مركز الاعتماد وضمان الجودة
ACCREDITATION & QUALITY ASSURANCE CENTER

Course Syllabus

1	**Course title**	Systematic Identification of Organic Compounds
2	**Course number**	**0333336**
3	**Credit hours**	3 (theory and practical)
	Contact hours (theory, practical)	2 hours (theory) and 5 hours (practical) / week
4	**Prerequisites/corequisites**	0303236 + 0303232
5	**Program title**	B.Sc.
6	**Program code**	NA
7	**Awarding institution**	The University of Jordan
8	**School**	Science
9	**Department**	Chemistry
10	**Course level**	3rd Year
11	**Year of study and semester(s)**	3th, Second semester
12	**Other department(s) involved in teaching the course**	NA
13	**Main teaching language**	English
14	**Delivery method**	☐Face to face learning √Blended ☐Fully online
15	**Online platforms(s)**	☐Moodle √Microsoft Teams ☐Skype ☐Zoom ☐Others……
16	**Issuing/Revision Date**	11/04/2023

17 Course Coordinator:

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18 Other instructors:

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19 Course Description:

Multistep syntheses; classification tests for functional groups; identification of unknown organic compounds by physical, chemical and spectroscopic techniques, and by the preparation of derivatives. The course also includes a series of lectures related to the theoretical aspects of the experimental part.

20 Course aims and learnings outcomes (CLOs):

A- Course Learning Outcomes: **0333336** Identification of Organic Compounds

Upon successful completion of this course, students will be able to:

CLO-1. To develop skills to carry out multi-step organic syntheses in the laboratory, isolate purify and identify of the products of the reaction.
CLO-2. To develop qualitative thinking skills and problem-solving techniques through the identification of organic compounds and data analysis
CLO-3. To develop the ability to organize and carry out a scientific investigation independently.
CLO-4. To develop skills to use spectroscopic properties (Mass, NMR, IR) for structure solving of unknown organic compounds.
CLO-5. To develop and strengthen library research skills, including e-search.
CLO-6. To develop in students the ability to apply their chemical knowledge and skills to the solution of theoretical and practical problems in organic chemistry.
CLO-7. To familiarize students with properties of organic compounds and their safe handling.

B- Students Learning Outcomes (SLOs):

SO-1. Problem Solving: Graduates will be able to apply mathematical and scientific knowledge to identify, formulate, and solve technical or scientific problems relevant to the discipline of chemistry.
SO-2. Design: Graduates will be able to use their understanding of chemistry concepts and principles to formulate and design systems, processes, procedures, or programs to meet desired goals and outcomes.
SO-3. Experimental Skills: Graduates will be able to design, conduct, and analyze experiments or test hypotheses, utilizing appropriate chemical techniques and scientific judgment to draw meaningful conclusions.
SO-4. Communication: Graduates will be able to communicate scientific information effectively and accurately to a range of audiences, including both technical and non-technical audiences.
SO-5. Ethics and Global Context: Graduates will understand and apply ethical and professional responsibilities in the context of the impact of technical and scientific solutions on global, economic, environmental, and societal issues.
SO-6. Teamwork: Graduates will be able to work effectively as part of a team, establishing goals, planning tasks, meeting deadlines, and analyzing risk and uncertainty in the context of chemistry-related projects and initiatives.
SO-7. Handling Chemicals: An ability to apply the proper procedures for safe handling of chemicals.

0333336 Identification of Organic Compounds								
		Student Outcomes (SO)						
		SO-1	SO-2	SO-3	SO-4	SO-5	SO-6	SO-7
Course Learning Outcomes (CLO)	CLO-1		✓	✓				
	CLO-2			✓				
	CLO-3		✓	✓		✓		
	CLO-4	✓		✓				
	CLO-5				✓			
	CLO-6						✓	
	CLO-7							✓

