

Republic of Iraq  
Ministry of Higher Education & Scientific  
Research  
University of Mosul  
College of Science  
Department of New & Renewable Energy



جمهورية العراق  
وزارة التعليم العالي والبحث العلمي  
جامعة الموصل  
كلية العلوم  
قسم الطاقات الجديدة والمتجددة

# Self-evaluation report for the Department of New and Renewable Energies, College of Science, University of Mosul Depending on criteria (Accredited accreditation program ABET)

2023-2022

Prepared by

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<https://uomosul.edu.iq/science/>

Self-evaluation report for the Department of New and Renewable Energies/ College of Science/ University of Mosul

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## Contents of the report

### Contents

#### **Introduction**

According to the directives of the Honorable Minister of Higher Education and Scientific Research on the necessity of developing universities and educational institutions, his Excellency instructed the establishment of a center for ensuring quality and reliability through which the scientific services provided by the ministry and its educational institutions are matched with international quality standards, taking into account the current and future needs of Iraqi society, with the aim of graduating qualified cadres capable of meeting these needs.

Based on the commitment of the Department of New and Renewable Energies/College of Science/University of Mosul to consolidate and apply quality practices to support the university's mission towards achieving its strategic goals and reaching global leadership, a self-evaluation report was written.

Self-evaluation according to the "ABET Accreditation Standards" is an examination of the overall functions and activities of the department, taking into account the mission and goals of the department, justifying the analysis extensively with conclusions and evidence, and taking advice from others who are able to provide independent comments. The responsibility for conducting the self-study falls on those in charge of the department, so that everyone is committed to conducting an objective, subjective, and scientific evaluation, and evaluation is an effective means of reviewing the strengths and weaknesses of the department.



The goal of the report is to make changes that contribute to raising the level of performance, supporting strengths, and eliminating weaknesses through work that achieves the standards of the ABET accreditation program, giving a comprehensive overview of the level of activities, services, and educational programs provided by the department, knowing the levels of students, and ways to improve the educational reality, and determining what... They need training courses and development programs and ensuring the quality of the department's outputs and programs to ensure the effectiveness of ongoing quality processes and procedures.

### **Report preparation methodology**

The methodology for preparing the self-evaluation report for the Department of New and Renewable Energies/College of Science was based on ABET program accreditation standards and on the participatory work of department officials and in direct coordination with the Quality Assurance Department at the college. Electronic workshops were started to clarify how to work with the standards while discussing ways and mechanisms of work and starting to write the self-report. For the section to be the basic building block from which the final self-evaluation report will emerge.

The guiding bodies for preparing the report, headed by Prof. Assem Ahmed Issa and MD membership Ibtisam Yahya Abdullah. The bodies supporting the writing of the self-report were, respectively, the New and Renewable Energies Department/Quality Assurance Unit/Deanship of the College of Science.

### **Mechanism for involving academic and administrative units and students in implementing the study**

After the department identified the comprehensive model in preparing the self-evaluation study, it determined the organizational structure of the committee supervising the self-evaluation study, and the work teams in accordance with the quality

management system applied in it, so that the department defined the organizational structure as follows:

- ✓ Consideration as a supervisor for the self-evaluation study.
- ✓ Forming a mini-follow-up committee in the department, to assist the work team, follow up on the groups implementing the study, and coordinate among them.
- ✓ Four groups were formed, each group studying and evaluating standards in the field assigned to their work
- ✓ An action plan has been identified for the work groups, within the performance standards that must be adopted in evaluating the extent to which each of the standards has been achieved.
- ✓ Holding a group of workshops attended by members of the teams, and supervised by the department, to explain the mechanisms of the groups' work, methods of analyzing available data and data, the methodology for issuing evaluative judgments, and formulating conclusions, and how to prepare the final report.

### **Tools for collecting information to prepare the report**

The following tools were used to prepare the report:

- ✓ Vision, mission and goal.
- ✓ ABET Standards Guide.
- ✓ Book of laws, regulations and instructions of the Ministry of Higher Education.
- ✓ Annual and executive plans, decisions, records, procedures, and forms.
- ✓ Questionnaires, personal interviews, meeting minutes, periodic reports, quarterly reports, and annual reports
- ✓ Studies, research, and completed development projects.

## Contents of the self-evaluation report

### Section One: Descriptive data for the educational section

- **Name and address of the educational department**

Name of the college/department	the address	Contact email
College of Science/New and Renewable Energies	Mosul /	Inquiry.sc@uomosul.edu.iq

- Name and title of the department head: assist. Prof. Dr. Asim Ahmed Issa Muhammad Suleiman
- Year of establishment: 2013
- An overview of the department

The department was established in 2013. Since then, the department has sought to expand over the years to include new and renewed energies for the academic degrees awarded by the department as research assistants.

The Department of New and Renewable Energies is one of the scientific departments of the College of Science at the University of Mosul. The duration of study is four years. The department grants a bachelor's degree in energy sciences and renewable energies after the student has been prepared scientifically and methodologically, qualifying him to keep pace with technical progress in the field of scientific research and providing services to the public and private sectors. Study in the department is in English.

The department aims to introduce students to the types of green and clean energies that are an alternative to traditional energy. These energies include solar energy, wind energy, biomass energy, hydropower, and geothermal energy. Four batches of department students have graduated.

