

National Commission for Academic Accreditation & Assessment

Course Specification

King Khalid University
Science college/ chemistry department

A Course Identification and General Information

1. Course title and code: Spectroscopic Identification of Organic Compounds Chem 314
2. Credit hours: 2 (Theoretical)
3. Program(s) in which the course is offered. : Chemistry Bachelor program (If general elective available in many programs indicate this rather than list programs)
4. Name of faculty member responsible for the course: Dr. Samir Bondock
5. Level/year at which this course is offered: 6/3
6. Pre-requisites for this course (if any): (Organic Chemistry 3: Chem. 313
7. Co-requisites for this course (if any)
8. Location if not on main campus

B Objectives

1. Summary of the main learning outcomes for students enrolled in the course. <ul style="list-style-type: none">• Understand the basic techniques used to identify the organic compounds• Ability to characterize the organic molecules based on spectroscopic tools.
2. Briefly describe any plans for developing and improving the course that are being implemented. (eg increased use of IT or web based reference material, changes in content as a result of new research in the field) <ul style="list-style-type: none">• Self-survey for some subjects related topics.• Visit the location of the available instruments.

C. Course Description (Note: General description in the form to be used for the Bulletin or Handbook should be attached)

1 Topics to be Covered		
List of Topics	No of Weeks	Contact hours
Introduction (Empirical and molecular formula, Elemental analysis, Index of hydrogen deficiency)	1	2
Electromagnetic radiation and its interaction with organic molecules	1	2
The Infrared Absorption Spectroscopy	3	6
UV-Vis absorption Spectroscopy	2	4
¹ H Nuclear Magnetic Spectroscopy	3	2
¹³ C Nuclear Magnetic Spectroscopy	2	4
Mass Spectrometry	2	4
Integrated Problems	2	4

2 Course components (total contact hours per semester):

Lecture: 30	Tutorial:	Laboratory:	Practical/Field work/Internship	Other:
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3. Additional private study/learning hours expected for students per week. (This should be an average for the semester not a specific requirement in each week)

4. Development of Learning Outcomes in Domains of Learning

For each of the domains of learning shown below indicate:

- A brief summary of the knowledge or skill the course is intended to develop
- A description of the teaching strategies to be used in the course to develop that knowledge or skill
- The methods of student assessment to be used in the course to evaluate learning outcomes in the domain concerned

a. Knowledge

(i) Description of the knowledge to be acquired

Integrated problems in the spectroscopic techniques to find out the exact structure of the organic molecule

(ii) Teaching strategies to be used to develop that knowledge

- Student has to depend on himself to read and interpret the spectra.
- Collect all the available data to be consistent with the structure.

(iii) Methods of assessment of knowledge acquired

- Written three exams
- First. 20%
- Second 20%
- Final 50%

b. Cognitive Skills
(i) Description of cognitive skills to be developed <ul style="list-style-type: none"> • Scientific skills • Conclusive skills.
(ii) Teaching strategies to be used to develop these cognitive skills <ul style="list-style-type: none"> • Using of most recent instruments • Independency of student during the course.
(iii) Methods of assessment of students cognitive skills <ul style="list-style-type: none"> • Oral questions during lectures
c. Interpersonal Skills and Responsibility
(i) Description of the interpersonal skills and capacity to carry responsibility to be developed Dependency of student on his self gives him more responsibilities.
(ii) Teaching strategies to be used to develop these skills and abilities <ul style="list-style-type: none"> • Every student must be able to reach his own conclusion about the final structure of the compound
(iii) Methods of assessment of students interpersonal skills and capacity to carry responsibility
d. Communication, Information Technology and Numerical Skills
(i) Description of the skills to be developed in this domain.

<ul style="list-style-type: none"> Encourage the student to have his conclusion based on the given data
(ii) Teaching strategies to be used to develop these skills
(iii) Methods of assessment of students numerical and communication skills
e. Psychomotor Skills (if applicable)
(i) Description of the psychomotor skills to be developed and the level of performance required NA
(ii) Teaching strategies to be used to develop these skills NA
(iii) Methods of assessment of students psychomotor skills NA

5. Schedule of Assessment Tasks for Students During the Semester			
Assessment	Assessment task (eg. essay, test, group project, examination etc.)	Week due	Proportion of Final Assessment
1			
2	First exam	5	20%

3	Second exam	12	20%
4	Final exam	16	50%
5			
6			
7			
8			

D. Student Support

1. Arrangements for availability of teaching staff for individual student consultations and academic advice. (include amount of time teaching staff are expected to be available each week)

Number of office hours: 6 hours weekly.

E Learning Resources

1. Required Text(s)

1. R. M. Silverstein "*Spectroscopic Identification of Organic Compounds*" John Wiley & Sons, New York, 7th Edition (2003).

2. L. D. Field and S. Sternhell "*Organic Structure from Spectra*" John Wiley & Sons, New York, 3rd Edition (2002).

2. Essential References

Textbook: Spectroscopy, Lampman, Pavia, Kriz, Vyvyan, 4th Ed. 2010.

3- Recommended Books and Reference Material (Journals, Reports, etc) (Attach List)

4- Electronic Materials, Web Sites etc

Any website related to subjects listed in the experiments.

5- Other learning material such as computer-based programs/CD, professional standards/regulations

ISIS Draw, Chem Draw

F. Facilities Required

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

1. Accommodation (Lecture rooms, laboratories, etc.)

2. Computing resources

Computer rooms (labs) in the college.

3. Other resources (specify --eg. If specific laboratory equipment is required, list requirements or attach list)

G Course Evaluation and Improvement Processes

1 Strategies for Obtaining Student Feedback on Effectiveness of Teaching

Making of questioner at the end of each.

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

Utilization from external and internal evaluations.

3 Processes for Improvement of Teaching

4. Processes for Verifying Standards of Student Achievement (eg. check marking by an independent member teaching staff of a sample of student work, periodic exchange and remarking of tests or a sample of assignments with staff at another institution)

NA

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