

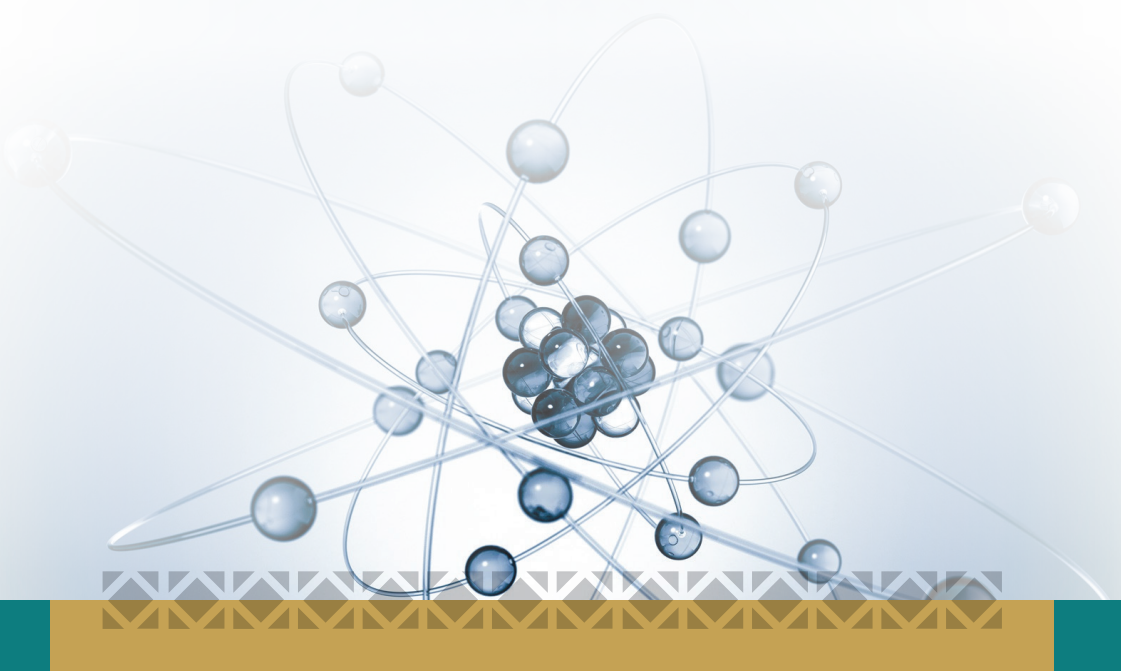


UMM AL-QURA UNIVERSITY

DEPARTMENT OF PHYSICS

Physics Department Handbook

Physics Department - College of Science
For the Academic Year 1446 - 1447 AH (2025-2026)





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Physics Department Handbook

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Message from the Head of the Physics Department

In the name of Allah, the Most Gracious, the Most Merciful. Praise be to Allah, and peace and blessings be upon the one who was granted wisdom and eloquent speech, our Prophet Muhammad, and upon his family and companions.

To every student, male and female, among our dear sons and daughters:

We, the faculty members of the Physics Department, are delighted to contribute to building a promising generation like you. We highly value and appreciate your diligence, sincerity, and dedication in seeking knowledge and acquiring education. We aspire to see in you respect and noble character, and we pray to Allah for your success and well-being.

We take pride in outstanding students and are committed to ensuring that our students always excel. At the same time, we support students who encounter difficulties, as we all eagerly look forward to your graduation and hope, with faith in Allah, for a bright and successful future for each of you.

We present this guidebook to you as a student handbook in which you will find an introduction to the Department, the field of Physics, the faculty members responsible for teaching, and the career opportunities awaiting you. It also provides information about your rights and responsibilities, in addition to practical advice that may help you complete your studies successfully and with distinction.

The Physics Department was established in 1384/1385 AH (1964/1965 AD) as a twin department to the Mathematics Department when the first regulations of the College of Education at King Abdulaziz University – Makkah Branch were issued. Several cohorts graduated under the dual-specialization system (Physics and Mathematics).

This system continued for ten years until 1394/1395 AH, when the Physics Department was separated from the Mathematics Department and became an independent department, granting the bachelor's degree in physics and medical physics.

