

# University of Mosul College of Science Physics Department



## *First Cycle – Bachelor's degree (B.Sc.) – Physics*

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### 1 . Mission & Vision Statement

- *Vision Statement*

**For the department to be a pioneer in the field of physics sciences and to be distinguished at the local, regional and global levels, with a focus on education, training, services, applied research and community service.**

- *Mission Statement*

**Preparing qualified graduates with knowledge and creativity in the field of physics, who are able to interact with the requirements of the age and technology, and contribute to building Iraqi society on sound scientific and ethical foundations.**

## 1. Program Specification

Programme code:	BS-Phy.	ECTS	240
Duration:	4 levels, 8 Semesters	Method of Attendance:	Full Time

Preparing qualified graduates with knowledge and creativity in the field of physics, who are able to interact with the requirements of the age and technology, and contribute to building Iraqi society on sound scientific and ethical foundations.

## 2. Program Objectives

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

The objectives can be summarized as follows:

1. Formation of a basic base of general physics curricula and a smooth and harmonious study plan.
2. Providing an advanced level of education for primary and higher studies, maintaining a solid level of academic curricula, and continuous updating of scientific plans.
3. Preparing the student in a focused preparation in the fundamentals of physics and the principles of analytical methods required for deduction from physical experiments.
4. Provide the opportunity for the student to deepen his knowledge in the various branches of physics so that he can look at the outskirts of contemporary scientific research.
5. Training the student on the scientific research method and enabling him to contribute to it under the supervision of capable researchers of the department's teachers.
6. Qualify the student with in-depth knowledge and a degree of scientific maturity that enables him to actively participate in the scientific and technical aspects of development and planning programs.
7. Working on the completion of applied and basic research in various specializations of physics.
8. Contribute to advisory services, training, short courses and solving scientific and industrial problems that face development plans in country.
9. Continuous development of faculty members by sending them to training courses in order to maintain high levels of efficiency and performance.

10. Supporting and encouraging scientific cooperation between faculty members in the department and cooperation with other departments in the field of multi-purpose research.
11. Spread the spirit of competition and encouragement and give opportunity to all faculty members 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.

### **3. Student Learning Outcomes**

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.

## 4 . Academic Staff

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07701649765	<a href="mailto:Prof.lai2014@uomosul.edu.iq">Prof.lai2014@uomosul.edu.iq</a>	PhD	Prof	Dr. Laith Ahmed Najim Al- sabha	.3
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## 5. Credits, Grading and GPA

### *Credits*

Mosul University is following the Bologna Process with the European Credit Transfer System (ECTS) credit system. The total degree program number of ECTS is 240, 30 ECTS per semester. 1 ECTS is equivalent to 25 hrs student workload, including structured and unstructured workload.

### *Grading*

Before the evaluation, the results are divided into two subgroups: pass and fail. Therefore, the results are independent of the students who failed a course. The grading system is defined as follows:

Group	Grade	Marks (%)	Definition
Success Group (50 - 100)	A – Excellent	90 – 100	Outstanding Performance
	B - Very Good	80 – 89	Above average with some errors
	C – Good	70 – 79	Sound work with notable errors
	D - Satisfactory	60 – 69	Fair but with major shortcomings
	E – Sufficient	50 – 59	Work meets minimum criteria
Fail Group (0 – 49)	FX – Fail	(45-49)	More work required but credit awarded
	F – Fail	(0-44)	Considerable amount of work required
Note:			

### Calculation of the Cumulative Grade Point Average (CGPA)

1. The CGPA is calculated by the summation of each module score multiplied by its ECTS, all are divided by the program total ECTS.