### Department heads since its establishment in 2013:

- 1 - Prof. Dr. Issam Gamal El-Din Nouri (2013-2015)
- 2- Dr. Faisal Hamadi Ali (2015-2017)

3- Prof. Dr. Mohamed Salah El-Din Abdel-Faraj (2017-2020)

4- assist. Prof. Dr Asim Ahmed Issa (2020 - until now)

The number of teaching staff in the department who hold doctorates and master's degrees is (19), and the number of employees is (4).



### **Organizational structure of the department**







**Number of members of the department council**



No.	Name	
1	<b>Asst. prof. Dr. Assim Ahmed Issa</b>	chief
2	<b>Lec. Duaa Hassan Yahya</b>	A member
3	<b>Asst. prof. Dr. Alla Asmaieal Ayoub</b>	A member
4	<b>Asst. prof. Dr. Hazim Saleh Ahmed</b>	A member
5	<b>Asst. prof. Dr. Lubna Abd Alazzez Saleh</b>	A member
6	<b>Asst. prof. Basher Khalel Ahmed</b>	A member

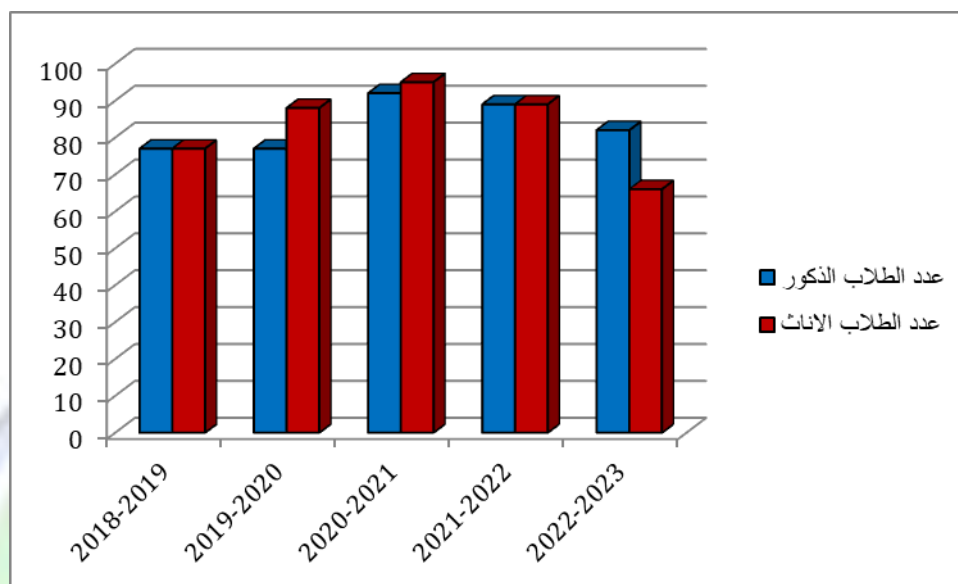
### **Staff Academic (scientific structure of the department/ teachers) 2022-2023**

No.	Name	General specialization	Specialization	The scientific title
1.	Asim Ahmed Issa Muhammad Al-Abdali	physics	Nano physics	Assistant Professor
2.	Alaa Ismail Ayoub Zidane	chemistry	organic chemistry	Assistant Professor
3.	Bashir Khalil Ahmed Hassan	physics	solar energy	Assistant Professor
4.	Lubna Abdel Aziz Saleh	chemistry	Oil chemistry	Assistant Professor
5.	Lamia Adnan Najeeb Sarsam	chemistry	Analytical chemistry	Assistant Professor
6.	Hazem Saleh Ahmed Hilal Al-Hadidi	physics	Molecular physics	Assistant Professor
7.	Praise Yacoub Youssef	chemistry	Inorganic chemistry	Assistant Professor
8.	Saad Fadel Mahmoud Jassim Al-Hayali	chemistry	Physical chemistry	Teacher
9.	Ghada Ghanem Younis Majeed Al-Taie	physics	Solid state physics	Teacher
10.	Hamed Abdullah Saleh	chemistry	Industrial chemistry	Teacher

11.	Ibtisam Yahya Abdullah	physics	Smart materials	Teacher
12.	Mead Salem Younis Thanoun Al-Hadidi	physics	Nano physics	Teacher
13.	Muhammad Mahmoud Younis Al Nuaimi	physics	Solid state physics	Teacher
14.	Nagham Salem Muhammad	computer Sciences	Computer vision	Teacher
15.	Zahraa Badie Ibrahim Khalil Al-Dabbagh	physics	Solid state physics	Teacher
16.	Rana Hisham Mahmoud Al-Abaji	physics	Nuclear Physics	Teacher
17.	Hassan Yahya's prayer	chemistry	Analytical chemistry	Teacher
18.	Zainab Walid Majed	chemistry	Analytical chemistry	Teacher
19.	Mustafa Hussein Ibrahim Mahmoud	electrical engineering	Renewable energy	Teacher
20.	Zakaria Abdel Wahed Hamid	computer science	Artificial intelligence	assistant teacher
21.	Sarah Khaled Saeed	chemistry	Industrial chemistry	assistant teac

