Guide of Department of Sustainable Energy Engineering

Edition 2026

9 الصناعة والابتكار والبنية التحتية

Iraq-Mosul-Al Majmoaa Street

Uomosul.edu.iq/engineering/

College of Engineering

Introduction

The Department of Sustainable Energy Engineering at the University of Mosul is one of the newest departments in the College of Engineering. It was established in 2024 to meet the growing need for clean and renewable energy solutions on both local and global scales. This initiative is in line with national policies aimed at promoting sustainability in the energy sector.

With increasing concerns about climate change, Energy Supplement, and environmental sustainability, there is an urgent need for engineers who can innovate and adopt sustainable energy technologies. The department's curriculum covers essential courses include main sections such as disciplines such as solar energy, wind energy, energy management, and environmental impact assessment.

The department equips students with the technical skills and knowledge needed to tackle global energy challenges and contribute to a sustainable future. This is achieved through practical projects, research opportunities, and collaboration with different industrial sectors. As a result, students are prepared to become a new generation of engineers who can lead the transition to sustainable energy solutions and help create a more resilient energy future.

This guide is available in both Arabic and English. It was prepared under the guidance of the Dean of the College of Engineering, Assist. Prof. Dr. Omar Mohammed Hamdoon, and supervised by the Head of the Department of Sustainable Energy Engineering, Dr. Younis Mahal Najm.

2025-2026

Department Management

Dr. Younis Mahal Najm

- **Head of the Department of Sustainable Energy Engineering**
- **Specializing in Thermal Power Engineering - Combustion**

Dr. Ali Azam Mohammed

- **Coordinator**
- **Specializing in Renewable Energy**

Department Laboratories

Renewable Energy Laboratory
- Lab Administrator : Lecturer Dr. Mahmoud Osama Jassim

Measurement and Control Laboratory
- Lab Administrator : Assist. Lecturer. Khaled Elias Hamo

Refrigeration and Air Conditioning Laboratory
- Lab Administrator : Asst. Prof. Dr. Omar Mohammed Hamdoon

Heat Transfer Laboratory
- Lab Administrator : Lecturer Raed Ahmed Ali

Fluid Laboratory
- Lab Administrator :Asst. Prof. Dr. Taha Ahmed Abdullah

Applied Mechanics Laboratory
- Lab Administrator : Lecturer Bakr Nouri Khder

Computer Laboratory
- Lab Administrator :Asst.Lecturer. Iman Mohammed Ali

Metallurgy Laboratory
- Lab Administrator :Lecturer Ahmed Saadon Abdul Aziz

Material Testing Laboratory
- Lab Administrator :Asst. Prof. Dr. Anas Obeid Idris

Thermal Machines Laboratory
- Lab Administrator :Asst.Lecturer. Noor Al-Din Saleh Khader

Electrical and Electrical Machines Laboratory
- Lab Administrator :Lecturer Dr. Salwan Samir Sabri

Vision:

As a Department of Sustainable Energy Engineering, we aim to become pioneers at both the local and regional levels in research and education related to sustainable energy, with a focus on solutions that align with local conditions and resources. Our objective is to achieve excellence in the development and application of modern technologies for the clean and efficient generation and utilization of energy.

We believe that sustainable energy is the key to addressing future challenges related to sustainable development and environmental protection. Therefore, we are committed to graduating engineers and researchers who are specialized in sustainable energy engineering, possessing the knowledge and skills to develop and implement innovative solutions that contribute to sustainable development both locally and globally.

We also aim to become a leading center for research and innovation in the field of sustainable energy, where we focus on developing new technologies and Spreading the results to have a positive impact on the energy and environmental industries.

Our vision is for the Department of Sustainable Energy Engineering to serve as a reference in sustainable energy research and education, and to contribute effectively to achieving sustainable development and global environmental preservation goals.

Mission:

The Department of Sustainable Energy Engineering is committed to addressing the needs of Iraqi society and the region by offering high-quality educational programs in sustainable energy engineering, with a focus on teaching, research, and community service through the following objectives:

Preparing graduates (engineers) work in design opportunities, development, and project management: The program is designed to equip students with the knowledge and skills necessary to actively engage in the fields of design, development, and project management.

Promoting creativity and ethical values: The program focuses on nurturing innovative and ethical standards within the engineering profession, motivating students to adopt creative approaches and make decisions that uphold ethical sustainability.

Contributing to the development of a continuous learning environment: The program aims to foster an environment of lifelong learning by offering up-to-date educational resources and practical applications that are aligned with the evolving needs of the market.

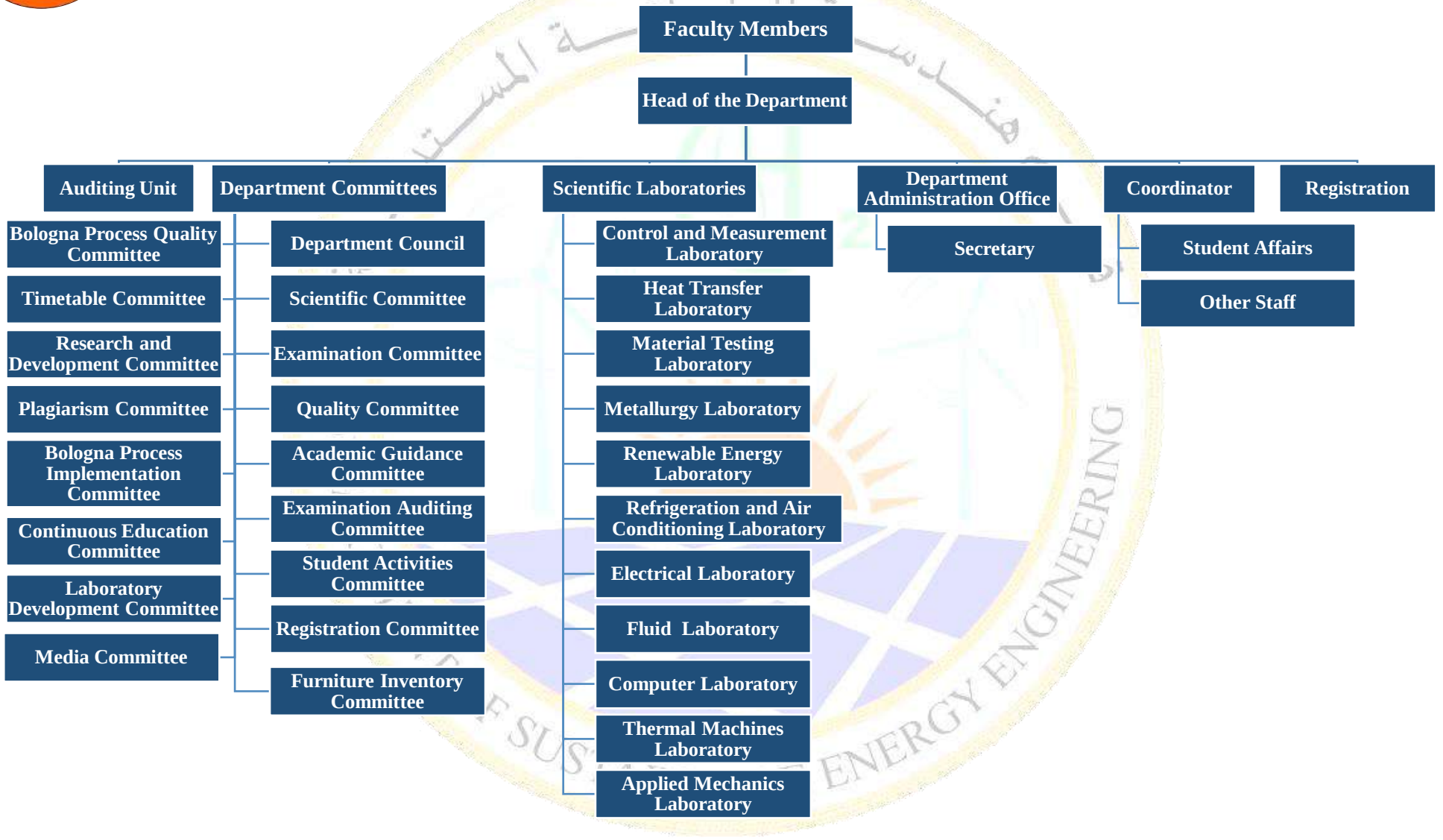
Addressing the engineering needs of the local market: The program aims to provide graduates with the expertise and skills needed to meet the demands of the local market, with a focus on specific technical and economic considerations.

Goals:

1. **The department is committed to offering exceptional educational programs in Sustainable Energy Engineering at the undergraduate level, aimed at graduating highly skilled engineers who are capable of continuous professional growth and can provide technical expertise to both government and private sectors in their engineering projects and needs.**
2. **The department prioritizes advancing research and fostering innovation in sustainable energy by supporting faculty members and researchers in developing groundbreaking research projects. Furthermore, it plays an active role in advancing the specialization of engineering professionals in government departments and projects by facilitating continuous education courses, either in collaboration with the college or independently by the department.**

3. **The department is dedicated to increasing awareness about the significance of sustainable energy and contributing to its realization through educational programs, community outreach, and awareness campaigns.**
4. **The department aims to equip its graduates with the essential knowledge and skills to develop and execute sustainable energy projects, thereby making valuable contributions to the workforce in the energy sector.**
5. **The department actively seeks to establish strong collaborative relationships with industrial and production organizations involved in sustainable energy, ensuring that research and educational programs are aligned with industry needs and practical applications.**
6. **The department is committed to supporting the achievement of sustainable development goals at local, national, and global levels through research, active participation in initiatives, and engagement in relevant projects.**

Sustainable Energy Engineering Department



Responsibilities

The responsibilities of the Head of Department: managing the department in scientific, administrative, educational, cultural, financial, technical and student affairs aspects, supervising the teaching process and teaching methods, preparing quarterly and annual scientific reports on the department's activities and submitting them to the Dean, forming committees in the department, distributing duties among department staff in alignment with the department's interests, and issue administrative orders as needed.

