

T6. Course Specification (CS) توصيف المقرر

Institution: Najran University	Date: 27 / 7 / 1438
College/Department: Sciences and Arts / Chemistry	

A. Course Identification and General Information: التعريف بالمقرر الدراسي ومعلومات عامة عنه:

1. Course title and code : Spectroscopy of organic compounds (345 CHEM-2)	
2. Credit hours : 2 credit hours per week(2+0)(Theoretical + practical)	
3. Program(s) in which the course is offered. Chemistry education program (If general elective available in many programs indicate this rather than list programs)	
4. Name of faculty member responsible for the course : Dr. HASAN M.H. MUHAISEN	
5. Level/year at which this course is offered : Sixth level	
6. Pre-requisites for this course (if any) : Organic Chemistry (335 CHEM-2) :	
7. Co-requisites for this course (if any) (إن وجدت) : N.A.	
8. Location if not on main campus : In the college building	
9. Mode of Instruction (mark all that apply) (نمط التدريس (ضع علامة على كل ما ينطبق)	
a. Traditional classroom الفصل الدراسي التقليدي	<input type="checkbox"/> What percentage النسبة المئوية ؟ <input type="checkbox"/>
b. Blended (traditional and online) التعليم المدمج (التقليدي + عبر الانترنت)	<input checked="" type="checkbox"/> What percentage النسبة المئوية ؟ <input type="text" value="100"/>
c. e-learning التعليم الإلكتروني	<input type="checkbox"/> What percentage النسبة المئوية ؟ <input type="text"/>
d. Correspondence التعليم بالمراسلة (عن بعد)	<input type="checkbox"/> What percentage النسبة المئوية ؟ <input type="text"/>
f. Other طرق أخرى	<input type="checkbox"/> What percentage النسبة المئوية ؟ <input type="text"/>
Comments التعليق:	

B. Objectives الأهداف

1. What is the main purpose for this course?

The student should be able to:

- 1. Identify the different areas of electromagnetic radiation.**
- 2. explain the principle and basis of spectroscopic.**
- 3. Used different spectra (U.V , IR, NMR and MS) to identify the structure of organic compounds.**

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

- Clarify the objectives of the course and distribute them in print.
- Instructing students to make an essay or research to increase knowledge.
- Training students to use the Internet to increase the ability to search and obtain information easily

C. Course Description (Note: General description in the form used in the Bulletin or handbook should be attached). (ملاحظة: ينبغي إرفاق وصف عام كما يظهر في النشرة التعريفية أو الدليل).

Course Description :

- Study of different areas of electromagnetic radiation.
- Use of different spectra (UV , IR, NMR and MS) to identify the structure of organic compounds.

1. Topics to be Covered:

List of Topics	No. of	Contact Hours
Spectroscopy : (introduction, Find a chemical composition)	1	2
Electromagnetic Radiation , Electromagnetic Spectrum , Principle of spectroscopy	1	2
Ultraviolet-visible spectroscopy: Types of electronic transitions , Conjugated Dienes , Woodward base calculations for wavelength maximum absorption	1	2
Diene system in bi-ring compounds , Homo and hetero annular diene systems ,	1	2
Diene System in aldehydes and ketones	1	2
Infrared Radiation (IR) Spectroscopy : introduction , Molecular vibration	1	2

Infrared spectrometer, Factors influencing vibrational frequency (Inductive effect (I effect) , Resonance effect on carbonyl frequency)	1	2
Nuclear Magnetic Resonance Spectroscopy : introduction , Spin number , Chemical shift	1	2
Factors affecting (effect of the chemical groups) on chemical shift	1	2
Number of signals	1	2
Peak intensity & Number of proton neighbors	1	2
Theory of spin-spin coupling	1	2
Mass Spectrometry: Introduction of theory, ionization methods and molecule fragmentation	2	4
Revision	1	2
	15	30

1.Course components (total contact hours and credits per semester):						
	Lecture	Tutorial	Laboratory or studio	Practical	Other:	Total
Contact Hours	30	-	-	-	-	30
Credit	2	-	-	-	-	2

3-Additional private study/learning hours expected for students per week: 6 hours Office and 4 hours of academic guidance per week .
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4. Course Learning Outcomes in NQF Domains of Learning and Alignment with Assessment Methods and Teaching Strategy.

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 intended learning outcomes.

Third, insert appropriate assessment methods that accurately measure and evaluate the learning outcome. Each course learning outcomes, assessment method, and teaching strategy ought to reasonably fit and flow together as an integrated learning and teaching process. (Courses are not required to include learning outcomes from each domain).