CGPA of a 4-year B.Sc. degree:

$$\text{CGPA} = [ (1\text{st module score} \times \text{ECTS}) + (2\text{nd module score} \times \text{ECTS}) + \dots ] / 240$$

## 6. Curriculum/Modules

Semester 1 | 30 ECTS | 1 ECTS = 25 hrs

Code	Module	SSWL	USSWL	ECTS	Type	Pre-request
PHY1101	Mechanics and properties of matter I	108	92	8.00	C	
PHY1102	Electricity	108	92	8.00	C	
Sci-101	Mathematics I	33	17	2.00	B	
PHY1103	General Astronomy	93	107	8.00	C	
UOM104	Democracy & Human Right	38	12	2.00	B	
UOM101	Arabic Language	35	15	2.00	B	

Semester 2 | 30 ECTS | 1 ECTS = 25 hrs

Code	Module	SSWL	USSWL	ECTS	Type	Pre-request
PHY1214	Mechanics and properties of matter II	108	92	8.00	C	PHY1101
PHY1215	Magnetism	108	92	8.00	C	PHY1102
PHY1217	Mathematics 2	48	52	4.00	C	Sci-101
UOM103	Computers I	48	52	4.00	B	
PHY1206	General Chemistry	64	36	4.00	S	



UOM102	English Language	33	17	2.00	B	
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**Semester 3 | 30 ECTS | 1 ECTS = 25 hrs**

Code	Module	SSWL	USSWL	ECTS	Type	Pre-request
PHY2308	Modern Physics I	79	71	6.00	C	
PHY2309	Heat and Thermodynamic	79	71	6.00	C	
PHY23110	Analytical Mechanics I	48	52	4.00	C	
PHY23011	Analog Electronics	79	71	6.00	C	
UOM201	Baath Crimes	48	52	4.00	B	
PHY23113	Computers 2	63	37	4.00	C	

**Semester 4 | 30 ECTS | 1 ECTS = 25 hrs**

Code	Module	SSWL	USSWL	ECTS	Type	Pre-request
PHY24114	Modern Physics II	79	71	6.00	C	PHY2308
PHY24015	Thermodynamic and Statistical	79	71	6.00	C	
PHY24116	Analytical Mechanics II	48	52	4.00	C	PHY23110
PHY24017	Digital Electronics	79	71	6.00	C	
PHY23112	Mathematics 3	48	52	4.00	B	PHY1217
PHY24018	sound and wave motion	48	52	4.00	C	

**Semester 5 | 30 ECTS | 1 ECTS = 25 hrs**

Code	Module	SSWL	USSWL	ECTS	Type	Pre-request
PHY35019	Geometrical Optics	79	71	6.00	C	
PHY35020	Laser Physics I	79	71	6.00	C	
PHY35121	Quantum Mechanics I	48	52	4.00	C	
PHY35022	Material Physics I	64	61	5.00	C	
PHY35023	Mathematics 4	48	77	5.00	C	PHY23112
PHY35024	Spectra	63	37	4.00	C	

**Semester 6 | 30 ECTS | 1 ECTS = 25 hrs**

Code	Module	SSWL	USSWL	ECTS	Type	Pre-request
PHY36025	Physical Optics	94	81	7.00	C	
PHY36126	Laser Physics II	79	71	6.00	C	PHY35020
PHY36127	Quantum Mechanics II	48	52	4.00	C	PHY35121
PHY36128	Material Physics II	94	81	7.00	C	PHY35022
PHY36029	Molecular Physics	48	27	3.00	C	
PHY36030	Nano physics	48	27	3.00	C	

**Semester 7 | 30 ECTS | 1 ECTS = 25 hrs**

Code	Module	SSWL	USSWL	ECTS	Type	Pre-request
PHY47031	Nuclear Physics I	94	81	7.00	C	
PHY47132	Solid State Physics I	94	81	7.00	C	
PHY47033	Electromagnetics Theory I	49	51	4.00	C	
PHY47034	Research Methodology	48	52	4.00	C	
PHY47035	Elective1 (solar energy+Nuclear reactors)	48	52	4.00	E	
PHY47036	Bio-physics	47	53	4.00	C	

**Semester 8 | 30 ECTS | 1 ECTS = 25 hrs**

Code	Module	SSWL	USSWL	ECTS	Type	Pre-request
PHY48137	Nuclear Physics II	94	81	7.00	C	PHY47031
PHY48138	Solid State Physics II	94	81	7.00	C	PHY47132
PHY48139	Electromagnetics Theory II	49	51	4.00	C	PHY47033
PHY48040	plasma physics	48	52	4.00	C	
PHY48041	Research project	63	37	4.00	C	

PHY48042	Elective 2 (Special Relativity +Medical physics)	48	52	4.00	E	
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## 7. **Contact**

Program Manager:
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