جامعة المجمعة
Majmaah University

Course Specifications

Institution:	**Majmaah University**
Academic Department :	**Chemistry**
Programme :	**Chemistry**
Course :	Heterocyclic Compounds
Course Coordinator :	**Dr. Amani Hassan Ahmed**
Programme Coordinator :	**Dr.gehan alaemary**
Course Specification Approved Date :	**5/ 12 / 1435 H**

This form compatible with NCAAA 2013 Edition

A. Course Identification and General Information

1 - Course title: Chemistry of Heterocyclic Compounds		Course Code: CHEM 221	
2. Credit hours : (**4hours**)			
3 - Program(s) in which the course is offered: Chemistry			
4 – Course Language : Arabic language			
5 - Name of faculty member responsible for the course:			
6 - Level/year at which this course is offered : course offered in the fourth level of the chemistry curriculum			
7 - Pre-requisites for this course (if any) : Organic Chemistry II (CHEM211)			
8 - Co-requisites for this course (if any) : Heterocyclic Compounds Laboratory			
9 - Location if not on main campus **:** on main campus			
10 - Mode of Instruction (mark all that apply)			
A - Traditional classroom	*	What percentage?	**50%**
B - Blended (traditional and online)		What percentage?	**0 %**
D - e-learning	*	What percentage?	**25 %**
E - Correspondence		What percentage?	**0 %**
F - Other	*	What percentage?	**25 %**
Comments : In 1436 *H* we use e-learning –correspondence(D2L)			

B Objectives

What is the main purpose for this course?

Chemistry of Heterocyclic Compounds course is four credit hours, course offered in the fourth level of the chemistry curriculum. This course provides an introduction to the broad field of heterocyclic organic chemistry by reviewing the major classes of heterocyclic compounds in terms of nomenclature, structure, properties, preparations and reactions. The syntheses of several physiologically important heterocyclic compounds are given.

Knows the proper procedures and regulations for safe handling and use of chemicals .

Briefly describe any plans for developing and improving the course that are being implemented :

- Use electronic Materials
- Use Web Sites
- The course content are reviewed and updated annually at the beginning of each academic year by the department curriculum committee and any major changes are reported to the college curriculum committee.

C. Course Description

1. Topics to be Covered

List of Topics	No. of Weeks	Contact Hours
Introduction of nonaromatic and aromatic heterocyclic compounds and nomenclature	3	6
Chemistry of five membered aromatic heterocyclic compounds contain one heterocyclic atom such as (pyrrole furan and thiophene)	4	8
Chemistry of Indoles and related compounds (synthesis, acidity, reaction with electrophiles, oxidation and reduction reactions)	1	2
Chemistry of six membered aromatic heterocyclic compounds contain one heterocyclic atom .	2	4
Chemistry of quinoline, isoquinolin ,synthesis and reactions	1	2
Chemistry of five membered ring heterocycles with two or more than one heteroatom .	2	4
Chemistry of six membered ring heterocycles with two or more than one heteroatom.	2	4
Total	15	30
Laboratory part :		
Synthesis and reactions of selected heterocyclic compounds	8	32
Chemistry of mixtures compounds	7	28
Total	15	60

2. Course components (total contact hours and credits per semester):

	Lecture	Tutorial	Laboratory	Practical	Other:	Total
Contact Hours	**30 hours**	**-**	**60 hours**	**-**	**-**	**90 hours**
Credit	**30hours**	**-**	**30 hours**	**-**	**-**	**60 hours**

3. Additional private study/learning hours expected for students per week. | **-**

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

	NQF Learning Domains And Course Learning Outcomes	Course Teaching Strategies	Course Assessment Methods
1.0	**Knowledge**		
1.1	**By the end of this course the student will be able to:** Acquire basic knowledge on classifications of Heterocyclic Compounds ,nomenclature of Heterocyclic Compounds, structural characteristics, physical properties, synthesis of Heterocyclic Compounds and chemical reactions.	1- Lectures - format presentation 2- Practical sessions 3- Home assignment	• Interm I (writing questions) • Interm II (writing questions) • Final exam (writing questions) • lab exam : • Including interm I and final exams