The responsibilities of the Department Coordinator: assigning teaching duties to faculty members, monitoring student absences, tracking daily attendance records, and following up scientific seminars conducted within the department.

The Department Council: collaborates with the Head of the Department in supervising the educational process, overseeing departmental operations, implementing the scientific plan, and executing plans for the development of academic, educational, and administrative staff.

The Scientific Committee: collaborate with the Head of the Department on all scientific decisions related to curriculum development and review, faculty promotions, research plagiarism checks, and academic legations.

The Quality Committee: responsible for promoting a culture of quality and supporting related activities by applying quality standards across all aspects of work to improve the outcomes of the educational and academic processes. It supervises activities related to evaluation and academic accreditation, supports continuous quality improvement and development, and oversees the preparation of academic program descriptions and reports for the department. The committee also ensures the preparation of course descriptions, reports, and statistical data within the department. Additionally, it carries out other tasks assigned to the unit concerning quality and its implementation.

The Examination Committee: responsible for overseeing the conduct of midterm, semester, and final examinations for students. It organizes invigilation schedules and allocates invigilators to examination halls. The committee also receives exam questions and results from faculty members, ensuring they are properly organized and maintaining their confidentiality. Additionally, it conducts statistical analyses of final results, determining pass and fail rates among the examined students, and oversees the administration of supplementary exams for students who require them.

The Audit Committee: operates in parallel with the Examination Committee during exams and the announcement of results. Its members are responsible for verifying the grades received from instructors (such as coursework grades) and ensuring the accuracy of the grades recorded on grade cards. The committee also reviews the final exam results to confirm their accuracy before they are officially announced to students.

The Continuing Education Committee: responsible for monitoring continuing education courses conducted by the department's faculty for engineering staff in various provincial departments, as well as the seminars and conferences organized by the department.

The Advisory Committee: meets with students to understand the challenges and obstacles they face academically and prepares reports addressing these issues.

The Media Committee: tasked with documenting the department's various scientific and social activities through photographs and informational publications.

The Scheduling Committee: responsible for preparing lecture schedules for undergraduate and postgraduate students for both semesters of each academic year.

The Archiving Committee: handles the electronic archiving of master's and doctoral theses completed across all specializations within the department. Additionally, it archives the graduation projects of higher diploma students across all branches and final-year undergraduate students.

The Social Solidarity Committee: oversees the social cases of the department's students and staff members who face economic or social challenges, providing support and assistance to those in need.

The Registration Committee: responsible for welcoming and registering new students at the beginning of each academic year. It also manages the enrollment of students across all stages, monitors student statuses during the academic year (such as transfers, hosting, or deferrals), and prepares lists of students for all stages based on their classroom assignments.

The Department Administration Office: manages the recording of incoming official correspondence, distributing outgoing mail from the Head of the Department, and documenting the recipients of distributed mail. It handles the issuance of official letters, tracks pending responses to correspondence, and organizes incoming and outgoing records into easily searchable files.

The Typing Office: responsible for drafting and typing official documents, recording daily student absences, and generating monthly absence reports. It also manages incoming and outgoing emails, ensuring they are sent to the Department Administration Office for further handling.

Teaching staff

SY	Name	Scientific Title	Email
1	Omar Mohammed Hamdoon	Associate Professor	eng.omar.m.hamdoon@uomosul.edu.iq
2	Taha Ahmed Abdullah	Associate Professor	tahatahamir100@uomosul.edu.iq
3	Ahmed Khalid Iibrahim Fattah	Associate Professor	alnajar.ahmed9@uomosul.edu.iq
4	Younis Mahal Najm	Lecturer	mahalyounis@uomosul.edu.iq
5	Mahmoud Osama Jassim	Lecturer	mahmood14@uomosul.edu.iq
6	Riyadh Zaki Sabri	Lecturer	riyadhzaki@uomosul.edu.iq
7	Ali Ghazi Mohammed Kamel	Lecturer	aligm@uomosul.edu.iq
8	Omar Salah El-Din Dhnoon	Lecturer	omerphd18@uomosul.edu.iq
9	Ahmed Fouad Mahmoud	Lecturer	ahmedfalneama@uomosul.edu.iq
10	Maysar Idris Ismail Sultan	Lecturer	Muyassar.alhasso@uomosul.edu.iq
11	Ali Azzam Mohammed Shaker	Lecturer	ali.alkhabbaz@uomosul.edu.iq
12	Salwan Samir Sabri	Lecturer	salwan.samir@uomosul.edu.iq
13	Hassan Muthaffar Saeed	Lecturer	saeedh81@uomosul.edu.iq
14	Sufyan Abdul Hakim Mohammed	Lecturer	sufyan.a.mohammed@uomosul.edu.iq
15	Khalid Elias Hamo Sheikho	Assistant Lecturer	khalid1974@uomosul.edu.iq
16	Iman Mohammed Ali Suleiman	Assistant Lecturer	Emanmali@uomosul.edu.iq
17	Maan Hussein A. Ahmed	Assistant Lecturer	maanhussein1991@uomosul.edu.iq
18	Iman Ahmed Ali	Assistant Lecturer	eman.alhanoti@uomosul.edu.iq
19	Rehab Nashwan Sadoon	Assistant Lecturer	Rehab.alshamaa@uomosul.edu.iq

Department Building

The Department of Sustainable Energy Engineering is located within the annex building of the Department of Mechanical Engineering. This building consists of three floors with a total construction area of 8,000 square meters. The facility includes the department's administrative offices, faculty rooms, classrooms, lecture halls, laboratories, and workshops.