Code #	NQF Learning Domains And Course Learning Outcomes	Course Teaching Strategies	Course Assessment Methods
1.0	Knowledge The student will be able to		
1.1	Explain the idea of the work of modern technologies based on different spectrum devices in the qualitative analysis of organic compounds.	• Discussion • Study lectures • Self-learning	Quarterly test • • Short tests • Measuring responsiveness to assignments and meals. • Final theoretical
1.2	Describe the spectrum of Infrared Radiation (I.R.), Ultraviolet (UV) and Nuclear Magnetic Resonance (NMR)		
1.3	Determine the composition structure of organic compounds by the use of different spectra.		
2.0	Cognitive Skills The student will be able to		
2.1	Analyze the spectra of UV radiation, IR and nuclear magnetic resonance.	• Study lectures. • Scientific discussions. • Brainstorming	• Quarterly test • Short tests • Measuring responsiveness to assignments and meals. • Final theoretical
2.2	Conclude the structural composition of organic compounds.		
2.3	Compare the effect of UV radiation, IR and nuclear magnetic resonance on organic compounds.		
3.0	Interpersonal Skills & Responsibility The student will be able to		
3.1	Participate in small or large groups to prepare research related to course topics	Cooperative Education (division of students into groups to conduct joint research group)	• Note card to discuss research and reports
4.0	Communication, Information Technology, Numerical The student will be able to		
4.1	Look through the international information network to prepare and write	Self-education (use of international	Corresponding to the evaluation of the duties

Code #	NQF Learning Domains And Course Learning Outcomes	Course Teaching Strategies	Course Assessment Methods
	various reports relevant to the decision	information network)	associated with the research aggregation and use of information technology.
5.0	Psychomotor		
5.1	Not applicable		

5. Schedule of Assessment Tasks for Students During the Semester

	Assessment task (e.g. essay, test, Quizzes, group project, examination, speech, oral presentation, etc.)	Week Due	Proportion of Total Assessment
1	First quarterly test	Eighth	20%
2	Secondary quarterly test	Tenth	20%
3	Alternative calendars(Short tests - participation - home assignments - search - note card)	Throughout the semester	10%
4	Final theoretical exam	seventeenth	50%

D. Student Academic Counseling and Support

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

- The presence of staff members to provide advice throughout the working days
- Office hours: 10 hours

Office hours	days
10-12	Sunday
8-11	Monday
9-12	Tuesday
9-12	Wednesday
10-11	Thursday

E. Learning Resources

1. List Required Textbooks :

- Basic principles in the spectra of organic compounds. Dr.. Hassan Mohammed Al-Hazmi - Dr. Salem Shwaiman Al-Shwaiman. Publisher: Dar Al-Khuraiji Publishing and Distribution - Third Edition - 1415 AH / 1995.

- Applications on spectra of organic compounds. Author: Salem bin Shwaiman Al-Shwaiman, d. Mohamed Saadah guide. Publisher: Dar Al-Khuraiji Publishing and Distribution - First Edition – 1430 AH / 2009

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

- **Introduction to Spectroscopy. Donald Pavia, Gary Lampman, George Kriz, James Vyvyan. ISBN-10: 128546012X | ISBN-13: 9781285460123**
- **Spectroscopy Of Organic Chemistry. P.S. Kalsi. 2005**
- **Organic Spectroscopy. William Kemp. 2006**

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

- **Journal of Spectroscopy.**
- **Journal of Molecular Spectroscopy**

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

- **Sciencedirect.com**
- **Chemguid.com**
- **<http://lib.nu.edu.sa/DigitalLibrary.aspx>**

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.)

Lecture hall fits (30 students)

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

- 1 - Projector**
- 2- Laptop computer**
- 3- Net point of contact**

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

- 1- Chemical devices.**
- 2- Absorption spectrometers**

G. Course Evaluation and Improvement Processes :

1- Strategies for Obtaining Student Feedback on Effectiveness of Teaching 1- Conducting a questionnaire to evaluate the curriculum. 2- Periodic, quarterly and final tests. 3- Discussion and dialogue. 4- Analysis of the results of the tests to determine the absorption of students and strategies for improvement
2. Other Strategies for Evaluation of Teaching by the Instructor or by the department. 1-Notes and assistance from colleagues 2- Independent assessment of students' achievement of standards 3- Self-assessment of teacher performance
3. Processes for Improvement of Teaching: 1- Workshops for teaching methods. 2- Continuing training for faculty member. 3- Review proposed strategies. 4- Provide modern tools for learning. 5- Application of e-learning methods. 6- Exchange of internal and external experiences
4. Processes for Verifying Standards of Student Achievement (e.g. 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) 1 - Use of faculty members who are related to the course or those who studied it before 2- Auditing and review of student papers through another colleague in the department
5. Describe the planning arrangements for periodically reviewing course effectiveness and planning for improvement 1. Inform students of their response papers in order to identify errors in order to avoid them in the future. 2. Results of a survey of students' views on their teaching methods. 3. Consult other course teachers 4. Review periodically the contents of the course and the teaching strategy and modify the negatives. 5. Keep pace with the rapid development in the field through the use of new technologies. 6. Updating the learning resources of the course to ensure that it keeps abreast of the developments embodied in the field

Name of instructor : DR. Hasan M. H. Muhaisen

Signature: _____ Date Report Completed: 6-9-1438 AH

Name of field experience teaching staff : _____

Program coordinator: _____

Signature: _____ Date received: