



**Self-evaluation report for the Physics
Department**

Depending on criteria

**(ABET Accredited Certification
Program)**

2022-2023



Self-evaluation report for the College of Science/Department of Physics for the year 2022-2023

Republic of Iraq

Ministry of Higher Education & Scientific Research

University of Mosul

College of Science

Physics Department



Mosul university/college of science/department of physics

<https://uomosul.edu.iq/en/science/physics-department/>

Introduction

Based on the directives of the Honorable Minister of Higher Education and Scientific Research regarding 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 Physics/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 Physics/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 in 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 department's self-report. /The College of Science to be the basic building block from which the final self-evaluation report will emerge.

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

After the department outlined the comprehensive model for 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:

- ✦ Supervising the self-evaluation study.
- ✦ Form a committee of department teachers to collect evidence supporting each standard and number them according to the standard, and determine an action plan for the work groups.
- ✦ Preparing and writing the report.

Tools for collecting information to prepare the report

The following tools were used to prepare the report

- ✦ Vision, mission and goals.
- ✦ 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.

Members of the self- evaluation writing team

Writing and preparing the report

Lecturer Enas Mohamed

Translation of the self-evaluation report

Lecturer Dr. Ahmed Mounir Suhail

Supervised community

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As. Prof. Dr. HAitham Abdulhamid

Prof. Dr. Mazin Ahmed

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Data Collection community

Dr. Huda Mohamed Muneer


Lecturer Rana Waleed

Lecturer Hiba Mohamed Tahir

As. Lecturer Abida Tahseen Tawfiq

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Chapter 1

Metadata

on

Education

Chapter 1

- **Name and address of the institution:** Ministry of Higher Education and Scientific Research - University of Mosul - College of Science - Department of Physics

- **Department contact information:**

- **Department Head:** Prof. Dr. Mazen Ahmed Abdel Ghazal

Iraq - Mosul - University of Mosul - College of Science - Department of Physics

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- **Department rapporteur:** As. Dr. Samir Mahmoud Ahmed

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- **Year of establishment:** 1964
- **Language of study:** English.
- **Initial study period:** four years.
- **Duration of postgraduate study (Master's):** two to three years.
- **Duration of postgraduate study (doctorate):** three to four years.







Department overview:









The Department of Physics - College of Science is one of the important departments and has had a high scientific standing and national value for 60 years. During these long years and until now, the department and its faculty members are still based on pioneering research that supports the development of the country and have made significant contributions to raising the reputation of the department as one of the distinguished institutions through... It ranked fourth among the physical sciences departments in Iraqi universities according to the national classification of the quality of Iraqi universities, in addition to giving an outstanding scientific and creative opportunity to many talented men and women.

- The College of Science was established in Mosul in the summer of 1963 and was affiliated, like the College of Medicine, which was established in 1959, to the University of Baghdad. Studies began in the College of Science in 1963. There were two departments: the Chemistry Department and the Mathematics Department. In 1964, the Physics Department was created. I graduated as the first A class of graduates from the Department of Physics in 1968. The number of students was 33.
- The number of graduated courses has reached 59 courses since its founding until now. The number of graduates of the Physics Department since its founding and up to now has reached 2938 male and female graduates. The Physics Department hosts six departments in its laboratories for practical and theoretical study: (Life Sciences, Life Physics, New Energies). renewable energy, chemistry, earth sciences, and mathematics).

- I began studying for a master's degree in 1977, and the number of graduates from that date until now who hold a master's degree has reached 401. I began studying for a doctorate in the Department of Physics in 1995, and the number of graduates has been 71 so far.

Heads of department since it has been established

S	Name	Year	
1	Abdualrazaq Hasoon	1964	
2	Azmy Bushara	1970	X
3	Yaha Abdulhameed	1971	
4	Shakir Mahmood	1973	
5	Mahdy Alobaidy	1980	X
6	Aisam Ahmed	1981	
7	Munib Adel	1984	
8	Yaha Nouri	1987	

S	Name	Year	
9	Amjad AbduAlrazak	1990	
10	Mohamed Basil	1994	
11	Yaha Nouri	1995	
12	Moyad Abdullallah	2003	
13	Haitham Abdulhameed	2006	
14	Isamil Kalif	2011	
15	Yaha Abdul Alkareem	2014	
16	Mazin Ahmed	2020	

Most achievement and activities:

S	Activity	Title	Date
1	Conference	The Fifth Scientific Conference of the Iraqi Society for Physics and Mathematics	1981
2	Conference	The eighth scientific conference of the Iraqi Society for Physics and Mathematics	1988
3	Conference	The ninth scientific conference of the Iraqi Society for Physics and Mathematics	1989
4	Conference	The Second National Specific Conference on Physics.	2002
5	Conference	The first scientific conference of the Physics Department	2010
6	Seminar	New and renewable energies	2011
7	Seminar	Nanotechnology	2012
8	Seminar	Computational Data Acquisition Technology	2013
9	Seminar	High Pressure... Vacuum... Negative Pressure	2018
10	Seminar	The role of the Fruitful Integrity Commission in achieving standards of transparency in employee behavior	2022
11	Seminar	Usage of graphene for developing solar cell efficiency	2023

- ◆ **Numbers of research since the establishment of the department:** inside the country: 478, outside the country: 344
- ◆ **Preparation of master's theses and dissertations:** Since its establishment, 401 master's theses and 71 doctoral theses have been published in the following specializations (solid-state physics, nuclear physics, molecular physics, medical physics, and plasma physics).
- ◆ **Translated books:** 9 books.
- ◆ **Books written:** 16 books.
- ◆ **Exhibitions:** 14 exhibitions held at the university.
- ◆ **Continuing education courses and workshops for the self-evaluation year (2022-2023):** 9 courses and 6 workshops
- ◆ **Department library:** includes (number of books: 4391 / number of periodicals: 99)
- ◆ **Free education:** 11,361 books

◆ **Patent: 5, which are as follows:**

1. A. Dr. Assem Abdel Karim. Patent issued by the Central Agency for Standardization and Quality Control. The title of the research is “A new method for addressing the problem of thermal expansion in Clausius-Dekel gas separation towers.” No. 2654 9/5/1993.
2. Prof. Dr. Anwar Mustafa Ezzat Al-Faydi patent entitled (Reshaping hydrocarbon liquid molecules using microwaves) dated 11/28/2013.
3. Prof. Dr. Anwar Mustafa Ezzat Al-Faydi The patent is entitled (Manufacturing a nanodiode from (a silicon junction - a carbon nanotube) (Si-CNT junction) (by means of plasma atomization for the first time without a catalyst) No. 6301 dated 8/26/2020.
4. Dr. Ahmed Mounir Suhail Patent entitled (METHOD FOR OBTAINING STABLE N-TYPE DOPED GRAPHENE) WIPOPCT dated 1/2021.
5. M.D. Ahmed Mounir Suhail The patent is entitled NH₃ as a functionalization agent for graphene-based biosensors with improved biosensing performance EP.2022/7

LETTER, VISION AND OBJECTIVES

Letter

The Physics Department aspires to provide the best scientific methods in teaching the principles of basic physics, both theoretical and experimental. The department spends most of its time maintaining the high level of its outputs, in addition to scientific research and community service, which reflects positively towards progress and advancement in this dear country.

Vision

The Department of Physics aspires to be at the forefront of scientific departments, not only at the local level, but also at the global level, whether in terms of academics, teaching, scientific research, or community service. It will be an essential pillar in supporting the country's research and projects, and in cooperation and participation with physics departments in Iraqi universities, national institutions and bodies, and even on The Arab and international level to support the progress and advancement of the nation, and it also keeps pace with everything new and useful for development in order to serve society.

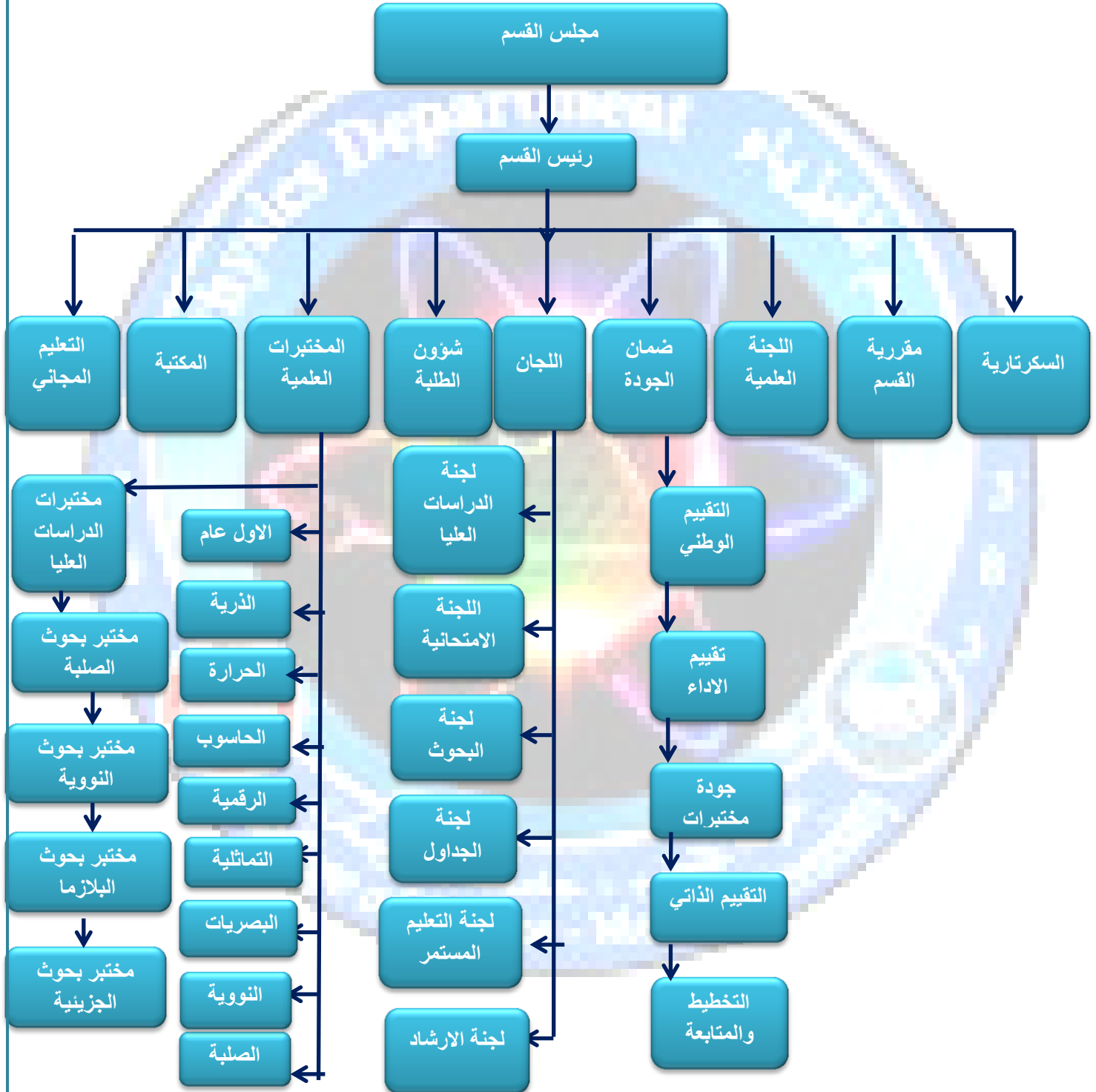
Objectives:

The academic programs in the department enable students to develop their talents and advanced scientific ideas, meet the needs of society and work centers in their various locations within the country, as well as prepare brilliant and talented students and send them on scholarship to complete their postgraduate studies, as well as enable technicians to enroll in various courses to develop their scientific capabilities and keep them abreast of everything that is new and useful to their country.

The objectives can be summarized as follows:

1. Forming a basic foundation of the general physics curriculum and a smooth and harmonious study plan.
2. Providing an advanced level of education for primary and postgraduate studies, maintaining a solid level of curricula, and constantly updating scientific plans.
3. Prepare the student in a focused manner in the principles of physics and the principles of analytical methods required for deduction from physical experiments.
4. Providing the student with the opportunity to deepen his knowledge in the various branches of physics so that he can overlook the outskirts of contemporary scientific research.
5. Training the student on the method of scientific research and enabling him to contribute to it under the supervision of capable researchers. From my teaching department.
6. Qualifying the student with in-depth knowledge and a degree of scientific maturity that will enable him to participate effectively in the scientific and technical aspects of development and planning programs.
7. Working to complete applied and basic research in various physics disciplines.
8. Contributing to advisory services, training, short courses, and solving scientific and industrial problems facing development plans in the Kingdom.
9. Continuous development of faculty members by sending them to training courses in order to maintain high levels of efficiency and performance.
10. Support and encourage scientific cooperation among faculty members in the department and cooperation with other departments in the field of multi-purpose research.
11. Spreading the spirit of competition and encouragement and giving all faculty members the opportunity in the field of research and teaching.
12. Preparing national cadres equipped with basic physical knowledge qualified to contribute to the development of the country and society.
13. sustainable development.

Organizational structure of the department



Students

1. Student admission policy

The student is accepted into the department centrally by distributing the student by the Ministry to various colleges and institutes, where the student who graduates from preparatory school in the biological and applied branches fills out the admission form through which he is accepted, based on the sequence of his choices and his average. And the numbers of students applying and the minimum averages. Students applying to the college are generally accepted on the basis of the scientific departments, of which the Physics Department is one of them. Students are distributed among these departments depending on their desires, which they prove by filling out an internal selection form. As well as their grades in preparatory school, according to the total

2. Central guidance

The Central Guidance Committee seeks to establish mechanisms to maintain the student's needs during the university stage by providing the necessary and appropriate environment to enable the student to succeed and achieve academic excellence, in addition to enhancing confidence in his abilities, especially in the field of his future work. Secondly, identifying the problems or obstacles that may cause a negative impact on his studies and the urgent mechanisms to work to overcome the problems that the student may encounter in the scientific, personal and psychological aspects. The most important thing you can do in the field of personality development is The student is to enhance cooperation between the student and the professor in the field of scientific knowledge, and for the student to resort to the advisor and the college in the event of a problem or topic that is difficult to solve, and to refer to guidance as an important means of confidence and personality for the student, and there are four professors supervising each A stage in the department...

3. Graduation requirements

Graduation requirements for a student in the initial stage of study include the following: Our department's program grants a bachelor's degree in physics. In order for the student to obtain the certificate awarded by...

The program must provide the following requirements:

Passing the four levels of study through:

First:

Attending attendance hours for each subject of no less than (90% of the hours scheduled for the subject).

Second:

Obtaining a passing grade in each subject for the year in question, which is equal to 50%. The grade for each subject is determined based on the evaluation method used.

In addition to continuous monitoring of the student's attendance at theoretical and practical lectures, as the student is considered non-compliant he completes the subject if his hours of absence exceed 10% of the total hours for that subject

After completing the above certificate requirements, the student is awarded a bachelor's degree in physics.

There is a summer training committee in the department that organizes the process of training students during the summer vacation through forms received from the ministry and sent to the training sites in an official letter. The committee receives the training body's responses, which show the student's evaluation during the training period. The training period is... The summer training period is eight weeks and is allocated to third-year students. The summer training committee follows up the students' training through visits it makes and meetings with department officials to learn closely about the nature of the training and the extent to which the student benefits from the training program.

5. Student transfer policies and classroom equivalency

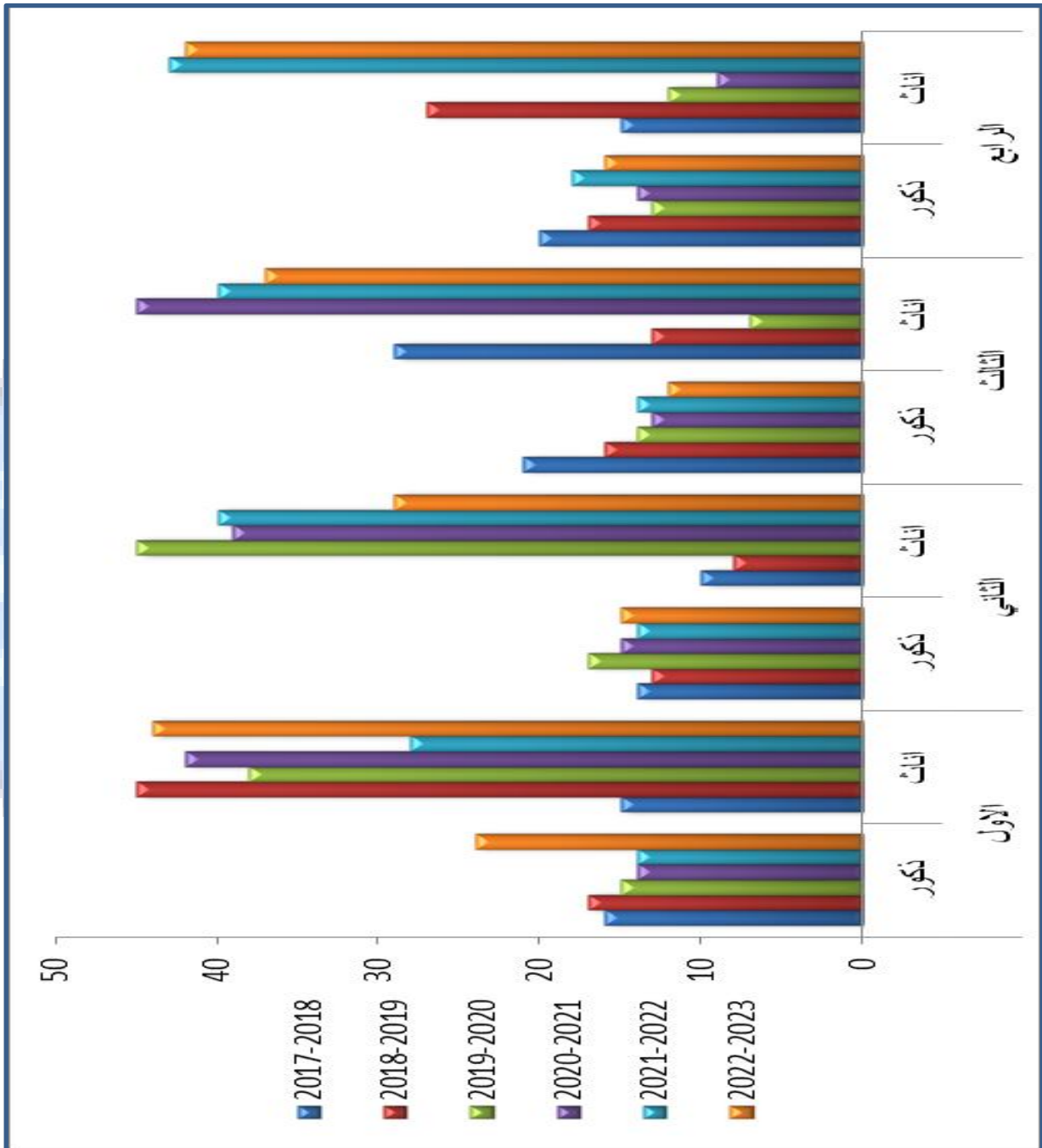
The department relies on a unified academic program approved by the Committee of Deans of Colleges of Science, which includes a high policy In moving between colleges...

University	Mosul
College	Science
Department	Physics
Certificate	B.Sc.
Career title	Assistant researcher
Required certificate	B.Sc.
Field of work	<p>1-Working in universities in the academic field (teacher) or the technical field (laboratory technician).</p> <p>2- Research assistant in research centers</p> <p>3- Work in factories such as: iron, steel, petrochemicals...</p> <p>4- Technical professions in military agencies such as: the Ministry of Defence, Aviation, Army and Interior.</p> <p>6- Scientific and technical research centers and quality laboratories affiliated with the Ministry of Commerce and the Standards and Metrology Authority.</p> <p>7- Assistant in radiation protection in hospitals</p> <p>8- Teaching in public and private schools affiliated with the Ministry of Education</p>

• Number of students for last 6 years

2 nd stage			1 stage			Year
Total	Female	Male	Total	Female	Male	
24	10	14	31	15	16	2018-2017
21	8	13	62	45	17	2019-2018
62	45	17	57	38	15	2020-2019
54	39	15	56	42	14	2021-2020
54	40	14	42	28	14	2022-2021
44	29	15	68	44	24	2023-2022

4 th stage			3 rd st			Year
Total	Female	Male	Total	Female	Male	
35	15	20	50	29	21	2018-2017
44	27	17	29	13	16	2019-2018
25	12	13	21	7	14	2020-2019
23	9	14	62	45	13	2021-2020
61	43	18	54	40	14	2022-2021
58	42	16	49	37	12	2023-2022

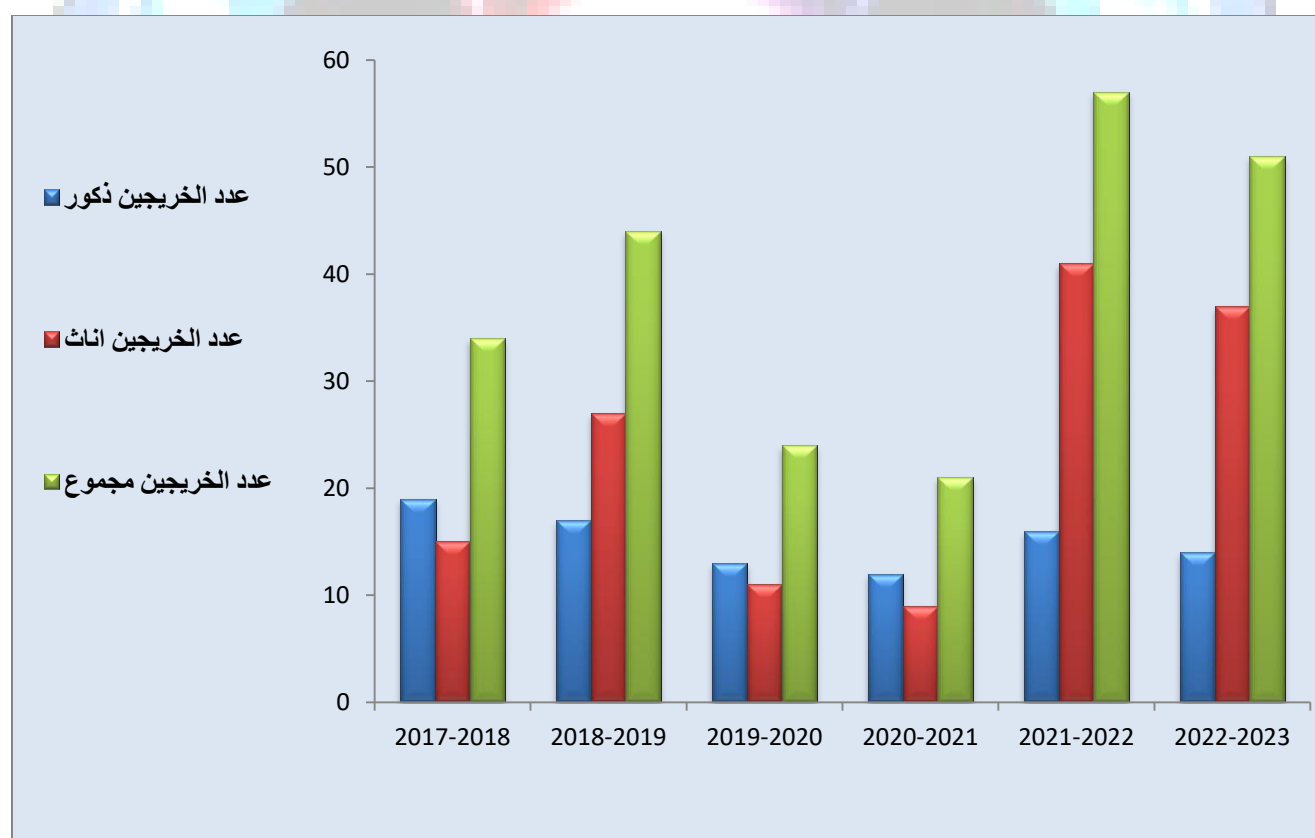


Numbers of students in the Physics Department, first stage, for the last six years

- Number of graduated students for last 6 years

No. of graduated students

Total	Female	Male	Year
34	15	19	2018-2017
43	26	17	2019-2018
24	11	13	2020-2019
20	8	12	2021-2020
57	41	16	2022-2021
51	37	14	2023-2022



Number of graduated students for last 6 years

- Preparing expelled, withdrawn and deferred students of the Physics Department for the last six years

2 nd st			1 st			Year
deferred	withdrawn	expelled	deferred	withdrawn	Expelled	
1	8	—	3	2	—	2018-2017
2	4	—	1	8	—	2019-2018
1	3	—	2	—	—	2020-2019
—	1	—	—	5	—	2021-2020
2	8	—	—	4	—	2022-2021
—	2	—	15	8	—	2023-2022

4 th st			3 rd st			Year
deferred	withdrawn	expelled	deferred	withdrawn	Expelled	
1	—	—	1	—	—	2018-2017
—	—	—	—	—	—	2019-2018
—	—	—	1	2	—	2020-2019
—	—	—	1	—	—	2021-2020
1	1	—	—	—	—	2022-2021
—	—	1	—	—	—	2023-2022

Self-evaluation report for the College of Science/Department of Physics for the year 2022-2023

- Estimates of graduates of the Physics Department for the last Six years

2023-2022		2022-2021		2021-2020		2020-2019		2019-2018		2018-2017		Estimate	
%	N.	%	N.	%	N.	%	N.	%	N.	%	N.		
—	0	—	0	—	0	—	0	—	0	—	0	M.	Distinction
—	0	1,7	1	—	0	—	0	—	0	—	0	F.	
—	0	1,7	1	—	0	—	0	—	0	—	0	Total	
5,8	3	5,2	3	4,6	1	6,16	4	2,2	1	—	0	M.	Very good
7,11	6	5,10	6	4,6	1	—	0	4,5	2	2,9	1	F.	
5,17	9	7,15	9	9,3	2	6,16	4	6,8	3	2,9	1	Total	
8,5	3	8,7	5	9,3	2	8,3	2	6,8	3	7,11	4	M.	Good
2,37	19	3,33	19	9,3	2	6,16	4	3,11	5	5,8	2	F.	
1,43	22	1,42	24	1,19	4	25	6	1,18	8	6,17	6	Total	
7,13	7	2,12	7	8,42	9	25	6	3,11	5	3,32	11	M.	intermediate
5,21	11	3,26	15	8,23	5	8,20	5	9,40	18	4,29	10	F.	
35,2	18	5,38	22	6,66	14	8,45	11	2,52	23	7,61	21	Total	
9,1	1	1,7	1	—	0	4,1	1	1,18	8	7,11	4	M.	Acceptable
9,1	1	—	0	4,6	1	8,3	2	5,4	2	5,8	2	F.	
8,3	2	1,7	1	4,6	1	5	3	7,22	10	6,17	6	Total	
51		57		21		24		44		34		Total	

M. : Male

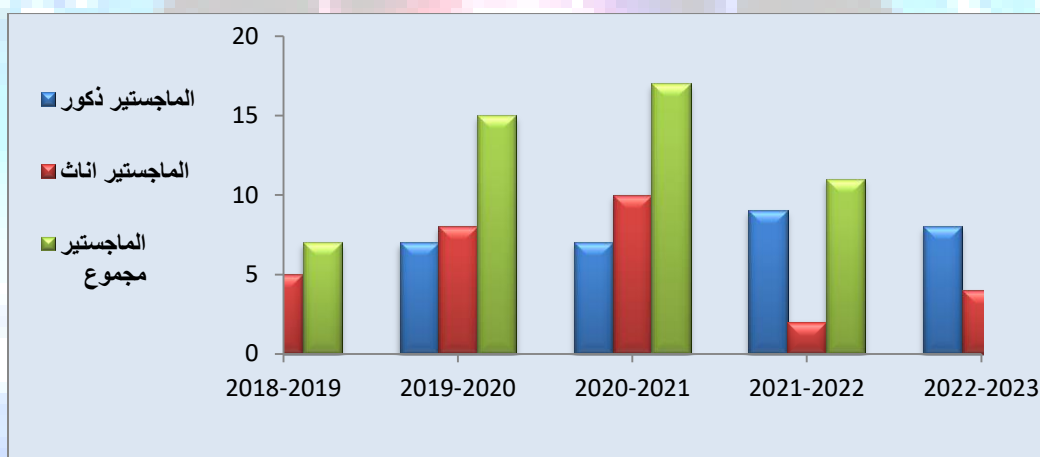
F. : Female

N.: Number

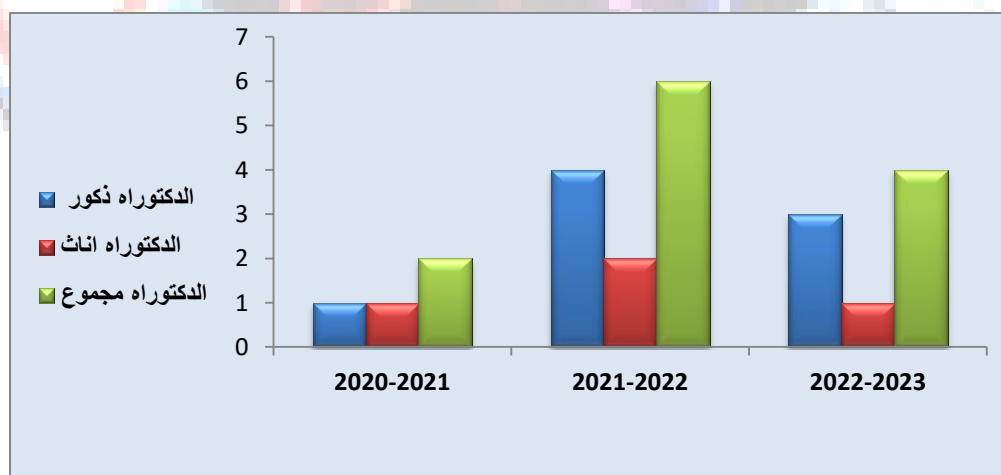
% : Percentage

- Number of graduated postgraduates for last 6 years

Total	Ph.D.		M.SC			Year
	F.	M.	Total	F.	M.	
						2018-2017
			7	5	2	2019-2018
			15	8	7	2020-2019
2	1	1	17	10	7	2021-2020
6	2	4	11	2	9	2022-2021
4	1	3	12	4	8	2023-2022



Numbers of Master's students in the Physics Department for the last six years



Numbers of Doctor's students in the Physics Department for the last six years

Academic program description form

Department of Physics: Academic program description form:

Academic program description form

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

Description of the academic program

This academic program description provides a summary of the most important program characteristics and learning outcomes. What is expected of the student to achieve, proving whether he has made the most of the available opportunities. It is accompanied by a description of each course within the program.

1-The learning institution	Mosul university
2-University department/centre	College of science/Physics
3- Name of the academic program	Bachelor's degree in physical sciences
4- Name of the final certificate	Bachelor's degree
5- Study system	Annually
6- Accredited accreditation program	None
7- Other external influences	None
8- Date the prepared description	2023
9- Objectives of the academic program	Graduating a student familiar with the basic concepts of physics Reg is a student who is able to apply physics to medical and industrial fields. Graduating an elite group of students who have the ability to continue graduate studies to support higher education in the future.

10-Required learning outcomes and methods of learning, learning and completion

A- Knowledge and understanding

1. Enabling the student to gain an understanding of physics
2. Preparing qualified teachers to teach in educational institutions

B- Subject-specific skills

1. Theoretical learning skills
2. Practical learning and data analysis skills

Teaching and learning methods

Theoretical and practical lectures, daily tests and discussions

Evaluation methods

Exams, daily tests, debates, laboratory exercises, and a graduation project.

C- Thinking skills

1. Discussions

2. Relaxation feeding

Teaching and learning methods

Lectures, scientific training, applications, homework and scientific discussions

Evaluation methods

Exams, daily tests, debates, laboratory exercises, and a graduation project.

D- General and developed skills (other skills learned for employability and personal development).

1. Ability to work in a multi-disciplinary team

2. Ability to communicate constructively

Teaching and learning methods

For lectures, scientific exercises, home tests and scientific discussions

Evaluation methods

Exams, daily tests, discussions, laboratory exercises, and a graduation project.

11 .Program structure

Hours		Name or course code	Course or course code	Level/ year
The.	Pra.			
3	2	Mechanical	PHYS102	1 st
3	2	Principle of electrophoresis and magnetism	PHYS103	
2	2	Properties of matter and wave motion	PHYS104	
3	2	Geometric optics	PHYS105	
2	2	Computing	COMP127	
3		Linear algebra	MATH129	
3		Differentiation and integration 1	MATH101	
3		Differentiation and integration 2	MATH102	
2	1	Chemistry	CHEM131	
	1	Sport	UMSE101	
2		human rights	UMHR101	
2		Arabic	UMAR102	
1		English	UMEL01	
1		Professional ethics	UMPE103	
1		Experimental methods	UMEM104	
3		Mathematics I	PHYS201	2 nd
3		Analog electronic	PHYS202	
2		Thermodynamic	PHYS203	
2		Astronomy I	PHYS204	
2		Modern physics I	PHYS205	
2		Geometric optics I	PHYS206	
	9	Practical I	PHYS207	
1		Healthy culture	PHYS208	
3		Mathematics II	PHYS209	
3		Digital electronic	PHYS210	
2		Statistical mechanics	PHYS211	
2		Astronomy II	PHYS212	
2		Modern physics II	PHYS213	
2		Geometric optics II	PHYS214	
	9	Practical II	PHYS215	
1		Philosophy of science	PHYS216	

2	2	Mathematics and modeling I	PHYS301	
2		Laser	PHYS302	
2		Physical optics I	PHYS303	
3		Analytical mechanics I	PHYS304	
2		Science of crystals	PHYS305	
2		Plasma	PHYS306	
	6	Practical I	PHYS307	
2	2	Mathematics and modeling II	PHYS308	3 rd
2		Applications of laser	PHYS309	
2		Physical optics II	PHYS310	
3		Analytical mechanics II	PHYS311	
2		Science of materials	PHYS312	
2		Molecular of physics	PHYS313	
	6	Practical II	PHYS314	
3		Quantum Mechanics I	PHYS401	
3		Nuclear physics I	PHYS402	
3		Electromagnetism I	PHYS403	
3		Solid state physics I	PHYS404	
2		Medical physics elective	PHYS405	
2		Optional fiber optic	PHYS406	
	6	Practical Physics I	PHYS407	
3		Quantum Mechanics II	PHYS408	4 th st
3		Nuclear Physics II	PHYS409	
3		Electromagnetism II	PHYS410	
3		Solid State Physics II	PHYS411	
2		Optional polymer	PHYS412	
2		Optional radiation	PHYS413	
	6	Practical Physics II	PHYS414	
2		Graduation Project	PHYS415	
100 hours				
144 units		Bachelor's degree Requires hour		Certificates and hours

12 . Planning for personal development

Extracurricular activities, scientific trips, and scientific tours

13 .The admission criterion (setting the rules for students to join the college or institute)

Central admission

14 .The most important sources of information about the program

Student guide for central admission from the Ministry of Higher Education and Scientific Research

Department links on the College of Science website

- **Description of Academic Program – Physics:**
<https://uomosul.edu.iq/en/science/description-of-academic-program-physics-2/>
- **Curricula Description of Physics Department**
<https://uomosul.edu.iq/en/science/curricula-description-of-physics/>
- **Subjects & Study Units of Physics Department**
<https://uomosul.edu.iq/en/science/subjects-study-units-of-physics-department/>
- **Teaching Staff's CVs**
<https://cv.uomosul.edu.iq/en/list/science/physics>
- **Education-related Links**
<https://uomosul.edu.iq/en/science/education-related-links-physics-2/>
- **Published Research**
<https://uomosul.edu.iq/en/science/published-research-of-physics-department/>
- **Projects of Students Graduations**
<https://uomosul.edu.iq/en/science/projects-of-students-graduations-of-physics-department/>

- Lectures

<https://drive.google.com/drive/folders/1znx02gQWY0ablvxltOFIuitZisoMYW2>

- Bologna Process – Physics Department

<https://uomosul.edu.iq/en/science/bologna-process-physics-department/>

- College Guide

<https://uomosul.edu.iq/en/science/college-guide/>

- Courses

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

- College Board

<https://uomosul.edu.iq/en/science/college-board/>

- Final Exams Schedule

<https://uomosul.edu.iq/en/science/final-exams-schedule/>

- Academic program requirements from the curriculum

Percentage	Hours	Type of curriculum	S
%8	8	University	1
%16	16	College	2
%76	76	Department	3
%100	100	Total	

•Department outputs

1. Determine the department's measurable cognitive skills that are consistent with the objectives of the academic department's programs through daily, quarterly and final examinations and reports.

2. Determine the priorities of the knowledge and skills that the department is keen to achieve for the graduate

3. The extent to which graduate students achieve the department's academic program

4. The department's mechanisms used in evaluating the department's academic program:

- Graduate opinion polls, as the department cooperates with the head of the rehabilitation and employment unit at the college in order to communicate with the department's graduates and listen to their opinions and ideas in developing the department.
- Opinions of employment agencies: The department communicates and cooperates with government employment agencies, the most important of which are the Directorate of Health and the Directorate of Education, as well as some companies, health centers and clinics in the private sector.
- Graduates' performance in jobs: Graduates perform very well in jobs because they have benefited from valuable information during their years of study.
- Graduate employment data through the College's Qualification and Employment Unit.

•Skills required for graduates of the Physics Department in the labor market

Students with a bachelor's degree in physics are expected to acquire the following skills:

1. Knowledge of the concepts of democracy and human rights.
2. Acquiring the values of citizenship and being keen to exercise one's electoral rights.
3. Ability to use information technology (IT).
4. Effective communication skills and getting a job.
5. Acquiring the skill of working on computers and basic software in the College of Science.
6. Acquiring the skill of working within one team.
7. Acquiring the skill of analyzing and interpreting scientific and practical issues using mathematical equations.
8. Working in the spirit of professional ethics.
9. Acquire basic concepts in physics and be able to apply physics in the medical, industrial fields and community service through their work in scientific, practical and research institutions that support this direction.
10. Have the foundations and transferable skills (such as solving problems, investigation, oral and written communication, analytical and IT skills and interpersonal skills) necessary for further training and to develop skills and knowledge in future jobs or research studies.
11. Demonstrate a good basic knowledge of structural and functional aspects of physical systems at many spatial scales, from the single molecule to the entire system.
12. Use experimental scientific skills to analyze and interpret data to solve and evaluate problems.
13. The ability to communicate effectively and work as a team in laboratory and extracurricular work.
14. The ability to conduct experimental investigations and use theoretical models, to critically analyze results, draw valid conclusions, and communicate their results orally and in writing.

• **Staff**

Specific specialization	General specialization	Certificate	The scientific title	Name
Solid	Physics	PhD	Prof	Dr. Mazen Ahmed Abdel Ghazal (Head of Department)
Renewable energy	Physics	PhD	Prof	Dr. Samir Mahmoud Ahmed Abdel Qader (department rapporteur)
Nuclear physics	Physics	PhD	Prof	Dr. Laith Ahmed Najim Al-sabha
Solid	Physics	PhD	Prof	Dr. Laith Muhammad Saadoun Hassan Al-Taan
Nuclear physics	Physics	PhD	Prof	Dr. Firas Muhammad Ali Fathi Al-Jumaili
Solid	Physics	PhD	Prof	Dr.. Yahya Abdul Karim Salman Al-Mawla
Electronic optics	Physics	PhD	Prof	Dr.. Abdullah Idris Mustafa Najm Al-Abdullah
Plasma	Physics	PhD	As. Prof	Dr. Haitham Abdel Hamid Ahmed Al Rawji
Nuclear physics	Physics	MSc	As. Prof	Mohsen Muhammad Hussein Abdullah Al-Badrani
Solid	Physics	PhD	As. Prof	Dr. Abdul Khaleq Khalil Muhammad Al Dabbagh
Plasma	Physics	PhD	As. Prof	Dr. Yasser Abdel-Jawad Abdullah Abdel-Jawad
Nonlinear optics	Physics	PhD	As. Prof	Dr. Muhammad Sobhi Hamid Muhammad Al-Sheikh Gader
Relativity	Physics	PhD	As. Prof	Dr. Muhammad Khairy Zaki Abdel Khalil Al-Anaz
Electronic optics	Physics	MSc	As. Prof	Alaa Abdel Hakim Hamed Ahmed Al Ezzo
Solid	Physics	PhD	As. Prof	Dr. Mahmoud Ahmed Hamoud Daoud Al-Jubouri
Solid	Physics	PhD	As. Prof	Dr.. Abdul Khaleq Ayoub Suleiman Al-Obaidi

Self-evaluation report for the College of Science/Department of Physics for the year 2022-2023

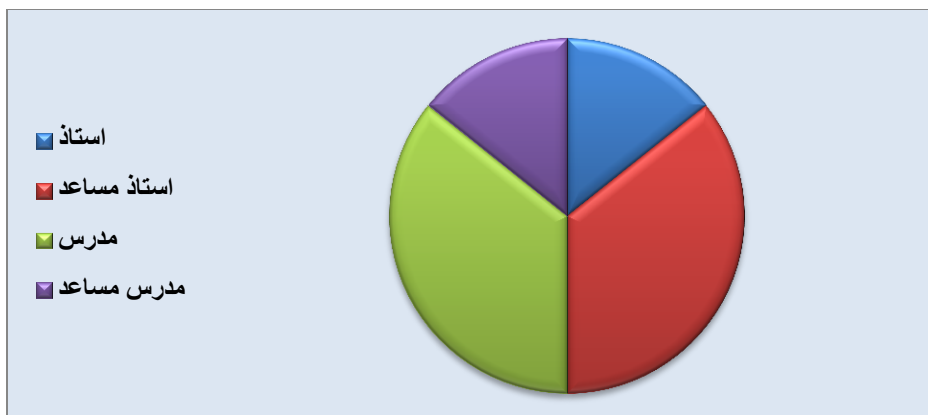
Specific specialization	General specialization	Certificate	The scientific title	Name
Solar energy	Physics	MSc	As. Prof	Yusra Mal Allah Abdullah Abdul Al Ahmed
Solid	Physics	MSc	As. Prof	Ammar Yassin Barjas Hussein Al-Jubouri
Nuclear Astronomy	Physics	PhD	As. Prof	Dr.. Imad Ahmed Hussein Ali Al-Ibrahimi
Solid	Physics	MSc	As. Prof	Soha Abdullah Najm
Solid	Physics	PhD	As. Prof	Dr. Idris Idan Ghadeer Suleiman Al-Obaidi
Solid	Physics	MSc	Lecturer	Rana Ziad Abdel Fattah Mustafa Al Falih
Solar energy	Physics	MSc	Lecturer	Hala Qidar Muhammad Saleh Al-Abbas Dr. Marwa Thamer
Optics	Physics	PhD	Lecturer	Mahmoud Hamoudi Al-Shamaa
Nuclear energy	Physics	MSc	Lecturer	Enas Muhammad Younis Abdel Fattah Al Farha
Renewable energy	Physics	PhD	Lecturer	Dr. Hoda Mohamed Mounir Abdel Qader
Electronic optics	Physics	MSc	Lecturer	Rana Walid Najm Abdullah Al-Maarouf
Solid	Physics	PhD	Lecturer	Dr. Iyad Jiyad Jarjis Abdel Baqi Al Sufi
Solid	Physics	MSc	Lecturer	Hala Ibrahim Muhammad Al-Taie Ibrahim Jassim
Solid	Physics	MSc	Lecturer	Heba Muhammad Taher Khalil Marei Friday
Solid	Physics	PhD	Lecturer	Dr. Taha Mustafa Khader Abdullah Al-Mawla
Renewable energy	Physics	PhD	Lecturer	Dr. Ahmed Mounir Suhail
Information security	Computing	MSc	Lecturer	Saadoun Hussein Abdullah
Solid	Physics	PhD	Lecturer	Dr. Khadr Ali Saleh Sayer Al-Jubouri
Solid	Physics	MSc	Lecturer	Muhannad Muayyad Elias Khader Al-Abadi

Self-evaluation report for the College of Science/Department of Physics for the year 2022-2023

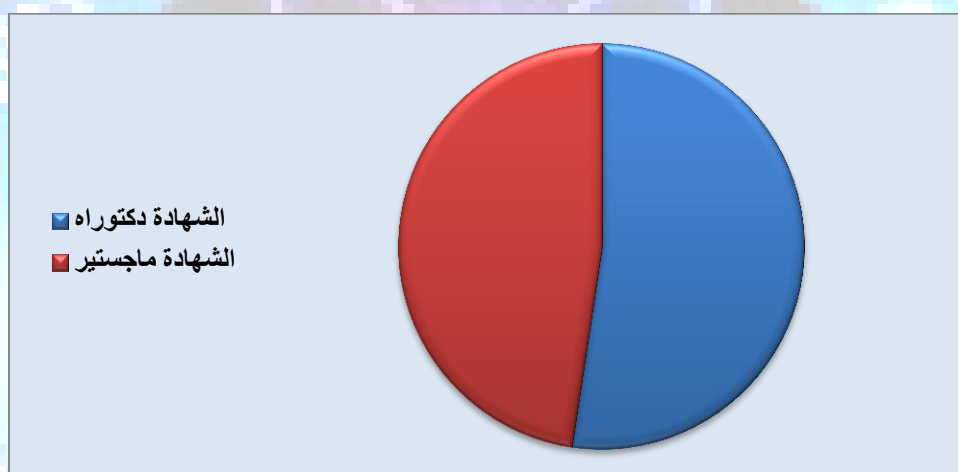
Specific specialization	General specialization	Certificate	The scientific title	Name
Solid	Physics	MsC	Lecturer	Maysam Shehab Ahmed Jassim Al-Hamidah
Intelligent technologies	Computing	MsC	As.Lecturer	Abida Tahseen Tawfiq Abdel-Jabbar Hamoudat
Nuclear physics	Physics	MsC	As.Lecturer	Mian Ibrahim Khalil Marei Friday
Molecular	Physics	MsC	As.Lecturer	Ahmed Ezz El-Din Thanoun
Nuclear physics	Physics	MsC	As.Lecturer	Arwa Raad Saadallah
Nuclear physics	Physics	MsC	As.Lecturer	Farah Nazim Muhammad Ali
Nuclear physics	Physics	MsC	As.Lecturer	Taha Yassin

• **Description of the faculty members in the department:**

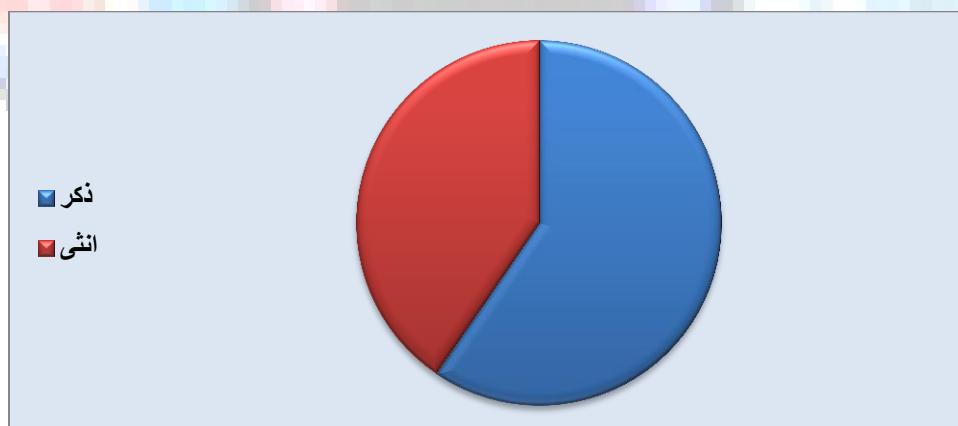
Gender		Scientific degree				Certificate		Number of staff/lecturer
Female	Male	As. Lecturer	Lecturer	As. Prof.	Prof.	M.Sc.	Ph.D.	
17	25	6	15	15	6	20	22	42
% 52.381		Percentage of teachers holding doctoral degrees						
% 47.619		Percentage of teachers holding a master's degree						



Faculty members by academic title



Faculty members by degree



Faculty members by gender

•Average hours of additional teaching load for faculty members

Hours of load	Hours of teaching	Scientific title
8	4	Prof.
13	8	As. Prof.
15	10	Lecturer
17	12	As. Lecturer

•Employees and administrators according to academic qualification

Number of contract employees	Number of permanent employees	Academic qualifications of administrative staff
1	7	B.Sc.
	1	Secondary I
	1	Secondary II
	1	Primary

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 scientific courses on performance evaluation for department members.

7. Prepare a plan on what was done before starting the department's self-evaluation process.
8. Working on coding the new curricula and exam questions on a regular basis.
9. Establishing special mechanisms for laboratory quality.

Field of university performance:

Completing the department's annual calendar file.

Conducting evaluations of teachers as well as evaluations of employees.

Archiving (automation) of information: electronic documentation of information in the department's Quality Assurance Committee.

Completing the national evaluation form for scientific departments.

Completing and writing the department's self-evaluation report according to the standards of the accredited ABET accreditation program

Writing a report on conformity with the standards of the accredited ABET accreditation program

• **Infrastructure**

Ratio of students to hall area	Area (m2)	Number	Place	S
0.5	410	6	Teaching halls	1.
2.98	104	2	Event halls	2.
0.83	246.5	2	Lecture large halls	3.
0.15	1317	22	Labs	4.
	120	1	Technical workshops	5.
0.2	520	33	Faculty offices	6.
11.13	18.5	1	Unit of internet	7.
		1	Clubs, sports stadiums	8.
0.2	500	1	Parks	9.
0.91	350	2	Gardens and squares	10.
2.81	110	1	Library	11.
		None	Health units	12.
1.3	229.5	7	Gardens and squares	13.

Chapter 2



About accreditation:

Accreditation Board for Engineering and Technology (ABET)

It is an American non-governmental organization that grants accreditation for academic programs in colleges and universities around the world in the fields of applied sciences, computers, engineering, and technology. It is one of the most trusted academic accreditations in the United States of America. ABET has been providing accreditation certificates to confirm the quality of academic programs in university studies for more than 75 years.

What does ABET accreditation mean ?

ABET accreditation is confirmation that the academic program obtained applies the quality standards of education agreed upon by those with relevant experience in education to prepare and qualify students. Learning specifications are set in terms of the academic program's mission, learning objectives, learning outcomes, and study plan for engineering programs by experts in engineering education, with confirmation of the existence of mechanisms to ensure that feedback is taken from all its sources and used for continuous improvement of the academic program so that graduates of these programs continue to have the highest specifications, qualifications, and skills they need. The labor market and to ensure that the graduate remains capable of continuous self-learning that enables him to keep pace with developments in his field.

Why ABET accreditation is important ?

- ◆ ABET accreditation ensures confidence that the academic program has met the basic standards to prepare graduates to enter the fields of science, technology, engineering, and mathematics, which have become a requirement for the global labor market.
- ◆ Graduates from an ABET-accredited program have a strong and capable educational foundation that enables them to follow the path of rapid technological innovations and developments.
- ◆ Accreditation helps students and their parents choose a reliable specialization, as it guarantees students that their educational experience keeps pace with international standards for learning and technical education in the vocational field.
- ◆ Accreditation gives companies and employers the opportunity to select and employ graduates, knowing that these graduates have been taught the specialty within international standards.
- ◆ Enhances job opportunities for the graduate as multinational companies require graduation from an accredited program.
- ◆ Registrars, licensors and certificates may use the accreditation to select applicants for these licenses and certificates.
- ◆ Accreditation helps universities and departments establish an organized mechanism to evaluate and develop the quality of their programs.

Standards of the American Accreditation Authority:

The study aimed to evaluate the current situation of the department, and the extent to which the department achieves the standards to ensure quality, 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 continuity of development and improvement of performance, and this in turn requires development and modernization in The management method and its work mechanisms are consistent with international standards for the quality of higher education and achieve 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:

Degree of marching			Standard name	No.
Totally	Partial	None		
✓			Students	1
✓			Objectives of the educational program	2
	✓		Continuous improvement of the educational institution's environment	3
✓			educational subjects	4
✓			Staff	5
	✓		financial support	6

Degree of matching			Students	No.
Totally	Partial	None		
✓			1- Student acceptance	1
✓			2- Providing advice to the student regarding the curriculum and job opportunities.	
✓			3- There must be a program to 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 have the following: <ul style="list-style-type: none"> • Clear policies regarding accepting the student's transfer from other institutes or universities and verifying the subjects (clearing) in his approval to complete the program in terms of units. • The program must include clear methods to ensure that all students meet the program requirements. 	