Regarding the ongoing development of the department's building, it is anticipated that construction and renovations will continue to align with modern advancements. These efforts are dependent on the availability of financial resources and aim to present the department as aesthetically pleasing and environmentally friendly on the exterior while ensuring comfort and functionality on the interior to support the educational process effectively.

The following is a table summarizing the details of the department's building:

Table 1: Details of the Sustainable Energy Engineering Department Building

Details	Total Area (Square Meter)	Quantity	Facility Type
Fully air-conditioned and furnished	61	1	Department Administration
Air-conditioned and appropriately furnished	324	4	Classrooms
Equipped with 20 new, high-spec computers	125	1	Computer Lab
Fully air-conditioned and furnished	120	20	Faculty Offices
Fully air-conditioned, furnished, and equipped	860	10	Laboratories
Fully air-conditioned, furnished, and equipped	1900	2	Technical Workshops

Department Laboratories

The department houses eleven laboratories managed by a team of highly qualified faculty members, distinguished by their academic expertise and field experience in their respective specializations. These laboratories contribute to providing an advanced educational environment that equips students with a solid scientific and practical foundation in engineering sciences. They also play a pivotal role in developing students' skills in addressing technical and practical challenges in the fields of sustainable and renewable energy.

The Renewable Energy Laboratory focuses on enhancing the understanding of renewable energy sources and integrating them into existing systems, enabling students to design, test, and optimize renewable energy technologies for practical applications.

Meanwhile, the Heat Transfer Laboratory focuses on the study of heat transfer across various materials and systems. Its objective is to teach students how to analyze heat transfer systems and design efficient systems to enhance the performance of energy systems.

The Fluid Dynamics Laboratory provides tools for studying fluid behavior, including flow in pipes and natural systems. Its primary goal is to enhance students' understanding of fluid dynamics and their impact on energy systems, enabling them to design sustainable energy systems.

The Applied Mechanics Laboratory focuses on fundamental mechanical concepts through practical experiments, aiming to teach students how to apply mechanical principles in designing and analyzing engineering systems. The Thermal Machines Laboratory examines and analyzes the performance of thermal machines, including internal combustion engines and refrigeration systems. This equips students with the knowledge needed to design and improve the thermal efficiency of machines. The Electrical and Electric Machines Laboratory focuses on studying electrical circuits, components, and electric machines, providing students with the skills to design and analyze electrical systems and understand the operation of electric machines in sustainable energy applications.

The Refrigeration and Air Conditioning Laboratory is dedicated to the study of refrigeration and air conditioning systems, including their design, installation, and maintenance. It aims to teach students how to improve the efficiency of these systems and understand their impact on energy consumption. The Control and Measurement Laboratory focuses on measurement and control techniques for energy systems, teaching students how to develop control systems and monitor performance to ensure efficient and reliable system operation. Therefore, the laboratories of the Department of Sustainable Energy Engineering are a fundamental cornerstone of the department's operations, combining theoretical knowledge with practical experience. The department's laboratories are equipped with specialized instruments across various fields, as outlined in the table below:

Apparatuses Description of Renewable Energy Laboratory

No.	Device Name	Function	Serial Number	Brand	Device Image
1	integrated device for testing solar energy applications	Conducting experiments for students	130414	Locally manufactured	
2	model of a solar water heater with a glass tube (evacuated tube)	Conducting experiments for students	130416	Chinese	
3	Flat-Plate Solar Water Heater System (Active System)	Conducting experiments for students	Not available	England	
4	Performance Testing Device for Solar Water Heater with Glass Tube (Evacuated Tube)	Conducting experiments for students	Not available	Department manufactured	

Apparatuses Description of Control and Measurement Laboratory

No.	Device Name	Function	Serial Number	Brand	Device Image
1	Control Box + RYC – PYC Modules	Conducting experiments for students	Not available	Spanish	
2	RYC-SM Dcservo Motor Module	Conducting experiments for students	Not available	Spanish	
3	Magnetiic Levitation Control Module (PYC – CLM)	Conducting experiments for students	Not available	Spanish	
4	Inverted Pendulum Control Module (PYC - PI)	Conducting experiments for students	Not available	Spanish	

Apparatuses Description of Control and Measurement Laboratory

No.	Device Name	Function	Serial No.	Brand	Device Image
5	Control Box + RYC – PYC Modules	Conducting experiments for students	Not available	Spanish	
6	RYC-SM Dcservo Motor Module	Conducting experiments for students	Not available	Spanish	
7	Magnetiic Levitation Control Module PYC – CLM	Conducting experiments for students	Not available	Spanish	

