Ministry of Higher Education and Scientific Research
Scientific Supervision and Scientific Evaluation Apparatus
Directorate of Quality Assurance and Academic Accreditation Department

Academic Program and Course Description Guide

Department of Sustainable Energy Engineering
College of Engineering – University of Mosul

2026

Introduction:

The educational program is a well—planned set of courses that include procedures and experiences arranged in the form of an academic syllabus. Its main goal is to improve and build graduates' skills so they are ready for the job market. The program is reviewed and evaluated every year through internal or external audit procedures and programs like the External Examiner Program.

The academic program description is a short summary of the main features of the program and its courses. It shows what skills students are working to develop based on the program's goals. This description is very important because it is the main part of getting the program accredited, and it is written by the teaching staff together under the supervision of scientific committees in the scientific departments.

This guide, in its second version, includes a description of the academic program after updating the subjects and paragraphs of the previous guide in light of the updates and developments of the educational system in Iraq, which included the description of the academic program in its traditional form (annual, semester based), as well as the adoption of the academic program description circulated according to the letter of the Department of Studies T 3/2906 on 3/5/2023 regarding the programs that adopt the Bologna Process as the basis for their work.

In this regard, we can only emphasize the importance of writing an academic programs and course description to ensure the proper functioning of the educational process.

Concepts and terminology:

Academic Program Description: The academic program description provides a brief summary of its vision, mission and objectives, including an accurate description of the targeted learning outcomes according to specific learning strategies.

Course Description: Provides a brief summary of the most important characteristics of the course and the learning outcomes expected of the students to achieve, proving whether they have made the most of the available learning opportunities. It is derived from the program description.

Program Vision: An ambitious picture for the future of the academic program to be sophisticated, inspiring, stimulating, realistic and applicable.

Program Mission: Briefly outlines the objectives and activities necessary to achieve them and defines the program's development paths and directions.

Program Objectives: They are statements that describe what the academic program intends to achieve within a specific period of time and are measurable and observable.

Curriculum Structure: All courses / subjects included in the academic program according to the approved learning system (quarterly, annual, Bologna Process) whether it is a requirement (ministry, university, college and scientific department) with the number of credit hours.

Learning Outcomes: **A** compatible set of knowledge, skills and values acquired by students after the successful completion of the academic program and must determine the learning outcomes of each course in a way that achieves the objectives of the program.

Teaching and learning strategies: They are the strategies used by the faculty members to develop students' teaching and learning, and they are plans that are followed to reach the learning goals. They describe all classroom and extra—curricular activities to achieve the learning outcomes of the program.

Academic Program Description Form

University Name: University of Mosul

Faculty/Institute: College of Engineering

Scientific Department: Department of Sustainable Energy Engineering

Academic or Professional Program Name: Bachelor's Degree / Sustainable Energy Engineering

Final Certificate Name: Bachelor of Science in Sustainable Energy Engineering

Academic System: Bologna Process

Description Preparation Date: 20/01/2026

File Completion Date: 27/04/2026

Signature:
Head of Department Name:
Dr. Younis Najim
Date: 20/4/2026

Signature:
Scientific Associate Name:
Asst. Prof. Dr. Ayman T. Hamid
Date: 20-4-2026

The file is checked by:

Department of Quality Assurance and University Performance

Director of the Quality Assurance and University Performance Department:

Date: 20/4/2026

Signature:

University of Mosul
College of Engineering
Dean Office

Approval of the Dean

Prof. Dr. Omar M. Hamdoon

4/20

1. Program Vision

At the Department of Sustainable Energy Engineering, we aspire to become a leading center at both the local and regional levels in education and research related to sustainable energy. Our focus is on technologies that align with local conditions and resources, aiming to advance the clean and efficient generation and use of energy.

We believe that sustainable energy holds the key to addressing future challenges in sustainable development and environmental protection. Therefore, our mission is to graduate generations of engineers and researchers equipped with the knowledge and skills to develop and implement innovative solutions that contribute to sustainable development locally and globally.

We also aim to become a hub for research and innovation in sustainable energy technologies. Our goal is to develop and disseminate advanced solutions that positively impact the energy and environmental sectors.

Our vision is to establish the Department of Sustainable Energy Engineering as a reference in sustainable energy research and education, making a meaningful contribution to global efforts in achieving sustainability and environmental preservation.

2. Program Mission

The Department of Sustainable Energy Engineering aims to meet the needs of Iraqi society and the broader region by offering high-quality academic programs in sustainable energy engineering, with a strong emphasis on education, scientific research, and community service. This mission is pursued through the following objectives:

- Preparing graduates for careers in design, development, and project management: The program equips students with the necessary knowledge and skills to actively engage in engineering-related fields, including system design, technological development, and the management of energy projects.
- Promoting creativity and ethical values: The program fosters a culture of innovation and ethical responsibility, encouraging students to think creatively and make decisions that support long-term sustainability and professional integrity.
- Supporting lifelong learning: By providing up-to-date educational content and practical applications, the program contributes to building an environment that promotes continuous learning and professional development aligned with industry needs.
- Responding to local engineering market demands: The curriculum is designed to provide graduates with the technical and economic

competencies required to address the specific needs of the local job market and energy sector.

3. Program Objectives

1. The department aims to offer high-quality educational programs in sustainable energy engineering at the undergraduate level, with the goal of graduating highly capable engineers. These graduates will be empowered to develop their skills continuously and provide technical support to both governmental and private sectors in their engineering projects and needs.
2. The department contributes to advancing research and innovation in sustainable energy by supporting faculty members and researchers in developing cutting-edge research projects. It also plays a role in enhancing the technical qualifications of engineers working in government institutions and projects by supporting continuing education programs, organized either in collaboration with the college or independently by the department.
3. The department seeks to raise awareness about the importance of sustainable energy and to contribute to its realization through educational programs, public outreach, and community-based activities.
4. It is committed to equipping graduates with the knowledge and skills necessary to design, implement, and manage sustainable energy projects, thereby contributing to the development of the energy workforce.
5. The department aims to build strong partnerships with industrial and production institutions involved in sustainable energy. These collaborations help align research and education efforts with practical industrial needs and applications.
6. The department promotes a strong commitment to the goals of sustainable development at the local, national, and global levels through active participation in relevant research initiatives, projects, and community engagement.

4. Program Accreditation

The program was newly established for the academic year 2024–2025; however, the Department of Sustainable Energy Engineering has already begun preparing the requirements for accreditation by the Iraqi Council for Accreditation of Engineering Education (ICAEE).

5. Other external influences

College of Engineering

6 Program Structure

Program Structure	Number of Courses	Credit hours	Percentage	Reviews•
Institution Requirements	8	18	7.5	
College Requirements	8	43	17.9	
Department Requirements	35	179	74.6	
Summer Training	1	-	-	
Other				

This can include notes whether the course is basic or optional.

7. Program Description

Semester 1 | 30 ECTS | 1 ECTS = 25 hrs

Module Code	Module Name	SSWL	USSWL	ECTS	Module Type	Pre-request
SEE101	Engineering Mechanics-Statics	63	62	5.00	C	
SEE102	Mathematics I	78	72	6.00	B	
SEE103	Electric Circuits	78	47	5.00	C	
SEE104	Physics	63	37	4.00	B	
SEE105	Introduction to Sustainable Engineering	63	62	5.00	B	
UOM1031	Computer 1	63	12	3.00	B	
UOM1011	Arabic Language 1	33	17	2.00	B	

Semester 2 | 30 ECTS | 1 ECTS = 25 hrs

Module Code	Module Name	SSWL	USSWL	ECTS	Module Type	Pre-request
SEE151	Engineering Mechanics-Dynamics	63	62	5.00	C	
SEE152	Mathematics II	78	72	6.00	B	
SEE153	Engineering Drawing	78	47	5.00	C	
SEE154	Environmental Pollution	63	37	4.00	B	
SEE155	Chemistry	63	62	5.00	B	
UOM1021	English 1	63	12	3.00	B	
UOM1040	Democracy and Human Rights	33	17	2.00	B	

Semester 3 | 30 ECTS | 1 ECTS = 25 hrs

Module Code	Module Name	SSWL	USSWL	ECTS	Module Type	Pre-request
SEE201	Fluid Mechanics	93	82	7.00	C	
SEE202	Thermodynamics	93	82	7.00	C	
SEE205	Applied Electronics	63	62	5.00	C	
SEE206	Applied Mathematics I	78	72	6.00	C	
UOM2032	Computer 2	63	12	3.00	B	
UOM2012	Arabic Language 2	33	17	2.00	B	

Semester 4 | 30 ECTS | 1 ECTS = 25 hrs

Module Code	Module Name	SSWL	USSWL	ECTS	Module Type	Pre-request
SEE251	Engineering Materials	78	72	6.00	C	
SEE252	Power Electronics	63	37	4.00	C	
SEE253	Applied Mathematics II	78	72	6.00	C	
SEE254	Heat Transfer	93	82	7.00	C	
SEE255	Laboratories I	33	42	3.00	B	
UOM2022	English 2	33	17	2.00	B	
UOM2050	Crimes of the Ba'ath Regime	33	17	2.00	B	

Semester 5 | 30 ECTS | 1 ECTS = 25 hrs

Module Code	Module Name	SSWL	USSWL	ECTS	Module Type	Pre-request
SEE301	Solar Thermal Energy Systems	63	62	5.00	C	
SEE302	Numerical Analysis	93	82	7.00	C	
SEE303	Turbomachinery	78	47	5.00	C	
SEE304	Wind Energy Systems	63	62	5.00	C	
SEE305	Bioenergy System	48	52	4.00	C	
SEE306	Electric Machines	48	52	4.00	C	

Semester 6 | 30 ECTS | 1 ECTS = 25 hrs

Module Code	Module Name	SSWL	USSWL	ECTS	Module Type	Pre-request
SEE351	Photovoltaic Energy Systems	93	57	6.00	C	
SEE352	Fundamentals of Combustion and Emissions	78	47	5.00	C	
SEE353	Design of Sustainable Energy Systems	63	37	4.00	C	
SEE354	Principles of Air-Conditioning and Refrigeration	93	57	6.00	C	
SEE355	Probability and Statistics	63	37	4.00	C	
SEE356	Electrical Power Systems	78	47	5.00	C	

Semester 7 | 30 ECTS | 1 ECTS = 25 hrs

Module Code	Module Name	SSWL	USSWL	ECTS	Module Type	Pre-request
SEE401	Geothermal Energy	63	62	5.00	C	
SEE402	Fuel Cell Principles and Techniques	78	72	6.00	C	
SEE403	Energy Storage systems	63	62	5.00	C	
SEE404	Power Plants	78	72	6.00	C	
SEE405	Automatic Control Systems	78	72	6.00	C	
SEE406	Engineering Design Project I	33	17	2.00	C	

Semester 8 | 30 ECTS | 1 ECTS = 25 hrs

Module Code	Module Name	SSWL	USSWL	ECTS	Module Type	Pre-request
SEE451	Sustainable Building Design	63	62	5.00	C	
SEE452	Mechanical Vibration	63	62	5.00	C	
SEE453	Laboratories II	63	62	5.00	C	
SEE454	Smart Grid Systems	93	82	7.00	C	
SEE455	Engineering Computer Aided Design	93	57	6.00	C	
SEE456	Engineering Design Project I	33	17	5.00	C	

8. Learning outcomes	
Knowledge	**A1**- Ability to recognize, identify, define, and solve engineering problems by applying principles of engineering, science, and mathematics. **A2-** Ability to produce engineering designs that meet specified needs within defined constraints by applying both analysis and synthesis in the design process. **A3-** Ability to recognize the ongoing need for professional knowledge growth and to find, evaluate, compile, and properly apply it. **A4-** Ability to effectively use modern technologies and contemporary engineering tools in analyzing and solving engineering problems.
Skills	**B1-** Ability to perform and test measurements accurately while ensuring quality, analyze and interpret results, and apply engineering judgment to draw conclusions. **B2-** Ability to communicate effectively—verbally with groups and in writing across various administrative levels. **B3-** Ability to work efficiently in teams by setting goals, planning activities, meeting deadlines, and managing risks and uncertainties. **B4-** Ability to apply critical thinking methodologies and modern analytical tools to make effective decisions in solving complex engineering problems and addressing unconventional challenges.
Ethics	**C1-** Ability to recognize ethical and professional responsibilities in engineering issues and make informed decisions while considering the financial, environmental, and societal consequences. **C2-** Ability to work effectively in teams by setting goals, planning activities, meeting deadlines, and managing risks and uncertainties.

9. Teaching and Learning Strategies

Teaching and Learning Strategies Adopted in the Program Implementation:

1. Detailed explanation of scientific material using interactive methods.
2. Engaging students in solving applied problems related to sustainable energy.
3. Adopting Project-Based Learning (PBL) approaches.
4. Conducting classroom discussions to develop critical thinking and connect theory with practice.
5. Performing hands-on experiments in laboratories to illustrate scientific concepts.
6. Organizing field visits to renewable energy plants and projects.
7. Utilizing e-learning platforms to support the educational process.
8. Promoting collaborative learning through teamwork.
9. Analysis of real case studies to develop problem-solving skills.

10. Evaluation methods

1. Midterm and final examinations (theoretical and practical).
2. Quizzes (daily and weekly).
3. Scientific and technical reports.
4. Evaluation of individual or group projects and research.
5. Assessment of student performance in laboratories and practical experiments.
6. Classroom participation and scientific discussions.

11. Faculty

Faculty Members

Academic Rank	Specialization		Special Requirements/Skills (if applicable)	Number of the teaching staff	
	General	Special		Staff	Lecturer
Ass. Prof.	Mechanical Engineering	Thermal Power		4	
Lecturer	Mechanical Engineering	Renewable Energy		1	
Lecturer	Mechanical Engineering	Energy Systems and Their Assemblies		2	
Lecturer	Electrical Engineering	Electrical Power		1	
Lecturer	Mechanical Engineering	Thermal Fluids and Combustion		2	
Lecturer	Mechanical Engineering	Power Electronics		1	
Lecturer	Mechanical Engineering	Thermal Power		2	
Lecturer	Mechanical Engineering	Renewable Energy		1	
Lecturer	Mechanical Engineering	Applied Mechanics		1	
Ass. Lecturer	Mechanical Engineering	Air Conditioning and Refrigeration		1	
Ass. Lecturer	Mechanical Engineering	Applied Mechanics		1	
Ass. Lecturer	Electrical Engineering	Power		1	
Ass. Lecturer	Electrical Engineering	Electrical Engineering		1	
Ass. Lecturer	Mechanical Engineering	Fluid and Thermal Engineering		1	

12. Professional Development

12-1. Mentoring New Faculty Members

The academic program of the Department of Sustainable Energy Engineering is designed to enhance the fundamental knowledge and skills of newly appointed faculty members across various educational aspects, ensuring their ability to perform academic duties effectively and professionally. In its initial stages, the program focuses on preparing new instructors to efficiently manage the educational process. It then expands to encompass the essential elements needed to achieve successful learning outcomes within a comprehensive academic framework. To achieve these goals, the program includes the following core components:

1. Educational Courses: New faculty members participate in courses aimed at improving the quality of teaching. These courses cover a range of topics, including:
2. Instructional Techniques Training: Teaching effective strategies to engage students and deliver scientific content in modern and interactive ways.
3. Modern Trends in University Teaching: Exploring innovative approaches to teaching and learning in higher education.
4. Workshops on Student Assessment: Focusing on fair and effective evaluation methods, skills in designing theoretical and practical exams, and analyzing student results.
5. Introduction to University Policies: Including current laws and regulations, e-learning platforms, and academic and administrative procedures.
6. Continuous Evaluation of Faculty Performance: Aimed at identifying areas for professional development and promoting sustainable academic excellence.
7. Professional Development Opportunities: Through participation in courses and workshops offered by the college or the Continuing Education Unit, enabling faculty members to stay updated with modern teaching methods and enhance academic collaboration among colleagues.

12-2. Professional Development of Faculty Members

The Department of Sustainable Energy Engineering maintains collaborative partnerships with several key ministries and official institutions, most notably the Ministry of Higher Education and Scientific Research, the Ministry of Electricity, the Ministry of Environment, the Ministry of Planning, municipal directorates across the provinces, in addition to a number of local and international companies operating in the energy sector. These partnerships provide faculty members with practical experience and field-based knowledge, enhancing their ability to stay abreast of technological challenges in the fields of renewable energy and sustainability. In this context, the department's Continuing Education Committee has organized several professional development activities over the past three academic years, including:

1. Workshops on enhancing teaching methods and e-learning practices.
2. Over 40 scientific papers presented or published by faculty members.
3. Two workshops focused on academic accreditation and quality standards.
4. One specialized seminar in the field of sustainable energy engineering.

5. Three international training participations in conferences and workshops outside Iraq.
6. Ten participations in specialized workshops, conferences, and training courses within Iraq.

Faculty members are consistently encouraged to engage in professional development programs to strengthen their academic and research competencies, ensuring that educational outcomes align with the evolving demands of the labor market and the goals of sustainable development.

13. Acceptance Criterion

The admission capacity for the Department of Sustainable Energy Engineering is determined annually as part of the official enrollment plan, in line with the department's human and physical resources. The department's scientific committee proposes the number of students to be admitted, which is then submitted to the college deanery, the university presidency, and ultimately to the Ministry of Higher Education and Scientific Research for official approval.

The admission process is overseen by the Ministry of Higher Education and Scientific Research through a centralized system, which allocates students to public universities and colleges based on their preparatory school (high school) grades.

Basic Admission Requirements:

1. The applicant must be of Iraqi nationality.
2. The applicant must hold a preparatory school certificate – scientific branch, or its equivalent.
3. The applicant must meet the minimum grade threshold set annually by the ministry.
4. The applicant must not have been expelled or subjected to disciplinary action by any public educational institution.
5. Applicants must submit a medical certificate to ensure they meet the necessary health conditions.
6. The applicant must commit to full-time study.
7. Concurrent enrollment is not allowed: a student cannot be admitted if already enrolled in another college or university.
8. International students: Non-Iraqi applicants holding a recognized Iraqi preparatory certificate may be admitted in accordance with centralized admission regulations.
9. Talented students: A designated percentage of seats is reserved for talented students according to criteria set by the ministry.

14. The most important sources of information about the program

1. University Guide
2. Department Website via the following link

15. Program Development Plan

As part of its commitment to providing high-quality engineering education aligned with global advancements in renewable energy and energy efficiency, the Department of Sustainable Energy Engineering has decided—through its departmental council—to adopt the European Bologna Process as a key component of its academic program development plan.

This shift includes the implementation of the European Credit Transfer and Accumulation System (ECTS) instead of the traditional credit system, starting from the academic year 2024–2025. This decision aligns with national efforts to enhance the quality of education and ensure academic outcomes that are competitive both locally and internationally. Expected Benefits of Adopting the Bologna Process:

1. Student-Centered Learning: Enhances student autonomy in the learning process and promotes self-learning and critical thinking.
2. Increased Interaction Between Students and Faculty: Through interactive teaching techniques and open discussions, fostering an engaging and motivating learning environment.
3. Focus on Practical and Professional Skills: Emphasizes hands-on experience in designing solar and wind energy systems and energy efficiency applications to align graduates with market demands.
4. Opportunities for Continuous Learning and Formative Assessment: Provides regular feedback through mid-semester evaluations, reinforcing student achievement.
5. Enhanced Understanding of Academic Content: By linking theoretical knowledge with practical and research-based applications in the field of sustainable energy.

Adopting this system marks a significant step in the educational advancement of the department and supports its vision of academic leadership in the field of sustainable energy.

Program Skills Outline															
				Required program Learning outcomes											
Year/ Level	Course Code	Course Name	Basic or Optional	Knowledge				Skills				Ethics			
				A1	A2	A3	A4	B1	B2	B3	B4	C1	C2		
1st year Fall Semester	SEE101	Engineering Mechanics-Statics	Core	✓	✓			✓			✓				
	SEE102	Mathematics I	Basic	✓							✓				
	SEE103	Electric Circuits	Core	✓	✓		✓	✓			✓				
	SEE104	Physics	Basic	✓			✓	✓			✓				
	SEE105	Introduction to Sustainable Engineering	Basic	✓	✓	✓	✓		✓	✓		✓	✓		
	UOM1031	Computer 1	Basic				✓		✓						
	UOM1011	Arabic Language 1	Basic						✓						
1st year Spring Semester	SEE151	Engineering Mechanics-Dynamics	Core	✓	✓			✓			✓				
	SEE152	Mathematics II	Basic	✓							✓				
	SEE153	Engineering Drawing	Core		✓		✓	✓	✓						
	SEE154	Environmental Pollution	Basic	✓	✓	✓			✓	✓		✓	✓		
	SEE155	Chemistry	Basic	✓			✓	✓			✓				
	UOM1021	English 1	Basic						✓						
	UOM1040	Democracy and Human Rights	Basic			✓			✓	✓		✓	✓		
2nd year Fall Semester	SEE201	Fluid Mechanics	Core	✓	✓		✓	✓			✓				
	SEE202	Thermodynamics	Core	✓	✓		✓	✓			✓				
	SEE205	Applied Electronics	Core	✓	✓		✓	✓			✓				
	SEE206	Applied Mathematics I	Core	✓							✓				
	UOM2032	Computer 2	Basic				✓	✓	✓						
	UOM2012	Arabic Language 2	Basic						✓						
2nd year Spring Semester	SEE251	Engineering Materials	Core	✓	✓		✓	✓			✓				
	SEE252	Power Electronics	Core	✓	✓		✓	✓			✓				
	SEE253	Applied Mathematics II	Core	✓							✓				
	SEE254	Heat Transfer	Core	✓	✓		✓	✓			✓				
	SEE255	Laboratories I	Basic	✓	✓		✓	✓	✓	✓	✓		✓		
	UOM2022	English 2	Basic						✓						
	UOM2050	Crimes of the Ba'ath Regime	Basic			✓			✓	✓		✓	✓		

Course Description: First year Fall Semester

1. Course Description Form of Computer 1

1. Course Name:
Computer1
2. Course Code:
UOM1031
3. Semester / Year:
First Year- Fall Semester
4. Description Preparation Date:
December 1, 2025
5. Available Attendance Forms:
In person attendance, online, exercises
6. Number of Credit Hours (Total) / Number of Units (Total)
Number of Credit Hours (75) / Number of Units (3)
7. Course administrator's name (mention all, if more than one name)
1- Eman Mohammedali Sulaiman emanmali@uomosul.edu.iq 2- Eman Ahmed Ali eman.alhanoti@uomosul.edu.iq
8. Course Objectives

Course Objectives	1. Prepare students to deal with computers 2. Teach the students the fundamentals of computers and its components 3. Learning how to use two of Microsoft Office applications (Word and Excel).
9. Teaching and Learning Strategies	
Strategy	• Board (Normal Or Smart) • Computers • Presentation Software such as PowerPoint.

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
Week 1	3		Introduction to Computer	Lecture + Lab+ In Class Activity	Assignments
Week 2	3		Computer Components	Lecture + Lab+ In Class Activity	
Week 3	3		Computer Components: (continued).	Lecture + Lab+ In Class Activity	
Week 4	3		Operating System and Graphical User	Lecture + Lab+ In Class Activity	Quizzes

		A4,B2	Interface GUI:		
Week 5	3		Operating System and Graphical User Interface GUI:(continued)	Lecture + Lab+ In Class Activity	
Week 6	3		Word Processing:	Lecture + Lab+ In Class Activity	
Week 7	3		Word Processing:(continued)	Lecture + Lab+ In Class Activity	Assignments
Week 8	3		Spread Sheet:	Lecture + Lab+ In Class Activity	
Week 9	3		Spread Sheet: (continued)	Lecture + Lab+ In Class Activity	Report
Week 10	3		Presentation Software:	Lecture + Lab+ In Class Activity	
Week 11	3		Presentation Software:(continued)	Lecture + Lab+ In Class Activity	Quizzes
Week 12	3		Introduction to internet and Web Browsers:	Lecture + Lab+ In Class Activity	Midterm Exam
Week 13	3		Introduction to internet and Web Browsers:. continued)	Lecture + Lab+ In Class Activity	Assignments
Week 14	3		Communications and Emails:	Lecture + Lab+ In Class Activity	
Week 15	3		Computer Troubleshooting	Lecture + Lab+ In Class Activity	

11. Course Evaluation

		Time/Number	Weight (Marks)
Formative assessment	Quizzes	2	20% (20)
	Assignments	3	5% (5)
	Practical	1	10% (10)
	Report	1	5% (5)
Summative assessment	Midterm Exam	1hr	10% (10)
	Final Exam	3hr	50% (50)
Total assessment			100% (100 Marks)

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	None
Main references (sources)	Computer Literacy BASICS: A Comprehensive Guide to IC3
Recommended books and references (scientific journals, reports…)	Connie Morrison, Dolores Wells, Lisa Ruffolo
Electronic References, Websites	Cengage Learning. ISBN: 128576658X

2. Course Description Form of (Arabic Language 1)

1. Course Name:	
Arabic Language 1	
2. Course Code:	
UOM1011	
3. Semester / Year:	
First Year- Fall Semester	
4. Description Preparation Date:	
20-11-2025	
5. Available Attendance Forms:	
Attending class. Theory, in-class discussion	
6. Number of Credit Hours (Total) / Number of Units (Total)	
Number of Credit Hours (50) / Number of Units (2)	
7. Course administrator's name (mention all, if more than one name)	
Name:Younis Najim Email: mahalyounis@uomosul.edu.iq	
8. Course Objectives	
Course Objective	The objective of this semester is to introduce students to the core topics of Arabic language studies. The course will cover the fundamental definitions of the Arabic language, key grammatical rules related to tenses, and the development of syntactic skills concerning singular and plural forms, as well as indeclinable nouns. Additionally, the curriculum will include rhetoric and its practical applications. By the end of the semester, students will have acquired a solid understanding of these concepts, achieved through a combination of theoretical lectures, tutorials, homework assignments, and relevant reports.
9. Teaching and Learning Strategies	
Strategy	The aim is to broaden students' understanding of the Arabic language and to ensure they grasp its fundamental concepts, including grammar and rhetoric, as well as the ability to distinguish between different tenses. This semester includes various components such as lectures, instructional programs, discussions, homework assignments, and e-learning platforms. The course will be taught in Arabic, and all mandatory assignments must be submitted by the specified deadlines in order to be eligible for the final examination.

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2	B2	Introduction	Lecture + Discussion	Quizzes + report
2	2			Lecture + Discussion	Quizzes + report
3	2		Grammar: Past Tense Verbs	Lecture + Discussion	Quizzes + report
4	2			Lecture + Discussion	Quizzes + report
5	2		Grammar: Present Tense Verbs	Lecture + Discussion	Quizzes + report
6	2			Lecture + Discussion	Quizzes + report
7	2		Grammar: The Five Verb Forms		
8	2				Quizzes + report
9	2		Grammar: Dual and Plural Forms	Lecture + Discussion	Quizzes + report
10	2			Lecture + Discussion	Quizzes + report
11	2		Grammar: Expressions of Wonder, Indeclinable Nouns, and Augmented Verbs	Lecture + Discussion	Quizzes + report
12	2			Lecture + Discussion	Quizzes + report
13	2		Midterm Examination	Lecture + Discussion	Quizzes + report
14	2			Lecture + Discussion	Quizzes + report
15	2		Grammar: Expressions of Wonder, Indeclinable Nouns, and Augmented Verbs	Lecture + Discussion	
16	2		Final Exam		
	2			Lecture + Discussion	Quizzes + report
	2		Grammar: Past Tense Verbs	Lecture + Discussion	Quizzes + report
	2			Lecture + Discussion	Quizzes + report
	2		Grammar: Present Tense Verbs	Lecture + Discussion	Quizzes + report

	2			Lecture + Discussion	Quizzes + report

11. Course Evaluation	
Mark (100)	Type of Assessment
10	Quizzes
10	Homework
10	Report
10	In Class Activity
10	Midterm
50	Final
100	Summation
12. Learning and Teaching Recourses	
Required textbooks (curricular books, if any)	Jaami' Al-Duroos Al-Arabiyyah (Comprehensive Arabic Lessons) by Mustafa Al-Ghalayini
Main references (sources)	Al-Nahw Al-Wafi (Comprehensive Grammar) by Abbas Hassan
Recommended books and references (scientific journals, reports...)	
Electronic References, Websites	

3. Course Description Form of Introduction to Sustainable Engineering

1. Course Name:	
Introduction to Sustainable Engineering	
2. Course Code:	
SEE105	
3. Semester / Year:	
Spring /2025-2026	
4. Description Preparation Date:	
1/3/2026	
5. Available Attendance Forms:	
Attendance in classrooms and online participation	
6. Number of Credit Hours (Total) / Number of Units (Total):	
60 / 6	
7. Course administrator's name (mention all, if more than one name)	
Name: Dr. Ali Azzam Mohammed Email: Ali.Alkhabbaz@uomosul.edu.iq	
8. Course Objectives	
Course Objectives	Understanding the fundamental principles of the field of energy and sustainability, and their importance in modern society. Identifying various energy sources, including fossil fuels, nuclear energy, and renewable energy such as solar, wind, and geothermal energy. Analyzing the environmental, economic, and social impacts of energy production and consumption. Promoting awareness of the importance of sustainable practices in the use of energy resources to preserve the environment. Developing the skills and knowledge necessary to engage in fields such as environmental consulting, energy management, and sustainability-related policymaking.
9. Teaching and Learning Strategies	
Strategy	The teaching strategy for the Introduction to Sustainable Engineering course is based on a blend of modern instructional approaches that integrate both theoretical and practical aspects to enhance students' understanding of fundamental concepts in energy and sustainability. The course content is delivered through interactive lectures that encourage dialogue and discussion, alongside real-world case studies that reflect the challenges and opportunities within the energy sector.

	Multimedia tools, such as videos and simulations, are utilized to simplify technical concepts and capture students' interest. Workshops and group work sessions are also organized to develop research, analytical, and critical thinking skills. Project-based learning further strengthens students' ability to design practical and sustainable solutions to energy-related problems. Students are encouraged to engage in self-directed learning through the provision of additional resources and references. Continuous assessment is implemented through quizzes and presentations to monitor students' progress and motivate high performance. These strategies aim to prepare graduates who can effectively contribute to environmental consulting, energy management, and sustainable policymaking, thereby supporting sustainable development and benefiting society.

10.Course Structure

Week	**Hours**	**Required Learning Outcomes**	**Unit or subject name**	**Learning method**	**Evaluation method**
1	4	A1-A4 B2,B3 C1,C2	Introducing students to the concept of energy and its various forms	Lecture	Quiz
2	4		Introducing students to the concept of energy and its various forms	Lecture	Quiz+Homework
3	4		Introducing students to the concept of energy and its various forms	Lecture	Quiz
4	4		A statement outlining the environmental and health impacts of using carbon-emitting energy sources	Lecture	Quiz+Homework
5	4		Fundamentals and Principles of Solar Energy	Lecture	Quiz
6	4		Conversion of solar energy into thermal energy	Lecture	Seminar
7	4		Conversion of solar energy into electrical energy	Lecture	Quiz+Homework
8	4		Fundamentals and Principles of Wind Energy	Lecture	Quiz+Report
9	4		Fundamentals and Principles	Lecture	Report

			of Geothermal Energy		
10	4		Fundamentals and Principles of Wave Energy and Geothermal Energy	Lecture	Seminar
11	4		Introducing students to the concept of sustainability	Lecture	Quiz
12	4		Introducing students to the concept of sustainability	Lecture	Quiz+Homework
13	4		Analysis of the Performance Characteristics of Energy Storage Systems	Lecture	Quiz+Homework
14	4		Analysis of the Performance Characteristics of Energy Storage Systems	Lecture	Quiz+Homework
15	4		Mid exam	Exam	Exam

11.Course Evaluation

Task	Weight (Marks)
Reports	5 points
Quizzes	20 points
Seminars	5 points
Homeworks	10 points
Midterm Exam	10 point
Total	50 points

12.Learning and Teaching Resources

Required textbooks (curricular books, if any)	
Primary references (sources)	Ibrahim Dincer, Azzam Abu-Rayash, Energy Sustainability, Elsevier (2019) MEHMET KANOĞLU, YUNUS A. ÇENGEL, and JOHN M. CIMBALA, Fundamentals and Applications of Renewable Energy , Mc Gra Hill (2020)
	Robert Bennett Dunlap, Sustainable Energy, Second Edition (2017)
Recommended books and references (scientific journals, reports...)	
Electronic References, Websites	Google Classroom

4. Course Description Form of Mathematics I

1. Course Name:	
Mathematics I	
2. Course Code:	
SEE102	
3. Semester / Year:	
First Semester / 2025	
4. Description Preparation Date:	
10/9/2025	
5. Available Attendance Forms:	
Mandatory Attendance	
6. Number of Credit Hours (Total) / Number of Units (Total)	
150 hours / 6 units	
7. Course administrator's name (mention all, if more than one name)	
Name: Dr Muyassar Edris Ismaeel **Email: Muyassar.alhasso@uomosul.edu.iq**	
8. Course Objectives	
Course Objectives	• Write clear mathematical arguments, including effective use of physical equations. • Develop a strong understanding of fundamental principles in physics, including: a. Reinforcement of central physics principles, b. Ability to apply these concepts mathematically, c. Practical understanding of how these ideas apply in the real world. • Use graphs and charts to effectively present results. • Identify appropriate solution strategies and necessary assumptions. • Apply algebraic and geometric methods to solve problems. • Develop flexible and creative problem-solving skills. • Build an integrated understanding of mathematics. • Translate physical descriptions into mathematical equations and explain the physical meaning of mathematical results. • Improve the ability to communicate Scientific ideas.
9. Teaching and Learning Strategies	
Strategy	The main strategy for delivering this course is encouraging students to participate in exercises while refining and expanding their critical thinking skills. This will be achieved through lectures, interactive lessons, and examining simple experiments involving engaging sampling activities.

10.Course Structure

Week	Hour	Required learning outcomes	Unit or subject name	Learning method	Evaluation method
1	5	A1 B4	Functions	Lecture	None
2	5		Functions	Lecture	None
3	5		Limits and Continuity	Lecture	Quiz
4	5		Limits and Continuity	Lecture	H.W.
5	5		Derivatives	Lecture	None
6	5		Derivatives	Lecture	Quiz
7	5		Derivatives	Lecture	None
8	5		Derivatives	Lecture	Mid-term Exam.
9	5		Derivatives	Lecture	None
10	5		Derivatives	Lecture	H.W.
11	5		Derivatives	Lecture	Quiz
12	5		Vectors	Lecture	None
13	5		Vectors	Lecture	H.W.
14	5		Matrices	Lecture	Quiz
15	5			Lecture	None
16	3			Final Exam.	End-of-Semester Final Exam.

11. Course Evaluation

Evaluation Type	Mark
Quiz (4)	20
Homework (4)	10
Project (1)	5
Report (1)	5
Midterm exam	10
Final exam	50
Final	100

12. Learning and Teaching Resources

Required textbook (curricular books, if any)	Calculus and Analytic Geometry by George B. Thomas, any edition.
Main references (sources)	
Recommended books and references (scientific journals, reports…)	
Electronic references, websites	

5. Course Description Form Engineering Mechanics – Statics

1. Course Name:	
Engineering Mechanics – Statics	
2. Course Code:	
SEE101	
3. Semester / Year:	
First semester / 2025-2026	
4. Description Preparation Date:	
20.11.2025	
5. Available Attendance Forms:	
In-person, theoretical	
6. Number of Credit Hours (Total) / Number of Units (Total)	
125 hours / 5 units	
7. Course administrator's name (mention all, if more than one name)	
Name: Sufyan A. Mohammed Email: Sufyan.a.mohammed@uomosul.edu.iq	
8. Course Objectives	
Course Objectives	• To develop the capacity of first-level students to predict the effects of forces, moments, and couples on bodies. • To develop problem-solving skills and an understanding of forces analysis by applying the equilibrium principle. • To understand and draw the free body diagram to analyze forces. • Analysis forces and finding their resultant forces for two- and three-dimensional systems. • Applying the equilibrium principle to simple trusses and frames. • Understand the friction phenomena and the friction force in machine parts. • To understand the centroid and center of gravity for an area and a rigid body.
9. Teaching and Learning Strategies	

Strategy	• Classroom lectures using theoretical explanation and demonstration • Problems and exercises solved during the lecture to apply concepts • Homework to enhance self-understanding and stimulate critical thinking • Cooperative learning in small groups to solve analytical problems

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	5	A1,A2 B1,B4	Introduction to statics + Vector operations (addition, product)	Theoretical lecture and problem solving	nil
2	5		Force system in 2D	Theoretical lecture and problem solving	nil
3	5		Addition of a system of coplanar Forces	Theoretical lecture and problem solving	Quiz
4	5		Moment, couples, and resultant of forces (1)	Theoretical lecture, problem solving, and group activity, solving exercises	Classroom exercise
5	5		Moment, couples, and resultant of forces (2)	Theoretical lecture, problem solving, and group activity, solving exercises	homework
6	5		Equations and conditions of Equilibrium	Theoretical lecture and problem solving	Quiz
7	5		System Isolation and the Free-Body Diagram (FBD)	Theoretical lecture, problem solving, and group activity, solving exercises	Classroom exercise
8	5		Trusses: Method of Joints + Method of Sections	Theoretical lecture and problem solving	homework
9	5		Frames and Machines	Theoretical lecture, problem solving, and group activity, solving exercises	Classroom exercise

10	5		Center of Gravity and Centroid	Theoretical lecture and problem solving	Quiz
11	5		Centroid of composite area	Theoretical lecture, problem solving, and group activity, solving exercises	Classroom exercise
12	5		Moment of Inertia	Theoretical lecture and problem solving	Mid exam
13	5		Moments of Inertia for Composite Areas	Theoretical lecture, problem solving, and group activity, solving exercises.	Classroom exercise
14	5		Theory of Dry Friction.	Theoretical lecture and problem solving	homework
15	5		Applications of Friction in Machines	Theoretical lecture and problem solving	Report

Course Evaluation	
ignments: 12%, Quizzes: 24%, report 4%, Midterm Exam: 10% and Final Exam 50%	
Learning and Teaching Resources	
uired textbooks (curricular books, if any)	
n references (sources)	Engineering_Mechanics_Statics_7th_Meriam 2012
Recommended books and references	Russell C. Hibbeler - Engineering Mechanics_ Static (12th Edition)-Prentice Hall
Electronic references, websites	https://engineeringstatics.org

6. Course Description Form of Physics

1. Course Name:
Physics
2. Course Code:
SEE104
3. Semester / Year:
Semester 1 / 2025
4. Description Preparation Date:
10 / 09 / 2025
5. Available Attendance Forms:
Presence (the student's presence in the class)
6. Number of Credit Hours (Total) / Number of Units (Total)
100 hrs. / 4 ECTS
7. Course administrator's name (mention all, if more than one name)
Name: **Dr. Ahmed Fouad Mahmood** Email: **ahmedfalneama@uomosul.edu.iq**

8. Course Objectives	
Course Objectives	• Understand fundamental physical principles. • Develop problem-solving skills. • Communicate scientific ideas effectively. • Develop critical thinking. • Collaborate effectively.
9. Teaching and Learning Strategies	
Strategy	Physics teaching and learning strategies emphasize active engagement through lectures, problem-solving, hands-on labs, and technology, fostering conceptual understanding, critical thinking, and practical application of physics principles.

10. Course Structure

Week	Hours	Required learning outcomes	Unit or subject name	Learning method	Evaluation method
1	4	A1,A4 B1,B4	Introduction to physics; Standards of length, mass and time; Scalar and Vector quantities; Kinematics; Position, Displacement and Distance; Speed, Velocity and Acceleration.	Homework	Lecture
2	4		Forces and motion; Mass and gravity force; Newton's three laws of motion. Spring forces and Hooke's law; Friction forces; Uniform circular motion; Work.	Homework	Lecture
3	4		Kinetic and Potential Energy; The work-kinetic energy theorem; Conservation of total mechanical energy; Power.	Homework	Lecture+ Quiz
4	4		Linear momentum; Momentum and kinetic energy; Rate of change of linear momentum and Newton's laws; Law of conservation of linear momentum; Impulse.	Homework	Lecture
5	4		Simple Harmonic Motion; Universal gravitation; Newton's law of universal gravitation; Free-fall acceleration and the gravitational force; and Solve problems using Newton's law of universal gravitation and calculate the gravitation for different locations.	Homework	Lecture+ Quiz
6	4		Fluid mechanics; Pressure and density of fluid at different depth; Hydrostatic pressure; Pascal's principle and the operation of a hydraulic lift.	Homework	Lecture
7	4		Buoyant forces and Archimedes's principle; the equation of continuity for fluids; and the Bernoulli's equation.	Homework	Lecture
8	4		Heat Transfer (Conduction, Convection, and Radiation).	Homework	Lecture+ Quiz
9	4		Atoms Structure; Atomic Energy Level; and Materials Used in Electronics.	Homework	Lecture
10	4		Conduction in Metals, Semiconductors, and Insulators; Intrinsic and Extrinsic Semiconductors; N-Type and P-Type Semiconductor; The PN Junction.	Homework	Lecture
11	4		Midterm exam	Exam	Test
12	4		Diodes and Transistors.	Homework	Lecture
13	4		Current and Voltage; electrical circuit; and Ohm's Law.	Homework	Lecture+ Quiz
14	4		Power and Energy; Parallel and Series Networks.	Homework	Lecture
15	4		Kirchhoff's Law.	Homework	Lecture
16	-final exam week		Classroom tests	Review	Thorough review

11. Course Evaluation

Evaluation Type	Mark
Quiz (4)	20
Homework (4)	10
Project (1)	5
Report (1)	5
Midterm exam	10
Final exam	50
Final	100

12. Learning and Teaching Resources

ıired Textbooks (Methodology, if provided)	
Primary References (Sources)	➢ **Physics for scientists and engineers: An interactive approach**. Robert Hawkes, Javed Iqbal, Firas Mansour, Marina Milner-Bolotin and Peter Williams. 2nd edition, 2019. ➢ **Fundamentals of Physics**. David Halliday, Robert Resnick and Jearl Walker. 10th Edition, 2014. ➢ **Engineering Mechanics: Dynamics - Volume 2**. J.L. Meriam, L.G. Kraige and J. N. Bolton. 8th edition, 2015.
Recommended Supplementary Books and References (e.g., Scientific Journals, Reports)	➢ **Electronic Devices**. Thomas L. Floyd. 9th Edition, 2012. ➢ **Physics for Scientists and Engineers with modern physics**. Raymond A. Serway and John W. Jewett. 9th edition, 2014.
Online Resources, Websites	

7. Course Description Electric Circuits

1. Course Name:
Electric Circuits
2. Course Code:
SEE103
3. Semester / Year:
First semester / 2024
4. Description Preparation Date:
December 1, 2024
5. Available Attendance Forms:
In person attendance, online, exercises
6. Number of Credit Hours (Total) / Number of Units (Total)
125/5
7. Course administrator's name (mention all, if more than one name)
Name: **Maan Hussein** Email: **maanhussein1991@uomosul.edu.iq** Name: Eman Ahmad Email: **eman.alhanoti@uomosul.edu.iq**
8. Course Objectives

Course Objectives	An ability to distinguish, identify, define, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics. applying circuit analysis techniques such as Ohm's Law, Kirchhoff's Voltage and Current Laws, and network theorems (Thevenin, Norton, etc.) An ability to create and carry out proper measurements and tests with quality assurance, analyze and interpret results, and utilize engineering judgment to make inferences.
9. Teaching and Learning Strategies	
Strategy	The primary strategy for delivering this module will be to encourage students to participate in the exercises while refining and expanding their critical thinking skills. This will be accomplished through classes, interactive tutorials, and the consideration of simple experiments involving sampling activities that students find interesting.

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
Week 1	5	A1,A2,A4 B1,B4	Standard international units and introduction to basic components	**Lecture**	**Assignments**
Week 2	5		Resistance and Ohm 's law,.	**Lecture**	
Week 3	5		Kirchhoff's voltage law	**Lecture**	
Week 4	5		Kirchhoff's current law	**Lecture**	**Quizzes**
Week 5	5		Loop analysis	**Lecture**	
Week 6	5		Nodal analysis	**Lecture**	
Week 7	5		Thevenin's theorem	**Lecture**	**Assignments**
Week 8	5		Norten's theorem	**Lecture**	
Week 9	5		DC circuit analysis examples	**Lecture**	**Report**
Week 10	5		Alternating current circuits	**Lecture**	
Week 11	5		Complex numbers &polar representation	**Lecture**	**Quizzes**
Week 12	5		Power triangle	**Lecture**	**Midterm Exam**
Week 13	5		Power factor	**Lecture**	**Assignments**
Week 14	5		Three phase circuits	**Lecture**	
Week 15	5		Delta –star and star – delta	**Lecture**	

11. Course Evaluation

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	**Quizzes**	2	20% (20)	5, 11	LO # 1
	Assignments	3	5% (5)	3,7,14	LO # 1
	Practical	1	10% (10)	15	LO # 2 and 3
	Report	1	5% (5)	9	LO# 2
Summative assessment	**Midterm Exam**	1hr	10% (10)	12	LO # 1 and 2
	Final Exam	3hr	50% (50)	16	All
Total assessment					100% (100 Marks)

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	أصول الهندسة الكهربائية لطلبة كلية الهندسة
Main references (sources)	A Text book of electric technology B.L.Theraja.
Recommended books and references (scientific journals, reports…)	Engineering circuit analysis William H.Hayt.
Electronic References, Websites	

Course Description: First year Spring Semester

1. Course Description Form English I

1. Course Name:
English I
2. Course Code:
UOM1021
3. Semester / Year:
Semester 2 / 2025
4. Description Preparation Date:
03 / 08 / 2025
5. Available Attendance Forms:
Presence (the student's presence in the class)
6. Number of Credit Hours (Total) / Number of Units (Total)
50 hrs. / 2 ECTS
7. Course administrator's name (mention all, if more than one name)
Name: **Dr. Ahmed Fouad Mahmood** Email: **ahmedfalneama@uomosul.edu.iq**
8. Course Objectives

Course Objectives	• The **goal of this course** is to correctly learn English grammar rules to help students build correct and understandable sentences, thereby **reducing misunderstandings** and ensuring effective communication of the intended meaning. • **Improving Writing Skills:** Grammar is the foundation for constructing cohesive and organized texts, whether you're writing letters, reports, or essays. • **Developing Listening and Reading Skills:** Understanding grammar helps to better analyze spoken and written sentences, which facilitates information comprehension and understanding complex texts. • **Preparation for Academic and Professional Exams:** Knowledge of grammar is essential for passing many internationally recognized English language tests, which are often required for study or work.
9. Teaching and Learning Strategies	
Strategy	Strategies for teaching English grammar include communicative language teaching, task-based learning, inductive and deductive approaches, and contextual learning. Meanwhile, strategies for learning English grammar involve regular and intensive practice, learning through context, focusing on patterns and structures, practical writing and conversation, using diverse resources, and reviewing and correcting errors.

10. Course Structure

Week	Hours	Required learning outcomes	Unit or subject name	Learning method	Evaluation method
1	2	B2	Part of speech	Homework	Lecture
2	2		Basic English Sentence Structure	Homework	Lecture
3	2		Basic English Sentence Structure	Homework	Lecture
4	2		Pronouns	Homework	Lecture
5	2		Tenses	Homework	Lecture
6	2		Tenses	Homework	Lecture + Quiz
7	2		Active voice	Homework	Lecture
8	2		Passive voice	Homework	Lecture
9	2		Changing between Active and Passive Voice	Homework	Lecture + Quiz
10	2		Midterm exam	Exam	Test
11	2		Comparative and Superlative	Homework	Lecture
12	2		Conditional sentences	Homework	Lecture
13	2		Constructing Simple, Compound, and Complex Sentences	Homework	Lecture
14	2		Developing the Skill of Reading Scientific Passages and Articles	Homework	Lecture
15	2		Developing the Skill of Reading Scientific Passages and Articles	Homework	Lecture
16	Pre-final exam week		Classroom tests	Review	Thorough review

11. Course Evaluation

Evaluation Type	Mark
Quiz (2)	20
Homework (2)	10
Project (1)	5
Report (1)	5
Midterm exam	10
Final exam	50
Final	100

12. Learning and Teaching Resources	
Required Textbooks (Methodology, if provided)	
Primary References (Sources)	➢ Ronald Carter and Michael McCarthy. **Cambridge grammar of English: A comprehensive guide**. Cambridge: Cambridge University Press, 2006. ➢ Rodney Huddleston, Geoffrey K. Pullum. **The Cambridge Grammar of the English Language**, 2002.
Recommended Supplementary Books and References (e.g., Scientific Journals, Reports)	**Collins Reading for IELTS** by Els Van Geyte, 2011.
Online Resources, Websites	

2. Course Description Form Democracy and Human Rights

1. Course Name:	
Democracy and Human Rights	
2. Course Code:	
UOM1040	
3. Semester / Year:	
First semester / 2025	
4. Description Preparation Date:	
December 1, 2025	
5. Available Attendance Forms:	
In person attendance, online, exercises	
6. Number of Credit Hours (Total) / Number of Units (Total)	
Number of Credit Hours (50) / Number of Units (2.0)	
7. Course administrator's name (mention all, if more than one name)	
Name: Younis Mahal Email: mahalyounis@uomosul.edu.iq	
8. Course Objectives	
Course Objectives	1. The aim of studying the democracy and human rights topics is to: 2. Understand the concept of human rights and explore their sources, including international, regional, national, and religious sources. 3. Define administrative corruption, explore its types, and understand its detrimental effects on society. Study methods to combat administrative corruption and promote transparency, accountability, and good governance. 4. Trace the historical development and evolution of human rights, examining key milestones and movements that have shaped the modern understanding of human rights. 5. Differentiate between different categories of human rights, including civil and political rights, economic and social rights, and environmental, cultural, and developmental rights. 6. Explore legal, institutional, and societal guarantees to prevent human rights violations, including guarantees of human rights in Islam, national-level protections, and international safeguards. 7. Comprehend the concept of democracy, including its principles, values, and various forms of democratic governance such as direct, semi-direct, indirect, and digital democracy. 8. Overall, studying these topics aims to develop a comprehensive understanding of human rights, democracy, and combating corruption, empowering individuals to actively promote and protect human rights and democratic values in society.
9. Teaching and Learning Strategies	
Strategy	When it comes to learning and teaching strategies for a human rights module, there are several approaches can be taken to enhance understanding and engagement. Here are some effective strategies:

	1. Interactive Discussions: Encourage students to actively participate in discussions, debates, and group activities. This promotes critical thinking, allows for different perspectives to be shared, and fosters a deeper understanding of human rights issues. 2. Case Studies: Present real-life case studies that highlight human rights violations or achievements. Analyzing these cases helps students apply theoretical concepts to practical situations and develops their problem-solving skills.

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
Week 1	2	**A3 B2,B3 C1,C2**	Characteristics of human rights.	Lecture	Quizzes + In Class Discussion
Week 2	2		The emergence and evolution of human rights.	Lecture	Quizzes + In Class Discussion
Week 3	2		Types of human rights / civil and political rights.	Lecture	Quizzes + In Class Discussion
Week 4	2		Economic and social rights.	Lecture	Quizzes + In Class Discussion
Week 5	2		Environmental, cultural, and developmental rights.	Lecture	Quizzes + In Class Discussion
Week 6	2		Guarantees to prevent human rights violations / guarantees of human rights in Islam.	Lecture	Quizzes + In Class Discussion
Week 7	2		Guarantees for the protection of human rights at the national level.	Lecture	Quizzes + In Class Discussion
Week 8	2		Guarantees of human rights at the international level.	Lecture	Quizzes + In Class Discussion
Week 9	2		The concept of democracy.	Lecture	Quizzes + In Class Discussion
Week 10	2		Characteristics of a democratic system.	Lecture	Quizzes + In Class Discussion
Week 11	2		Forms of democratic governance (direct democracy / semi-direct democracy / indirect democracy).	Lecture	Quizzes + In Class Discussion
Week 12	2		Digital democracy / definition and advantages and disadvantages of digital democracy / manifestations of digital democracy.	Lecture	Quizzes + In Class Discussion
Week 13	2		The Islamic stance on democracy.	Lecture	Quizzes + In Class Discussion
Week 14	2		Critique of the democratic system.	Lecture	Quizzes + In Class Discussion
Week 15	2		Administrative corruption / definition and types.	Lecture	Quizzes + In Class Discussion
Week 16	2		Final Exam		

11. Course Evaluation	
Evaluation Type	**Mark**
Quiz	20
Homework	10
Project	5
Report	5
Midterm exam	10
Final exam	50
Final	100

12. Learning and Teaching Resources	
Required textbooks (curricular books, if any)	ضمانات حقوق الانسان وحمايتها وفقا للقانون الدولي والتشريع الوطني / نبيل عبد الرحمن ناصر الدين
Main references (sources)	
Recommended books and references (scientific journals, reports…)	الديمقراطية وحقوق الانسان / د. امير عبد العزيز
Electronic References, Websites	

3. Course Description Form Engineering Mechanic Dynamic

Course Description Form

1. Course Name:
Engineering Mechanics DYNAMICS
2. Course Code:
SEE151
3. Semester / Year:
Spring Semester/ 2026
4. Description Preparation Date:
Jan. 2026
5. Available Attendance Forms:
Presence
6. Number of Credit Hours (Total) / Number of Units (Total)
150/6
7. Course administrator's name (mention all, if more than one name)
Bakr Noori Alhasan bakralhasan@uomosul.edu.iq
8. Course Objectives

Course Obj	• Describe the linear and curved motion of a single particle using the fundamental concepts of displacement, velocity, and acceleration, and distinguish between different coordinate systems used in kinematic analysis (such as Cartesian, polar, and arc length coordinates). • Apply mathematical relationships that connect motion variables to solve problems related to particle motion, and develop the ability to graphically represent motion and analyze the relationships between different quantities. • Apply Newton's second law directly to particles moving under the influence of external forces by constructing and analyzing free-body diagrams to accurately determine the acting forces, or indirectly by formulating equations involving the concepts of work, kinetic energy, potential energy, as well as linear and angular impulse and momentum. • Analyze the planar motion of rigid bodies by classifying it into translational, rotational, and general motion, and use geometric and physical relationships to determine the velocity and acceleration of different points on the body. • Understand the application of linear and angular velocity and acceleration in describing the motion of bodies through the concept of relative velocity or acceleration.

9. Teaching and Learning Strategies	
Strategy	Lectures Tutorials Quizzes Class works Home works Reports

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1-2	10	A1,A2 B1,B4	Introduction Kinematics of Particles/Rectilinear Motion	Lectures and Tutorials	Quiz
3-4-5	15		Plane Curvilinear Motion/Rectangular, Polar, and Normal and Tangential Coordinates	Lectures and Tutorials	Quiz
6	5		Relative Motion	Lectures and Tutorials	Homework
7	5		Kinetics of Particles/Direct Applications of Newton's 2nd Law/Rectilinear and Curvilinear Coordinates	Lectures and Tutorials	Homework
8-9	10		Work energy and Potential Energy Concept	Lectures and Tutorials	
10-11	10		Impulse and Momentum, linear and Angular	Lectures and Tutorials	Quiz
12	5		Kinematics of Rigid Bodies, Rotation	Lectures and Tutorials	
13-14	10		Relative Velocity and Acceleration	Lectures and Tutorials	
15	5		Appendix: Mass Moment of Inertia	Lectures and Tutorials	
16	5		Final Exam		

11. Course Evaluation

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	**Quizzes**	2	20% (20)	3, 8	LO #1
	Home Work	2	6% (6)		
	Class Work	1	6% (6)	2,6	LO#1
	Report	1	8% (8)	13	LO#1
Summative assessment	**Midterm Exam**	1hr	10% (10)	10	LO#1
	Final Exam	3hr	50% (50)	16	LO#1
Total assessment			100% (100 Marks)		

12. Learning and Teaching Resources

Required textbook	**Engineering Mechanics: Dynamics - Volume 2**. J.L. Meriam, L.G. Kraige and J. N. Bolton. 8th edition, 2015
Main references (sources)	**Engineering Mechanics' Dynamics",** R. C. Hibbeler
Recommended books and references (scientific journals, reports…)	
Electronic References, Websites	

4. Course Description Form Mathematics II

1. Course Name:
Mathematics II
2. Course Code:
SEE152
3. Semester / Year:
Second Semester / 2026
4. Description Preparation Date:
11/11/2025
5. Available Attendance Forms:
Classroom, online, Tutorials
6. Number of Credit Hours (Total) / Number of Units (Total)
150 hours / 6 units
7. Course administrator's name (mention all, if more than one name)
Name: Dr. Omar Ahmad Jasim Email: omar.ahmed.j@uomosul.edu.iq Name: Mrs. Rehab Nashwan Sadoon Email: rehab.alshamaa@uomosul.edu.iq

8. Course Objectives

Course Objectives	• The unit aims to prepare students to write and solve mathematical formulas and equations, including the effective use of physical equations. • Develop flexible and creative problem-solving skills. • Translate physical descriptions into mathematical equations, and vice versa, and explain the physical meaning of mathematical results.

9. Teaching and Learning Strategies

Strategy	The primary strategy for delivering this module will be to encourage students to participate in the exercises while refining and expanding their critical thinking skills. This will be accomplished through classes, interactive tutorials, and the consideration of simple experiments involving sampling activities that students find interesting.

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method

1	5	**A1** **B4**	Integrals and Area Calculations	Lecture + Tutorials	Homework
2	5		Definite Integral	Lecture + Tutorials	Homework
3	5		Definite Integral	Lecture + Tutorials	Homework + Quiz
4	5		Applications of definite integrals	Lecture + Tutorials	Homework
5	5		Applications of definite integrals	Lecture + Tutorials	Homework
6	5		Transcendental Functions	Lecture + Tutorials	Homework
7	5		Transcendental Functions	Lecture + Tutorials	Homework + Quiz
8	5		Midterm exam	Exam	Classroom exam
9	5		Transcendental Functions	Lecture + Tutorials	Homework
10	5		Integration techniques	Lecture + Tutorials	Homework
11	5		Integration techniques	Lecture + Tutorials	Homework
12	5		Integration techniques	Lecture + Tutorials	Homework + Quiz
13	5		First-order differential equations	Lecture + Tutorials	Homework + Report
14	5		First-order differential equations	Lecture + Tutorials	Homework + Quiz
15	5		First-order differential equations	Lecture + Tutorials	Homework
16	5		Comprehensive review	Revision	N/A

11. Course Evaluation

Assessment Type	Mark
Quizzes:	24
Homeworks:	8
Project:	4
Report:	4
Midterm exam	10
Final exam	50
Total marks	100

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	Calculus and Analytic Geometry by George B. Thomas, any edition. Linear Algebra and Its Applications by David C. Lay, any edition.
Main references (sources)	Calculus and Analytic Geometry by George B. Thomas, any edition.
Recommended books and references scientific journals, reports …)	
Electronic References, Websites	

5. Course Description Form Chemistry

1. Course Name:
Chemistry
2. Course Code:
SEE155
3. Semester / Year:
First Year / Spring Semester
4. Description Preparation Date:
2025/10/20
5. Available Attendance Forms:
Presence (the student's presence in the class)
6. Number of Credit Hours (Total) / Number of Units (Total)
100 hrs. / 4 ECTS
7. Course administrator's name (mention all, if more than one name)
Name: **Dr. Younis Najim** Email:mahalyounis@uomosul.edu.iq Name: Eman Ahmed Ali Email: eman.alhanoti@uomosul.edu.iq

8. Course Objectives	
Course Objectives	• By the end of this course, students will be able to: • Understand the fundamental structure of the atom and electron configurations, and explain their role in determining the chemical properties of elements. • Apply key concepts of chemical composition—including the mole concept, formula mass, and stoichiometric relationships—to solve quantitative chemical problems. • Analyze and classify different types of chemical reactions, perform stoichiometric calculations, identify limiting reactants, and compute theoretical and percentage yields. • Demonstrate an understanding of energy changes in chemical reactions through topics such as thermochemistry, calorimetry, and applications of Hess's Law. • Apply the gas laws and kinetic molecular theory to explain the behavior of gases under various conditions. • Examine the properties of liquids and solids, focusing on intermolecular

	forces, phase transitions, and crystalline structures. • Interpret reaction rates, influencing factors, rate laws, reaction mechanisms, and the role of catalysts in the study of chemical kinetics. • Explain the principles of chemical equilibrium, calculate equilibrium constants, and predict equilibrium shifts using Le Châtelier's Principle.

9. Teaching and Learning Strategies

Strategy	The primary strategy will focus on encouraging students to actively participate in exercises, with a strong emphasis on developing and enhancing their critical thinking skills. This will be achieved through in-class lectures, interactive sessions, and the implementation of simple experiments that involve sample collection activities designed to engage students and increase their level of interaction

10. Course Structure

Week	Hours	Required learning outcomes	Unit or subject name	Learning method	Evaluation method
1	3	A1,A4 B1,B4	Atomic Structure, Electron Configuration, Elements	Lecture + Solving Problem	Quizzes + Report + In Class Activity
2	3		Ionic Bonding, Ionic Nomenclature, Covalent Bonding	Lecture + Solving Problem	Quizzes + Report + In Class Activity
3	3		Qualitative Analysis, Geometry, Polarity, Nomenclature	Lecture + Solving Problem	Quizzes + Report + In Class Activity
4	3		Calculations, Moles, Reactions	Lecture + Solving Problem	Quizzes + Report + In Class Activity
5	3		Chemical Reactions, Stoichiometry	Lecture + Solving Problem	Quizzes + Report + In Class Activity
6	3		Gases, Gas Laws, Phases	Lecture + Solving Problem	Quizzes + Report + In Class Activity
7	3		Solution Formation	Lecture + Solving Problem	Quizzes + Report + In Class Activity
8	3		Mid-Term Exam	Lecture + Solving Problem	Quizzes + Report + In Class Activity
9	3		Concentration, Colligative Properties	Lecture + Solving Problem	Quizzes + Report + In Class Activity
10	3		Redox Reactions	Lecture + Solving Problem	Quizzes + Report + In Class Activity
11	3		Reaction Energetics, Equilibria	Lecture + Solving Problem	Quizzes + Report + In Class Activity

12	3		Equilibrium Constant, Le Châtelier	Lecture + Solving Problem	Quizzes + Report + In Class Activity
13	3		Introduction to Hydrocarbons	Lecture + Solving Problem	Quizzes + Report + In Class Activity
14	3		Neutralization, Titration	Lecture + Solving Problem	Quizzes + Report + In Class Activity
15	3			Lecture + Solving Problem	Quizzes + Report + In Class Activity
16	3			Lecture + Solving Problem	Quizzes + Report + In Class Activity

11. Course Evaluation

Evaluation Type	Mark
Quiz	20
Homework	10
Project	5
Report	5
Midterm exam	10
Final exam	50
Final	100

12. Learning and Teaching Resources

Required Textbooks (Methodology, if provided)	
Primary References (Sources)	1 .Stoker, S.H. General, Organic, and Biological Chemistry, Sixth Edition, 2010. Houghton Mifflin. Boston, Mass. 2. Bundy, Robert, Castiglia Lab Manual for Fundamental Chemistry I, Chemistry 101, 2014-2015 Edition
Recommended Supplementary Books and References (e.g., Scientific Journals, Reports)	
Online Resources, Websites	

6. Course Description Form Engineering drawing

1. Course Name:
Engineering drawing
2. Course Code:
SEE153
3. Semester / Year:
Second semester / 2025-2026
4. Description Preparation Date:
01/11/2025
5. Available Attendance Forms:
Attendance, Theoretical, Practical, Seminar
6. Number of Credit Hours (Total) / Number of Units (Total)
125 hours / 5 units
Course administrator's name (mention all, if more than one name)
Name: Dr. Ahmed Khalid Ibrahim Email: alnajar.ahmed9@uomosul.edu.iq Name: Rehab Nashwan Saadoun Email: rehab.alshamaa@uomosul.edu.iq Name: Iman Ahmed Ali Email: eman.alhanoti@uomosul.edu.iq
7. Course Objectives

Course Objectivs	1. Enabling students to gain knowledge and understanding in engineering drawing using computers using AutoCAD. 2. Educating and teaching students the basics of engineering drawing specific to sustainable energy engineering. 3. Identifying the correct methods for engineering drawing using computers and how to apply them in AutoCAD in engineering and sustainable energy engineering fields. 4. Enhancing students' experience in drawing and designing various geometric shapes. 5. Drawing geometric shapes clearly using computers, including the effective use of AutoCAD.
8. Teaching and Learning Strategies	
Strategy	The main strategy adopted in delivering this unit is to encourage students' participation in solving exercises, in addition to understanding and applying the basics of drawing different types of lines, defining, explaining, and applying engineering drawing processes, understanding the basics of drawing curves, and understanding and applying the basic idea of the central projection theory, explaining the central and parallel projection theory to understand the projection process, explaining the different reference planes: the horizontal plane (HP), the front vertical plane (VP), and the side plane (PP), explaining the different types of views: the front view (FV), the top view (TV), and the side view (SV), explaining the methods of parallel projection, the first-quadrant projection method, and the third-quadrant projection method, using the third-

	quadrant projection method to draw engineering projections, understanding the interrelationship between the three projections (F.V, S.V, and T.V), drawing three-dimensional geometric shapes using the method of linking its three projections.

9. Course Structure

Week	Hours	Required learning outcomes	Unit or subject name	Learning method	Evaluation method
1	5	**A2,A4 B1,B2**	Introduction to engineering drawing and its tools / Identifying engineering tools and how to use them / Types of pens used in drawing engineering shapes / Designing bulletin boards and address box numbers / How to deal with engineering boards and engineering drawing.	Lecture + Lab	homework and classwork
2	5		Types of lines in engineering drawing / visible lines, hidden lines, center lines, dimension lines, and cutting lines.	Lecture + Lab	homework and classwork
3	5		Definition of drawing scale and its types / zoom in and zoom out scale / Teaching students how to apply and draw geometric operations / Drawing a straight line parallel to a known straight line.	Lecture + Lab	homework and classwork
4	5		Bisecting angles / Drawing a straight line parallel to a given straight line from a point that does not belong to it / Drawing a tangent to a circle from a point that does not belong to it.	Lecture + Lab	homework and classwork
5	5		Draw a tangent to two adjacent circles from the outside / Draw a tangent to two adjacent circles from the inside / Draw a tangent to two circles from the inside and the other from the outside / Draw a tangent to a circle passing through a straight line.	Lecture + Lab	homework and classwork
6	5		Multi-perspective projection / Orthographic projection theory of objects:	Lecture + Lab	homework and classwork
7	5		Types of projection in drawing and its practical importance / Projections with vertical rays	Lecture + Lab	homework and classwork

8	5		Types of projections resulting from orthographic projection and adopted in projecting various geometric objects / Front view	Lecture + Lab	homework and classwork
9	5		Side view/top view	Lecture + Lab	homework and classwork
10	5		Types of 3D shapes and their practical benefits	Lecture + Lab	homework and classwork
11	5		Drawing measurement axes and how to place dimensions on them	Lecture + Lab	homework and classwork
12	5		Linking the given projections to the process of imagination and drawing	Lecture + Lab	homework and classwork
13	5		Full section cuts	Lecture + Lab	homework and classwork
14	5		Half-section cuts	Lecture + Lab	homework and classwork
15	5		Transverse section cuts	Lecture + Lab	homework and classwork

10. Course Evaluation

Assessment Type	Grade
homework's (10)	12.5
Classwork's (10)	12.5
Seminars (1)	5
Quizzes (2)	10
Midterm Exam (1)	10
Final Exam	50
Total	100

11. Learning and Teaching Resources

Required textbooks (curricular books, if any)	"NGINEERING DRAWING AND GRAPHIC TECHNOLOGY", Thirteen Edition, By: THOMAS E. FRENCH, CHARLES. VIERCK, ROBERT J. FOSTER
Main References (Sources)	"ENGINEERING DRAWING AND AUTO CAD", By: RAMZY SYHOOD HAMIED
Recommended books and references (scientific journals, reports...)	William D. Callister Jr. & David D. Rethwisch. (2010)"Material Science and Engineering An introduction", eight Edition.
Electronic references, websites	Google Classroom

7. Course Description Form Environmental Pollution

1. Course Name:					
Environmental Pollution					
2. Course Code:					
SEE154					
3. Semester / Year:					
Second semester / 2025 −2026					
4. Description Preparation Date:					
February 1, 26					
5. Available Attendance Forms:					
In person attendance, online, practical laboratory					
6. Number of Credit Hours (Total) / Number of Units (Total)					
125/10					
7. Course administrator's name (mention all, if more than one name)					
Name: **Dr. Ali Ghazi Mohammed Kamil** Email: **aligm@uomosul.edu.iq**					
8. Course Objectives					
Course Objectives	Students will be able to: 1. Provide foundational knowledge of environmental pollution and its impact on ecosystems. 2. Introduce various types and sources of pollution, including water, air, soil, and thermal pollution. 3. Explore pollution control methods and mitigation strategies. 4. Highlight the importance of environmental balance and sustainability. 5. Emphasize the role of renewable and green energy in reducing environmental degradation.				
9. Teaching and Learning Strategies					
Strategy	The primary strategy for delivering this module will be to encourage students to participate in the exercises while refining and expanding their critical thinking skills. This will be accomplished through classes, interactive tutorials, and the consideration of simple experiments involving sampling activities that students find interesting.				
10. Course Structure					
Week	**Hours**	**Required Learning Outcome**	**Unit or subject name**	**Learning method**	**Evaluation method**

Week 1	5	A1,A2,A3 B2,B3 C1,C2	Environmental Pollution, Environmental Balance and Environmental Pollution Concept.	In person Lecture, online Lecture, practical laboratory	Assignments, Report
Week 2	5		The main sources of environmental pollution, Degrees of Ecological Pollution and Pollutants Classification.	In person Lecture, online Lecture, practical laboratory	
Week 3	5		Water Pollution, Physical and chemical properties of water.	In person Lecture, online Lecture, practical laboratory	
Week 4	5		Water pollutants, Types of water pollution, pollution of river water and groundwater and Water pollution control methods.	In person Lecture, online Lecture, practical laboratory	Assignments, Report
Week 5	5		Quiz	Lecture	
Week 6	5		Air Pollution, Atmosphere Layers, Air Components and Air Pollution Sources.	In person Lecture, online Lecture, practical laboratory	
Week 7	5		Air Pollution Types, Primary Air Pollutants, Secondary Air Pollutants and Proposed solutions to reduce the air pollution.	In person Lecture, online Lecture, practical laboratory	Assignments, Report
Week 8	5		Sustainable Development, Renewable, Alternative or Green Energy	In person Lecture, online Lecture, practical laboratory	
Week 9	5		Quiz	Lecture	Assignments, Report & Project
Week 10	5		Soil Pollution, Soil Structure, causes of soil degradation, Sources of soil pollution and dealing with contaminated lands.	In person Lecture, online Lecture, practical laboratory	
Week 11	5		Agricultural soil pollution Soil biological contamination and Radioactive contamination of soil	In person Lecture, online Lecture, practical laboratory	Assignments, Report
Week 12	5		Quiz	Lecture	Quiz
Week 13	5		Thermal pollution, Main sources of thermal pollution, The effects of thermal pollution and Cooling systems in power plants.	In person Lecture, online Lecture, practical laboratory	Assignments, Report
Week 14	5		Effects of thermal pollution on water resources, Ways to reduce the thermal pollution, Noise pollution, visual pollution, and light pollution.	In person Lecture, online Lecture, practical laboratory	
Week 15	5		Midterm Exam	Lecture	

11. Course Evaluation

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	**Quizzes**	3	18% (18)	5, 9,12	LO # 1
	Assignments	3	3% (3)	3,7,14	LO # 1
	Practical	4	12% (12)	4,6,8,10	LO # 2 and 3
	Project	1	7% (7)	9	LO# 2
Summative assessment	**Midterm Exam**	2hr	10% (10)	15	LO # 1 and 2
	Final Exam	3hr	50% (50)	16	All
Total assessment					100% (100 Marks)

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	**1. David A. Cornwell, Mackenzie Davis, Introduction Environmental Engineering, Fi Edition, 2012. McGraw-I Education**
Main references (sources)	**2. Richard O. Mines ·, Environmental Engineering Principles and Practice, 2014, Wiley**
Recommended books and references (scientific journals, reports…)	
Electronic References, Websites	

Course Description: Second year Fall Semester

1- Fluid Mechanics

1. Course Name:	
Fluid Mechanics	
2. Course Code:	
SEE201	
3. Semester / Year:	
Semester 1 /2nd year- 2025	
4. Description Preparation Date:	
15 / 09 / 2025	
5. Available Attendance Forms:	
Presence (the student's presence in the class)	
6. Number of Credit Hours (Total) / Number of Units (Total)	
175 hrs. / 7 ECTS	
7. Course administrator's name (mention all, if more than one name)	
Name: **Dr. Taha Ahmed Abdullah** Email: tahatahamir100@uomosul.edu.iq Name: Rehab Nashwan Sadoon Email: rehab.alshamaa@uomosul.edu.iq	
8. Course Objectives	
Course Objectives	Understand the fundamental principles of fluid mechanics, including fluid properties, statics, kinematics, and dynamics. Apply governing equations (continuity, momentum, energy) to analyze fluid flow in engineering systems. Develop problem-solving skills for real-world applications related to flow in pipes, channels, and around immersed bodies. Analyze forces due to fluid motion such as lift, drag, and pressure distribution. Introduce measurement techniques for pressure, velocity, flow rate, and viscosity in laboratory and field applications. Relate theoretical knowledge of fluid mechanics to practical applications in sustainable energy systems such as wind turbines, hydro turbines, pumps, and heat exchangers. Encourage critical thinking and prepare students for advanced courses in energy conversion, thermal systems, and fluid machinery..
9. Teaching and Learning Strategies	
Strategy	Physics teaching and learning strategies emphasize active engagement through lectures, problem-solving, hands-on labs, and technology, fostering conceptual understanding, critical thinking, and practical application of physics principles.

10. Course Structure

Week	Hours	Required learning outcomes	Unit or subject name	Learning method	Evaluation method
1	12	A1,A2,A4 B1,B4	An introduction to the fundamental of fluid mechanics, basic concepts and applications Compressibility and elasticity	Homework	Lecture
2					
3	18		viscosity	Homework	Lecture+Quiz
4			Viscosity- tutorial		
5			surface tension, capillarity, vapor pressure		
6	18		Pressure applications and measurements	Homework	Lecture+Quiz
7			Forces on immersed bodies - plane surfaces		
8			Forces on immersed bodies - plane surfaces - tutorial		
9	42		Forces on immersed bodies - curved surfaces `	Homework Exam Review	Test Lecture Lecture+Quiz
10			Forces on immersed bodies - curved surfaces - tutorial		
11			Introduction to fluid motion – basic concepts, Conservation of mass		
12			Equations of motions- Euler's and Bernoulli's		
13			Work-Energy Equations		
14			Work-Energy Equations - tutorial		
15			Summary Review		

11. Course Evaluation

Evaluation Type	Mark
Quiz (4)	20
Homework (4)	10
Project (1)	5
Report (1)	5
Midterm exam	10
Final exam	50
Final	100

12. Learning and Teaching Resources

Required Textbooks (Methodology, if provided)	
Primary References (Sources)	➢ **Elementary Fluid Mechanics Vennard and Street. 6thedition, 1982.** ➢ **Fluid Mechanics 5th edition Frank M. White. 1999.**

Recommended Supplementary Books and References (e.g., Scientific Journals, Reports)	
Online Resources, Websites	

2- Thermodynamics

1. Course Name:	
Thermodynamics	
2. Course Code:	
SEE202	
3. Semester / Year:	
Semester 3 / 2025	
4. Description Preparation Date:	
21 / 09 / 2025	
5. Available Attendance Forms:	
Presence (the student's presence in the class)	
6. Number of Credit Hours (Total) / Number of Units (Total)	
175 hrs. / 7 ECTS	
7. Course administrator's name (mention all, if more than one name)	
Name: Dr. Ahmed Fouad Mahmood	Email: ahmedfalneama@uomosul.edu.iq
Name: Dr. Younis Mahal Najim	Email: mahalyounis@uomosul.edu.iq
8. Course Objectives	
Course Objectives	Thermodynamics is a cornerstone subject for students of Sustainable Energy Engineering (SEE). The SEE202 course is designed to give students a strong foundation in both the First and Second Laws of Thermodynamics. It introduces essential terminology and definitions related to energy in its various forms, heat, work, control volumes, thermodynamic processes, and cycles. Students will apply the principle of energy conservation and the first law of thermodynamics to open and closed systems. The course also extends to the Second Law of Thermodynamics and associated principles, including Gibbs equations and the derivation of isentropic relations from these equations.
9. Teaching and Learning Strategies	
Strategy	SEE202 is delivered through interactive lectures, tutorials, and problem-solving sessions to strengthen both theoretical understanding and practical application. Case studies and real-world examples from sustainable energy systems are used to contextualize thermodynamic concepts. Laboratory demonstrations and computational tools give students hands-on experience in analyzing processes and cycles, while group discussions and assignments encourage collaboration and critical thinking.
10. Course Structure	

Week	Hours	Required learning outcomes	Unit or subject name	Learning method	Evaluation method
1	5	A1,A2,A4 B1,B4	Basic Concepts of Thermodynamic Systems.	Homework	Lecture
2	5		Equations of State and Thermodynamic Properties.	Homework	Lecture
3	5		First Law of Thermodynamics and Basic Processes.	Homework	Lecture+Quiz
4	5		Thermodynamic Energy Analysis and Specific Heat Relations.	Homework	Lecture
5	5		Properties of Pure Substances and Gases.	Homework	Lecture+Quiz
6	5		First Law Applications in Closed Systems.	Homework	Lecture
7	5		Steady and Unsteady Flow in Control Volumes.	Homework	Lecture
8	5		Applications of Energy Balance to Nozzles and Turbines.	Homework	Lecture+Quiz
9	5		Second Law of Thermodynamic.	Homework	Lecture
10	5		Second Law of Thermodynamics: Process Analysis.	Homework	Lecture
11	5		Mid-Term Exam	Exam	Test
12	5		Carnot Cycle and Practical Thermal Devices.	Homework	Lecture
13	5		Entropy Analysis in Thermodynamic Systems.	Homework	Lecture+Quiz
14	5		Advanced Gas Power Cycles.	Homework	Lecture
15	5		Vapor power cycles.	Homework	Lecture

11. Course Evaluation

Evaluation Type	Mark
Quiz (4)	20
Homework (4)	10
Project (1)	5
Report (1)	5
Midterm exam	10
Final exam	50
Final	100

12. Learning and Teaching Resources

Required Textbooks (Methodology, if provided)	Yunus A. Gengel and Michael A. Boles. Thermodynamics – an engineering approach. Eighth Edition. 2015.
	Michael J. Moran, Howard N. Shapiro, Daisie D. Boettner and Margaret B. Bailey. Fundamentals of Engineering Thermodynamics. Eighth Edition. 2014. Claus Borgnakke and Richard E. Sonntag. Fundamentals of Thermodynamics. Eighth Edition. 2013.
Recommended Supplementary Books and References (e.g., Scientific Journals, Reports)	T.D. Eastop and A. Mcconkey. Applied Thermodynamics for Engineering Technologists. Fifth Edition. 1993.
Online Resources, Websites	

3- Applied Electronics

1. Course Name:
Applied Electronics
2. Course Code:
SEE205
3. Semester / Year:
Semester 1 /2nd year- 2025
4. Description Preparation Date:
15 / 09 / 2025
5. Available Attendance Forms:
Presence (the student's presence in the class)
6. Number of Credit Hours (Total) / Number of Units (Total)
125 hrs. / 5 ECTS
7. Course administrator's name (mention all, if more than one name)
Name: **Dr. Salwan Samir Sabry** Email: **salwan.samir@uomosul.edu.iq** Name: Asst. Lecturer **Eman Ahmed Ali** Email: **eman.alhanoti@uomosul.edu.iq**
8. Course Objectives

Course Objectives	Students will be able to: 1 .Determine from a circuit diagram whether a diode is forward- or reverse-biased. 2 .Recognize the characteristic V-I curve for a diode. 3 .Define diode breakdown 4 .Determine when a diode can be considered “ideal”. 5 .Understand the fundamental properties of semiconductors. 6 .Analyze diode behavior in various circuit configurations. 7. Study and evaluate diode rectifier circuits for AC to DC conversion. 8. Solve theoretical and simulation-based problems related to electronic circuits. 9.Apply theoretical concepts to practical design exercises.

9. Teaching and Learning Strategies

Strategy	The primary strategy for delivering this module will be to encourage students to participate in the exercises while refining and expanding their critical thinking skills. This will be accomplished through classes, interactive tutorials, and the consideration of simple experiments involving sampling activities that students find interesting.

10. Course Structure

Wee	Hou	Require learning outcomes	Unit or subject name	Learnin method	Evaluatio method
1	6	A1,A2,A4 B1,B4	An introduction to the semiconductor materials types	Homework	Lecture
2	6		Semiconductors	Homework	Lecture
3	6		Semiconductors	Homework	Lecture
4	6		Performance Parameters	Homework	Lecture
5	6		Performance Parameters	Homework	Lecture
6	6		Single-Phase Half-Wave Uncontrolled Rectifier Circuits	Homework	Lecture+Quiz
7	6		Single-Phase Half-Wave Uncontrolled Rectifier Circuits	Homework	Lecture
8	6		Single-Phase Half-Wave Controlled Rectifier Circuits	Homework	Lecture+Quiz
9	6		Single-Phase Full-Wave Controlled Rectifier Circuits	Homework	Lecture
10	6		DC to DC Converters	Homework	Lecture
11	6		DC to DC Converters	Homework	Lecture
12	6		AC to AC Cycloconverter	Exam	Test
13	6		Introduction to Three-Phase Rectifiers	Homework	Lecture+Quiz
14	6		Three-Phase Rectifiers	Homework	Lecture
15	6		Summary Review	Review	Lecture
16	Pre-fi exam week		Classroom tests	Review	Thorough review

11. Course Evaluation

Evaluation Type	Mark
Quiz (4)	20
Homework (4)	10
Project (1)	5
Report (1)	5
Midterm exam	10
Final exam	50
Final	100

12. Learning and Teaching Resources

ıired Textbooks (Methodology, if provided)	
Primary References (Sources)	➢ **Power Electronics, Daniel W. Hart, Valparaiso University, Valparaiso, Indiana**
Recommended Supplementary Books and References (e.g., Scientific Journals, Reports)	
Online Resources, Websites	

4- Applied Mathematics 1

1. Course Name:	
Applied Mathematics 1	
2. Course Code:	
SEE206	
3. Semester / Year:	
Fall – 2025	
4. Description Preparation Date:	
September – 2025	
5. Available Attendance Forms:	
Onsite attendance	
6. Number of Credit Hours (Total) / Number of Units (Total)	
125/5	
7. Course administrator's name (mention all, if more than one name)	
Name: Hassan M. S. Alsarraj Email: saeedh81@uomosul.edu.iq	
8. Course Objectives	
Course Objectives	• Ability to recognize, identify, define, and solve engineering problems by applying principles of engineering, science, and mathematics. • Ability to communicate effectively—verbally with groups and in writing across various administrative levels. • Ability to apply critical thinking methodologies and modern analytical tools to make effective decisions in solving complex engineering problems and addressing unconventional challenges.
9. Teaching and Learning Strategies	
Strategy	1. Detailed explanation of scientific material using interactive methods. 2. Engaging students in solving applied problems related to engineering. 3. Conducting classroom discussions to develop critical thinking and connect theory with practice. 4. Utilizing e-learning platforms to support the educational process. 5. Promoting collaborative learning through teamwork.

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method

1	5	A1 B4	Multivariable func.	1 to 4	HW
2	5		Multivariable func.	1 to 4	HW
3	5		Differential equat.	1 to 4	HW – CW
4	5		Differential equat.	1 to 4	HW
5	5		Differential equat.	1 to 4	HW
6	5		Differential equat.	1 to 4	HW – CW
7	5		Differential equat.	1 to 4	Quiz
8	5		Fourier series	1 to 4	HW
9	5		Fourier series	1 to 4	HW
10	5		Fourier series	1 to 4	HW – CW
11	5		Fourier series	1 to 4	Quiz
12	5		Vector algebra	1 to 4	HW
13	5		Vector functions	1 to 4	HW – CW
14	5		Vector calculus	1 to 4	Quiz
15	5		seminar	5	presentation

11. Course Evaluation

Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exams, reports .... etc

Quizzes	12	seminar	9
Assignments	7	Midterm Exam	10
CW	12	Final Exam	50

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	1. E. Kreyszig, et al, "Advanced Engineering Mathematics," 10th ed., McGraw Hill, 2011. 2. George B. Thomas, Jr., "Thomas' Calculus Early Transcendentals," 13th Ed, 2014.
Main references (sources)	D.G. Zill, "Advanced Engineering Mathematics," 6th Ed, 2018.
Recommended books and references (scientific journals, reports…)	
Electronic References, Websites	https://uomosul.edu.iq/engineering/%d9%85%d9%81%d8%b1%d8%af%d8%a7%d8%aa-%d8%a7%d9%84%d9%85%d9%88%d8%a7%d8%af-%d8%a7%d9%84%d8%af%d8%b1%d8%a7%d8%b3%d9%8a%d8%a9/ https://eqworld.ipmnet.ru/ https://math.libretexts.org/ https://www.youtube.com/c/3blue1brown/featured

5- Computer 2

1. Course Name:
Computer2
2. Course Code:
UOM2032
3. Semester / Year:
Semester 2 / 2026
4. Description Preparation Date:
1 / 03 / 2026
5. Available Attendance Forms:
Presence (the student's presence in the class)
6. Number of Credit Hours (Total) / Number of Units (Total)
45hrs. / 3 ECTS
7. Course administrator's name (mention all, if more than one name)
Name: Eman Mohammedali Sulaiman Email: emanmali@uomosul.edu.iq
8. Course Objectives

• Course Objectives	• Teach and familiarize students with the concept of the Internet, communication networks, their technologies, classifications, and everything related to the topic. • Teaching students how to use the Internet correctly and in a way that benefits them scientifically • Introducing students to the concept of artificial intelligence, its most important technics, and the correct ways to benefit from it.
9. Teaching and Learning Strategies	
Strategy	• Board(Normal or Smart) • Computers • Presentation software such as PowerPoint.
10. Course Structure	

Week	Hours	Required learning outcomes	Unit or subject name	Learning method	Evaluation method

1	3	A4 B1,B2	computer hardware and software, Software and Hardware Interaction	Theoretical+practical	Daily, monthly, and final exams Homework Participatio n
2	3		Security and networking, what is the network, network types.	Theoretical+practical	
3	3		Basic network components	Theoretical+practical	
4	3		e-commerce, concept of electronic banking services, phone banking, SMS baking	Theoretical+practical	
5	3		Computer troubleshooting	Theoretical+practical	
6	3		Basic troubleshooting technique and tools	Theoretical+practical	
7	3		Introduction to AI, Define AI	Theoretical+practical	
8	3		AI technique and approaches	Theoretical+practical	
9	3		Monthly Exam	Theoretical+practical	
10	3		Challenges and ethical consideration	Theoretical+practical	
11	3		AI in our daily lifes	Theoretical+practical	
12	3		Application of AI , education, healthcare, marketing.	Theoretical+practical	
13	3		AI and society	Theoretical+practical	
14	3		Ethical challenges of AI	Theoretical+practical	
15	3		The future of AI	Theoretical+practical	
16	Pre-final exam week		Classroom tests		

11. Course Evaluation

Evaluation Type	Mark
Quiz (2)	10
Homework (2)	5
Lab	15
Report (1)	10
Midterm exam	10
Final exam	50
Final	100

12. Learning and Teaching Resources

Required Textbooks (Methodology, if provided)	2015Computer Literacy BASICS: A Comprehensive Guide to IC3 Connie Morrison, Dolores Wells, Lisa Ruffolo Cengage Learning. ISBN: 128576658X

Primary References (Sources)	Ahmed Banafa { introduction to Artificial Intelligence (AI)} 1'st addition (2024) مدخل الى عالم الذكاء الاصطناعي (2005) الدكتور عادل عبد النور
Recommended Supplementary Books and References (e.g., Scientific Journals, Reports)	
Online Resources, Websites	Google Classroom/br6cngca

6- Arabic Language 2

1. Course Name:
Arabic Language2
2. Course Code:
UOM2012
3. Semester / Year:
Fall Semester/ 2026
4. Description Preparation Date:
22\1\2026
5. Available Attendance Forms:
Presence
6. Number of Credit Hours (Total) / Number of Units (Total)
2\30
7. Course administrator's name (mention all, if more than one name)
Sawsan Amin Khudair – sausan.zakar@uomosul.edu.iq
8. Course Objectives

Course Objectives	Develop students' skills in using the Arabic language correctly in academic and scientific contexts. Enable students to understand and analyze scientific and engineering texts written in Arabic. Develop students' written and oral expression in a clear and precise manner. Enhance functional writing skills related to engineering such as reports and official correspondence. Reinforce basic Arabic grammar rules for scientific and professional communication. Develop critical thinking and linguistic analysis skills. Enhance confidence in presentations and discussions.

9. Teaching and Learning Strategies	
Strategy	Lectures Tutorials Quizzes Class works Home works Reports

10. Course Structure

Week	Hours	Required Learning Outcome	Unit or subject name	Learning method	Evaluation method
1-2	4	B2	Surah Yusuf / Hadith	Introduction / Surah Yusuf / Hadith	Quiz
3-4-5	6		Poetry (Al-Mutanabbi, etc.)	Lectures and Tutorials	Quiz
6	2		Relative Motion	Lectures and Tutorials	Homework
7	2		Morphology (nouns)	Lectures and Tutorials	Homework
8-9	4		Grammar) (numbers	Lectures and Tutorials	
10-11	4		Lexicon	Lectures and Tutorials	Quiz
12	2		Rhetoric	Lectures and Tutorials	
13-14	4		Literary applications	Lectures and Tutorials	
15	2		Common mistakes	Common mistakes	

11. Course Evaluation

		Time/Number	Weight (Marks)	Week Due	
Formative assessment	**Quizzes**	2	20% (20)	3, 8	
	Home Work	2	6% (6)		
	Class Work	1	6% (6)	2,6	
	Report	1	8% (8)	13	
Summative assessment	**Midterm Exam**	1hr	10% (10)	10	
	Final Exam	3hr	50% (50)	16	

12. Learning and Teaching Resources

Required textbook	Main Reference: Jami‘ Al-Duroos Al-Arabiyyah – Mustafa Al-Ghalayini
Main references (sources)	Supporting: Mughni Al-Labib – Ibn Hisham / Sharh Ibn Aqil
Recommended books and references (scientific journals, reports…)	
Electronic References, Websites	Website: Al-Maktaba Al-Shamela

Course Description: Second year Spring Semester

1- Engineering Materials

1. Course Name:	
Engineering Materials	
2. Course Code:	
SEE251	
3. Semester / Year:	
Spring /2025-2026	
4. Description Preparation Date:	
23/5/2026	
5. Available Attendance Forms:	
Presence/online	
6. Number of Credit Hours (Total) / Number of Units (Total):	
75 / 5	
7. Course administrator's name (mention all, if more than one name)	
Name: Dr. Mohammed Najeeb Abdullah Email: moh_77@uomosul.edu.iq	
8. Course Objectives	
Course Objectives	• To develop the capacity of second-year students to recognize types of Binary alloy systems for ferrous metals. • To develop skills and an understanding of Alloy steels. • To enrich students' knowledge and develop their skills in alloy steels' heat treatments and engineering applications. • To understand the hardenability and surface hardening of steel. • To understand nonferrous metals and alloys and bearing metals. • Explains the applications of non-metallic materials such as ceramics, polymers, and rubber. • Describes the standard specifications used in coding metal alloys. • Compares composite materials with other non-metallic materials. • Analyzes nanotechnology in materials and advanced applications.
9. Teaching and Learning Strategies	

Strategy	This course aims to enrich the knowledge of second-level students about applied metallurgy of ferrous metal, including binary alloy systems and ternary alloy systems, ad heat treatments, and engineering applications. Thus, the primary strategy of this curse is to encourage students to recognize different types of materials in real life. Also, to refine their thinking skills to analyze the microstructure of metals and understand their effects on the mechanical properties of metals. As a result, students will evaluate and recognize the relationship between the microstructure transformation of metals and their properties and applications. This strategy is achieved through classes, interactive discussions, different lab experiments, seminars, and by considering real applications.

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	5	A1,A2,A4 B1,B4	Structure of atom, Crystalline structure of metals,	lectures	Quiz
2	5		Properties of metals, Elastic and plastic deformation of metals	lectures	Quiz
3	5		Mechanical tests, Solidification of pure metals, Defects in metals	lectures	Homework
4	5		Fracture of metals, Strengthening Mechanisms in Metals	lectures	Quiz
5,6	10		Binary alloy systems for ferrous metals	lectures	Quiz + Homework
7,8	10		Alloy steels: alloying elements, heat treatments, and engineering applications.	lectures	Exam
9-10	10		Engineering polymers	lectures	Homework
11-12	10		Ceramics	lectures	Quiz
13-14	10		Composites	lectures	Exam
15	5		Material selection	lectures	Quiz

11. Course Evaluation

Task	Weight (Marks)
Assignments	5%
Quizzes	10%
Monthly Exams	15%
Attendance and Participation	5%
Reports	5%
Midterm Exam	10%
Final Exam	50%
Total	100%

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	-"Fundamentals of material science and engineering", William.d.callister, 4th ed., John weily & sons, 2012, U.S.A
Primary references (sources)	Engineering metallurgy", R. A. Higgins, part I, 6th ed, London

Recommended books and references (scientific journals, reports...)	Technology of engineering materials, M. Philip & W. Bolton, BH, 2002, London.
Electronic References, Websites	----------

2- Power Electronics

1. Course Name:
Power Electronics
2. Course Code:
SEE252
3. Semester / Year:
Semester 2 /2nd year- 2026
4. Description Preparation Date:
02 / 01 / 2026
5. Available Attendance Forms:
Presence (the student's presence in the class)
6. Number of Credit Hours (Total) / Number of Units (Total)
125 hrs. / 4 ECTS
7. Course administrator's name (mention all, if more than one name)
Name: **Dr. Salwan Samir Sabry** Email: **salwan.samir@uomosul.edu.iq** Name: Asst. Lecturer **Eman Ahmed Ali** Email: **eman.alhanoti@uomosul.edu.iq**
8. Course Objectives

Course Objectives	This is an introductory course for power electronics. The course, in its first part, identifies the methods and introduces the basic definitions in the field of power electronics. In the second part the course introduces the basic characteristics of the essential power semiconductor switching devices. The third part of this course presents the various phase-controlled power rectifier and AC controller converters.
9. Teaching and Learning Strategies	
Strategy	The primary strategy for delivering this module will be to encourage students to participate in the exercises while refining and expanding their critical thinking skills. This will be accomplished through classes, interactive tutorials, and the consideration of simple experiments involving sampling activities that students find interesting.

10. Course Structure

Week	Hours	Required learning	Unit or subject name	Learning method	Evaluation method

		outcomes			
1	4	A1,A2,A4 B1,B4	An introduction to the semiconductor materials types	Homework	Lecture
2	4		Power calculations and computations	Homework	Lecture
3	4		Fourier analysis and desecrate analysis	Homework	Lecture
4	4		Steady state and transient analysis	Homework	Lecture
5	4		Halfwave rectifier in three phase system	Homework	Lecture
6	4		Half-Wave uncontrolled/ controlled Rectifier Circuits	Homework	Lecture+Quiz
7	4		Wave uncontrolled/ controlled Rectifier Circuits	Homework	Lecture
8	4		Full-Wave controlled/uncontrolled Rectifier Circuits	Homework	Lecture+Quiz
9	4		AC to AC converter	Homework	Lecture
10	4		AC to AC Cycloconverter	Homework	Lecture
11	4		DC to DC Converters	Homework	Lecture
12	4		DC to DC	Exam	Test
13	4		DC to DC	Homework	Lecture+Quiz
14	4		DC to DC	Homework	Lecture
15	4		Inverter	Review	Lecture

11. Course Evaluation

Evaluation Type	Mark
Quiz (4)	20
Homework (4)	10
Project (1)	5
Report (1)	5
Midterm exam	10
Final exam	50
Final	100

12. Learning and Teaching Resources

Required Textbooks (Methodology, if provided)	
Primary References (Sources)	Power electronics Devices, circuits, and Applications (Fourth Edition) by Muhammad H. Rashid, ISBN 978-0-13-312590-0 , Pearson 2014 2-Power Electronics Basics, by Yuriy Rozanov, Sergey Ryvkin, Evgeny Chaplygin and Pavel Voronin. ISBN 978-1-4822-9880-2, CRC Press 2016 3- POWER CONVERTER CIRCUITS By Shepherd and Zhang ISBN: 0-8247-5054-3, Marcel Dekker 2004 4- Power Electronics, Daniel W. Hart, Valparaiso University, Valparaiso, Indiana
Recommended Supplementary Books and References (e.g., Scientific Journals, Reports)	
ne Resources, Websites	https://classroom.google.com/c/ODQzNjQ0NzY0OT

3- Applied Mathematics 2

1. Course Name:
Applied Mathematics 2
2. Course Code:
SEE253
3. Semester / Year:
Spring – 2026
4. Description Preparation Date:
Jan. – 2026
5. Available Attendance Forms:
Onsite attendance
6. Number of Credit Hours (Total) / Number of Units (Total)
125/5
7. Course administrator's name (mention all, if more than one name)
Name: Hassan M. S. Alsarraj Email: saeedh81@uomosul.edu.iq
8. Course Objectives

Course Objectives	• Ability to recognize, identify, define, and solve engineering problems by applying principles of engineering, science, and mathematics. • Ability to communicate effectively—verbally with groups and in writing across various administrative levels. • Ability to apply critical thinking methodologies and modern analytical tools to make effective decisions in solving complex engineering problems and addressing unconventional challenges.
9. Teaching and Learning Strategies	
Strategy	1. Detailed explanation of scientific material using interactive methods. 2. Engaging students in solving applied problems related to engineering. 3. Conducting classroom discussions to develop critical thinking and connect theory with practice. 4. Utilizing e-learning platforms to support the educational process. 5. Promoting collaborative learning through teamwork.

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	5		Laplace Transform	1 to 4	HW

2	5	A1 B4	Laplace Transform	1 to 4	HW – CW
3	5		Laplace Transform	1 to 4	HW
4	5		Laplace Transform	1 to 4	HW – CW
5	5		Laplace Transform	1 to 4	Quiz
6	5		Complex function	1 to 4	HW
7	5		Complex function	1 to 4	HW – CW
8	5		Complex function	1 to 4	Quiz
9	5		Eigenvalues vectors	1 to 4	HW
10	5		Eigenvalues vectors	1 to 4	HW – CW
11	5		Eigenvalues vectors	1 to 4	Quiz
12	5		Vector calculus	1 to 4	HW
13	5		Vector calculus	1 to 4	HW – CW
14	5		Vector calculus	1 to 4	Quiz
15	5		seminar	5	presentation

11. Course Evaluation

Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exams, reports .... etc

Quizzes	12	seminar	9
Assignments	7	Midterm Exam	10
CW	12	Final Exam	50

12. Learning and Teaching Resources

Required textbooks (curricu books, if any)	3. E. Kreyszig, et al, "Advanced Engineering Mathematics," 10th ed., McGraw Hill, 2011. 4. George B. Thomas, Jr., "Thomas' Calculus Early Transcendentals," 13th Ed, 2014.
Main references (sources)	D.G. Zill, "Advanced Engineering Mathematics," 6th Ed, 2018.
Recommended books and references (scientific journals, reports…)	
Electronic References, Websites	https://uomosul.edu.iq/engineering/%d9%85%d9%81%d8%b1%d8%af%d8%a7%d8%aa-%d8%a7%d9%84%d9%85%d9%88%d8%a7%d8%af-%d8%a7%d9%84%d8%af%d8%b1%d8%a7%d8%b3%d9%8a%d8%a9/ https://eqworld.ipmnet.ru/ https://math.libretexts.org/ https://www.youtube.com/c/3blue1brown/featured

4- Heat Transfer

1. Course Name:	
Heat Transfer	
2. Course Code:	
SEE254	
3. Semester / Year:	
Fourth / 2025-2026	
4. Description Preparation Date:	
1/3/2026	
5. Available Attendance Forms:	
Lectures in the classroom and Experimental lectures in the lab.	
6. Number of Credit Hours (Total) / Number of Units (Total)	
125 hours/ 5 ECTS credits	
7. Course administrator's name (mention all, if more than one name)	
Asst. Prof. Dr. Ahmed Khalid Ibrahim	Email: alnajar.ahmed9@uomosul.edu.iq
Asst. Prof. Dr. Ahmed Fouad Mahmoud	Email: ahmedfalneama@uomosul.edu.iq
8. Course Objectives	
Course Objectives	• To understand the basic principles of heat transfer. • To know how to represent principles of conduction. • To know how to represent principles of convection. • To know how to represent principles of radiation. • To know how to represent principles of Finned surfaces. • To know how to represent principles of heat exchangers.
9. Teaching and Learning Strategies	
Strategy	The main strategy adopted in delivering this module is to enhance students' skills in the movement of thermal energy through conduction (solid contact), convection (fluid movement), or radiation (electromagnetic waves) to improve efficiency or cooling. Key strategies include maximizing surface area for heat exchangers, utilizing high-conductivity materials, and employing forced

	convection (fans/pumps) to drive heat away from critical components to make them ready to design or implement any model they may need.

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	5	**A1,A2,A4 B1,B4**	Introduction	Lectures	H.W, Exam
2	5		Unit's systems	Lectures	H.W, Exam
3	5		Heat Transfer Laws	Lectures	H.W, Exam
4	5		Conduction	Lectures	H.W, Exam
5	5		Conduction	Lectures	H.W, Exam
6	5		One-dimensional	Lectures	H.W, Exam
7	5		Conduction and convection	Lectures	H.W, Exam
8	5		Conduction and convection	Lectures	H.W, Exam
9	5		Solving problems	Lectures	H.W, Exam
10	5		Unsteady state	Lectures	H.W, Exam
11	5		Solving problems	Lectures	H.W, Exam
12	5		Radiation	Lectures	H.W, Exam
13	5		Radiation	Lectures	H.W, Exam
14	5		Radiation	Lectures	H.W, Exam
15	5		Radiation	Lectures	H.W, Exam

11. Course Evaluation

Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exams, reports .... etc

Quizzes	10%	Homework	10%
Assignments	10%	Midterm Exam	10%
Seminar	10%	Final Exam	50%

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	Heat Transfer and Mass Transfer (6th edition) Jyunus A. Çengel, Afshin J. Ghajar 2020.
Main references (sources)	Heat transfer, (10th edition), J.P. Holman, McGraw-Hill International Edition, 2010.
Recommended books and references (scientific journals, reports…)	
Electronic References, Websites	

5- Laboratory I

1. Course Name:
Laboratory I
2. Course Code:
SEE255
3. Semester / Year:
Spring /2026
4. Description Preparation Date:
1/02/2026
5. Available Attendance Forms:
Manual attendance: The teacher categorizes students as present or absent in a list.
6. Number of Credit Hours (Total) / Number of Units (Total):
45 hours / 3 ECTS
7. Course administrator's name (mention all, if more than one name)
Name: Dr. Taha Ahmed Abdallah Email: tahatahamir100@uomosul.edu.iq
8. Course Objectives

Course Objectiv	• The empirical basis of the theoretical concepts presented in the lectures. It is important that students have the opportunity to verify some of the ideas themselves. • Familiarization with experimental equipment and the scientific method to gain insight into the inductive process by which ideas are derived. Furthermore, the ability to make accurate experimental observations and to analyze experimental data and draw conclusions. • How to write a technical report that conveys scientific information clearly and concisely.

9. Teaching and Learning Strategies	
Strategy	Using standard tools and techniques to conduct and design practical experiments on mechanical and electromechanical systems, and to accurately analyze and interpret the results. Applying modern engineering techniques, skills, and tools for intelligent control of mechanical systems.

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method

1	3	A1,A2,A4 B1-B4 C2	Introduction to Engineering Laboratories I	lectures	N/O
2-3	6		Universal Beam Experiment	Experimental	Report
4-5	6		Hardness Test Experiment	Experimental	Report
6-7	6		Rope-belt Experiment	Experimental	Report
8-9	6		Impact of Water Jet Experiment	Experimental	Report
10-11	6		Tensile test	Experimental	Report
12-13	6		Center of Pressure Experiment	Experimental	Report
14	3		The midterm exam	Exam	-------
15	3		The final exam	Exam	---------

11.Course Evaluation

Task	Weight (Marks)
Attendance and participation	10 points
Report	30 points
Semester exam	10 points
Total:	50 points

12.Learning and Teaching Resources

Required textbooks (curricular books, if any)	Experiment sheets
Main references (sources)	• Wheeler and Ganji, Introduction to Engineering Experimentation, Prentice Hall, 1996. • J. P. Holman, Experimental Methods for Engineers, McGraw-Hill, 2001 .
Recommended books and references (scientific journals, reports…)	Nothing
Electronic References, Websites	Nothing

6- English for academic purposes II

1. Course Name:	
English for academic purposes II	
2. Course Code:	
SEE256	
3. Semester / Year:	
Semester 2 /2nd year- 2026	
4. Description Preparation Date:	
01 / 02 / 2026	
5. Available Attendance Forms:	
Presence (the student's presence in the class)	
6. Number of Credit Hours (Total) / Number of Units (Total)	
30 hrs. / 2 ECTS	
7. Course administrator's name (mention all, if more than one name)	
Name: **Dr. Salwan Samir Sabry** Email: **salwan.samir@uomosul.edu.iq**	
8. Course Objectives	
Course Objectives	Students will be able to: 1. Study grammar, (verb tenses, structure sentence, question words, adverbs and adjectives, quantity, articles, verb pattern, prepositions, comparative and superlative). 2. Learn Vocabulary, focus on all academic words specifically in environmental engineering field. 3. Study comprehensive reading in variety subjects. 4. Focus on listening and speaking using videos and conversation between students in class. Study how to write an academic paragraph.
9. Teaching and Learning Strategies	
Strategy	Type something like: The main strategy that will be adopted in delivering this module is to encourage students' participation in the exercises, while at the same time refining and expanding their critical thinking skills. This will be achieved through classes, interactive tutorials and by considering type of simple experiments involving some sampling activities that are interesting to the students.

10. Course Structure

Week	Hours	Required learning outcomes	Unit or subject name	Learning method	Evaluation method
1	2	B2	An introduction	Homework	Lecture
2	2		Skills for / Reading, listening, speaking	Homework	Lecture
3	2		Type of sentences	Homework	Lecture
4	2		Dealing with preposition words	Homework	Lecture
5	2		Dealing with passive voice for writing	Homework	Lecture
6	2		Comprehension for Reading, listening, and writing	Homework	Lecture+Quiz
7	2		conjunction word	Homework	Lecture
8	2		Writing style for academic	Homework	Lecture+Quiz
9	2		Advance academic writing	Homework	Lecture
10	2		One clause sentence	Homework	Lecture
11	2		Multiple clauses sentences	Homework	Lecture
12	2		Writing short paragraph	Exam	Test
13	2		Writing for chart and figure	Homework	Lecture+Quiz
14	2		Essay writing style	Homework	Lecture
15	2		Classroom tests	Review	Thorough review

Course Evaluation	
Evaluation Type	Mark
Quiz (4)	20
Homework (4)	10
Project (1)	5
Report (1)	5
Midterm exam	10
Final exam	50
Final	100

Learning and Teaching Resources	
quired Textbooks (Methodology, if provided)	
Primary References (Sources)	Liz and John Soars-Headway Intermediate Student's Book Deborah Phillips - Longman Preparation Course For The TOEFL, 3rd Edition. 1-Pearson Education ESL (2021).
Recommended Supplementary Books and References (e.g., Scientific Journals, Reports)	
Online Resources, Websites	://classroom.google.com/c/ODQzNjY2NTQxOTQ5

7- Crimes of the Baath regime in Iraq

1. Course Name:
Crimes of the Baath regime in Iraq
2. Course Code:
UOM2050
3. Semester/Year:
2026-2025
4. Description Preparation Date:
2025-12-4
5. Available Attendance Forms:
Individual group
6. Number of Credit Hours(Total)/Number of Units(Total)
2\30
7. Course administrator's name (mention all, if more than one name)
Name:Shatha chachan Hameed Email: Shatha. Hameed@uomosul.edu.iq
8. Course Objectives

Course Objectives	Educating students about the crimes committed by the Baath regime in Iraq ..... Guiding students to familiarize themselves With crimes..... Educating students about the seriousness of crimes.....

9. Teaching and Learning Strategies
Through the prescribed book
10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or Subject Name	Learning Method	Evaluation Method
First	2		The concept of crimes and their types	View Sfeir's	Written
second	2		Types of in trinational crimes	minutes and contribution	lecture
third	2		Political crime	=	=
fourth	2		Exam		
fifth	2		Sociai	=	=

			Crime		
sixth			The crime of suppressing	=	=
			the Shaaban uprising		
			psychologial	=	=
Seventh	2		crimes of the baath	=	=
Eighth			regime		
	2	**A3**	of disrupting Friday prayers	=	=
		B2,B3	Mass grave crimes		
Ninth	2	**C1,C2**		=	=
			Chemical attack on Haiabja		
10^{th}	2				
			Use of internationally	=	=
Eleven	2				
			Exam	=	=
twelfth	2		Environmental crimes of		
			the baath regime in Iraq	=	=
Thirteenth	2			=	=
Fourth	2		Incidents of cemeteries and		
			genocide committed dy the	=	=
Fifteenth	2		Baathist regime in Iraq	=	=

11. Course Evaluation	
Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exams, reports 1.The theoretical exam inside the hall 2.The daily exam 3.Numders of activities within the class 4.Question-answer and exam 5.Monthly exam…. etc	
12. Learning and Teaching Resources	
Required textbooks(curricular books, if any)	Course book
Main references (sources)	
Recommended books and references (scientific journals, reports)	
Electronic references, websites	