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

Academic Program and Course Description Guide

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

2024

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: 20/9/2024

File Completion Date: 20/10/2024

Signature:

Head of Department Name:

Dr. Younis Najim

Date: 20/5/2025

Signature:

Scientific Associate Name:

Asst. Prof. Dr. Ayman T. Hamid

Date: 25-5-2025

The file is checked by:

Department of Quality Assurance and University Performance

Director of the Quality Assurance and University Performance Department:

Date: 25/5/2025

Signature:

Dr. Abdulrahman Hani Taha

Approval of the Dean

25/5

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

- 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.
- 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.
- 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.
- 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.
- 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.
- 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**	C	
SEE102	Mathematics I	78	72	**6**	B	
SEE103	Electric Circuits	78	47	**5**	C	
SEE104	Physics	63	37	**4**	B	
SEE105	Introduction to Sustainable Engineering	63	62	**5**	B	
UOM1031	Computer	48	27	**3**	B	
UOM1011	Arabic Language	33	17	**2**	S	

Semester 2 | 30 ECTS | 1 ECTS = 25 hrs

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

Semester 3 | 30 ECTS | 1 ECTS = 25 hrs

Module Code	Module Name	SSWL	USSWL	ECTS	Module Type	Pre-request
SEE201	Fluid Mechanics	78	72	6	C	
SEE202	Thermodynamics	78	72	6	C	
SEE205	Applied Electronics	63	37	4	C	
SEE206	Engineering Mathematics	63	37	4	C	
UOM2032	Computer 2	63	37	4	C	
UOM2012	Arabic Language 2	78	72	6	C	

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	Solid Mechanics	63	37	4.00	C	
SEE253	Energy Economics and Management	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	Engineering and 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	Photovoltic 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	Hydrogen Energy Systems	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	2.00	C	

8. Program Description	
Knowledge	• Ability to recognize, identify, define, and solve engineering problems by applying principles of engineering, science, and mathematics. • Ability to produce engineering designs that meet specified needs within defined constraints by applying both analysis and synthesis in the design process. • Ability to recognize the ongoing need for professional knowledge growth and to find, evaluate, compile, and properly apply it. • Ability to effectively use modern technologies and contemporary engineering tools in analyzing and solving engineering problems.
Skills	• Ability to perform and test measurements accurately while ensuring quality, analyze and interpret results, and apply engineering judgment to draw conclusions. • Ability to communicate effectively—verbally with groups and in writing across various administrative levels. • Ability to work efficiently in teams by setting goals, planning activities, meeting deadlines, and managing risks and uncertainties. • Ability to apply critical thinking methodologies and modern analytical tools to make effective decisions in solving complex engineering problems and addressing unconventional challenges.
Ethics	• Ability to recognize ethical and professional responsibilities in engineering issues and make informed decisions while considering the financial, environmental, and societal consequences. • 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		3	
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		1	
Lecturer	Mechanical Engineering	Power Electronics		1	
Lecturer	Mechanical Engineering	Thermal Power		2	
Lecturer	Mechanical Engineering	Renewable Energy		1	
Lecturer	Computer Engineering	Control and Systems Engineering		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		✓		✓			✓		✓	

- **Please tick the boxes corresponding to the individual program learning outcomes under evaluation.**

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, 2024
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	Defining the importance of computers in daily life	Introduction to Computer	Lecture + Lab+ In Class Activity	Assignments
Week 2	3	Identify hardware components that affect computer performance	Computer Components	Lecture + Lab+ In Class Activity	
Week 3	3	Identify hardware components that	Computer Components:	Lecture + Lab+ In Class Activity	