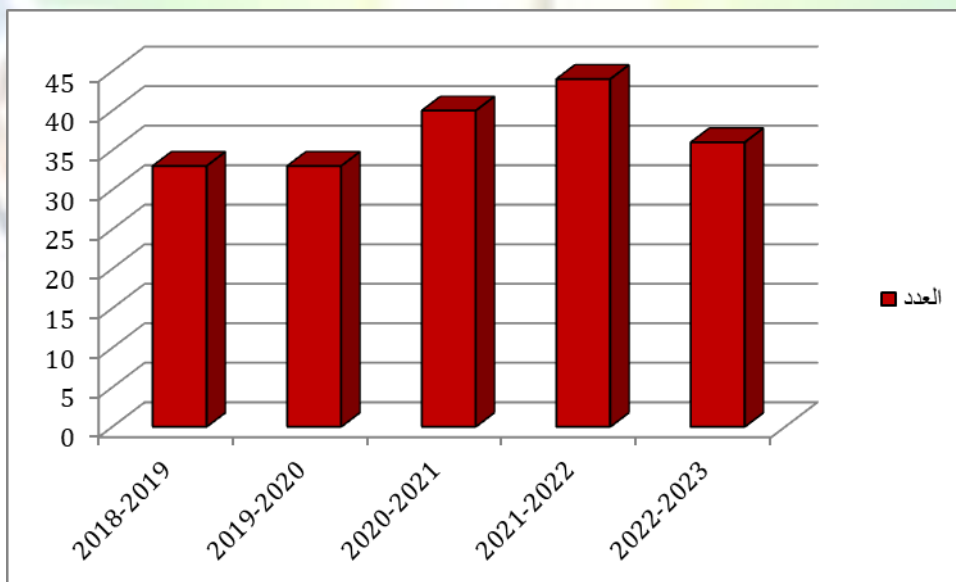
### Number of students by gender for the past five years

Yaer	Number of Female students	Number of male students	Total
2018-2019	<b>77</b>	<b>77</b>	<b>154</b>
2019-2020	<b>88</b>	<b>77</b>	<b>165</b>
2020-2021	<b>95</b>	<b>92</b>	<b>187</b>
2021-2022	89	89	178
2022-2023	66	82	148



### Number of graduates for the past five years

Yaer	No.
<b>2018-2019</b>	33
<b>2019-2020</b>	33
<b>2020-2021</b>	40
<b>2021-2022</b>	44
<b>2022-2023</b>	36





### Staff Academic according to academic title and degree 2022-2023

Dep.	Master	Ph.D	Total	Prof.	Prof. Assist.	Lect.	Lect. Assist.	Total
New & Renewable Energy	10	11	21	0	7	12	2	21

Ratio of doctoral degrees/total number of teaching staff × 8	
Number of permanent teaching staff/total number of teaching staff × 8	

### Ratio of students to teachers

العام الدراسي	No. 1 <sup>st</sup> class students	No. 2 <sup>nd</sup> class students	No. 3 <sup>rd</sup> class students	No. 4 <sup>th</sup> class students	Total	The success rate	No. of Teacher's	No. of student/ No. of Teacher's
2018-2019	48	36	33	35	152	100%	20	7.6
2019-2020	48	42	40	33	164	100%	21	7.8
2020-2021	57	46	45	40	188	100%	19	10
2021-2022	32	55	47	44	178	95.5	20	8.9
2022-2023	18	28	55	47	148	63.7	21	7.04

### Information about previous or planned academic credits

Regarding academic programs, our college chose the ABET program for academic accreditation, and proactive plans were made to work within this program, under the direct supervision of the Dean of the College and his scientific and administrative assistants, by holding an introductory workshop on the ABET program, but under the guidance of the Ministry, the college was directed to work according to national institutional accreditation standards for higher education institutions in Iraq at present,

and the college is working to implement it by preparing a self-evaluation file according to the standards of the aforementioned program.

### **A summary of the most important work at the quality assurance level:**

#### **Quality field:**

1. Writing and implementing boards related to the department's vision, mission, and goals.
2. Preparing questionnaires for students to evaluate the teaching.
3. Follow up on the implementation of the department's self-evaluation standards
4. Participation in many seminars, workshops and conferences related to quality within the country.
5. Holding workshops aimed at improving quality in the department.
6. Holding and attending a scientific course on performance evaluation for department members.
7. Preparing posters and work maps before starting the department's self-evaluation process.
8. Working on coding the new curricula and exam questions on a regular basis.

#### **Field of university performance:**

1. Completing the department's annual calendar file.
2. Conducting evaluations of teachers as well as evaluations of employees.
3. Archiving (automation) of information: electronic documentation of information in the Quality Assurance Division in the department.

### **Students**

University	College	Department	Career Title	Certificate description	Graduate qualifications	The graduate's field of work
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Mosul	Science	New and Renewable Energy	Bachelor's degree in new energy sciences	Assistant researcher in new energies	Hold Bachelor's degree in new energy sciences	Working in the departments and institutions of the Ministry of Electricity, Industry, Oil, Health, Environment, Municipalities, Defense, Agriculture and Resources
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### No. of Students 2022-2023

Average of age	Female	Male	No.	Stage
2001-2004	7	11	18	1 <sup>st</sup>
2000-2003	26	29	55	2 <sup>nd</sup>
1999-2002	23	24	47	3 <sup>rd</sup>
1998-2001	22	25	47	4 <sup>th</sup>

Percentage of students who completed their studies within the prescribed period to the total number×10	
Percentage of students who completed their studies after one year of the prescribed period to the total number×8	
Percentage of students who completed their studies after two years of the prescribed period to the total number×6	
Percentage of students who completed their studies after three years of the prescribed period to the total number×3	
The ratio of students who obtained jobs to those who graduated in the last year	

