MODULE DESCRIPTION CATALOGUE

وصف المادة الدراسية

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 Objectiv	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	A4,B2	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 Interface GUI:	Lecture + Lab+ In Class Activity	Quizzes
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

1. 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	Lecture +	Quizzes +

			Tense Verbs	Discussion	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 Objectiv	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 of Geothermal Energy	Lecture	Report
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,	Classroom exercise

				solving exercises	
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

11. Course Evaluation	
Assignments: 12%, Quizzes: 24%, report 4%, Midterm Exam: 10% and Final Exam 50%	
12. Learning and Teaching Resources	
Required textbooks (curricular books, if any)	
Main references (sources)	Engineering_Mechanics_Statics_7th_Meriam 2012
Recommended books and references	Russell C. Hibbeler - Engineering Mechanics_ Statics (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	Pre-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

Required 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. (by 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		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	**A3** **B2,B3** **C1,C2**	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	

2. 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	

3. 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	Lecture +	Homework

			equations	Tutorials	+ 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	

4. 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	

5. 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

6. 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		Environmental Pollution, Environmental Balance and Environmental Pollution Concept.	In person Lecture, online Lecture, practical laboratory	
Week 2	5		The main sources of environmental pollution, Degrees of Ecological Pollution and Pollutants Classification.	In person Lecture, online Lecture, practical laboratory	Assignments, Report
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	
Week 5	5		Quiz	Lecture	Assignments, Report
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	A1,A2,A3 B2,B3 C1,C2	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	In person Lecture, online Lecture, practical laboratory	Assignments, Report

			Radioactive contamination of soil		
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 to Environmer Engineering, Fifth Edition, 20 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	

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	Homework	Lecture
2			Compressibility and elasticity		
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 Name: Dr. Younis Mahal Najim	Email: ahmedfalneama@uomosul.edu.iq 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					
Week	**Hours**	**Required learning outcomes**	**Unit or subject name**	**Learning method**	**Evaluation 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-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

Required 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		Multivariable func.	1 to 4	HW

2	5	A1 B4	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 (curricu 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, Webs	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		computer hardware and software, Software and Hardware Interaction	Theoretical+practical	
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	A4 B1,B2	AI technique and approaches	Theoretical+practical	Daily, monthly, and final exams Homework Participation
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 الاصـــطناعي (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	Home work
7	2		Morphology (nouns)	Lectures and Tutorials	Home work
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 outc**	**Unit or subject name**	**Learning method**	**Evaluation method**

		ome s			
1	4	A1,A2,A4 B1,B4	An introduction to the semiconductor materials types	Hom ewor k	Lectur e
2	4		Power calculations and computations	Hom ewor k	Lectur e
3	4		Fourier analysis and desecrate analysis	Hom ewor k	Lectur e
4	4		Steady state and transient analysis	Hom ewor k	Lectur e
5	4		Halfwave rectifier in three phase system	Hom ewor k	Lectur e
6	4		Half-Wave uncontrolled/ controlled Rectifier Circuits	Hom ewor k	Lectur e+Qui z
7	4		Full-Wave uncontrolled/ controlled Rectifier Circuits	Hom ewor k	Lectur e
8	4		Full-Wave controlled/uncontrolled Rectifier Circuits	Hom ewor k	Lectur e+Qui z
9	4		AC to AC converter	Hom ewor k	Lectur e
10	4		AC to AC Cycloconverter	Hom ewor k	Lectur e
11	4		DC to DC Converters	Hom ewor k	Lectur e
12	4		DC to DC	Exam	Test
13	4		DC to DC	Hom ewor k	Lectur e+Qui z
14	4		DC to DC	Hom ewor k	Lectur e
15	4		Inverter	Revie w	Lectur e

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)	
Online Resources, Websites	https://classroom.google.com/c/ODQzNjQ0NzY0OTE5

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 Referenc 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 Objecti	• 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	Home work	Lecture
2	2		Skills for / Reading, listening, speaking	Home work	Lecture
3	2		Type of sentences	Home work	Lecture
4	2		Dealing with preposition words	Home work	Lecture
5	2		Dealing with passive voice for writing	Home work	Lecture
6	2		Comprehension for Reading, listening, and writing	Home work	Lecture +Quiz
7	2		conjunction word	Home work	Lecture
8	2		Writing style for academic	Home work	Lecture +Quiz
9	2		Advance academic writing	Home work	Lecture
10	2		One clause sentence	Home work	Lecture
11	2		Multiple clauses sentences	Home work	Lecture
12	2		Writing short paragraph	Exam	Test
13	2		Writing for chart and figure	Home work	Lecture +Quiz
14	2		Essay writing style	Home work	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	
Required 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	https://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 second third	2 2 2		The concept of crimes and their types Types of in trinational crimes Political crime Exam	View Sfeir's minutes and contributi on =	Written lecture =

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

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	