		affect computer performance (continued)	(continued).		
Week 4	3	Identify the tasks an operating system performs	Operating System and Graphical User Interface GUI:	Lecture + Lab+ In Class Activity	Quizzes
Week 5	3	Identify the tasks an operating system performs:	Operating System and Graphical User Interface GUI:(continued)	Lecture + Lab+ In Class Activity	
Week 6	3	(continued)	Word Processing:	Lecture + Lab+ In Class Activity	
Week 7	3	Getting to know Microsoft Word	Word Processing:(continued)	Lecture + Lab+ In Class Activity	Assignments
Week 8	3	Learn to use Microsoft Word	Spread Sheet:	Lecture + Lab+ In Class Activity	
Week 9	3	Getting to know Microsoft Excel	Spread Sheet: (continued)	Lecture + Lab+ In Class Activity	Report
Week 10	3	Learn to use Microsoft Excel	Presentation Software:	Lecture + Lab+ In Class Activity	
Week 11	3	Getting to know Microsoft PowerPoint	Presentation Software:(continued)	Lecture + Lab+ In Class Activity	Quizzes
Week 12	3	Learn to use Microsoft PowerPoint	Introduction to internet and Web Browsers:	Lecture + Lab+ In Class Activity	Midterm Exam
Week 13	3	Learn about the Internet and its types	Introduction to internet and Web Browsers:. continued)	Lecture + Lab+ In Class Activity	Assignments
Week 14	3	Getting to know web browsers	Communications and Emails:	Lecture + Lab+ In Class Activity	
Week 15	3	Learn the basics of email	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:	
20-01-2025	
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	Introduction to the Arabic Language: Definition and unique features of the Arabic language	Introduction	Lecture + Discussion	Quizzes + report
2	2			Lecture + Discussion	Quizzes + report
3	2	Grammar Rules: The past tense verb (الفعل الماضي)	Grammar: Past Tense Verbs	Lecture + Discussion	Quizzes + report
4	2			Lecture + Discussion	Quizzes + report
5	2	Grammar Rules: The present tense verb (الفعل المضارع)	Grammar: Present Tense Verbs	Lecture + Discussion	Quizzes + report
6	2			Lecture + Discussion	Quizzes + report
7	2	Grammar Rules: The five verb forms (الأفعال الخمسة)	Grammar: The Five Verb Forms		
8	2				Quizzes + report
9	2	Grammar Development: Dual and plural forms (regular masculine and feminine plurals)	Grammar: Dual and Plural Forms	Lecture + Discussion	Quizzes + report
10	2			Lecture + Discussion	Quizzes + report
11	2	Grammar Development: Expressions of wonder, indeclinable nouns, and triliteral vs. augmented verbs	Grammar: Expressions of Wonder, Indeclinable Nouns, and Augmented Verbs	Lecture + Discussion	Quizzes + report
12	2			Lecture + Discussion	Quizzes + report
13	2	Midterm Examination	Midterm Examination	Lecture + Discussion	Quizzes + report
14	2			Lecture + Discussion	Quizzes + report
15	2	Rhetoric and Application: Metaphor (الاستعارة)	Grammar: Expressions of Wonder, Indeclinable Nouns, and Augmented Verbs	Lecture + Discussion	
16	2	Final Exam	Final Exam		
	2			Lecture + Discussion	Quizzes + report

	2	Grammar Rules: The past tense verb (الفعل الماضي)	Grammar: Past Tense Verbs	Lecture + Discussion	Quizzes + report
	2			Lecture + Discussion	Quizzes + report
	2	Grammar Rules: The present tense verb (الفعل المضارع)	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	الامتحان الفصلي
50	الامتحان النهائي
100	مجموع الدرجات
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 Energy Engineering

Course Description Form

1. Course Name:
Introduction to Sustainable Engineering
2. Course Code:
SEE105
3. Semester / Year:
First Semester / 2024-2025
4. Description Preparation Date:
01/09/2024
5. Available Attendance Forms:
In-person, Theoretical, Seminar
6. Number of Credit Hours (Total) / Number of Units (Total)
125 hours / 5 credits
7. Course administrator's name (mention all, if more than one name)
Dr. Younis Mahal Najm – Email: mahalyounis@uomosul.edu.iq Dr. Ali Azzam Mohammed – Email: ali.alkhabbaz@uomosul.edu.iq

8. Course Objectives	
Course Objectives	The course aims to: • Understand the fundamental principles of energy and sustainability and their importance in modern society • Identify different energy sources, including fossil fuels, nuclear, and renewables like solar, wind, and geothermal • Analyze the environmental, economic, and social impacts of energy production and consumption • Promote awareness of sustainable practices in resource utilization to protect the environment

	• Develop the skills and knowledge necessary for careers in environmental consulting, energy management, and sustainability policymaking

9. Teaching and Learning Strategies

Strategy	The teaching strategy combines modern educational methods that integrate theoretical and practical aspects to enhance students' understanding of energy and sustainability concepts. It includes: 1-Interactive lectures that encourage discussion and dialogue 2- Real-world case studies illustrating challenges and opportunities in the energy sector 3-Use of multimedia tools such as videos and simulations 4-Workshops and group sessions to build research, analytical, and critical thinking skills 5-Project-based learning to enable practical and sustainable energy solutions 6-Encouragement of self-learning through additional resources and references 7-Continuous assessment via quizzes and presentations to track student progress and encourage excellence se strategies aim to prepare students to effectively contribute to environmental consulting, energy management, and sustainable policymaking in support of sustainable development.

10. Course Structure

Week	Hours	Required learning outcomes	Unit or subject name	Learning method	Evaluation method
1	4	Introduce students to energy concepts and forms	General introduction to energy and its types and conversions	Lecture	homework
2	4	Introduce students to energy concepts and forms	Non-renewable energy sources	Lecture	homework
3	4	Introduce students to energy concepts and forms	Renewable energy sources	Lecture	homework
4	4	Explain environmental and health impacts of carbon-emitting sources	Introduction to environmental pollution and consequences of non-renewable energy	Lecture	homework