### Activities of the department on the website

#### Vision, mission and goals

<https://uomosul.edu.iq/science/%d8%a7%d9%84%d8%b1%d8%a4%d9%8a%d8%a9-%d9%88%d8%a7%d9%84%d8%b1%d8%b3%d8%a7%d9%84%d8%a9->



[%d9%88%d8%a7%d9%84%d8%a3%d9%87%d8%af%d8%a7%d9%81-%d9%84%d9%82%d8%b3%d9%85-%d8%a7%d9%84%d8%b7%d8%a7%d9%82%d8%a7/](#)

### Department lectures

<https://uomosul.edu.iq/science/%d9%85%d8%ad%d8%a7%d8%b6%d8%b1%d8%a7%d8%aa-%d9%82%d8%b3%d9%85-%d8%a7%d9%84%d8%b7%d8%a7%d9%82%d8%a7%d8%aa-%d8%a7%d9%84%d8%ac%d8%af%d9%8a%d8%af%d8%a9-%d9%88%d8%a7%d9%84%d9%85%d8%aa%d8%ac%d8%af%d8%af/>

### College guide

<https://uomosul.edu.iq/science/%d8%af%d9%84%d9%8a%d9%84-%d8%a7%d9%84%d9%83%d9%84%d9%8a%d8%a9/>

### CV of staff academics

<https://cv.uomosul.edu.iq/list/science/new-and-renewable-energies>

### Members of the College Council

<https://uomosul.edu.iq/science/%d8%a3%d8%b9%d8%b6%d8%a7%d8%a1-%d9%85%d8%ac%d9%84%d8%b3-%d9%83%d9%84%d9%8a%d8%a9-%d8%a7%d9%84%d8%b9%d9%84%d9%88%d9%85/>

### Links to scientific research on the college website

<https://uomosul.edu.iq/science/%d8%a7%d9%84%d8%a8%d8%ad%d9%88%d8%ab-%d8%a7%d9%84%d9%85%d9%86%d8%b4%d9%88%d8%b1%d8%a9-%d9%84%d9%82%d8%b3%d9%85-%d8%a7%d9%84%d8%b7%d8%a7%d9%82%d8%a7%d8%aa-%d8%a7%d9%84%d8%ac%d8%af%d9%8a%d8%af%d8%a9/>

### Links to graduation projects for department students

<https://uomosul.edu.iq/science/%d9%85%d8%b4%d8%a7%d8%b1%d9%8a%d8%b9-%d8%aa%d8%ac%d8%b1%d8%ac-%d9%82%d8%b3%d9%85-%d8%a7%d9%84%d8%b7%d8%a7%d9%82%d8%a7%d8%aa-%d8%a7%d9%84%d8%ac%d8%af%d9%8a%d8%af%d8%a9-%d9%88%d8%a7%d9%84%d9%85%d8%aa/>

### Description of the academic program

<https://uomosul.edu.iq/science/%d9%88%d8%b5%d9%81-%d8%a7%d9%84%d8%a8%d8%b1%d9%86%d8%a7%d9%85%d8%ac-%d8%a7%d9%84%d8%a3%d9%83%d8%a7%d8%af%d9%8a%d9%85%d9%8a-%d9%84%d9%82%d8%b3%d9%85-%d8%a7%d9%84%d8%b7%d8%a7%d9%82%d8%a7%d8%aa-%d8%a7/>

### Subjects and units of study

<https://uomosul.edu.iq/science/%d8%a7%d9%84%d9%85%d9%88%d8%a7%d8%af-%d9%88%d8%a7%d9%84%d9%88%d8%ad%d8%af%d8%a7%d8%aa-%d8%a7%d9%84%d8%af%d8%b1%d8%a7%d8%b3%d9%8a%d8%a9-%d9%84%d9%82%d8%b3%d9%85-%d8%a7%d9%84%d8%b7%d8%a7%d9%82%d8%a7/>

**Links that contribute to the learning process**

<https://uomosul.edu.iq/science/%d8%b1%d9%88%d8%a7%d8%a8%d8%b7-%d8%aa%d8%b3%d8%a7%d9%87%d9%85-%d9%81%d9%8a-%d8%b9%d9%85%d9%84%d9%8a%d8%a9-%d8%a7%d9%84%d8%aa%d8%b9%d9%84%d9%8a%d9%85-%d9%84%d9%82%d8%b3%d9%85-%d8%a7%d9%84%d8%b7%d8%a7/>

**Links to workshops, courses and seminars held in the department**

<https://uomosul.edu.iq/science/%d8%a7%d9%84%d8%af%d9%88%d8%b1%d8%a7%d8%aa/>

## Description of the academic program

**Reviewing the performance of higher education institutions ((academic program review))**

## Description of the academic program

Studying the types of new and renewable energies and preparing a generation that is aware of the culture of renewable energy and is ready to use it as the basis for most of the energy in society, by providing an academic program and supplying society with distinguished graduates capable of dealing with the modern changes and developments taking place in the world and contributing to the development of scientific, health, industrial and environmental institutions in solving the problems that arise. It facilitates its progress and the preparation of specialized cadres in energy sciences and their applications, and the qualification of graduates specialized in the fields of energies and familiarity with the theoretical foundations of energy sciences and their field applications