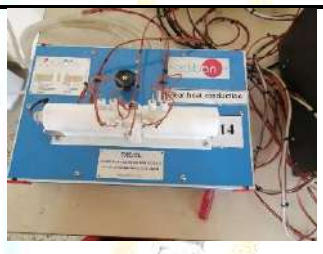
Apparatuses Description of Refrigeration and Air Conditioning Laboratory

No.	Device Name	Function	Serial No.	Brand	Device Image
1	Thermal pump study unit	Conducting experiments for students	1304105	Italian	
2	Refrigerator model	Conducting experiments for students	1304106	England	
3	Different models	Conducting experiments for students	1304107	England	
4	Fault Plant Refrigeration	Conducting experiments for students	1304108	Italian	
5	Air conditioning study unit D110T	Conducting experiments for students	1304109	Italian	

Apparatuses Description of Refrigeration and Air Conditioning Laboratory

No.	Device Name	Function	Serial Number	Brand	Device Image
6	Air conditioning unit	Conducting experiments for students	1304110	England	
7	General cycle Refrigeration trainer	Conducting experiments for students	1304112	Italian	
8	Instrument Automobile Air Conditioner	Conducting experiments for students	1304121	Italian	

Apparatuses Description of Heat Transfer Laboratory

No.	Device Name	Function	Serial No.	Brand	Device Image
1	Cross Flow Heat Exchanger	Conducting experiments for students	1304022	England	
2	Unsteady Heat Transfer	Conducting experiments for students	Not available	Spanish	
3	Linear Heat Conduction	Conducting experiments for students	Not available	Spanish	
4	Heat Exchanger Testing System	Conducting experiments for students	Not available	Italian	

Apparatuses Description of Fluid Laboratory

No.	Device Name	Function	Serial No.	Brand	Device Image
1	Heat Pump	Conducting experiments for students	130402	England	
2	Oil and Water Pump Inspection Device	Conducting experiments for students	1304099	Italian	
3	Oil and Water Pump Inspection Device	Conducting experiments for students	1304098	Italian	

Apparatuses Description of Applied Mechanics Laboratory

No.	Device Name	Function	Serial No.	Brand	Device Image
1	Balancing Model Constant	Conducting experiments for students	1304015		
2	Gyroscopic Torque Study	Conducting experiments for students	1304001		
3	Column Bearing Device	Conducting experiments for students	1304002		
4	Astronomical Gear Study Device	Conducting experiments for students	1304004		
5	Coriolis Component of Acceleration	Conducting experiments for students	1304010		

Apparatuses Description of Applied Mechanics Laboratory

No.	Device Name	Function	Serial No.	Brand	Device Image
6	Dead Weight Tester	Conducting experiments for students	1304011		
7	Centrifugal Force Measurement	Conducting experiments for students	1304003		
8	Governor Apparatus	Conducting experiments for students	1304012		
9	Bearing Friction Apparatus	Conducting experiments for students	1304014		
10	Simple Flying Wheel Model	Conducting experiments for students	1304031		
11	Flying Wheel Model	Conducting experiments for students	1304006		

Apparatuses Description of Metals Laboratory

No.	Device Name	Function	Serial No.	Brand	Device Image
1	**Ultrasonic Oscillator**	**Experiments + Tests**	**Not available**	**German**	
2	**Hand Held Metal Grinder**	**Samples preparation**	**Not available**	**German**	
3	Mechanical Metal Grinding Machine	Samples preparation	Not available	German	
4	Automatic Sample Clamping Press	Samples preparation	1304154	German	
5	**Specimen Cutting Machine**	**Samples preparation**	**1304144**	**German**	

Apparatuses Description of Thermal Machines Laboratory

No.	Device Name	Function	Serial No.	Brand	Device Image
1	Control Panel + Single Cylinder Engine Test Sample	Conducting experiments for students	Not available	Chinese	
2	Four Stroke Gasoline Engine	Conducting experiments for students	Not available	Chinese	
3	Four Stroke Variable Compression Ratio Engine	Conducting experiments for students	Not available	Chinese	
4	Four Stroke Diesel Engine	Conducting experiments for students	Not available	Chinese	
5	Two Stroke Gasoline Engine	Conducting experiments for students	Not available	Chinese	

Apparatuses Description of Materials Testing Laboratory

No.	Device Name	Function	Serial No.	Brand	Device Image
1	Tensile testing machine (100) tons	Experiments + Tests	1304128	Chinese	
2	Tensile testing machine (10) tons	Experiments + Tests	1304129	England	
3	Hardness Tester	Experiments + Tests	1304127	England	
4	Charpy Shock Tester	Experiments + Tests	1304134	England	
5	Izod Shock Tester	Experiments + Tests	1304130	England	

Apparatuses Description of Materials Testing Laboratory

No.	Device Name	Function	Serial No.	Brand	Device Image
6	Metal Polishing Machine	Experiments + Tests	1304161	German	
7	Metal Analyzer	Experiments + Tests	1304131	Turkish	