5	4	Understand technical challenges of renewable energy utilization	Basics of solar energy and types of solar collectors	Lecture	homework
6	4	Understand technical challenges of renewable energy utilization	Types of solar cells and their interconnection	Lecture	homework
7	4	Understand technical challenges of renewable energy utilization	Basics of wind energy and its utilization	Lecture	homework
8	4	Understand technical challenges of renewable energy utilization	Types of wind turbines and performance improvement techniques	Lecture	homework
9	4	Understand technical challenges of renewable energy utilization	Basics of hydropower and turbine types	Lecture	homework
10	4	Understand technical challenges of renewable energy utilization	Types and design basics of hydropower turbines	Lecture	homework
11	4	Understand technical challenges of renewable energy utilization	Introduction to geothermal energy and applications	Lecture	homework
12	4	Define the concept of sustainability	Introduction to sustainable energy	Lecture	
13	4	Define the concept of sustainability	Difference between renewable and sustainable energy, key characteristics	Lecture	homework
14	4	Analyze energy storage system performance	Basics of energy conversion systems	Lecture	homework
15	4	Analyze energy storage system performance	Basics of energy storage systems	Lecture	homework

11. Course Evaluation

Evaluation Type	Mark
Quiz (5)	20
Homework (4)	8
Report (2)	6

Seminar (1)	6
Midterm exam	10
Final exam	50
Final	100

12. Learning and Teaching Resources

ıired Textbooks (Methodology, if provided)	
Primary References (Sources)	• Ibrahim Dincer, Azzam Abu-Rayash, Energy Sustainability, Elsevier (2019) • Mehmet Kanoğlu, Yunus A. Çengel, John M. Cimbala, Fundamentals and Applications of Renewable Energy, McGraw Hill (2020)
Recommended Supplementary Books and References (e.g., Scientific Journals, Reports)	Robert Bennett Dunlap, Sustainable Energy, 2nd Edition (2017)
Online Resources, Websites	Google Classroom

4. Course Description Form of Mathematics I

1. Course Name:	
Mathematics I	
2. Course Code:	
SEE102	
3. Semester / Year:	
First Semester / 2024	
4. Description Preparation Date:	
10/9/2024	
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	Understanding the domain and range, and exploring algebraic and trigonometric functions.	Functions	Lecture	None
2	5	Explaining the equation of a straight line, with examples and solved problems.	Functions	Lecture	None
3	5	Exploring the concept of the limit of an algebraic function.	Limits and Continuity	Lecture	Quiz
4	5	Understanding the limit of trigonometric functions, limit rules, and examples.	Limits and Continuity	Lecture	H.W.
5	5	Definition of the derivative, differentiation of algebraic functions.	Derivatives	Lecture	None
6	5	Explanation of the topic of differentiation of trigonometric functions.	Derivatives	Lecture	Quiz
7	5	Further explanation of differentiation with illustrative examples and solved exercises.	Derivatives	Lecture	None
8	5	Familiarizing students with the concept of related rates and the theory of extrema (maximum and minimum values)	Derivatives	Lecture	Mid-term Exam.
9	5	Continuing the discussion on the rate of change, accompanied by illustrative examples and fully worked-out problems	Derivatives	Lecture	None
10	5	An introduction to the graphing of inverse trigonometric functions, the differentiation of inverse trigonometric functions, and the presentation of solved problems	Derivatives	Lecture	H.W.

11	5	Explanation and analysis of algebraic, trigonometric, and inverse functions	Derivatives	Lecture	Quiz
12	5	Introduction to the Concepts and Operations of Vectors in Two-Dimensional and Three-Dimensional Space	Vectors	Lecture	None
13	5	Understanding Vector Properties (Dot Product and Cross Product) and Their Applications with Solved Problems.	Vectors	Lecture	H.W.
14	5	Study and Analysis of Matrices and Their Properties.	Matrices	Lecture	Quiz
15	5	Applications of Matrices with Worked Examples		Lecture	None
16	3	Comprehensive Evaluation of All Learning Outcomes of Mathematics I		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 / 2024-2025	
4. Description Preparation Date:	
20.05.2025	
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	Understanding vectors and operations on them	Introduction to statics + Vector operations (addition, product)	Theoretical lecture and problem solving	nil
2	5	Analyze force system	Force system in 2D	Theoretical lecture and problem solving	nil
3	5	Addition of a system of coplanar Forces	Addition of a system of coplanar Forces	Theoretical lecture and problem solving	Quiz
4	5	Calculating moment, couple and resultant forces (1)	Moment, couples, and resultant of forces (1)	Theoretical lecture, problem solving, and group activity, solving exercises	Classroom exercise
5	5	Calculating moment, couple and resultant forces (2)	Moment, couples, and resultant of forces (2)	Theoretical lecture, problem solving, and group activity, solving exercises	homework
6	5	Finding resultant forces that are applied to bodies in equilibrium conditions	Equations and conditions of Equilibrium	Theoretical lecture and problem solving	Quiz
7	5	Recognize forces, free body diagram approach to solve problems	System Isolation and the Free-Body Diagram (FBD)	Theoretical lecture, problem solving, and group activity, solving exercises	Classroom exercise
8	5	Explain the essential steps of drawing free-body diagrams for different mechanical structures (1)	Trusses: Method of Joints + Method of Sections	Theoretical lecture and problem solving	homework