1- Educational institution

University of Mosul / College of

	Science
<b>2- University department/center</b>	new and renewable energies
<b>3- Name of the academic program</b>	Sciences of new and renewable energies
<b>4- Name of the final certificate</b>	Bachelor's degree in new energy sciences
<b>5- SCHOLASTIC SYSTEM</b>	courses
<b>6- Accredited accreditation program</b>	ABET
<b>7- Other external influences</b>	
<b>8- Date the description was prepared</b>	2023
9- Objectives of the academic program	
Reaching the national classification	
10- Required educational outcomes and teaching, learning and evaluation methods Success in academic subjects for the four years + graduation research + summer training	
A- Knowledge and understanding A1- Exams A2- Daily duties, discussions, and reports	
B- Subject-specific skills B1- Ability to work in a multidisciplinary team  B2- Ability to Constructive communication	
Teaching and learning methods	
Blended learning through electronic theoretical lectures, practical in-person, electronic, and applied lectures, daily assignments, and discussions.	
a-Thinking skills b- Discussions	



c-Assignments d- Laboratory reports e- Scientific reports				
Teaching and learning methods				
Electronic lectures in PDF format, electronic meetings, sending videos, conducting practical experiments, applications, homework, and scientific discussions.				
Evaluation methods				
Exams, projects, daily assignments, discussions, laboratory reports, and a graduation project.				
General and portable skills (other skills related to employability and personal development The ability to work in a multidisciplinary team The ability to communicate constructively				
Program structure				
Credit hours		The name of the course	Course or course code	Level/year
Theoretical	Practical			
3	3	Analytical Chemistry	UMSCNR21S1011	First year First semester
3	3	D.C Circuit	UMSCNR21S1021	
3		Geoscience	UMSCNR21S1031	
3	3	Mechanics	UMSCNR21S1041	
3		Mathematicss	UMSCNR21S1051	
1	2	Mat lab	UMSCNR21S1061	
1		Human Rights	UMSCNR21S1071	
3	3	Analytical Chemistry2	UMSCNR21S1091	
3	3	A.C Circuit	UMSCNR21S1101	

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3		Geoscience 2	UMSCNR21S1111	First year Second semester
3	3	Optics	UMSCNR21S1121	
3		Mathematicss 2	UMSCNR21S1131	
1	2	Mat lab	UMSCNR21S1141	
1		Democracy	UMSCNR21S1151	
3	3	Analog Electronics	UMSCNR21S2011	Second Year First Semester
2	2	Geothermal Energy	UMSCNR21S2021	
3		Inorganic Chemistry	UMSCNR21S2031	
3		Mathematics	UMSCNR21S2041	
3	3	Organic Chemistry	UMSCNR21S2051	
3	3	Thermodynamic	UMSCNR21S2061	
3	3	Digital Electronics	UMSCNR21S2101	Second Year Second Semester
3		Industrial Chemistry	UMSCNR21S2111	
3	3	Materials Science	UMSCNR21S2121	
3		Mathematics (Statistics)	UMSCNR21S2131	
3	3	Meteorology	UMSCNR21S2141	
3		Organic Chemistry	UMSCNR21S2151	
1	2	Mat lab	UMSCNR21S2161	
2	2	Mathematical Modelling	UMSCNR21S3011	Third Year First
3	3	Electronic Measurements and Control	UMSCNR21S3201	
3		Energy Sources and Synthetic Fuel	UMSCNR21S3031	

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3		Environment Pollution	UMSCNR21S3041	Semester
1	2	Hydrology	UMSCNR21S3051	
3	3	Solar Cell	UMSCNR21S3061	
3		Advanced Solar Cell	UMSCNR21S3101	Third Year Second Semester
2		Energy Economics	UMSCNR21S3111	
3	3	Energy Storage	UMSCNR21S3121	
3	3	Petroleum Chemistry	UMSCNR21S3131	
3	3	Wind Power	UMSCNR21S3141	
		Occupational safety	UMSCNR21S3151	
3		Biomass Energy	UMSCNR21S4101	Fourth year First Semester
3		Hydropower	UMSCNR21S4021	
3	3	Nanomaterials	UMSCNR21S4031	
3		Nuclear Energy	UMSCNR21S4041	
2		Selective Course	UMSCNR21S4051	
3	3	Small Solar Energy Systems	UMSCNR21S4061	
3		Grid Connection Systems	UMSCNR21S4071	Fourth year Second Semester
3		Large Solar Energy Systems	UMSCNR21S4081	
3	3	Nanoenergy	UMSCNR21S4091	
3		Photochemistry	UMSCNR21S4101	
2		Professional Ethics	UMSCNR21S4111	
2		Selective Course	UMSCNR21S4121	
2		Healthy culture	UMSCNR21S4131	
1	2	Graduation Project		

143 academic units	Bachelor's degree requires (x) number of credit hours	Certificates and credit hours
	12	Planning for personal development
		Extracurricular activities
	13	Admission standard (setting regulations regarding admission to the college or institute) Desire + preparatory rate
		Central admission to the Ministry of Higher Education and Scientific Research
	-14	The most important sources of information about the program
		The student's guide for central admission, prepared by the Ministry of Higher Education and Scientific Research

### **Programmatic accreditation standards for the department**

It is one of the standards of the American National Council for Accreditation of Applied Science Programs and is one of the most famous standards at the global level, and many colleges of science seek to obtain accreditation from these institutions. The Accrediting Applied Science Program (ABET) is one of the important educational accreditation programs in the United States of America, as the number of higher education institutions accredited by the Council has exceeded (600 institutions). It was established in 1954. The Council's mission is to help the public by ensuring that they acquire... Graduates of accredited institutions have the knowledge, skills, and attributes necessary to help all students learn; achieving leadership in reforming teacher preparation institutions (this institution has set standards for preparing educational cadres). It developed a slogan of precise standards and high status, "High Standards high status." These standards include: (development of academic programs, an evaluation system, field experiences, diversity of teachers, professional development for



faculty members, management, sources and resources) and every institution requests professional accreditation. The educational intention must ensure application These standards

### **Standards of the American Accreditation Authority:**

ABET has set eight standards for preparing educational cadres, and every institution that requests educational professional accreditation must apply those standards.