In 1396/1397 AH, the credit-hour system was introduced at King Abdulaziz University – Makkah Branch, and the Department began offering its courses according to this system, granting the bachelor's degree in physics.

In 1400/1401 AH, Umm Al-Qura University was established in Makkah Al-Mukarramah, followed by the establishment of the College of Applied Sciences, to which the Physics Department became affiliated. The Department then began granting bachelor's degrees in two programs:

1. Physics Program
2. Medical Physics Program

May Allah guide us all to what pleases Him and grant us success. With our sincere regards to you all.

Head of the Physics Department
Dr. Ahmed bin Mohammed Saeedi

Former Heads of the Physics Department – College of Science – Umm Al-Qura University

No.	Name	Period
1	Dr. Abdel Fat tah Al-Nadi	1965–1967
2	Dr. Fadel Mashali	1968–1970
3	Dr. Ibrahim Nasser	1971–1973
4	Dr. Fadel Mashali (Acting Head)	1974–1975
5	Dr. Suleiman Al-Musallam	1975–1977
6	Dr. Abdulrahman Fikri Hassan	1977–1979
7	Dr. Abdulaziz Mohammed Qutb	1979–1981
8	Dr. Ghali Ghazi Al-Barakati	1981–1983
9	Dr. Abdullah Saleh Shawoush	1983–1990
10	Dr. Essam Hamed Al-Ahdal	1990–1993
11	Dr. Abdulaziz Mohammed Qutb	1993–1995
12	Dr. Walid Jameel Al-Tuf	1995–2001
13	Dr. Fayez Hammad Al-Ghraibi	2001–2003
14	Dr. Sabri Asaad Abu Mansour	1427 AH – 1428 AH
15	Dr. Essam Abdullah Al-Arafj	1428 AH – 1430 AH
16	Prof. Saud Humaid Al-Lihyani	1431 AH – 1433 AH
17	Dr. Mohammed Khalil Al-Turkistani	1434 AH – 1436 AH
18	Prof. Fahad Abdullah Al-Hashimi	1436 AH – 1438 AH
19	Dr. Hatem Rashid Al-Omari	1438 AH
20	Dr. Saleh Marzouq Al-Luqmani	1439 AH
21	Prof. Fahad Abdullah Al-Hashimi	1440 AH
22	Dr. Turki Othman Al-Mu'tani	1441 AH
23	Dr. Omar Hammad Al-Salmi	1442 AH – 1444 AH
24	Dr. Mohammed Awad Al-Omari	1444 AH – 1446 AH
25	Dr. Ahmed Mohammed Saeedi	1446 AH – Present

About the Physics Department

Physics

Physics is the science concerned with the study and formulation of natural phenomena. A natural phenomenon is an event that occurs repeatedly under the same conditions and circumstances. All natural phenomena take place through matter and energy.

Matter is anything that has mass and occupies space. In general, matter can be classified into gases, liquids, solids, plasma, biological materials (plants and animals), humans, celestial bodies, and the atmosphere.

Energy, on the other hand, refers to any influence that has neither mass nor volume. Broadly speaking, energy can be classified into electrical energy, magnetic energy, thermal energy, light energy, kinetic energy, and nuclear energy.

The interaction between energy and matter gives rise to what are known as the properties of matter. Depending on the type of energy involved, these properties include the mechanical properties, electrical properties, magnetic properties, optical properties, thermal properties, and radiation properties of matter, in addition to the crystalline structure of materials.

The combination of these properties for a particular type of matter forms what is known as a field of physics. For example, there are fluid physics (gases and liquids), solid-state physics, plasma physics, biophysics, medical physics, astronomy, and meteorology.

Fields of Physics

Physics discipline can be classified according to the type of matter and energy involved. These include Fluid Physics (Gases and Liquids), Solid-State Physics, Plasma Physics, Biophysics, Medical Physics, Astronomy, Meteorology, Nuclear Physics, Optics, Heat and Thermodynamics, Electricity, Mechanics, Magnetism.

Career Opportunities for Physics Graduates

Graduates of the Physics Department are qualified for careers involving experimental and theoretical research related to the laws of matter and energy and their applications in solving technical problems across scientific, engineering, medical, agricultural, and environmental fields.