9	5	Explain the essential steps of drawing free-body diagrams for different mechanical structures (2)	Frames and Machines	Theoretical lecture, problem solving, and group activity, solving exercises	Classroom exercise
10	5	Recognize and locate centroid	Center of Gravity and Centroid	Theoretical lecture and problem solving	Quiz
11	5	Locate the centroid of composite bodies	Centroid of composite area	Theoretical lecture, problem solving, and group activity, solving exercises	Classroom exercise
12	5	Recognize and calculate the moment of inertia for a given body and axes	Moment of Inertia	Theoretical lecture and problem solving	Mid exam
13	5	calculate the moment of inertia for composite area	Moments of Inertia for Composite Areas	Theoretical lecture, problem solving, and group activity, solving exercises.	Classroom exercise
14	5	Recognizing dry friction	Theory of Dry Friction.	Theoretical lecture and problem solving	homework
15	5	Analyze equilibrium systems that include frictional forces	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

Module Evaluation

		Time/No	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	**Quizzes**	3	24% (24)	4, 8,13	LO # 2, 5 ,7,8 and 9
	Assignments	3	12% (12)	3, 6,12	LO # 2,3, 4, 6 ,7,and 9
	Projects / Lab.		0% (0)		
	Report		4% (4)		
Summative assessment	**Midterm Exam**	1 hr	10% (10)	10	LO # 1-6
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

6. Course Description Form of Physics

13. Course Name:
Physics
14. Course Code:
SEE104
15. Semester / Year:
Semester 1 / 2024
16. Description Preparation Date:
10 / 09 / 2024
17. Available Attendance Forms:
Presence (the student's presence in the class)
18. Number of Credit Hours (Total) / Number of Units (Total)
100 hrs. / 4 ECTS
19. Course administrator's name (mention all, if more than one name)
Name: **Dr. Ahmed Fouad Mahmood** Email: **ahmedfalneama@uomosul.edu.iq**

20. Course Objectives	
Course Objectives	• Understand fundamental physical principles. • Develop problem-solving skills. • Communicate scientific ideas effectively. • Develop critical thinking. • Collaborate effectively.
21. Teaching and Learning Strategies	
Strategy	ics teaching and learning strategies emphasize active engagement through lectures, problem -solvi thinking, and practical application of physics principles.

22. Course Structure

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

1	4	- State SI units, and write the units and their abbreviations correctly. - Determine whether a physical quantity is a vector or a scalar. - Distinguish between kinematic and kinetic energy. - Define, calculate, and distinguish between distance and displacement, average and instantaneous speed and velocity, and average and instantaneous acceleration.	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	- State, explain, and apply Newton's three laws of motion. - Differentiate between static and kinetic friction, and solve friction problems. - State and apply Hooke's law for ideal springs.	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	- Define work, and calculate the work done by a constant force in one and two dimensions. - State the work–energy theorem, and use it to solve problems. - Apply the principle of conservation of mechanical energy to solve simple problems in mechanics. - Calculate both kinetic and potential energy. - Calculate the power.	Kinetic and Potential Energy; The work-kinetic energy theorem; Conservation of total mechanical energy; Power.	Homework	Lecture+ Quiz
4	4	- Define linear momentum, and calculate and compare momenta of various objects. - Express Newton's laws in terms of rates of change of linear momentum. - Define and calculate impulse.	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	- State, explain, and apply the simple harmonic motion. - Solve problems using Newton's law of universal gravitation and calculate the	Simple Harmonic Motion; Universal gravitation; Newton's law of universal gravitation; Free-fall acceleration and the	Homework	Lecture+ Quiz

		gravitation for different locations (i.e. Earth, Moon, Sun and etc.).	gravitational force; and Solve problems using Newton's law of universal gravitation and calculate the gravitation for different locations.		
6	4	- Calculate the pressure and density of fluid at different depth; - Explain the Hydrostatic Pressure. - Explain Pascal's principle and the operation of a hydraulic lift.	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	- Define and describe the buoyant forces and Archimedes's principle, furthermore, weighing an object immersed in a fluid. - Derive the equation of continuity for fluids; - Use Bernoulli's equation to calculate flow speed and pressure of a moving fluid for simple situations.	Buoyant forces and Archimedes's principle; the equation of continuity for fluids; and the Bernoulli's equation.	Homework	Lecture
8	4	- Define and describe the flow of heat through a material by direct molecular contact (conduction). - Define and describe the transfer of heat by the movement or flow of molecules -liquid or gas (convection). - Define and describe the transfer of heat by electromagnetic waves through a gas or vacuum (Radiation).	Heat Transfer (Conduction, Convection, and Radiation).	Homework	Lecture+ Quiz
9	4	- Define and describe the Bohr model of an atom . - Define electron, proton, neutron and nucleus . - Explain electron shells and orbits. - Explain and calculate the energy levels. - Define valence electron, free electron and ions. - Explain insulators, conductors, and semiconductors and how they differ.	Atoms Structure; Atomic Energy Level; and Materials Used in Electronics.	Homework	Lecture