The study aimed to evaluate the current situation of the department, and the extent to which the department achieves the standards for quality assurance, noting that the department, from the beginning, reviewed the experiences of regional and local universities and reached the following fact: The department needs support for a quality management system to ensure continued development and improvement of performance, and this in turn requires development and modernization in The management method and its work mechanisms, in line with international standards for the quality of higher education and achieving compliance with the standards set by the Ministry of Higher Education and Scientific Research/the Scientific Supervision and Evaluation Agency/the Department of Quality Assurance and Academic Accreditation by adopting the program standards.

The results of the self-evaluation study showed the extent to which these standards were met as follows:

Evaluation score	Degree of conformity			The total score for the paragraph	Paragraph name	Paragraph No.
	كليا	جزئيا	لا توجد			
	✓				Educational objectives of the programs	1
	✓				Students and their cognitive and	2

					creative abilities	
	✓				Multiple skills for faculty members	3
	✓				Educational materials	4
	✓				Continuous improvement of the educational environment in the department	5
	✓				The level of support, control and supervision from senior management	6
	✓				Evaluation and examination system	7
	✓				The academic program's connections and the department's relationship with the local community and its needs to solve all problems related to that	8
				100	Total marks	

**The paragraphs of each standard are based on what is available in the department**

Evaluation score	Degree of conformity			The total score for the paragraph	Paragraph name	Paragraph No.
	entirely	partially	Nothing			
	✓				1- The academic program has documented and published	1

					educational objectives	
					2- Educational objectives are consistent with the message	
	✓				3- Vision of department	
	✓				4- Relevant educational objectives	
	✓				5- Specialization of an applied nature	
	✓				6- Educational objectives include abilities	
	✓				7- It must be acquired by the graduate and meet the needs of the labor market and their professional life 8- There is a periodic review of goals	
	✓				9- Documented education based on the needs of the program and the labor market for development and review	
	✓				1- performance of the student	2
	✓				2- Providing advice to the student regarding the curriculum and job opportunities.	
	✓				There must be a program to -3 evaluate the student's progress for the purpose of achieving the success of the program's outcomes in order to help them .fully benefit from the program	

	✓				4 -The program must include clear methods to ensure that all students meet the program requirements.	
	✓				The teaching staff must have:	3
		✓			1- A sufficient number of teachers who are capable of covering all components of the program.	
	✓				2- The teaching staff must have high academic qualifications to be able to provide the student with adequate advice and guidance regarding the curriculum items. The teaching staff member must also have the ability to evaluate and evaluate the program on an ongoing basis in terms of educational objectives and outcomes.  The comprehensive organization of the teaching staff must be governed by the following points:  1. Diversity of culture and its background.  2. Experience and teaching competence.  3. Ability to communicate.  4. The desire to work on developing programs in terms of efficiency.  Participation in scientific societies.	
	✓				The curriculum must meet the following requirements:	4



	✓				Curriculum requirements must indicate the general scientific specialization of the department.	
					The teaching staff must ensure that the curriculum contains sufficient teaching hours for each subject and each subject, in line with the required outcomes and the objectives of the program and the college.	
	✓				<p>The scientific part of the program must include</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> The basic principles of energy sciences, and may include some practical experiences related to the specialization.</li> <li><input type="checkbox"/> Or three years for specialized topics including:- <ul style="list-style-type: none"> <li>1- Energy sciences.</li> </ul> </li> </ul> <p>The practical side of energy sciences</p>	
					<ul style="list-style-type: none"> <li><input type="checkbox"/> Classrooms and laboratories must be available with modern equipment that is compatible with the objectives of the program and provides an appropriate educational environment.</li> <li><input type="checkbox"/> Providing these requirements is necessary to increase interaction between the teaching staff and students and create a suitable and encouraging climate for the development and development of the profession.</li> <li><input type="checkbox"/> The program must provide an</li> </ul>	
		✓				5
		✓				
		✓				

		✓			<p>opportunity for students to learn and use the latest scientific equipment</p> <p>The infrastructure related to information technology must be available to support the educational activities carried out by students and teachers and the educational objectives of the program and the educational institution.</p>	
	✓				<p>The support for the educational institution in terms of financial resources and constructive leadership must be effective to ensure the continuity and value of the program. Resources must be prepared to ensure the continuity and operation of all facilities and laboratory equipment related to the program, in addition to supporting the items related to services.</p>	6
	✓ ✓				<p>The evaluation system in the college</p> <ul style="list-style-type: none"> <li>- Collecting, evaluating and analyzing data</li> <li>- Using data to develop the program</li> </ul>	7
	✓ ✓				<ul style="list-style-type: none"> <li>- The department's relationship with the local community.</li> <li>- Mechanisms for advertising and promoting the department's activities.</li> </ul> <p>Activities related to assessing</p>	8

	✓				community needs.	
					Total marks	

### **The first criterion:**

#### **The educational objectives of the programs**

The Department of New and Renewable Energies seeks to achieve the following objectives to reach the national classification:

#### **Department Objectives**

##### **First: General Objectives:**

- A. Keeping pace with global development in all scientific fields related to energy and renewable energies.
- B. Providing the community and state institutions with scientific and technical expertise in the field of energy sciences and renewable energies and developing its scientific, health and environmental institutions.
- C. Raising the level of performance and quality to the ranks of advanced international universities.