Apparatuses Description of Electrical and Electrical Machines Laboratory

No.	Device Name	Function	Serial No.	Brand	Device Image
1	D.C machines	Conducting experiments for students	Not available		
2	A.C machines	Conducting experiments for students	Not available		
3	Transformers	Conducting experiments for students	Not available		

Sustainable Energy Engineering Department

University of Mosul / College of Engineering / Department of Sustainable Energy Engineering
2024-2025 Course Catalog
First and Second Stages / Polonia System

Republic of Iraq - Ministry of Higher Education and Scientific Research
University of Mosul
Bachelor's degree in Sustaibnable Energy Department (First cycle)
Four years (Eight semesters) - 240 ECTS credits - 1 ECTS = 25hr
Program Curriculum (2024 - 2025)

جمهورية العراق - وزارة التعليم العالي والبحث العلمي
جامعة الموصل
بكالوريوس في هندسة الطاقة المستدامة (الدورة الأولى)
أربع سنوات (ثمانية فصول دراسية) - ٢٤٠ وحدة اوربية - كل وحدة اوربية = ٢٥ ساعة
المنهاج الدراسي للعام ٢٠٢٤-٢٠٢٥

Level	Semester	No.	Module Code	Module Name in English	اسم المادة الدراسية	Language	SSWL (hr/w) CL (hr/w)	Lect (hr/w)	Lab (hr/w)	Pr (hr/w)	Tut (hr/w)	Semn (hr/w)	Exam hr/sem	SSWL hr/sem	USSWL hr/sem	SWL hr/sem	ECTS	Module Type	Prerequisite Module(s) Code
UGI	One	1	SEE101	Engineering Mechanics-Statics	الميكانيك الهندسي - السكون	English	2	1			1		3	63	62	125	5.00	C	
		2	SEE102	Mathematics I	الرياضيات I	English	3	1			1		3	78	72	150	6.00	B	
		3	SEE103	Electric Circuits	دوائر كهربائية	English	2	1		2			3	78	47	125	5.00	C	
		4	SEE104	Physics	الفيزياء	English	2	1			1		3	63	37	100	4.00	B	
		5	SEE105	Introduction to Sustianble Engineering	مقدمة في هندسة الاستدامة	English	2	1			1		3	63	62	125	5.00	B	
		6	UOM1031	Computer 1	حاسوب 1	English	2		2				3	63	12	75	3.00	B	
		7	UOM1011	Arabic Language 1	اللغة العربية 1	Arabic	2						3	33	17	50	2.00	B	
						Total	16	5	2	2	4	0	21	441	309	750	30.00		

Level	Semester	No.	Module Code	Module Name in English	اسم المادة الدراسية	Language	SSWL (hr/w) CL (hr/w)	Lect (hr/w)	Lab (hr/w)	Pr (hr/w)	Tut (hr/w)	Semn (hr/w)	Exam hr/sem	SSWL hr/sem	USSWL hr/sem	SWL hr/sem	ECTS	Module Type	Prerequisite Module(s) Code
UGI	Two	1	SEE151	Engineering Mechanics-Dynamics	الميكانيك الهندسي - الحركة	English	3	1			1		3	78	72	150	6.00	C	
		2	SEE152	Mathematics II	الرياضيات II	English	3	1			1		3	78	72	150	6.00	B	
		3	SEE153	Engineering Drawing	الرسم الهندسي	English	2	1		2			3	78	47	125	5.00	C	
		4	SEE154	Environmental Pollution	تلوث بيئة	English	2	1		2			3	78	47	125	5.00	B	
		5	SEE155	Chemistry	الكيمياء	English	2	1			1		3	63	37	100	4.00	B	
		6	UOM1021	English 1	اللغة الإنكليزية 1	English	2						3	33	17	50	2.00	B	
		7	UOM1040	Democracy and Human Rights	الديمقراطية وحقوق الانسان	Arabic	2						3	33	17	50	2.00	B	
						Total	16	5	0	4	3	0	21	441	309	750	30.00		

Level	Semester	No.	Module Code	Module Name in English	اسم المادة الدراسية	Language	SSWL (hr/w) CL (hr/w)	Lect (hr/w)	Lab (hr/w)	Pr (hr/w)	Tut (hr/w)	Semn (hr/w)	Exam hr/sem	SSWL hr/sem	USSWL hr/sem	SWL hr/sem	ECTS	Module Type	Prerequisite Module(s) Code
UGII	Three	1	SEE201	Fluid Mechanics	ميكانيك الموائع	English	4	1			1		3	93	82	175	7.00	C	
		2	SEE202	Thermodynamics	ديناميك الحرارة	English	4	1			1		3	93	82	175	7.00	C	
		4	SEE205	Applied Electronics	الالكترونيات التطبيقية	English	2	1			1		3	63	62	125	5.00	C	
		5	SEE206	Engineering Mathematics	رياضيات هندسية	English	3	1			1		3	78	72	150	6.00	C	
		2	UOM2032	Computer 2	حاسوب 2	English	2		2				3	63	12	75	3.00	B	
		6	UOM2012	Arabic Language 2	اللغة العربية 2	Arabic	2						3	33	17	50	2.00	B	
						Total	17	4	0	0	4	0	18	327	298	625	30.00		