Their work also includes the study of various physical phenomena through observations and practical experiments, with the aim of applying and utilizing them in diverse scientific areas such as agriculture, medicine, industry, and engineering.

In short, wherever matter or energy exists, there are opportunities for physics graduates.

Career opportunities for physics graduates can generally be classified into:

- Academic and Research Fields
- Professional Fields

First: Academic and Research Career Opportunities for Physics Graduates

University Employment

Physics graduates may work as Teaching Assistants, Research Assistants, or Laboratory Technicians at governmental and private universities and institutes, both within and outside the Kingdom of Saudi Arabia.

Research Centers

Graduates may also work as Research Assistants or Technicians in various research centers, including but not limited to:

King Abdulaziz City for Science and Technology (KACST)

- Environmental Technology Center
- Space Research and Remote Sensing Center
- Nanotechnology Center
- Advanced Electronics Technology Center
- Physics and Mathematics Center
- Robotics and Intelligent Systems Technology Center

- King Abdullah City for Atomic and Renewable Energy (K.A.CARE)
- Atomic Energy Research Center
- Renewable Energy Research Center
- Saudi Standards, Metrology and Quality Organization (SASO)
- General Authority of Meteorology and Environmental Protection
- Saudi Geological Survey
- And other related institutions.

Second: Professional Career Opportunities for Physics Graduates

Professional careers may require additional training or specialized study. Physics graduates may pursue employment in the following sectors:

- Ministry of Education as teachers.
- Ministry of Health as Medical Physics Technicians.
- Ministry of Commerce and industrial sectors in the fields of industry and industrial safety.
- Ministry of Justice.
- Ministry of Human Resources and Social Development.
- Ministry of Defense in military-related positions.
- Telecommunications and Information Technology sectors.
- Ministry of Hajj and Umrah.
- Ministry of Energy in the fields of petroleum and mineral resources.
- Sectors related to water and electricity services.

- Industrial companies and factories, including oils and soaps, ceramics, steel, petrochemicals, and related industries.
- Companies specializing in scientific instruments, such as medical devices and laboratory equipment.
- Journalism and media, as program producers or science and education editors.

Vision, Mission, and Objectives of the Department

Vision

To achieve leadership in the fields of Physics and Medical Physics at both the local and international levels, while actively contributing to collaboration with community institutions.

Mission

To promote creativity and excellence in higher education and scientific research in the fields of Physics and Medical Physics, graduate students with high scientific and technical competencies, and contribute to community service and development.

Objectives

1. To achieve leadership in higher education, scientific research, and community service.
2. To attract distinguished scientific and administrative competencies.
3. To advance scientific research and prepare specialized scientific and professional competencies capable of conducting distinguished scientific and applied research.
4. To establish partnerships with prestigious international research centers and universities.
5. To equip students with the fundamental knowledge and skills in Physics and Medical Physics.
6. To enhance the quality of graduates through the implementation of comprehensive quality standards.
7. To develop advanced educational programs and appropriate curricula aligned with the needs of the knowledge society and labor market.
8. To serve community institutions through effective partnerships.

Administrative Structure of the Physics Department

Faculty Members – Al-Abdiyah Campus

No	Name	Academic Rank	Specialization
1	Thamer Salman Faleh Al-Amiri	Professor	Solid State Physics
2	Khaled Abdulwajed Mohammed Abdul Latif	Professor	Nuclear Physics
3	Sameer Suleiman Ahmed Netto	Professor	Medical Physics
4	Fahad Abdullah Shukr Al-Hashimi	Professor	Solid State Physics
5	Mohammed Khalil Mohammed Al-Turkistani	Professor	Solid State Physics
6	Mohammed Mahmoud Sabri Salahuddin	Professor	Optics
7	Ahmed Maqbool Mohammed Hakami	Associate Professor	Solid State Physics
8	Ahmed Mohammed Abdulhadi Saeedi	Associate Professor	Solid State Physics
9	Turki Othman Humaid Al-Mu'tani	Associate Professor	Medical Physics
10	Saeed Muaydh Abdullah Al-Qahtani	Associate Professor	Medical Physics
11	Abdulrahman Youssef Mohammed Lasheen	Associate Professor	Solid State Physics
12	Ali Saleh Ali Al-Shamrani	Associate Professor	Solid State Physics
13	Omar Hammad Humaid Al-Salmi	Associate Professor	Solid State Physics
14	Haikal Abdulhamid Hilal Al-Obaidi	Associate Professor	Atomic Physics
15	Walid Belkacem Al-Akrami Belhaj	Associate Professor	Theoretical Physics
16	Monji Al-Sassi Omar Ben Mousa	Assistant Professor	Solid State Physics
17	Al-Mahdi Abdulhafeez Hussein Fateeti	Assistant Professor	Theoretical Physics
18	Khaled Thamer Hussein Al-Thaqafi	Assistant Professor	Experimental Physics
19	Saleh Marzouq Barki Al-Luqmani	Assistant Professor	Solid State Physics
20	Atef Mahmoud Al-Hasnain Ismail	Assistant Professor	Theoretical Physics

No	Name	Academic Rank	Specialization
21	Abdulrahman Masoud Dhaifallah Al-Otaibi	Assistant Professor	Solid State Physics
22	Abdulmajeed Omar Ali Taimoumi	Assistant Professor	Solid State Physics
23	Mohammed Awad Fahad Al-Omari	Assistant Professor	Theoretical Physics
24	Mohammed Abdulaziz Mohammed Seddiq Qutb	Assistant Professor	Medical Physics
25	Marwan Ahmed Mohammed Saeed Al-Thumali	Assistant Professor	Medical Physics
26	Anas Alaa Asaad Mahdhar	Lecturer	Physics
27	Ayman Khalaf Mohammed Al-Husseini	Lecturer	Physics
28	Nasser Alyan Mohammed Al-Hazmi	Lecturer	Physics

Faculty Members – Al-Zaher Campus (Female Section)

No.	Name	Academic Rank	Specialization
1	Rabab Khaled Mohammed Sindi	Professor	Solid State Physics
2	Amina Nayef Mohammed Al-Ahmadi	Associate Professor	Theoretical Physics
3	Amani Ibrahim Mohammed Saleh Al-Alawi	Associate Professor	Medical Physics
4	Omairah Abdullah Abdulrahim Bawazeer	Associate Professor	Medical Physics
5	Zainab Suleiman Ali Matar	Associate Professor	Nuclear Physics
6	Ghada Abdulrahman Khidr Mubarak Al-Zaidi	Associate Professor	Solid State Physics
7	Noha Abdulhaleem Maher Falemban	Associate Professor	Nuclear Physics
8	Noor Mahmoud Mohammed Abdul-lah Basfar	Associate Professor	Solid State Physics
9	Balsam Fahad Ibrahim Soufi	Assistant Professor	Medical Physics

No.	Name	Academic Rank	Specialization
10	Taghreed Suleiman Butti Al-Sulami	Assistant Professor	Solid State Physics
11	Hawraa Abdullah Mazal Al-Ghasham	Assistant Professor	Optics
12	Dania Abdulrahim Makki Sindi	Assistant Professor	Solid State Physics
13	Abeer Ahmed Abdullah Al-Suraihi	Assistant Professor	Medical Physics
14	Effat Abdullah Ali Ali Rashid	Assistant Professor	Solid State Physics
15	Faten Ahmed Othman Al-Somali	Assistant Professor	Medical Physics
16	Fadia Abdulaziz Abdullah Ibrahim	Assistant Professor	Solid State Physics
17	Mariyah Murad Mostafa Kamal Al-Hassan	Assistant Professor	Solid State Physics
18	Noha Farraj Mohammed Abdullah Al-Harbi	Assistant Professor	Solid State Physics
19	Haifa Matar Hushaim Al-Mutairi	Assistant Professor	Solid State Physics
20	Walaal Mohammed Rafid Al-Ahmadi	Assistant Professor	Solid State Physics
21	Yusra Mohammed Hamed Zabarmawi	Assistant Professor	Solid State Physics
22	Ibtihal Mastour Khidr Al-Thubaiti	Lecturer	Solid State Physics
23	Arwa Mohammed Abdulhakim Bukhari	Lecturer	Solid State Physics
24	Asmahan Saud Ali Al-Sheikhi	Lecturer	Solid State Physics
25	Imtinan Talal Mohammed Al-Otaibi	Lecturer	Medical Physics
26	Amal Ibrahim Bakhit Al-Saeedi	Lecturer	Solid State Physics
27	Amnah Abdullah Ali Al-Kudaisi	Lecturer	Solid State Physics
28	Iman Abdulbasit Jaber Madkhali	Lecturer	Solid State Physics
29	Iman Ahmed Abdulrahim Bukhari	Lecturer	Solid State Physics
30	Hanan Ayish Zamil Al-Otaibi	Lecturer	Solid State Physics
31	Reem Abdulaziz Ali Al-Thaqafi	Lecturer	Solid State Physics
32	Samar Mohammed Saadoun Al-Sulami	Lecturer	Solid State Physics
33	Afaf Hussein Hassan Al-Maabadi	Lecturer	Physics
34	Afaf Abdulmuhi Mutair Al-Sulaimi	Lecturer	Solid State Physics