##### **Second: Educational Objectives:**

- A. Developing and updating theoretical and practical scientific curricula.
- B. Developing the scientific competencies and performance of teachers and students.

##### **Third: Objectives of Scientific Research:**

- A. Finding alternatives to traditional energies and replacing them with clean energy.

B. Investing in energy research and sustainable development to develop scientific, health, industrial and environmental institutions.

C. Work to address energy-related problems in Iraq and find appropriate solutions to obtain green energy at the lowest costs.

**Fourth: Community Service Objectives:**

A. Supporting community activities through the establishment of seminars, workshops and scientific courses related to energy and renewable energies.

B. Expanding the general horizons related to the importance of energy and renewable energies in solving many health, environmental and industrial problems for the advancement of society.

**Fifth: Objectives of Student Activity:**

- Ability to work in a multidisciplinary team
- Supporting student, cultural, social, sports and artistic activities.
- Knowledge, cultural and scientific exchange with other local and international universities.
- Holding a scientific conference for graduation projects and honoring the distinguished ones.
- Ability to communicate constructively.

**Department Vision:**

The department aims to study the types of new and renewable energies and prepare a generation aware of the culture of renewable energy and ready to use it as the basis for most of the energy in society by providing an academic program and providing the community with distinguished graduates capable of dealing with the changes and modern developments taking place in the world and contributing to the development of



scientific, health, industrial and environmental institutions in solving the problems that hinder their progress.

### **Department Mission:**

The Department of New and Renewable Energies seeks to create a generation capable of keeping pace with progress and development in basic sciences and their various applications and exploiting nature to produce green energy through:

1. Preparing specialized cadres in energy sciences and their applications, qualifying graduates specialized in the fields of energies, and familiarity with the theoretical foundations of energy sciences and their field applications to work in scientific, research, educational, and industrial centers.
2. Providing students with educational skills through the study of renewable energies of various kinds.
3. Increase community knowledge of the benefits of renewable energy.
4. Deepening national loyalty and preserving the principles of society and noble human values.

### **Improvement Plan**

- 1- Providing a solid university education commensurate with scientific development
- 2- Developing students' talents, investing their potential, and preparing them for research work
- 3- Developing the level of associates and increasing their scientific and practical competence in order to keep pace with scientific development
- 4- Urging teachers to carry out scientific research and participate in scientific activities and conferences
- 5- Holding scientific conferences, seminars and seminars
- 6- Holding scientific and practical courses for the department's employees

## **Second Criterion: Students**

- There are multiple mechanisms to support students, whether at the level of guidance and rehabilitation or at the level of academic performance as well as About the existence of a system to support students financially.
- The existence of counseling and educational committees in the department that take it upon themselves to follow up on students and provide them with educational advice and guidance and help them overcome the problems and difficulties they face.
- The department's sponsorship of artistic and sports activities
- Forming a committee to introduce the department to the task of introducing the department at the beginning of the academic year, especially for new students, clarifying the objectives and mission of the department, describing the work of the graduate from the department, the department's curricula, and others.
- Survey students' opinions in recent years regarding subjects, the level of exam questions and obstacles to the teaching and learning process.

### **Vulnerabilities**

Admission of students in the department at the lowest rates, which indicates the low scientific level of students admitted to the department.

- Sometimes it happens that the student's admission to the department is not by choice. Because of the rate
- The weakness of the systematic training program, despite its importance, due to the lack of seriousness of the training sites and the weak follow-up by the competent committees and after these sites, as the student usually chooses the location close to his place of residence.
- The lack of a mechanism to activate relations between the corresponding departments and colleges in the Arab world and internationally.

### **Improvement Plan**

- Learn about the educational and training programs announced by Arab and international universities and guide students

to take advantage of them.

- Trying to find a mechanism to promote the department's program to attract Arab or even foreign students.

Threats

- The lack of graduates getting jobs leads to a lack of enthusiasm for students, lack of interest in study, laziness, and distance from creativity.

### **SWAT analysis of the third criterion regarding faculty members**

#### **a. Strength points**

- The diversity of subspecialties of the teaching staff.
- All teachers complete their teaching quorum in addition to assigning most of them additional hours.
- Most teachers receive a scientific promotion, especially from the degree of assistant teacher to teacher.
- The ratio of students to the number of teachers is fairly acceptable.

#### **b. vulnerabilities**

- The small number of teachers who have the title of professor or assistant professor in the exact specialization of the department.
- Lack of opportunities for contact with international academic institutions, which negatively affects access to modern methods in the teaching and learning processes.

. Improvement

- Increasing the support of training programs for teaching staff by the Ministry for the purpose of informing the largest possible number of teachers about the modern methods used in higher education systems in the world.

- Activating agreements between the department and the corresponding departments in the world to increase the experiences of teachers.
- Increasing the chances of obtaining scientific promotions for the purpose of supporting initial study programs and the possibility of opening a graduate program in the department.

### **SWAT Analysis of the Fourth Criterion: Curriculum**

Compatibility between the curriculum and the department's stated mission.

#### **Weaknesses:-**

- Lack of international and regional cooperation mechanisms for curriculum development.
- Lack of financial resources allocated for authorship and translation that serve both learning and teaching.