Level	Semester	No.	Module Code	Module Name in English	اسم المادة الدراسية	Language	SSWL (hr/w) CL (hr/w)	Lect (hr/w)	Lab (hr/w)	Pr (hr/w)	Tut (hr/w)	Semn (hr/w)	Exam hr/sem	SSWL hr/sem	USSWL hr/sem	SWL hr/sem	ECTS	Module Type	Prerequisite Module(s) Code
UGII	Four	1	SEE251	Engineering Materials	مواد هندسية	English	2	1	2				3	78	72	150	6.00	C	
		2	SEE252	Solid Mechanics	الميكانيكا الصلبة	English	2	1			1		3	63	37	100	4.00	C	
		3	SEE253	Energy Economics and Management	اقتصاديات وادارة الطاقة	English	3	1			1		3	78	72	150	6.00	C	
		4	SEE254	Heat Transfer	انتقال الحرارة	English	4	1			1		3	93	82	175	7.00	C	
		5	SEE255	Laboratories I	مختبرات I	English				2			3	33	42	75	3.00	B	
		6	UOM2022	English 2	اللغة الإنكليزية 2	English	2						3	33	17	50	2.00	B	
		7	UOM2050	Crimes of the Ba'ath Regime	جرائم نظام البعث	Arabic	2						3	33	17	50	2.00	B	
						Total	16	4	2	2	3	0	21	411	339	750	30.00		

Sustainable Energy Engineering Department

Level	Semester	No.	Module Code	Module Name in English	اسم المادة الدراسية	Language	SSWL (hr/w) CL (hr/w)	Lect (hr/w)	Lab (hr/w)	Pr (hr/w)	Tut (hr/w)	Semn (hr/w)	Exam hr/sem	SSWL hr/sem	USSWL hr/sem	SWL hr/sem	ECTS	Module Type	Prerequisite Module(s) Code
UGIII	Five	1	SEE301	Solar Thermal Energy Systems	أنظمة الطاقة الحرارية الشمسية	English	2	1			1		3	63	62	125	5.00	C	
		2	SEE302	Engineering and Numerical Analysis	التحليلات الهندسية والعددية	English	4	1			1		3	93	82	175	7.00	C	
		3	SEE303	Turbomachinary	المكائن التوربينية	English	2	1	1		1		3	78	47	125	5.00	C	
		4	SEE304	Wind Energy Systems	أنظمة طاقة الرياح	English	2	1			1		3	63	62	125	5.00	C	
		5	SEE305	Bioenergy System	نظام لطاقة الحيوية	English	2				1		3	48	52	100	4.00	C	
		6	SEE306	Electric Machines	مكائن كهربائية	English	2				1		3	48	52	100	4.00	C	
						Total	14	4	1	0	6	0	18	393	357	750	30.00		

Level	Semester	No.	Module Code	Module Name in English	اسم المادة الدراسية	Language	SSWL (hr/w) CL (hr/w)	Lect (hr/w)	Lab (hr/w)	Pr (hr/w)	Tut (hr/w)	Semn (hr/w)	Exam hr/sem	SSWL hr/sem	USSWL hr/sem	SWL hr/sem	ECTS	Module Type	Prerequisite Module(s) Code
	Six	1	SEE351	Photovoltic Energy Systems	أنظمة الطاقة الكهروضوئية	English	3	1	1		1		3	93	57	150	6.00	C	
		2	SEE352	Fundamentals of Combustion and Emissions	أساسيات الاحتراق والانبعاثات	English	3	1			1		3	78	47	125	5.00	C	
		3	SEE353	Design of Sustainable Energy Systems	تصميم أنظمة الطاقة المستدامة	English	2		2				3	63	37	100	4.00	C	
		4	SEE354	Principles of Air-Conditioning and Refrigeration	مبادىء تكييف الهواء والتثليج	English	3	1	1		1		3	93	57	150	6.00	C	
		5	SEE355	Hydrogen Energy Systems	أنظمة طاقة الهيدروجين	English	2	1			1		3	63	37	100	4.00	C	
		6	SEE356	Electrical Power Systems	أنظمة الطاقة الكهربائية	English	2			3			3	78	47	125	5.00	C	
						Total	13	4	4	0	4	0	15	390	235	625	30.00		