No.	Name	Academic Rank	Specialization
35	Fatimah Ahmed Amer Saad	Lecturer	Solid State Physics
36	Masha'el Saud Hajer Al-Harbi	Lecturer	Physics
37	Huda Juwaibir Unaiz Al-Sulami	Lecturer	Solid State Physics
38	Hind Abdulaziz Ahmed Al-Hajjaji	Lecturer	Optics
39	Hawazen Ahmed Mohammed Al-Thaqafi	Lecturer	Solid State Physics

Administrative Staff

No.	Name	Qualification	Responsibilities	Campus
1	Abdulrahman Suleiman Al-Tuwaijri	Bachelor's Degree	Secretary of the Physics Department	Al-Abdiyah
2	Jameel Ahmed Al-Hazmi	Bachelor's degree in physics	Modern and Nuclear Physics Laboratory	Al-Abdiyah
3	Mazen Mohsen Malkan	Diploma in Optics	Optics Laboratory	Al-Abdiyah
4	Mazen Mohammed Basharaf	Bachelor's degree in chemistry	General Physics Laboratory (2)	Al-Abdiyah
5	Mohammed Abdullah Mirah	Diploma in Optics	Measurement Instruments Laboratory	Al-Abdiyah
6	Rakan Al-Thaqafi	Bachelor's degree in physics	Modern Physics Laboratories	Al-Abdiyah
7	Yousef Ahmed Al-Asmari	Bachelor's degree in engineering	Electricity and Magnetism Laboratory	Al-Abdiyah
8	Hussein Hassen Al-Dhabyani	Bachelor's degree in physics	Optics Laboratory	Al-Abdiyah
9	Amal Awad Al-Shahri	—	—	Al-Zaher

No.	Name	Qualification	Responsibilities	Campus
10	Dareen Abdullah Ajaj	Bachelor's degree in biology	Nuclear Physics Laboratory	Al-Zaher
11	Iman Suleiman Al-Oufi	Bachelor's degree in physics	Physics Laboratory	Al-Zaher
12	Fatimah Abdullah Al-Qarni	—	—	Al-Zaher
13	Fatimah Al-Haqbani	Bachelor's degree in physics	Electronics Laboratory	Al-Zaher
14	Mona Al-Mahyaw	Bachelor's degree in physics	Nuclear Physics Laboratory	Al-Zaher
15	Najwa Al-Otaibi	Bachelor's degree in medical physics	Optics and Medical Physics Laboratories	Al-Zaher
16	Soha Abdullah Khan	Master's degree in medical physics	Optics and Medical Physics Laboratories	Al-Zaher
17	Manal Saleh Mohammed	Bachelor's degree in physics	—	Al-Zaher

Responsibilities of the Physics Department Committees

Curriculum and Study Plans Committee

Committee Responsibilities

- Monitoring the academic programs and study plans within the Department, reviewing them, and ensuring their compliance with university requirements.
- Reviewing the structure of study plans, as well as program and course specifications, and providing recommendations and feedback regarding them.
- Submitting proposals, after addressing all observations and requirements, to the Head of the Department for presentation to the Department Council in order to complete the necessary procedures.

- Performing any additional tasks assigned to the Committee by the Head of the Department.

Development, Quality, and Academic Accreditation Committee

Committee Responsibilities

- Monitoring and reviewing academic programs and study plans to ensure their alignment with quality requirements, academic accreditation standards, and discipline-specific standards.
- Reviewing program and course specifications to ensure compliance with quality requirements and academic accreditation standards and providing appropriate recommendations to guarantee such compliance.
- Supervising the implementation and management of the quality assurance system within the academic programs by monitoring and following up on its requirements.
- Monitoring the requirements of local and international academic accreditation, ensuring the completion of accreditation requirements, coordinating with department members to fulfill necessary obligations, and preparing periodic reports on the implementation of the quality system within the programs.
- Ensuring fulfillment of institutional quality requirements, preparing annual follow-up reports for accredited programs, reports on accreditation conditions and recommendations, and preparing and updating the Program Quality Assurance Manual when necessary.
- Recommending the formation of subcommittees to support quality assurance and academic accreditation tasks when needed, such as committees for Key Performance Indicators (KPIs), Learning Outcomes Assessment, Program Standards, and other related areas.
- Identifying the training needs of program coordinators and administrators, preparing training plans for them, and coordinating with relevant entities for implementation.
- Performing any additional tasks assigned to the Committee by the Head of the Department.

Graduate Studies Committee

Committee Responsibilities

- Monitoring and following up on graduate studies programs within the Department.
- Supervising the processes of student admission, registration of graduate study plans, and the discussion and approval of academic supervisors.
- Introducing graduate students to the available scientific specializations and the research interests of faculty members.
- Providing recommendations regarding the development of academic programs and courses.
- Performing any additional tasks assigned to the Committee by the Head of the Department.

Academic Scheduling and Affairs Committee

Committee Responsibilities

- Preparing and coordinating course schedules in accordance with the regulations and procedures established by the Deanship of Admission and Registration.
- Preparing final examination schedules and overseeing the monitoring and administration of examinations.
- Coordinating examinations for general courses that require the implementation of standardized examinations.
- Assigning academic advising responsibilities to faculty members.
- Monitoring students' course registration based on reports and statistics available through the academic system.
- Appointing course coordinators for academic courses.

- Performing any additional tasks assigned to the Committee by the Head of the Department.

Alumni Affairs Committee

Committee Responsibilities

- Maintaining records of the number of program graduates and tracking their employment rates.
- Monitoring and analyzing graduate surveys and collecting feedback from graduates regarding the academic programs offered.
- Keeping up to date with announcements and updates issued by the Ministry of Civil Service regarding job vacancies and employment opportunities available to graduates.
- Establishing and maintaining a graduate database.
- Performing any additional tasks assigned to the Committee by the Head of the Department.

Laboratories and Educational Services Committee

Committee Responsibilities

- Identifying and assessing the needs of laboratories, including materials, supplies, equipment, and maintenance requirements.
- Following up on the Department's requests with the relevant entities and concerned departments.
- Performing any additional tasks assigned to the Committee by the Head of the Department.

Academic Programs in the Physics Department

1. Bachelor of Science in Physics
2. Bachelor of Science in Medical Physics

Study Plans in the Physics Department

Study Plan (47) For Physics Program (206 credit hours)

Level	Course Code	Course Title	Credit Hours
Level 1	PHYS1101T	General Physics 1	3
	MTH1101T	Calculus 1	3
	MTH1401T	Linear Algebra	4
	MTH1131T	Introduction to Mathematical Physics	2
	ELIN1301T	English Language 1	3
	QR1101T	Tajweed of the Holy Quran	2
	IND1101T	Design thinking	2
Level 2	PHYS1102T	General Physics 2	4
	CHM1101T	General Chemistry	3
	BIO1101T	General Biology	3
	MTH1102T	Calculus 2	4
	ELIN1302T	English Language 2	3
	QR2102T	The Holy Quran memorization 1	2
	CUR1101T	University skills	0
Level 3	PHYS2103T	Heat and Waves	4
	PHYS2501T	Classical Mechanics	4
	PHYS2301T	Electricity and Magnetism	5
	MTH2132T	Intermediate Mathematical Physics	2
	MTH2134T	Mathematical Physics Application	2
	QR2103T	The Holy Quran memorization 2	2
	AI2001T	Introduction to Artificial Intelligence	2