#### **Improvement**

- Paying attention to the labor market and meeting its growing and evolving needs.
- Benefit from the new information of scientific competencies that have completed their studies abroad.

#### **Threats:-**

- Weak will of the teaching staff in the field of self-development.
- Poor mutual trust between different generations within the educational framework due to lack of communication.

#### **(b) Proposed procedures for the fourth criterion:**

- Periodic review of educational curricula through specialized committees compared to scientific development and progress
- Prepare regular reports on the needs and needs of the labor market and their suitability to the approved curricula.



- Allow private sector educational institutions and employers to participate in curriculum development.
- The department listens to the opinions of students and stakeholders to determine their requirements and formulate curricula and general directions towards achieving their desires and needs.
- Achieve a balance as much as possible between the requirements of modernization and application and the needs of the learner and society.
- Benefit from the results of the evaluation in the process of making corrective decisions to develop curricula and educational programs.

**Elements of the evaluation of the fourth axis: -**

- 1- The existence of a study prepared by the scientific committee of the department shows the appropriateness of the objectives of the curricula with the educational outputs and the extent of their compliance with international standards.
- 2- The existence of an academic description of all courses that provides sufficient information on teaching methods, learning, evaluation and the contents of the courses, which is announced on the website and documented.
- 3- Courses contain theoretical and practical aspects that help the student acquire applied skills.
- 4- The department adopts a variety of teaching and learning methods, including interactive lectures, e-learning, self-education, problem solving and teaching in small groups.
- 5- Promote students' self-education through graduation research in the last academic year.
- 6- The existence of a diversity in the methods of evaluating students such as theoretical and electronic exams and oral exams.

## **SWAT Analysis of the Fifth Criterion: Continuous Improvement of the Department's Educational Environment**

### **Strength point**

- The number of classrooms available at the time is sufficient to cover the lecture schedule.

### **Weaknesses.**

- Lack of scientific laboratories, devices and equipment available for some laboratories .
- The level of furnishing of the classrooms is considered modest.

### **Improvement**

- Increase the financial allocations necessary to build model laboratories with sufficient areas and equipped with modern laboratory equipment and equipment.
- Increasing financial allocations to furnish classrooms and equip them with the necessary modern technologies.

### **Threats**

- The poor performance of students in the implementation of laboratory experiments for experiments in which one or two devices are used, as this leads to the inability of all students to carry out the experiments themselves, but only watching their colleagues or laboratory staff during the implementation of such experiments, which reflects negatively on the scientific level of the student due to the importance of the practical side in scientific disciplines.
- 

## **SWAT analysis of the sixth criterion: the level of support, control, and supervision of senior management**

### **Strength points**

- The salaries of employees and teachers are secured from the annual budget.
- The department maintains a good scientific level so that the financial aspect does not affect its work, which suffers from the departments in which the study method depends on the financial dues paid by the student to secure the study, which leads to a low scientific level.

#### **Weaknesses**

- Lack of financial allocations in the aspect of scientific research and lack of financial allocations for the purchase of modern laboratory equipment and materials for the purpose of keeping pace with the developments of the times.

#### **Improvement**

- Ease of securing financial resources when available to cover the department's needs for other devices and materials.
- Activating the joint cooperation mechanism to provide financial resources that help cover some expenses for which resources are not available or limited budget.

#### **Threats**

- The lack of appointments of new young cadres, even scientifically superior, limits the possibility of developing or implementing some ambitious programs.
- The department is unable to contract with administrative, technical or teaching cadres to meet its needs due to the lack of self-financing that can be used to cover the expenses of paying salaries.

## **SWAT Analysis of the Seventh Standard: Evaluation and Examination System**

#### ***Strength points***

The department has an evaluation system and strong exams that can collect data about the learners in terms of the degree of their scientific qualification to practice the

profession and their performance after graduation, and in a way that helps to feedback from evaluation programs and examinations in it, and the two previous standards are related to both the student and the teacher.

- The evaluation system in the college
- Data collection, evaluation and analysis
- Using data to develop the program

### **Strengths**

- Scientific tests (written and oral, tests during learning)
- Evaluation of individual and group work among students
- Student success rates
- Educational and scientific supervision forms

### **Improvement**

Conducting training courses for students and teaching staff to view and learn to conduct electronic tests and the latest programs

Providing smart electronic halls

### **vulnerabilities**

Poor English for students, which hinders the answer process

Lack of experience of students and teaching staff in electronic matters and management of evaluation programs

## **Eighth criterion: Academic program links and the department's relationship with the local community and its needs to solve all related problems**

### ***Reconciling the applied and academic side***

- 1- The existence of effective participation of educational institutions in planning and determining the educational objectives of the program,



student outcomes and curricula, and making them updated and relevant to the needs of society and scientific requirements

- 2- The necessity of effective participation of faculty members and students with the beneficiaries and the community through field visits and graduation projects with the participation of specialists from the beneficiaries
- 3- There must be a sustainable mechanism between scientific institutions and academia

### **Community-Oriented Programs**

- 1- The existence of student programs to help communities by finding appropriate solutions to technical obstacles.
- 2- Consultation with communities to identify their needs Proposed projects help students acquire specific skills

### ***Engagement in Professional Practice***

- 1- The program must provide educational services based on new technologies and new professional topics and help graduates keep pace with new developments
- 2- Developing and updating continuing education courses in cooperation with relevant institutions
- 3- Documenting and evaluating this standard to support the achievement of student outcomes