		- Define valence band and conduction band, and compare between the semiconductor atom and the conductor atom.			
10	4	- Explain the electrical symbols for a diode and diode applications. - Define the bias and its effect on the depletion region . - Define the barrier potential and its effects . - Explain the electrical symbol of a transistor, and describe the basic transistor operation.	Conduction in Metals, Semiconductors, and Insulators; Intrinsic and Extrinsic Semiconductors; N-Type and P-Type Semiconductor; The PN Junction.	Homework	Lecture
11	4	mprehensive evaluation of the student's grasp of the grammatical and linguistic concepts addressed in the first half of the course.	Midterm exam	Exam	Test
12	4	- Understanding the fundamental concepts of Diodes and Transistors	es and Transistors.	Homework	Lecture
13	4	- Understanding the fundamental concepts of current and voltage. - Explain the electrical circuit elements and its objects.	ent and Voltage; electrical circuit; and Ohm's Law.	Homework	Lecture+ Quiz
14	4	- Define Ohm's law, and calculate power and energy - Analyze the electric circuits in both parallel and series connections .	er and Energy; Parallel and Series Networks.	Homework	Lecture
15	4	- Define Kirchhoff's law, and analysis the electrical circuits using Kirchhoff's law.	hoff's Law.	Homework	Lecture
16	-final exam week	Non	Classroom tests	Review	Thorough review

23. 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

24. 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.
ɔmmended 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.
ne Resources, Websites	

7. Course Description Electric Circuits

13. Course Name:	
Electric Circuits	
14. Course Code:	
SEE103	
15. Semester / Year:	
First semester / 2024	
16. Description Preparation Date:	
December 1, 2024	
17. Available Attendance Forms:	
In person attendance, online, exercises	
18. Number of Credit Hours (Total) / Number of Units (Total)	
125/5	
19. 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**	
20. 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.
21. 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.

22. Course Structure

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

23. 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)

24. 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	Engineering circuit analysis William H.Hayt.

journals, reports…)	
Electronic References, Websites	

Course Description: First year Spring Semester

1. Course Description Form English I

2. Course Name:	
English I	
3. Course Code:	
UOM1021	
4. Semester / Year:	
Semester 2 / 2025	
5. Description Preparation Date:	
03 / 03 / 2025	
6. Available Attendance Forms:	
Presence (the student's presence in the class)	
7. Number of Credit Hours (Total) / Number of Units (Total)	
50 hrs. / 2 ECTS	
8. Course administrator's name (mention all, if more than one name)	
Name: **Dr. Ahmed Fouad Mahmood** Email: **ahmedfalneama@uomosul.edu.iq**	
9. 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.

10. 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.

11. Course Structure

Week	Hours	Required learning outcomes	Unit or subject name	Learning method	Evaluation method
1	2	After studying the parts of speech, the learner is expected to be able to identify and distinguish the different types of parts of speech, understand their functions, and use them correctly in constructing meaningful sentences, which forms a foundation for understanding more complex English grammar.	Part of speech	Homework	Lecture
2	2	Understanding and applying the basic rules for forming correct English sentences.	Basic English Sentence Structure	Homework	Lecture
3	2	Ability to independently construct grammatically correct and well-formed English sentences.	Basic English Sentence Structure	Homework	Lecture
4	2	Proper usage of various pronoun types in English sentence contexts.	Pronouns	Homework	Lecture
5	2	The ability to precisely and effectively use English tenses to convey time and temporal relationships in different contexts.	Tenses	Homework	Lecture
6	2	The ability to precisely and effectively use English tenses to convey time and temporal relationships in different contexts.	Tenses	Homework	Lecture + Quiz
7	2	The ability to accurately construct and utilize active voice sentences to indicate the subject performing an action.	Active voice	Homework	Lecture
8	2	Ability to correctly form and use passive voice sentences in English, focusing on the action that was done rather than the agent.	Passive voice	Homework	Lecture

9	2	Proficiency in smoothly and accurately converting sentences between active and passive voice in English.	Changing between Active and Passive Voice	Homework	Lecture + Quiz
10	2	A comprehensive evaluation of the student's grasp of the grammatical and linguistic concepts addressed in the first half of the course.	Midterm exam	Exam	Test
11	2	The ability to accurately and precisely use comparative and superlative degrees to describe and compare objects and individuals in English.	Comparative and Superlative	Homework	Lecture
12	2	Ability to correctly comprehend and apply various types of conditional sentences to convey conditions and their possible or unlikely results.	Conditional sentences	Homework	Lecture
13	2	The ability to accurately construct and utilize simple, compound, and complex sentences for producing coherent and meaningful texts.	Constructing Simple, Compound, and Complex Sentences	Homework	Lecture
14	2	Enhancing the student's capacity to understand and grasp key information and intricate details in complex scientific texts.	Developing the Skill of Reading Scientific Passages and Articles	Homework	Lecture
15	2	Enhancing the student's capacity to understand and grasp key information and intricate details in complex scientific texts.	Developing the Skill of Reading Scientific Passages and Articles	Homework	Lecture
16	e-final exam week	Non	Classroom tests	Review	Thorough review

12. 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

13. 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

25. Course Name:	
Democracy and Human Rights	
26. Course Code:	
UOM1040	
27. Semester / Year:	
First semester / 2024	
28. Description Preparation Date:	
December 1, 2024	
29. Available Attendance Forms:	
In person attendance, online, exercises	
30. Number of Credit Hours (Total) / Number of Units (Total)	
Number of Credit Hours (50) / Number of Units (2.0)	
31. Course administrator's name (mention all, if more than one name)	
Name: Younis Mahal Email: mahalyounis@uomosul.edu.iq	
32. Course Objectives	
Course Objectives	3. The aim of studying the democracy and human rights topics is to: 4. Understand the concept of human rights and explore their sources, including international, regional, national, and religious sources. 5. 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. 6. Trace the historical development and evolution of human rights, examining key milestones and movements that have shaped the modern understanding of human rights. 7. Differentiate between different categories of human rights, including civil and political rights, economic and social rights, and environmental, cultural, and developmental rights. 8. Explore legal, institutional, and societal guarantees to prevent human rights violations, including guarantees of human rights in Islam, national-level protections, and international safeguards.

