews: Biochemistry, 7 th ed. Lehninger Principles of Biochemistry, 8 th ed.
Recommended books and references (scientific journals, reports...)	
Electronic References, Websites	



Third Year- Course Description 2026-2027



1. Course Name:	
Pharmacognosy and medicinal plants III	
2. Course Code:	
334 ChPP3	
3. Semester / Year:	
2 nd semester/ 3 rd year	
4. Description Preparation Date:	
9-2026	
5. Attendance:	
On campus	
6. Number of Credit Hours (Total) / Number of Units (Total)	
2 hours Theoretical + 2 hours Practical (60) /3units	
7. Course administrator's name (mention all, if more than one name)	
Prof. Maha Noori Hamad Email: mahanoori@bcms.edu.iq Lab instructors: Assist. Lect. Huda Saaran Hosny Email: Hsaaz16@bcms.edu.iq	
8. Course Objectives	
Course Objectives	• Studying some groups of secondary metabolites chemically, biologically, pharmacologically & their biosynthesis pathway & uses.
9. Teaching and Learning Strategies	
Strategy	• Presentation and recitation • Interactive discussions • Brainstorming • Small groups • Research and induction • Flipped rows • Discussions • Field visits to institutions and entities related to fishing work • Volunteer work, seminars, workshops and exhibitions
10. Course Structure	



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Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2	Describe alkaloid classification, basic physicochemical traits, and extraction techniques	Alkaloids: Introduction, Physical & Chemical Properties & Extraction	Lectures and practical laboratories	Daily, midterm and final exams, practical exam, reports
2	2	Identify structural features and pharmacological roles of pyridine-piperidine and tropane alkaloids	Pyridine-piperidine, Tropane Alkaloids	Lectures and practical laboratories	Daily, midterm and final exams, practical exam, reports
3	2	Compare biosynthetic pathways and therapeutic uses	Tropane Alkaloids (Cont.), Quinoline Alkaloids	Lectures and practical laboratories	Daily, midterm and final exams, practical exam, reports
4	2	Analyze Isoquinoline biosynthesis and medicinal relevance	Isoquinoline Alkaloids	Lectures and practical laboratories	Daily, midterm and final exams, practical exam, reports
5	2	Distinguish between types of indole alkaloids and correlate with clinical uses	Indole Alkaloids	Lectures and practical laboratories	Daily, midterm and final exams, practical exam, reports
6	2	Describe structural diversity And physiological activity	Imidazole & Steroidal Alkaloids	Lectures and practical laboratories	Daily, midterm and final exams, practical exam, reports
7	2	Explain occurrence, structure, and role in therapy	Lupinane Alkaloids, Alkaloidal Amines	Lectures and practical laboratories	Daily, midterm and final exams, practical exam, reports



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8	2	Define purine alkaloids and outline antibiotic origins	Purine Bases, Antibiotics: Introduction	Lectures and practical laboratories	Daily, midterm and final exams, practical exam, reports
9	2	Outline natural product sources and basic purification steps	Natural Sources, Production, Isolation & Purification	Lectures and practical laboratories	Daily, midterm and final exams, practical exam, reports
10	2	Classify biosynthetic routes of natural products	Production (Cont.), Biosynthesis Pathways, Classification	Lectures and practical laboratories	Daily, midterm and final exams, practical exam, reports
11	2	Compare biosynthetic origins of antibiotic classes	Biosynthesis of Different Classes of Antibiotics	Lectures and practical laboratories	Daily, midterm and final exams, practical exam, reports
12	2	Discuss basic concepts and regulatory aspects of phytotherapy	Phytotherapy: Introduction, Principles	Lectures and practical laboratories	Daily, midterm and final exams, practical exam, reports
13	2	Examine ethnobotanical approaches in various health systems	Medicinal Plants in Selected Health Care Systems	Lectures and practical laboratories	Daily, midterm and final exams, practical exam, reports
14	2	Identify key phytochemicals with therapeutic application	Important Natural Products & Phytomedicines Used in Pharmacy & Medicine	Lectures and practical laboratories	Daily, midterm and final exams, practical exam, reports
15	2	Evaluate evidence-based use of remaining phytomedicines	Important Natural Products (Cont.)	Lectures and practical laboratories	Daily, midterm and final exams, practical exam, reports

11. Course Evaluation



Third Year- Course Description 2026-2027



- 20° Theoretical Part
- (Seminar + attendance + quiz + mid-term exam)
- 20 degrees practical part (practical technique + cob + presence)
- 60 Final Exam Marks

Total 100 degrees

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	Pharmacognosy 9 th edition Varro E.Tyler, Lynn R.Brady.
Main references (sources)	Pharmacognosy 16 th edition Trease & Evans.
Recommended books and references (scientific journals, reports...)	Phytochemical methods 3 th edition A guide to modern techniques of plant analysis 1998
Electronic References, Websites	Thin layer chromatography 2 nd edition Egon Stahl. 1990



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1. Course Name:					
Pharmacy Ethics					
2. Course Code:					
335 ACIPE					
3. Semester / Year:					
2nd semester/ Third					
4. Description Preparation Date:					
9-2026					
5. Available Attendance Forms:					
On campus					
6. Number of Credit Hours (Total) / Number of Units (Total)					
1 Hour (15) /1 Units					
7. Course administrator's name (mention all, if more than one name)					
Name: Assistant Lecturer Zainab Nazar					
Email: zainab.nazar@bcms.edu.iq					
8. Course Objectives					
Course Objectives		The course will provide an overview of ethical issues facing practicing pharmacists to enable the student to understand the basic concepts of ethics which formulate the relationship of pharmacists with the patient, colleges, and other health personnel to deliver his pharmaceutical services in a good way...			
9. Teaching and Learning Strategies					
Strategy		Enable students to understand ethical issues and common ethical dilemma which may face pharmacists in the pharmacy, hospital, and community.			
10. Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1-2	2	History and definition of ethics in pharmacy	Introduction to Pharmacy Ethics (Theoretical considerations).	Lectures and seminars	Daily, midterm and final exams, reports and seminars
3	1	Principals of code of pharmacy ethics	Code of Ethics for Pharmacists	Lectures and seminars	Daily, midterm and final exams, reports and seminars



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4-5	2	Definitions and examples about ethical considerations	Common Ethical Considerations in Pharmaceutical Care Practice (Beneficence, Autonomy, Honesty, Informed Consent, Confidentiality, Fidelity.....).	Lectures and seminars	Daily, midterm and final exams, reports and seminars
6	1	Definitions and examples of ethical considerations	Other ethical considerations	Lectures and seminars	Daily, midterm and final exams, reports and seminars
7-8	2	How to build good Interprofessional considerations	Interprofessional Relations.	Lectures and seminars	Daily, midterm and final exams, reports and seminars
9	1	Types of ethical decisions	Making ethical decisions.	Lectures and seminars	Daily, midterm and final exams, reports and seminars
10	1	Understand how ethics play an important role before making research	Ethical issues related to clinical pharmacy research.	Lectures and seminars	Daily, midterm and final exams, reports and seminars
11	1	Definition of misuse and abuse, prevention, treatment and complications	Preventing misuse of medicines.	Lectures and seminars	Daily, midterm and final exams, reports and seminars
12-15	3	1-Apply ethical considerations on some clinical cases. 2-The main ethical dilemma in clinical cases.	Case studies in pharmacy ethics.	Lectures and seminars	Daily, midterm and final exams, reports and seminars

11. Course Evaluation.

Theoretical midterm exam (25%), Quizzes (2%) , and attendance (3%), and the end semester exam will be assessed for 70% of the final mark



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12. Learning and Teaching Resources.	
Required textbooks (curricular books, if any)	Robert J. Cipolle, Linda M. Strand, Peter C. Morley. Pharmaceutical Care Practice: The Clinician's Guide.
Main references (sources)	
Recommended books and references (scientific journals, reports...)	• Course notes in medical ethics and law • Compelling_Ethical_Challenges_in_Critical_Care_and_Emergency_Medicine
Electronic References, Websites	Review articles