

Course Description

Organic Chemistry III, second course Second Stage

• Educational Institution	Ministry of Higher Education and Scientific Research
• University Department / Center	Alzahrawi University College/ pharmacy collage
• Course Name / Code	Organic Chemistry III, PPCS 24
• Programs in which it is included	Bachelor of Pharmacy
• Available Forms of Attendance	Daily
• Semester / Year	Second course 2025-2026
• Total Number of Study Hours	24 hr.
• Date of preparing this description	2023-2024
• Course objectives:	• Synthesis and properties of heterocyclic compounds , in addition to enabling students understand the chemistry of aromatic heterocyclic compounds and the classification, properties, and reactions of aromatic heterocyclic organic compounds. It includes understanding the basic structure to furan, pyrrole, thiophene. and features of heterocyclic aromatic compounds.
• Learning Outcomes, Teaching and Learning Methods, and Evaluation	

Knowledge and Understanding

Basic concepts of heterocyclic aromatic organic reactions, their classification and reaction mechanisms. to be used as a guide in structure determination . Identification and application of different organic compounds.

- **Subject-Specific Skills:**
- Get experience in carrying out different heterocyclic aromatic organic reactions

Teaching and Learning Methods:

using white board and projector screen

- **Evaluation Methods:**

- Periodic exams, reports, seminars, routine homeworks, final exams.

- **Thinking Skills:**

- **Practical workshops, homeworks, exams**

Teaching and Learning Methods:

using white board and projector screen. Lectures to direct students to textbooks, notes and on-line material. Laboratory practice. Assignments and researches done and presented by the students in seminars.

Evaluation Methods : Periodic exams, seminars, and reports

e. General and Transferable Skills:

Communicate clearly by verbal and written means. Retrieve and evaluate information from different sources to improve professional competencies. Work effectively in a team. Use numeracy, calculation and statistical methods as well as information technology tools. Practice independent learning for continuous professional development. Demonstrate creativity and time management abilities. Implement writing and presentation skills. Demonstrate critical thinking, problem solving and decision making abilities.

- **Course Structure for the Fifth Stage, Theoretical Subject (First Course)**

Week	Hours	Required Learning Outcomes	Unit Name Course or Topic	Learning Method	Assessment Method
1	3	Knowledge	Heterocyclic system, classes, general structures	Use of the board and display screen	Daily examination and oral questions and discussion

2	3	Knowledge	five membered ring heterocycle	Use of the board and display screen	Daily examination and oral questions and discussion and homework assignments
3	3	Knowledge	Source of pyrrole, furan and thiophene.	Use of the board and display screen	Daily examination and oral questions and discussion and homework assignments
4	3	Knowledge	ES-Ar reactions of pyrrole, furan and thiophene	Use of the board and display screen	Daily examination and oral questions and discussion and homework assignments
5-6	6	Knowledge	6-membered aromatic heterocycles	Use of the board and display screen	Daily examination and oral questions and discussion and homework assignments
7-8	6	Knowledge	Saturated 5-membered heterocycled	Use of the board and display screen	Daily examination and oral questions and discussion and homework assignments
9	3	Knowledge	Saturated 5-membered heterocycled	Use of the board and display screen	Daily examination and oral questions and discussion and homework assignments
10-11	6	Knowledge	Heterocycles with 2 or 3 heteroatoms	Use of the board and display screen	Daily examination and oral questions and discussion and homework assignments
13	3	Knowledge	Heterocycles with 2 or 3 heteroatoms	Use of the board and display screen	Daily examination and oral

					questions
14	3	Knowledge	Condensed heterocycles	Use of the board and display screen	Daily examination and oral questions
15	3	Knowledge	Condensed heterocycles	Use of the board and display screen	Daily examination and oral questions

• Infrastructure	
Required Readings:	References: 1- Organic Chemistry by Robert T. Morrison and Robert N. Boyd, latest edition. 2- Organic Chemistry by J. McMurry, latest ed., Thomson learning, CA, USA. 3_ An introduction to the chemistry of heterocyclic compound by Acheson, R. M. latest ed.
Special Requirements (Workshops, Journals, Software, Websites):	Electronic Websites: Molecules journal, Journal of medicinal chemistry.
Social Services (Guest Lectures, Professional Training, Field Studies, Others)	Organizing workshops and courses for graduates: : Distance education and electronic lectures

• Admission:	
Prerequisites	Admission according to the central plan
Minimum Number of Students	120
Maximum Number of Students	Admission exceeds the capacity plan: 140

Course coordinator: Assistant lecturer Ahmed M. Motlk