	9. Comprehend the concept of democracy, including its principles, values, and various forms of democratic governance such as direct, semi-direct, indirect, and digital democracy. **10.** 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.
33.	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.

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
Week 1	2	Understand the lecture	Characteristics of human rights.	Lecture	Quizzes + In Class Discussion
Week 2	2	Understand the lecture	The emergence and evolution of human rights.	Lecture	Quizzes + In Class Discussion
Week 3	2	Understand the lecture	Types of human rights / civil and political rights.	Lecture	Quizzes + In Class Discussion
Week 4	2	Understand the lecture	Economic and social rights.	Lecture	Quizzes + In Class Discussion
Week 5	2	Understand the lecture	Environmental, cultural, and developmental rights.	Lecture	Quizzes + In Class Discussion
Week 6	2	Understand the lecture	Guarantees to prevent human rights violations / guarantees of human rights in Islam.	Lecture	Quizzes + In Class Discussion
Week 7	2	Understand the lecture	Guarantees for the protection of human rights at the national level.	Lecture	Quizzes + In Class Discussion
Week 8	2	Understand the lecture	Guarantees of human rights at the international level.	Lecture	Quizzes + In Class Discussion
Week 9	2	Understand the lecture	The concept of democracy.	Lecture	Quizzes + In Class Discussion

Week 10	2	Understand the lecture	Characteristics of a democratic system.	Lecture	Quizzes + In Class Discussion
Week 11	2	Understand the lecture	Forms of democratic governance (direct democracy / semi-direct democracy / indirect democracy).	Lecture	Quizzes + In Class Discussion
Week 12	2	Understand the lecture	Digital democracy / definition and advantages and disadvantages of digital democracy / manifestations of digital democracy.	Lecture	Quizzes + In Class Discussion
Week 13	2	Understand the lecture	The Islamic stance on democracy.	Lecture	Quizzes + In Class Discussion
Week 14	2	Understand the lecture	Critique of the democratic system.	Lecture	Quizzes + In Class Discussion
Week 15	2	Understand the lecture	Administrative corruption / definition and types.	Lecture	Quizzes + In Class Discussion
Week 16	2		Final Exam		

34. Course Evaluation

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

35. 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:	
MEE151	
3. Semester / Year:	
Spring Semester/ 2025	
4. Description Preparation Date:	
May 2025	
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 Sufian Abdulhakeem Mohammed sufyan.a.mohammed@uomosul.edu.iq	
8. Course Objectives	
Course Objectives	• 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 Homeworks Reports

10. Course Structure					
Week	**Hours**	**Required Learning Outcomes**	**Unit or subject name**	**Learning method**	**Evaluation method**
1-2	10	LO#1, LO#2	Introduction Kinematics of Particles/Rectilinear Motion	Lectures and Tutorials	Quiz
3-4-5	15	LO#1, LO#2	Plane Curvilinear Motion/Rectangular, Polar, and Normal and Tangential Coordinates	Lectures and Tutorials	Quiz
6	5	LO#1, LO#2	Relative Motion	Lectures and Tutorials	Homework
7	5	LO#1, LO#2	Kinetics of Particles/Direct Applications of Newton's 2nd Law/Rectilinear and Curvilinear Coordinates	Lectures and Tutorials	Homework
8-9	10	LO#1, LO#2	Work energy and Potential Energy Concept	Lectures and Tutorials	
10-11	10	LO#1, LO#2	Impulse and Momentum, linear and Angular	Lectures and Tutorials	Quiz
12	5	LO#1, LO#2	Kinematics of Rigid Bodies, Rotation	Lectures and Tutorials	
13-14	10	LO#1, LO#2	\Relative Velocity and Acceleration	Lectures and Tutorials	
15	5	LO#1, LO#2	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**	3	24% (24)	3, 8, 12	LO #1 and 2
	Assignments	3	8% (8)	2,7, 11	LO # 1 and 2
	Projects / Lab.		0% (0)		
	Report	1	8% (8)	13	LO # 7
Summative assessment	**Midterm Exam**	1hr	10% (10)	10	LO # 1 and 2
	Final Exam	3hr	50% (50)	16	LO # 1 and 2
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 / 2025
4. Description Preparation Date:
11/1/2025
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 subjec name	Learning method	Evaluation method
1	5	Understanding Integrals: Area and Estimation Using Finite Sums; Sigma Notation and Limits of Finite Sums	Integrals and Area Calculations	Lecture + Tutorials	Homework
2	5	Understanding Definite Integral; The Fundamental Theorem of Calculus	Definite Integral	Lecture + Tutorials	Homework
3	5	Distinguish between indefinite integrals and the substitution method; definite integral substitutions and the area between curves	Definite Integral	Lecture + Tutorials	Homework + Quiz
4	5	Learn to calculate volumes using cross sections; volumes using cylindrical shells; arc length	Applications of definite integrals	Lecture + Tutorials	Homework
5	5	Understanding areas of surfaces of rotation; forces and fluids; moments and centers of mass	Applications of definite integrals	Lecture + Tutorials	Homework
6	5	Learn transcendental functions: inverse functions and their derivatives; natural logarithms; exponential functions;	Transcendental Functions	Lecture + Tutorials	Homework
7	5	Transcendental functions: exponential variation and discrete differential equations; indeterminate forms and L'Hospital's rule; inverse trigonometric functions	Transcendental Functions	Lecture + Tutorials	Homework + Quiz
8	5	Integrals and Area Calculus, Definite	Midterm exam	Exam	Classroom