Level	Course Code	Course Title	Credit Hours
Level 4	PHYS2502T	Advanced Classical Mechanics	3
	PHYS2401T	Modern Physics	4
	PHYS2201T	Theoretical Physics	4
	MTH2133T	Advanced Mathematical Physics	3
	QR3104T	The whole Holy Quran recital	2
	ICC1201T	Values and morals	2
Level 5	PHYS3504T	Quantum Mechanics	4
	PHYS3302T	Electrodynamics	3
	PHYS3503T	Thermodynamics	3
	PHYS3402T	Optics	4
	PHYS3202T	Advanced Theoretical Physics	3
		University Elective	2
Level 6	PHYS3505T	Advanced Quantum Mechanics	3
	PHYS3303T	Advanced Electrodynamics	3
	PHYS3701T	Solid State Physics	4
	PHYS3506T	Statistical Physics	3
	PHYS3203T	Computational Physics	3
	ICC4202T	Family in Islam	2
Level 7	PHYS7700T	Co-Op Training	6
Level 8	PHYS4702T	Advanced Solid State Physics	3
	PHYS4601T	Nuclear Physics	4
	PHYS4703T	Electronics	4
	PHYS4801T	Final Year Project	3
		Elective	2
		Elective	2
	BUS1099T	Professional development skills	2

Elective courses

Level	Course Code	Course Title	Credit Hours
Level 8	PHYS4605T	Introduction to Medical Physic	2
	PHYS4705T	Renewable Energy	2
	PHYS4706T	Introduction to Nanotechnology	2
	PHYS4602T	Nuclear Technology	2
	PHYS4603T	Radiation Physics	2
	PHYS4404T	Photonics	2

First exit point

Required credit hours: 39

Degree awarded: Associate Diploma in Physics

Courses:

	Course Code	Course Title	Credit Hours
1	PHYS1101T	General Physics 1	3
2	MTH1101T	Calculus 1	3
3	MTH1401T	Linear Algebra	4
4	QR1101T	Tajweed of the Holy Quran	2
5	IND1101T	Design thinking	2
6	PHYS1102T	General Physics 2	4
7	QR2102T	The Holy Quran Memorization 1	2
8	CUR1101T	University skills	0
9	PHYS2103T	Heat and Waves	4
10	PHYS2301T	Electricity and Magnetism	5
11	AI2001T	Introduction to Artificial Intelligence	2

	Course Code	Course Title	Credit Hours
12	PHYS2401T	Modern Physics	4
13	PHYS3402T	Optics	4

Second exit point

Required credit hours: 72

Degree awarded: Intermediate Diploma in Physics

Courses:

	Course Code	Course Title	Credit Hours
1	PHYS1101T	General Physics 1	3
2	MTH1101T	Calculus 1	3
3	MTH1401T	Linear Algebra	4
4	MTH1131T	Introduction to Mathematical Physics	2
5	ELIN1301T	English Language 1	3
6	QR1101T	Tajweed of the Holy Quran	2
7	IND1101T	Design thinking	2
8	PHYS1102T	General Physics 2	4
9	CHM1101T	General Chemistry	3
10	BIO1101T	General Biology	3
11	MTH1102T	Calculus 2	4
12	ELIN1302T	English Language 2	3
13	QR2102T	The Holy Quran Memorization 1	2
14	CUR1101T	University skills	0
15	PHYS2103T	Heat and Waves	4
16	PHYS2501T	Classical Mechanics	4

	Course Code	Course Title	Credit Hours
17	PHYS2301T	Electricity and Magnetism	5
18	QR2103T	The Holy Quran memorization 2	2
19	AI2001T	Introduction to Artificial Intelligence	2
20	PHYS2401T	Modern Physics	4
21	PHYS2201T	Theoretical Physics	4
22	ICC1201T	Values and morals	2
23	PHYS3701T	Solid State Physics	4
24	PHYS3506T	Statistical Physics	3

