

## COURSE SPECIFICATIONS

### Form

Course Title: **Advanced Heterocyclic Chemistry**

Course Code: **4026833-3**



Date: 30-10-2018

Institution: Umm Al-Qura University.

College: Faculty of Applied Science

Department: Department of Chemistry

### A. Course Identification and General Information

1. Course title and code: **Advanced Heterocyclic Chemistry / 4026833-3**

2. Credit hours: **3 hrs. (theoretical)**

3. Program(s) in which the course is offered. **M. Sc. in Chemistry**

(If general elective available in many programs indicate this rather than list programs)

4. Name of faculty member responsible for the course: **Prof. Dr. Thoraya A. Farghaly**

5. Level/year at which this course is offered: **3<sup>rd</sup> / 2<sup>nd</sup>**

6. Pre-requisites for this course (if any): **not applicable**

7. Co-requisites for this course (if any): **not applicable**

8. Location if not on main campus: **El-Abedyah, El-Azizya, and El-Zaher**

9. Mode of Instruction (mark all that apply):

a. Traditional classroom	<input type="checkbox"/>	percentage?	<input type="checkbox"/>
b. Blended (traditional and online)	<input checked="" type="checkbox"/>	percentage?	100%
c. E-learning	<input type="checkbox"/>	percentage?	<input type="checkbox"/>
d. Correspondence	<input type="checkbox"/>	percentage?	<input type="checkbox"/>
f. Other	<input type="checkbox"/>	percentage?	<input type="checkbox"/>

Comments:

## B Objectives

### 1. The main objective of this course

**After finishing this course students will be able to:**

- Write the name of any fused heterocyclic compounds.
- Know the physical properties of different types of fused heterocyclic compounds.
- Describe and write the method of synthesis of any fused heterocyclic ring system.
- Understand the application of many fused heterocyclic rings in medicine, industry and in other fields.
- Understand current publications in heterocyclic chemistry.

### 2. Describe briefly any plans for developing and improving the course that are being implemented. (e.g. increased use of the IT or online reference material, changes in content as a result of new research in the field)

- The use of smart teaching halls for lectures.
- Increased use of IT or web based reference material.
- Encourage students to carry out research reports in the field of the course using the library, data base services, and/or websites.
- Changes in content as a result of new research in the field.

## C. Course Description (Note: General description in the form used in the program's bulletin or handbook)

### Course Description:

#### 1. Topics to be Covered

List of Topics	No. of Weeks	Contact hours
Introduction, nomenclatures of fused heterocyclic rings, two fused ring systems, three fused ring systems, and poly fused ring systems.	3	9
Physical and chemical properties of different types of heterocyclic ring systems.	2	6
General methods for synthesis of different ring systems (by a number of cyclisation and cycloaddition reactions).	4	12



Uses of heterocyclic compounds as: marketing drugs, agrochemicals, dyes and pigments, fluorescent agents, antioxidants and food additives, corrosion inhibitors, fire retardant, photographic materials, organic conductors, catalysis.	4	12
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## 2. Course components (total contact and credit hours per semester):

		Lecture	Tutorial	Laboratory/ Studio	Practical	Other	Total
Contact Hours	Planned	39	--	--	--	--	39
	Actual	39	--	--	--	--	39
Credit	Planned	3	--	--	--	--	3
	Actual	3	--	--	--	--	3

## 3. Individual study/learning hours expected for students per week.

2

## 4. Course Learning Outcomes in NQF Domains of Learning and Alignment with Assessment Methods and Teaching Strategies

On the table below are the five NQF Learning Domains, numbered in the left column.

**First**, insert the suitable and measurable course learning outcomes required in the appropriate learning domains (see suggestions below the table). **Second**, insert supporting teaching strategies that fit and align with the assessment methods and targeted learning outcomes. **Third**, insert appropriate assessment methods that accurately measure and evaluate the learning outcome. Each course learning outcomes, assessment method, and teaching strategy should fit in together with the rest to form an integrated learning and teaching process. (Courses are not required to include learning outcomes from each domain.)

### Curriculum Map

Code #	NQF Learning Domains And Course Learning Outcomes	Course Teaching Strategies	Course Assessment Methods
1.0	<b>Knowledge</b>		
1.1	Define the molecular structures of different fused heterocyclic compounds	<ul style="list-style-type: none"> <li>Lectures</li> <li>Scientific discussion</li> </ul>	<ul style="list-style-type: none"> <li>Exams</li> <li>web-based student performance systems</li> </ul>
1.2	Describe the classification of heterocyclic compounds according to their different types	<ul style="list-style-type: none"> <li>Web-based study</li> </ul>	<ul style="list-style-type: none"> <li>portfolios</li> </ul>
1.3	Know the different methods for nomenclature of fused heterocyclic compounds	<ul style="list-style-type: none"> <li>Library visits</li> </ul>	<ul style="list-style-type: none"> <li>long and short</li> </ul>
1.4	Remember the multiple methods of preparation		