21. Topic Outline and Schedule:

Week	Lecture	Topic	Student Learning Outcome	Learning Methods (Face to Face/Blended/ Fully Online)	Platform	Synchronous / Asynchronous Lecturing	Evaluation Methods	Resources
1	1.1	Instruction and Safety	CLO-7	Face to face			Midterm Exams Quiz in 6th week	• Selected Experiments in Organic Compounds Manual (2nd Edition)
4	1.2	Multi-steps Synthesis Experiments p-Bromoaniline from aniline	CLO-1	Blended	Microsoft Teams	Midterm Exams Quiz in 6th week	• Selected Experiments in Organic Compounds Manual (2nd Edition) • chemistry lab channel at youtube.com •	• Selected Experiments in Organic Compounds Manual (2nd Edition) • chemistry lab channel at youtube.com
	1.3	Multi-steps Synthesis Experiments	1	Blended	Microsoft Teams		Midterm Exams Quiz in 6th week	• Selected Experiments in Organic Compounds Manual (2nd Edition) • chemistry lab channel at youtube.com
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	1.4	Preparation of p-bromoaniline	1		Lab		Midterm Exams Quiz in 6th week	• Selected Experiments in Organic Compounds Manual (2nd Edition) • chemistry lab channel at youtube.com
2	2.1	Introduction, Preliminary Examination (physical state, color, odor, ignition test)	1	Blended	Microsoft Teams			The Systematic Identification of Organic Compounds
	2.2	Physical Constants (melting point and boiling point), Qualitative Elemental Analysis		Blended	Microsoft Teams			
Week	**Lecture**	**Topic**	**Student Learning Outcome**	**Learning Methods (Face to Face/Blended/ Fully Online)**	**Platform**	**Synchronous / Asynchronous Lecturing**	**Evaluation Methods**	**Resources**
3	3.1	Classification of Organic Compounds by Solubility		Blended	Microsoft Teams		Midterm and final exams Quiz in 4th week	
	3.2	Classification of Organic Compounds by Solubility		Blended	Microsoft Teams		Midterm and final exams Quiz in 4th week	
	3.3	Preparation of benzensufonamide	1		Lab		Midterm Exams Quiz in 6th week	• Selected Experiments in Organic Compounds Manual (2nd Edition)

								• chemistry lab channel at youtube.com
4	4.1	Theory of solubility	4	Blended	Microsoft Teams		Midterm and final exams Quiz in 5th week	
	4.2	Theory of solubility		Blended	Microsoft Teams		Midterm and final exams Quiz in 5th week	
	4.3	Preparation of benzoin, benzil and benzilic acid	1	Face to face	Lab		Midterm Exams Quiz in 6th week	• Selected Experiments in Organic Compounds Manual (2nd Edition) • chemistry lab channel at youtube.com
5	5.1	Chemical Tests for Functional Groups		Blended	Microsoft Teams		Midterm and final exams Quiz in 7th week	The Systematic Identification of Organic Compounds
	5.2	Chemical Tests for Functional Groups		Blended	Microsoft Teams		Midterm and final exams Quiz in 7th week	The Systematic Identification of Organic Compounds
	5.3	Preparation p-iodotoluene	1	Face to face	Lab		Midterm Exams Quiz in 6th week	• Selected Experiments in Organic Compounds Manual (2nd Edition) • chemistry lab channel at youtube.com
6	6.1	Chemical Tests for Functional Groups	4	Blended	Microsoft Teams		Midterm and final exams Quiz in 8th week	The Systematic Identification of Organic Compounds

	6.2	Chemical Tests for Functional Groups		Blended	Microsoft Teams		Midterm and final exams Quiz in 8th week	The Systematic Identification of Organic Compounds
	6.3	Tests at known compounds	4	1	Face to face	Lab		The Systematic Identification of Organic Compounds
7	7.1	Preparation of Derivatives	4	Blended	Microsoft Teams		Final exams Quiz in 9th week	The Systematic Identification of Organic Compounds
	7.2	Preparation of Derivatives	4	Blended	Microsoft Teams		Final exams Quiz in 9th week	The Systematic Identification of Organic Compounds
	7.3	Unknown Identification	1,2,3 and 4	Face to Face	Lab			The Systematic Identification of Organic Compounds
8	8.1	Spectrometric Methods (IR, NMR)	3.3 and 3,4	Blended	Microsoft Teams		Final exams	The Systematic Identification of Organic Compounds
	8.2	Spectrometric Methods (IR, NMR)	3.3 and 3,4	Blended	Microsoft Teams		Final exams	The Systematic Identification of Organic Compounds
	8.3	Unknown Identification	1,2,3 and 4	Face to Face	Lab		Lab report	The Systematic Identification of Organic Compounds
9	9.1	Spectrometric Methods (IR, NMR)	3.3 and 3,4	Blended	Microsoft Teams		Final exams	The Systematic Identification of Organic Compounds
	9.2	Spectrometric Methods (IR, NMR)	3.3 and 3,4	Blended	Microsoft Teams		Final exams	The Systematic Identification of Organic Compounds
	9.3	Unknown Identification	1,2,3 and 4	Face to Face	Lab		Lab report	The Systematic Identification of Organic Compounds