		Integrals, Applications of Definite Integrals, Transcendental Functions			exam
9	5	Learning Transcendental Functions: Hyperbolic Functions; Relative Growth Rates	Transcendental Functions	Lecture + Tutorials	Homework
10	5	Understanding and applying integration techniques: using basic integration formulas; integration by parts; trigonometric integrals	Integration techniques	Lecture + Tutorials	Homework
11	5	Understanding and applying integration techniques: trigonometric substitutions; integration of rational functions using partial fractions; integration tables and computer algebra systems	Integration techniques	Lecture + Tutorials	Homework
12	5	Integration techniques: numerical integration; improper integrals; probability	Integration techniques	Lecture + Tutorials	Homework + Quiz
13	5	Understanding First-Order Differential Equations: Solutions, Slope Fields, and Euler's Method; First-Order Linear Equations	First-order differential equations	Lecture + Tutorials	Homework + Report
14	5	Application of first-order differential equations: applications; graphical solutions of independent equations	First-order differential equations	Lecture + Tutorials	Homework + Quiz
15	5	Learn First-Order Differential Equations: Systems of Equations and Phase Levels	First-order differential equations	Lecture + Tutorials	Homework
16	5	Preparation week before the final exam	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:
2025/1/20
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	it or subject name	Learning method	valuation method
1	3	• Define and describe atomic structure, including protons, neutrons, and electrons. • Explain electron configuration and its significance in determining the chemical properties of elements.	Atomic Structure, Electron Configuration, Elements	Lecture + Solving Problem	Quizzes + Report + In Class Activity

		• Understand and classify elements in the periodic table, including groups and periods.			
2	3	• Define ionic bonding and explain how ions form through the transfer of electrons. • Describe and apply the rules of ionic nomenclature to name ionic compounds.	Ionic Bonding, Ionic Nomenclature, Covalent Bonding	Lecture + Solving Problem	Quizzes + Report + In Class Activity
3	3	• Understand qualitative analysis techniques for identifying ions in a solution. • Explore molecular geometry using VSEPR theory and predict the shapes of molecules.	Qualitative Analysis, Geometry, Polarity, Nomenclature	Lecture + Solving Problem	Quizzes + Report + In Class Activity
4	3	• Perform chemical calculations involving moles, molar mass, and Avogadro's number. • Write and balance chemical equations for various types of reactions.	Calculations, Moles, Reactions	Lecture + Solving Problem	Quizzes + Report + In Class Activity
5	3	• Classify different types of chemical reactions, including synthesis, decomposition, single replacement, and double replacement. • Perform stoichiometric calculations to determine the amounts of reactants and products in chemical reactions.	Chemical Reactions, Stoichiometry	Lecture + Solving Problem	Quizzes + Report + In Class Activity
6	3	• Explore the properties of gases and the principles behind the gas laws (Boyle's, Charles', and Avogadro's laws). • Apply the ideal gas law to solve problems involving pressure, volume, temperature, and moles.	Gases, Gas Laws, Phases	Lecture + Solving Problem	Quizzes + Report + In Class Activity
7	3	• Describe the process of solution formation, including solvation and factors affecting solubility. • Discuss the different types of solutions (solid, liquid, gas) and their properties.	Solution Formation	Lecture + Solving Problem	Quizzes + Report + In Class Activity
8	3	• Review and assess understanding of the content covered in Weeks 1-7.	Mid-Term Exam	Lecture + Solving Problem	Quizzes + Report + In Class Activity
9	3	• Calculate the concentration of solutions in terms of molarity, molality, and percent composition.	Concentration, Colligative Properties	Lecture + Solving Problem	Quizzes + Report + In Class Activity
10	3	• Define oxidation and reduction and identify redox reactions. • Assign oxidation states to elements in compounds and reactions.	Redox Reactions	Lecture + Solving Problem	Quizzes + Report + In Class Activity

11	3	• Discuss the energetics of chemical reactions, including exothermic and endothermic reactions. • Explore the concept of chemical equilibrium and the factors that affect it.	Reaction Energetics, Equilibria	Lecture + Solving Problem	Quizzes + Report + In Class Activity
12	3	• Define the equilibrium constant (K) and calculate it for various chemical reactions. • Apply Le Châtelier's principle to predict the effects of changes in concentration, pressure, and temperature on equilibrium.	Equilibrium Constant, Le Châtelier	Lecture + Solving Problem	Quizzes + Report + In Class Activity
13	3	• Define and classify hydrocarbons, including alkanes, alkenes, and alkynes. • Discuss the structure, nomenclature, and properties of hydrocarbons.	Introduction to Hydrocarbons	Lecture + Solving Problem	Quizzes + Report + In Class Activity
14	3	• Understand the process of neutralization and the formation of water and salt in acid-base reactions. • Perform titration calculations to determine the concentration of acids or bases in a solution.	Neutralization, Titration	Lecture + Solving Problem	Quizzes + Report + In Class Activity
15	3	• Preparatory Week Before Final Exam		Lecture + Solving Problem	Quizzes + Report + In Class Activity
16	3	Final Exam		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 / 2024-2025
4. Description Preparation Date:
01/03/2025
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 Objec	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	Explanation of the drawing program, menu bar, and taskbar	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 /	Lecture + Lab	homework and classwork

			How to deal with engineering boards and engineering drawing.		
2	5	Learn how to draw using line, rectangle and ray instructions.	Types of lines in engineering drawing / visible lines, hidden lines, center lines, dimension lines, and cutting lines.	Lecture + Lab	homework and classwork
3	5	Learn how to draw using ellipse instructions.	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	Learn to draw circles	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	Understanding similar cues	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	Understanding multiple projections	Multi-perspective projection / Orthographic projection theory of objects:	Lecture + Lab	homework and classwork

7	5	Understanding multiple projections	Types of projection in drawing and its practical importance / Projections with vertical rays	Lecture + Lab	homework and classwork
8	5	Exploring multiple projections	Types of projections resulting from orthographic projection and adopted in projecting various geometric objects / Front view	Lecture + Lab	homework and classwork
9	5	Exploring multiple projections	Side view/top view	Lecture + Lab	homework and classwork
10	5	Learn stereoscopic projections	Types of 3D shapes and their practical benefits	Lecture + Lab	homework and classwork
11	5	Learn to put dimensions	Drawing measurement axes and how to place dimensions on them	Lecture + Lab	homework and classwork
12	5	Multiple projection application	Linking the given projections to the process of imagination and drawing	Lecture + Lab	homework and classwork
13	5	Learn the sections and their shapes	Full section cuts	Lecture + Lab	homework and classwork
14	5	Understanding sections and their shapes	Half-section cuts	Lecture + Lab	homework and classwork
15	5	Application of sections and their shapes	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

Course Description Form

36. Course Name:
Environmental Pollution
37. Course Code:
SEE154
38. Semester / Year:
Second semester / 2024 −2025
39. Description Preparation Date:
February 1, 25
40. Available Attendance Forms:
In person attendance, online, practical laboratory
41. Number of Credit Hours (Total) / Number of Units (Total)
125/10
42. Course administrator's name (mention all, if more than one name)
Name: **Dr. Ali Ghazi Mohammed Kamil** Email: aligm@uomosul.edu.iq

43. 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.
44. 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.

45. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
Week 1	5	#1	Environmental Pollution, Environmental Balance and Environmental Pollution Concept.	In person Lecture, online Lecture, practical laboratory	Assignments, Report
Week 2	5	#1	The main sources of environmental pollution, Degrees of Ecological Pollution and Pollutants Classification.	In person Lecture, online Lecture, practical laboratory	
Week 3	5	#1	Water Pollution, Physical and chemical properties of water.	In person Lecture, online Lecture, practical laboratory	
Week 4	5	#1	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	#1	Quiz	Lecture	

Week 6	5	#1	Air Pollution, Atmosphere Layers, Air Components and Air Pollution Sources.	In person Lecture, online Lecture, practical laboratory	
Week 7	5	#1	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	#1	Sustainable Development, Renewable, Alternative or Green Energy	In person Lecture, online Lecture, practical laboratory	
Week 9	5	#2	Quiz	Lecture	Assignments, Report & Project
Week 10	5	#2	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	#2	Agricultural soil pollution Soil biological contamination and Radioactive contamination of soil	In person Lecture, online Lecture, practical laboratory	Assignments, Report
Week 12	5	#2	Quiz	Lecture	Quiz
Week 13	5	#2	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	#2	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	#2	Midterm Exam	Lecture	
Week 16	5	#2	Preparatory week before the final Exam		

46. 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	**Midterm**	2hr	10% (10)	15	LO # 1 and 2

assessment	**Exam**				
	Final Exam	3hr	50% (50)	16	All
Total assessment					100% (100 Marks)

47. Learning and Teaching Resources

Required textbooks (curricular books, if any)	1. David A. Cornwell, Mackenzie L. Davis, Introduction to Environmental Engineering, Fif Edition, 2012. McGraw-Hill 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	