Degree of matching			Objectives of the educational program	
Totally	Partial	None		
✓			<ul style="list-style-type: none"> • The educational objectives of the program (printed) and are in line with the vision of the educational institution 	2
✓			<ul style="list-style-type: none"> • The program must have a continuous evaluation process for programmed time periods that show that the goals are based on needs. 	
✓			<ul style="list-style-type: none"> • There must be a continuous evaluation and evaluation process for all components of the program, which shows the desired degree and on the basis of which the goals were set. 	

Degree of matching			Continuous improvement of the educational institution's environment	
Totally	Partial	None		
	✓		<ul style="list-style-type: none"> Classrooms and laboratories must be available with modern equipment that is compatible with the objectives of the program and provides an appropriate educational environment. 	3
	✓		<ul style="list-style-type: none"> Providing these requirements is necessary to increase interaction between the teaching staff and students and to create an appropriate and encouraging climate for the growth and development of the profession. 	
	✓		<ul style="list-style-type: none"> The program must provide an opportunity for students to learn and use the latest scientific equipment 	
	✓		<ul style="list-style-type: none"> Information technology infrastructure 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. 	

Degree of matching			educational subjects	
Totally	Partial	None		
✓			<ul style="list-style-type: none"> We 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. 	4
✓			<ul style="list-style-type: none"> The scientific part of the program must include the basic principles of physical sciences, and may include some practical experiments related to the specialization. 	

Degree of matching			Staff	5
Totally	Partial	None		
✓			<p>:Must be available</p> <ul style="list-style-type: none"> • A sufficient number of teachers who are capable of covering all components of the program. • It must have high academic specifications to be able to provide the student with adequate advice and guidance regarding the curriculum components. • The faculty member must also have the ability to continuously evaluate and evaluate the program in terms of academic objectives and outcomes. 	5
✓				
✓				

Degree of matching			financial support	6
Totally	Partial	None		
	✓		<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

SWOT analysis

The first standard and the second standard: students and the objectives of the educational program

Strengths

- There are multiple mechanisms to support students, whether at the level of guidance and rehabilitation or at the level of academic performance as well

About the existence of a system to support students financially.

- There are guidance and educational committees in the department that take it upon themselves to follow up on students, provide them with educational advice, and help them overcome the problems and difficulties they face.
- The department's sponsorship of artistic and sports activities
 - Forming the department's introduction committee, which undertakes the task of introducing the department at the beginning of the academic year, especially to new students. It explains the goals and mission of the department, descriptions of the graduate's work from the department, the department's curricula, and others.
- A survey of students' opinions in recent years regarding academic subjects, the level of exam questions, and the obstacles surrounding the teaching and learning process.

Weaknesses

- Students are accepted into the department at the lowest grades, which indicates the low academic level of students accepted into the department.
- Sometimes a student's acceptance into the department is not by his choice, either because of the grade point average or an error in the admission form.
- The absence of a division or unit that takes care of graduates' affairs and communicates with them

- There is no electronic link to the department on the college's website for graduates who can communicate with them and benefit from feedback to improve the teaching and learning process.
- 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 relevant committees and the distance from these sites, as the student usually chooses the site close to his place of residence.
- The lack of a mechanism to activate relations between the corresponding departments and colleges at the Arab and international levels.

Improvement plan

- Identifying the educational and training programs announced by Arab and international universities and guiding students

To benefit from it.

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

Threats

- The lack of graduates obtaining jobs leads to a lack of student enthusiasm, a lack of interest in studying, laziness, and a lack of creativity.

Third standard: Continuous improvement of the department's educational environment

Strengths: The number of classrooms available at the time is considered sufficient to cover the lecture schedule

Weak points..

- Scientific laboratories do not provide the devices and equipment available to some laboratories
- The level of furnishing of classrooms is considered modest.

Optimization

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

Threats

- Poor performance of students in carrying out laboratory experiments for experiments in which one or two devices are used, as this leads to not all students being able to carry out the experiments themselves, but rather being content with only watching their colleagues or laboratory staff while carrying out such experiments, which reflects negatively on The student's academic level due to the importance of the practical aspect in scientific disciplines.

Fourth standard: Curriculum

strength point: Compatibility between the curriculum and the department's stated mission.

Weaknesses

- Lack of actual participation of beneficiary entities in designing and developing curricula
- Lack of international and regional cooperation mechanisms to develop curricula
- Lack of financial resources allocated for writing and translation that serve both learning and teaching.

Optimization

- Striving to develop curricula by implementing continuous updating of curricula
- Paying attention to the labor market and meeting its growing and evolving needs .
- Benefiting from new information for scientific competencies who completed their studies abroad.

Threats

- The ongoing financial and political crises and their impact on educational curriculum development plans
- Weak will of the teaching staff in the field of self-development
- Weak mutual trust between different generations within the educational framework due to lack of communication.

Proposed procedures for the fourth standard

- Periodic review of educational curricula through specialized committees in comparison with scientific development and progress.

- Preparing regular reports on the needs and needs of the labor market and their suitability to the approved curricula.
- Providing the opportunity for educational institutions in the private sector and employers to participate in developing curricula.
- 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.
- Achieving the balance as much as possible between modernization and application requirements and the needs of the learner and society .
- Benefiting from the evaluation results in the process of making corrective decisions to develop curricula and educational programs .

Items for evaluating the fourth standard

- The presence of a study prepared by the department's scientific committee that clarifies the suitability of curricular objectives with educational outcomes and the extent of their conformity with international standards.
- There is an academic description for all courses that provides sufficient information about teaching and learning methods, evaluation, and course contents, and it is announced on the website and documented.
- The courses contain theoretical and practical aspects that help the student acquire applied skills
- The department adopts a variety of teaching and learning methods, including interactive lectures, e-learning, self-learning, problem-solving methods, and teaching in small groups.
- Enhancing students' self-education through graduation research in the final academic year .
- There is a diversity of methods for evaluating students, such as theoretical, electronic, and oral exams.

Fifth standard: Faculty members

strength point

- Diversity of the precise specializations of the teaching staff.
- All teachers complete their teaching quorum, in addition to assigning most of them additional hours.
- Most of the teachers received an academic promotion, especially from the rank of assistant teacher to teacher.
- The ratio of students to the number of teachers is considered somewhat acceptable.

Weaknesses

- The small number of teaching staff holding the title of professor or assistant professor in the specific specialty of the department.
- Lack of opportunities for interaction with international academic institutions, which negatively affects the ability to learn about modern methods in the teaching and learning processes.

Optimization

- Increasing support for 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 corresponding departments around the world to increase teaching experience.
- Increasing opportunities for obtaining academic promotions for the purpose of supporting initial study programs and the possibility of opening a postgraduate program in the department.

Threats

- The modest experience of some teachers sometimes prevents the proper implementation of the curriculum.

Sixth standard: financial support

strength point

- Employee and teaching salaries are secured from the annual budget.
- The department maintains the good academic level because the financial aspect does not affect its work, which suffers from colleges whose method of study depends on the financial dues the student pays to secure the study, which leads to a low academic level.

Weaknesses

- Lack of financial allocations for scientific research and the absence of financial allocations to purchase modern laboratory equipment and materials for the purpose of keeping pace with modern developments.

Optimization

- Ease of securing financial resources when available to cover the department's needs for equipment and other 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 for new young cadres, even those who excel academically, limits the possibility of developing or implementing some ambitious programs.
- The department is unable to contract with administrative, technical, or teaching staff to meet its needs due to the lack of self-financing that can be used to cover salary expenses.

The file for completing the self-evaluation for the Department of Physics was previously reviewed, audited, and approved

Scientific Committee

the signature

Name

the date

Head of department

the signature

Name

the date

Quality Assurance and Performance Evaluation Division

the signature

Name

the date

Assistant Dean for Scientific Affairs

the signature

Name

the date

The dean

the signature

Name

the date