	NQF Learning Domains And Course Learning Outcomes	Course Teaching Strategies	Course Assessment Methods
1.2	Draw structural and molecular and formulas of Heterocyclic Compounds		
1.3	Recognize the nomenclature, structure, physical properties synthesis and chemical reactions of Heterocyclic Compounds.		
1.4	Use modern instrumentation and classical techniques, to design experiments, and to properly record the results of their experiment.		
1.5	Identify and solve organic chemical problems and explore new areas of research		
1.6	Use modern library search tools to locate and retrieve scientific information about a topic, organic chemical, chemical technique, or an issue relating to chemistry.		
2.0	**Cognitive Skills**		
	By the end of this course the student will be able to:		
2.1	Analyze and discuss the Information and data related to Heterocyclic Compounds.	1-Lectures 2- ractical sessions 3- Home assignment	Interm I (writing questions) Interm II (writing questions) Final exam (writing questions) lab exam : Including interm I and final exams
2.2	Apply organic chemical knowledge to solve some problems.		

	NQF Learning Domains And Course Learning Outcomes	Course Teaching Strategies	Course Assessment Methods
2.3	Use organic chemical theories to explain and predict observable phenomena, using the principles developed in organic chemistry.		
2.4	The student will follow a logical process based on well-established scientific principles and demonstrate the ability to use the appropriate problem-solving techniques to solve a scientific problem such as an Heterocyclic Compounds synthesis or a determination of the structure of different Heterocyclic Compounds		
2.5	When conducting a laboratory experiment, the student will follow written procedures commonly used in the organic lab accurately and safely. The student will maintain an accurate and organized lab notebook. When completing a lab report the student will apply the scientific method correctly by being able to state a hypothesis, take careful measurements, estimate uncertainties and draw appropriate conclusions based on gathered data and scientific principles.		
2.6	**.....**	.....	.....
3.0	**Interpersonal Skills & Responsibility**		
3.1	**By the end of this course the student will be able to:** Students will effectively and respectfully communicate and collaborate with colleagues.	1-Student-directed learning**:** Small groups of students are given individual assignments.	Through observation in practical and presentations.

	NQF Learning Domains And Course Learning Outcomes	Course Teaching Strategies	Course Assessment Methods
		Students will introduce their assignment in the form of: Power point presentation. Written assignment. 2- collaborative education	
3.2	Acquire the skill of team work.		
3.3	Acquire the skill of respect colleagues		
3.4	Students will contribute their own knowledge and experiences to their community and the broader society by participating in professional and/or community activities.		
3.5	Value the role of organic chemistry in our life		
3.6			
4.0	**Communication, Information Technology, Numerical**		
4.1	**By the end of this course the student will be able to:** Students will demonstrate proficiency in writing and speaking about organic chemistry topics in a clear and concise manner to both chemists and non-chemists according to professional standards.	1-Small group teaching. 2- Practical sessions. 3-Power point presentation. 4-Written	Through, home work, observation in practical, presentation skills and exam.

	NQF Learning Domains And Course Learning Outcomes	Course Teaching Strategies	Course Assessment Methods
		assignment.	
4.2	Are skilled in problems solving, critical thinking and analytical reasoning.		
4.3	Use computers in data acquisition and processing and use available software as a tool in data analysis.		
4.4			
4.5			
4.6			
5.0	**Psychomotor**		
5.1	**By the end of this course the student will be able to:** Apply the proper procedures and regulations for safe handling and use of chemical.	1-Practical sessions.	Through observation in practical skills and lab. exam
5.2	Use modern instrumentation and classical techniques, to design experiments,		
5.3	Design, carry out, record and analyze the results of chemical experiments.		
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5. Schedule of Assessment Tasks for Students During the Semester:

	Assessment task	Week Due	Proportion of Total Assessment
1	Participation, Written assignment. Reports	All term	5%
2	Term Paper on Descriptive organic Chemistry II Topic	Through term	15%
3	first term exam	6th week	10%
4	Midterm exam	12th week	10%
5	Final exam	15th week	40%
6	Lab	15th week	20%
7	Total		100%

D. Student Academic Counseling and Support

- Arrangements for availability of teaching staff for individual student consultations and academic advice:

-Every teaching staff has to be available for the students for 2 hours 3 days a week.

-There will be a schedule for office hours of every staff member declared to the students.

-Contact numbers, and mobile numbers should be available to the students.

-Office hours are held in faculties' offices of staff members.