	of fused heterocyclic compounds		essays • posters
1.5	Recognize the chemical properties of different types of fused heterocyclic compounds		
1.6	Recognize the role of fused heterocyclic compounds in different field in our life.		
<b>2.0</b>	<b>Cognitive Skills</b>		
2.1	Development of reverse thinking skill (back thinking) and the student's acquiring the training skill to choose the suitable method for fused heterocyclic compounds preparation	<ul style="list-style-type: none"> <li>• Lectures</li> <li>• Scientific discussion</li> <li>• Web-based study</li> <li>• Library visits</li> </ul>	<ul style="list-style-type: none"> <li>• Exams</li> <li>• web-based student performance systems</li> <li>• portfolios</li> <li>• long and short essays</li> <li>• posters</li> <li>• demonstrations</li> </ul>
2.2	Making the student acquire the skill of naming any fused heterocyclic compounds		
2.3	The student acquiring of the skill of how to predict the outcomes of interactions of heterocyclic compounds		
2.4	The student can pick the appropriate methods for the preparation of fused heterocyclic compounds		
2.5	Design of different ways to nomenclature the heterocyclic compounds		
2.6	Student invents different ideas for the construction of bioactive fused heterocyclic compounds.		
2.7	The student is planning to make a research program in the field of applied heterocyclic chemistry.		
<b>3.0</b>	<b>Interpersonal Skills &amp; Responsibility</b>		
3.1	Develop the student's ability in self-reliance and responsibility.	<ul style="list-style-type: none"> <li>• Lectures</li> <li>• Scientific discussion</li> <li>• Web-based study</li> </ul>	<ul style="list-style-type: none"> <li>• Exams</li> <li>• web-based student performance systems</li> </ul>
3.2	Choose the suitable method to solve problems in selected topics in inorganic chemistry.		
3.3	Operate in team work and accept his college's opinions.		

<b>4.0</b>	<b>Communication, Information Technology, Numerical</b>		
4.1	Introductory lecture at the beginning of the semester to use the computer and the internet to search for sources of new researches and collect the researches which help in writing reports on topics related to syllabus.	<ul style="list-style-type: none"> <li>• Lectures</li> <li>• Scientific discussion</li> <li>• Library visits</li> <li>• Web-based study</li> </ul>	<ul style="list-style-type: none"> <li>• Web-based student performance systems</li> <li>• Individual and group presentations</li> </ul>
4.2	Evaluating the performance of the students through examination, duties and the discussion in the lecture which constitute 30% of the total evaluation.		
4.3	Introductory lecture at the beginning of the semester to use the computer and the internet to search for sources of new researches and collect the researches which help in writing reports on topics related to syllabus.		
<b>5.0</b>	<b>Psychomotor(if any)</b>		
5.1	Not applicable		
5.2			

#### 5. Assessment Task Schedule for Students During the Semester

	Assessment task (i.e., essay, test, quizzes, group project, examination, speech, oral presentation, etc.)	Week Due	Proportion of Total Assessment
1	Mid-term exam	8	30%
2	Assignments and activities		10%
3	Final Exam	15-16	60%

#### D. Student Academic Counseling and Support

1. Arrangements for availability of faculty and teaching staff for individual student consultations and academic counseling. (include the time teaching staff are expected to be available per week)

- We have faculty members to provide counseling and advice.

- Office hours: During the working hours weekly.
- Academic Advising for students.

## E Learning Resources

### 1. List Required Textbooks

- T. Eicher and S. Hauptmann, "The Chemistry of Heterocycles" (2003).
- [John A. Joule and Keith Mills, Heterocyclic Chemistry, 5<sup>th</sup>, Wiley-Blackwell, 2013.](#)

### 2. List Essential References Materials (Journals, Reports, etc.)

- Alan Katritzky Tribute, Advances in Heterocyclic Chemistry, Volume 119, 2016.

### 3. List Electronic Materials, Web Sites, Facebook, Twitter, etc.

- <http://www.chemweb.com>
- <http://www.sciencedirect.com>
- <http://www.rsc.org>

### 4. Other learning material such as computer-based programs/CD, professional standards or regulations and software.

- [ChemDraw Ultra 11.0](#)

## F. Facilities Required

Indicate requirements for the course including size of classrooms and laboratories (i.e. number of seats in classrooms and laboratories, extent of computer access, etc.)

### 1. Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)

- Classrooms capacity (10) students.
- Providing hall of teaching aids including computers and projector.

### 2. Technology resources (AV, data show, Smart Board, software, etc.)

- Room equipped with computer, projector and TV.

### 3. Other resources (specify, e.g. if specific laboratory equipment is required, list requirements or attach list)

- No other requirements.

## G Course Evaluation and Improvement Procedures

### 1. Strategies for Obtaining Student's Feedback on Effectiveness of Teaching

- Questionnaires can be used to collect student feedback.
- Student representation on staff-student committees and institutional bodies.
- Structured group discussions and/or focus groups.

### 2. Other Strategies for Evaluation of Teaching by the Instructor or the Department

- Visits by other faculty can provide information about the process of teaching.
- Colleagues have the expertise to evaluate the quality of a course as evidenced by its content and format (peer reviewers.)
- The instructor's statement of his/her goals for the course, teaching methods and philosophy, student outcomes, and plans for improvement are a critical source of information.
- A systematic self-review has the potential for contributing significantly to the instructor's teaching improvement by focusing on the strengths and weaknesses of the course in light of his/her original course objectives.

### 3. Procedures for Teaching Development

- The application of e-learning.
- Exchange of experiences internal and external.
- Review of strategies proposed.
- Providing new tools for learning.

### 4. Procedures for Verifying Standards of Student's Achievement (e.g. check marking by an independent member teaching staff of a sample of student's work, periodic exchange and remarking of tests or a sample of assignments with staff members at another institution)

- Check marking of a sample of exam papers, or student work.
- Exchange corrected sample of assignments or exam basis with another staff member for the same course in other faculty.

### 5. Describe the planning arrangements for periodically reviewing course effectiveness and planning for developing it.

- Periodic review of the contents of the syllabus and modify the negatives.
- Consult other staff of the course.
- Hosting a visiting staff to evaluate of the course.
- Workshops for teachers of the course.

**Name of Course Instructor: Prof. Dr. Thoraya A. Farghaly**

**Signature:** 

**Date Completed: 30 – 10 - 2018**

**Program Coordinator: Dr. Ismail Ibrahim Althagafi**

**Signature:** 

**Date Received: 31/10/2018**