10	10.1	Spectrometric Methods (IR, NMR)	3.3 and 3,4	Blended	Microsoft Teams		Final exams	The Systematic Identification of Organic Compounds
	10.2	Spectrometric Methods (IR, NMR)	3.3 and 3,4	Blended	Microsoft Teams		Final exams	The Systematic Identification of Organic Compounds
	10.3	Unknown Identification	1,2,3 and 4	Face to Face	Labe		Lab report	The Systematic Identification of Organic Compounds
Week	**Lecture**	**Topic**	**Student Learning Outcome**	**Learning Methods (Face to Face/Blended/ Fully Online)**	**Platform**	**Synchronous / Asynchronous Lecturing**	**Evaluation Methods**	**Resources**
11	11.1	Structural Problems	2, 4, 3.3 and 3,4	Blended	Microsoft Teams		Final exams	The Systematic Identification of Organic Compounds
	11.2	Structural Problems	2, 4, 3.3 and 3,4	Blended	Microsoft Teams		Final exams	The Systematic Identification of Organic Compounds
	11.3	Unknown Identification	1,2,3 and 4	Face to Face	Lab		Lab report	The Systematic Identification of Organic Compounds
12	12.1	Structural Problems	2, 4, 3.3 and 3,4	Blended	Microsoft Teams		Final exams	The Systematic Identification of Organic Compounds
	12.2	Structural Problems	2, 4, 3.3 and 3,4	Blended	Microsoft Teams		Final exams	The Systematic Identification of Organic Compounds
	12.3	Unknown Identification	1,2,3 and 4	Face to Face	Lab		Lab report	The Systematic Identification of Organic Compounds
13	13.1	Structural Problems	2, 4, 3.3 and 3,4	Blended	Microsoft Teams		Final exams	The Systematic Identification of Organic Compounds

	13.2	Structural Problems	2, 4, 3.3 and 3,4	Blended	Microsoft Teams		Final exams	The Systematic Identification of Organic Compounds
	13.3	Unknown Identification	1,2,3 and 4	Face to Face	Lab		Lab report	The Systematic Identification of Organic Compounds
14	14.1	Structural Problems	2, 4, 3.3 and 3,4	Blended	Microsoft Teams		Final exams	The Systematic Identification of Organic Compounds
	14.2	Structural Problems	2, 4, 3.3 and 3,4	Blended	Microsoft Teams		Final exams	The Systematic Identification of Organic Compounds
	14.3	Unknown Identification	1,2,3 and 4	Face to Face	Lab		Lab report	The Systematic Identification of Organic Compounds
15	15.1							
	15.2							
	15.3							

22 Evaluation Methods:

Opportunities to demonstrate achievement of the SLOs are provided through the following assessment methods and requirements:

In-class discussion with students,

Meeting through the office hour's,

Discussion of some issues during the lab work

Evaluation Activity	Mark	Topic(s)	SLOs	Period (Week)	Platform
Quizzes	10	Multi-steps Synthesis Experiments Introduction, Preliminary Examination (physical state, color, odor, ignition test)	1,3,4	6 and 13	In the department

		Physical Constants (melting point and boiling point), Qualitative Elemental Analysis Classification of Organic Compounds by Solubility Chemical Tests for Functional Groups and Preparation of Derivatives Spectrometric Methods (IR, NMR)			
Midterm Exam	30	Multi-steps Synthesis Experiments Introduction, Preliminary Examination (physical state, color, odor, ignition test) Physical Constants (melting point and boiling point), Qualitative Elemental Analysis Classification of Organic Compounds by Solubility Chemical Tests for Functional Groups and Preparation of Derivatives	1,3,4	8	In the department
Final exam	40	Introduction, Preliminary Examination (physical state, color, odor, ignition test) Physical Constants (melting point and boiling point), Qualitative Elemental Analysis Classification of Organic Compounds by Solubility Chemical Tests for Functional Groups and Preparation of Derivatives Spectrometric Methods (IR, NMR)	1,3,4	16	In the department
Reports and unknowns	20	Physical Constants (melting point and boiling point), Qualitative Elemental Analysis Classification of Organic Compounds by Solubility Chemical Tests for Functional Groups and Preparation of Derivatives	2		

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23 Course Requirements

(e.g: students should have a computer, internet connection, webcam, account on a specific software/platform…etc): All equipment's and chemicals are available, in addition to NMR, MS and IR instruments.

24 Course Policies:

A- Attendance policies: Maximum 20% absence is allowed. B- Absences from exams and submitting assignments on time: Incomplete Exams are conducted later after arrangement a new date. C- Health and safety procedures: Safety rules and guidelines related to the working in any chemistry labs are always followed. D- Honesty policy regarding cheating, plagiarism, misbehavior: The general Jordan University's laws are applied in any case of cheating. E- Grading policy: Letters scale is applied. F- Available university services that support achievement in the course: Free Internet-access and E-learning and Microsoft teams.

25References:

A- Required book(s), assigned reading and audio-visuals: 1) Selected Experiments in Organic Compounds (2^{nd} Edition) 2) The Systematic Identification of Organic Compounds (Authors: Shriner, Hermann, Morrill, Curtin, Fuson), 8^{th} edition B- Recommended books, materials, and media:youtube channel https://www.youtube.com/@almeqdadhabashneh8408/playlists

26 Additional information:

NA

Name of Course Coordinator: Dr Nader Al Bujuq Signature: - *Nader* Date: 05-11-2023
Head of Curriculum Committee/Department: ---------- Signature: ----------
Head of Department: ---------- Signature: ----------
Head of Curriculum Committee/Faculty: ---------- Signature: ----------
Dean: ---------- Signature: ----------