E. Learning Resources

1. List Required Textbooks :

- المركبات الحلقية غير المتجانسة
- اسم المؤلف:- د/ حسن بن محمد الحازمي د. ناصر محمد المهندس د. سهام عبد الرحمن عيسي
- اسم الناشر : دار الخريجي للنشر والتوزيع
- سنة النشر : ١٤٢٢ هـ
- المركبات الحلقية غير المتجانسة والحيوية
- اسم المؤلف : حمد بن عبد الله اللحيدن محمد ابراهيم حسن سالم بن سليم الذياب
- Hetrocyclic Chemistry ,2nd Ed.T.L.Gilchrist Longman Scientific & Technical Longman group UK Co published in the United State with John Wily , Sons and Inc. New York 2nd Ed. 1993.
- John A. Joule and Keith Mills: *Heterocyclic Chemistry*, 5th Edition.

2. List Essential References Materials :

- المركبات الحلقية غير المتجانسة
- اسم المؤلف:- د/ حسن بن محمد الحازمي د. ناصر محمد المهندس د. سهام عبد الرحمن عيسي
- اسم الناشر : دار الخريجي للنشر والتوزيع
- سنة النشر : ١٤٢٢ هـ
- المركبات الحلقية غير المتجانسة والحيوية
- اسم المؤلف : حمد بن عبد الله اللحيدن محمد ابراهيم حسن سالم بن سليم الذياب

3. List Recommended Textbooks and Reference Material :

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4. List Electronic Materials :

Web Sites etc:

(1) Individual computer access to *Chemdraw* or *Isis draw* software. The latest version of *Chemdraw* is 2008 and can be accessed at http://scistore.cambridgesoft.com; Isis draw can be accessed at http://www.symyx.com/downloads (2) Individual access to any on-line periodic table. Two good sites are (a) http://www.americanelements.com and (b) http://www.webelements.com (3) Individual accesses to the American Chemical Society web-site: http://portal.acs.org (4) the *wwwVirtual Library*: http://www.liv.ac.uk/Chemistry/Links/links.html (5) A database such as ChemBioFinder for searching compounds and structures: http://www.cambridgesoft.com/databases (6) Access to MSDS data pages:

http://www.msdsonline.com(7)Reusch, Wm. H *Virtual Text of Organic Chemistry*, 1999, Michigan State University, Madison, WI, USA
http://www2.chemistry.msu.edy/faculty/reusch/VirtTxtJml/intro1.htm

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5. Other learning material :

- Either software includes a full range of molecular

mechanics and quantum chemical methods, including Hartree-Fock *AbInitio* methods. This version of Spartan is commonly used in academic computer labs.

F. Facilities Required

1. Accommodation

- Lecture room with tables and/or movable chairs for student group work.
- laboratories

2. Computing resources

- In-class access to PC computers (provided or required of students) is recommended, but not required. It is, however, essential that the staff have a computer, projector and smart board for use during each class.

3. Other resources

- Advance laboratories,
- virtual laboratories,

G Course Evaluation and Improvement Processes

1 Strategies for Obtaining Student Feedback on Effectiveness of Teaching:

- Analysis of students' performance on interm exam and final exam..
- Comparison of students' scores on interm I, interm II and Final exam.
- Asking students about their difficulties every now and then during the semester.
- Students' comments during office hours.
- Watch for students weaknesses while doing exercises in class.
- Administer a questionnaire at the end of the semester.

2 Other Strategies for Evaluation of Teaching by the Program/Department Instructor :

- A administer a questionnaire at the end of the semester.
- Analysis of students' performance on interm exam and final exam**.**
- Reflection on student evaluation comments and levels of student achievement of understanding can help identify successful implementation strategies.
- Self assessment

3 Processes for Improvement of Teaching :

- Record areas of difficulty.

- Focus on individualized instruction in class.
- Reflection on student behavior/understanding correlated with the strategies utilized during class sessions can help identify successful implementation of strategies.

4. Processes for Verifying Standards of Student Achievement

- Check marking by an independent member teaching staff of a sample of student work.
- Check paper research by an independent member teaching staff of a sample of student work.

5 Describe the planning arrangements for periodically reviewing course effectiveness and planning for improvement :

- This would be achieved by issuing an annual course report at the end of the academic year and which will encompass a corrective/improvement action plan.

Course Specification Approved
Department Official Meeting No (…..) Date … / …. / ….. *H*

Course's Coordinator		**Department Head**	
Name :	Amani Hassan Ahmed	***Name :***	**Dr.gehan alaemary**
Signature :	Amani	***Signature :***	Gehan
Date :	5/ 12 / 1435 *H*	***Date :***	…./ … / …… *H*