Level	Semester	No.	Module Code	Module Name in English	اسم المادة الدراسية	Language	SSWL (hr/w) CL (hr/w)	Lect (hr/w)	Lab (hr/w)	Pr (hr/w)	Tut (hr/w)	Semn (hr/w)	Exam hr/sem	SSWL hr/sem	USSWL hr/sem	SWL hr/sem	ECTS	Module Type	Prerequisite Module(s) Code
UGIV	Seven	1	SEE401	Geothermal Energy	الطاقة الحرارية الأرضية	English	2	1			1		3	63	62	125	5.00	C	
		2	SEE402	Fuel Cell Principles and Techniques	مبادئ وتقنيات خلايا الوقود	English	3	1			1		3	78	72	150	6.00	C	
		3	SEE403	Energy Storage systems	أنظمة تخزين الطاقة	English	2	1			1		3	63	62	125	5.00	C	
		4	SEE404	Power Plants	محطات القدرة	English	3	1			1		3	78	72	150	6.00	C	
		5	SEE405	Automatic Control Systems	أنظمة التحكم الآلي	English	2	1		2			3	78	72	150	6.00	C	
		6	SEE406	Engineering Design Project I	مشروع التخرج I	English	2						3	33	17	50	2.00	C	
						Total	14	4	0	0	4	0	18	393	357	750	30.0		

Level	Semester	No.	Module Code	Module Name in English	اسم المادة الدراسية	Language	SSWL (hr/w) CL (hr/w)	Lect (hr/w)	Lab (hr/w)	Pr (hr/w)	Tut (hr/w)	Semn (hr/w)	Exam hr/sem	SSWL hr/sem	USSWL hr/sem	SWL hr/sem	ECTS	Module Type	Prerequisite Module(s) Code
	Eight	1	SEE451	Sustainable Building Design	تصميم المباني المستدامة	English	2	1			1		3	63	62	125	5.00	C	
		2	SEE452	Mechanical Vibration	الاهتزازات الميكانيكية	English	2	1			1		3	63	62	125	5.00	C	
		3	SEE453	Laboratories II	مختبرات II	English	2	1			1		3	63	62	125	5.00	C	
		4	SEE454	Smart Grid Systems	أنظمة الشبكة الذكية	English	3	1	1		1		3	93	82	175	7.00	C	
		5	SEE455	Engineering Computer Aided Design	التصميم الهندسي بمساعدة الحاسوب	English	2		4				3	93	57	150	6.00	C	
		6	SEE456	Engineering Design Project I	مشروع التخرج II	English	2						3	33	17	50	2.00	C	
							13	4	5	0	4	0	18	408	342	750	30.0		
						Total	117	34	14	8	32	0	150	3204	2646	5750	240.0		Must be 240 ECTS

Note: The student should complete 4 weeks of Summer Internships to fulfill the requirements of the Bachelor's degree

Structured SWL (hr/w) type		
	CL	Class Lecture
	Lab	Laboratory
	Pr	Practical Training
	Tut	Tutorial
	Lect	Online lecture
	Semn	Seminar

Module type		
	B	Basic learning activities
	C	Core learning activity
	S	Suport or related learning activity
	E	Elective learning activity

SWL:	Student Workload
SSWL:	Structured SWL
USSWL:	Unstructured SWL

Note: Columns O, Q and R are progmaed, protected and should not be edited

Research Trends of the Department of Sustainable Energy Engineering

The research focuses of the Department of Sustainable Energy Engineering primarily revolve around three main areas:

1. **Renewable Energy**
   Faculty efforts are dedicated to advancing renewable energy technologies, focusing on key areas such as solar, wind, hydroelectric, and geothermal energy. This includes improving solar panels, optimizing wind turbine designs, enhancing hydroelectric systems' efficiency and sustainability, and integrating renewable energy into infrastructure. These advancements aim to reduce costs, improve performance, and transition away from fossil fuels, ultimately contributing to emission reductions and fostering a sustainable energy environment. Through precise experimentation and practical applications, the department aspires to lead renewable energy innovation and support environmental sustainability.

2. **Energy Storage**
   Energy storage is a cornerstone for a sustainable future and is given top priority. Research spans a variety of storage technologies, including lithium-ion batteries, solid-state batteries, and thermal storage systems. The goal is to increase storage capacity, improve charging efficiency, and ensure sustainability. Innovative approaches like compressed water energy storage and new energy management techniques are also explored. Enhancing storage capabilities is crucial for the effective integration of renewable energy sources, ensuring a stable and flexible power supply. This research not only focuses on technological advancements but also examines economic feasibility and environmental impact to provide comprehensive solutions supporting sustainable energy transitions.

3. Energy Efficiency and Management

Energy efficiency and management are pivotal to sustainable energy initiatives. In-depth studies investigate advanced construction materials, smart grid technologies, and innovative energy management systems to significantly reduce energy consumption across various sectors. Research also focuses on demand strategies and predictive analytics to optimize energy use and resource management.

Moreover, evaluations of smart devices' potential in enhancing energy efficiency are conducted. By integrating high-efficiency energy systems into urban planning, building strategies, and policy frameworks, the department aims to lower overall energy demand, reduce carbon emissions, and promote sustainable development. These efforts align with global climate goals, improving the quality of life for future generations.

This guide has been prepared under the guidance of the Dean of the College of Engineering

Assistant Professor

Dr. Omar Mohammed Hamdoun

To serve as a reference for introducing the Department of Computer Engineering, its members, and the study programs for undergraduate and graduate studies

coordination

Department of Media and Government Communication at the College of Engineering