Study Plan (47) For Physics Medical Program (206 credit hours)

Level	Course Code	Course Title	Credit Hours
Level 1	QR1101T	Tajweed of the Holy Quran	2
	IND1101T	Digital Design	2
	ELIN1301T	English Language (1)	3
	BIO1101T	General Biology	3
	PHYS1101T	General Physics (1)	3
	MTH1101T	Calculus 1	3
	MTH1111T	Linear Algebra	4
Level 2	QR2102T	The Holy Quran memorization 1	2
	CUR1101T	University skills	0
	ELIN1302T	English Language (2)	3
	MTH1102T	Calculus 2	4
	BIO2901T	Anatomy and physiology	3
	PHYS1102T	General Physics (2)	4
	PHYM2101T	Medical Physics	4

Level	Course Code	Course Title	Credit Hours
Level 3	QR2103T	The Holy Quran memorization 2	2
	CS2001T	Digital Technology	2
	PHYS3902T	Electricity and magnetism	3
	PHYS3903T	Introductory Modern Physics	3
	PHYS3904T	Theoretical Methods in Medical Physics	3
	PHYS3905T	Optics and Waves	3
	PHYS3906T	Fundamentals of Nuclear Physics	3
Level 4	QR3104T	The whole Holy Quran recital	2
	ICC1201T	Values and morals	2
	PHYM4201T	Medical Radiation Physics (1)	4
	CHM1101T	General Chemistry	3
	PHYS4907T	Solid State Physics	4
	PHYS4908T	Quantum Mechanics	3
	PHYS4909T	Classical Mechanics	2
Level 5	PHYS3503T	Elective (1)	2
	PHYS5910T	Fundamentals of Electronics	4
	PHYM5301T	Nuclear medicine physics	4
	PHYM5302T	Physics of Radiation Therapy (1)	4
	PHYM5303T	Physics of Medical Imaging (1)	4
Level 6	ICC4202T	Family in Islam	2
	PHYM6304T	Physics of Radiation Therapy (2)	3
	PHYM8203T	Radiation protection and dosimetry	3
	PHYM6305T	Quality Controls in Medical Physics	3
	PHYM6306T	Physics of Medical Imaging (2)	3
	PHYM6202T	Medical Radiation Physics (2)	2

Level	Course Code	Course Title	Credit Hours
Level 7	PHYM7700T	Co-Op Training	6
Level 8	BUS1099T	Professional development skills	2
	PHYS8912T	Graduation project	3
	PHYM8401T	Biomedical Instrumentation	3
	PHYM8402T	Health Physics	3
	PHYM8403T	Computer applications in medical physics	3
	PHYM8404T	Biomaterials	2
		Specialist Elective (1)	2
		Specialist Elective (2)	2

Elective courses

Level	Course Code	Course Title	Credit Hours
Level 8	PHYM8801T	Nanomaterials in Medicine	2
	PHYM8802T	Nonionizing radiation in medicine	2
	PHYM8803T	Isotopes in Medicine	2
	PHYM8804T	Medical biophysics	2
	PHYM8805T	Biosensors	2
	PHYM8806T	Medical image processing	2

First exit point

Required credit hours: 37

Degree awarded: Associate Diploma in Physics

Courses:

	Course Code	Course Title	Credit Hours
1	QR1101T	The Holy Quran (1)	2
2	IND1101T	Design thinking	2
3	BIO1101T	General Biology	3
4	PHYS1101T	General physics (1)	3
5	MTH1101T	Calculus 1	3
6	MTH1111T	Linear Algebra	4
7	CUR1101T	University skills	0
8	BIO1301T	Anatomy and physiology	3
9	IND1101T	Digital design skills	2
10	PHYS1102T	General physics (2)	4
11	PHYM2101T	Medical Physics	4
12	PHYM4201T	Medical Radiation Physics (1)	4
13	PHYS3902T	Fundamentals of Electricity and magnetism	3

Second Exit Point

Required credit hours: 72

Degree awarded: Intermediate Diploma in Physics

Courses:

	Course Code	Course Title	Credit Hours
1	QR1101T	The Holy Qur'an (1)	2
2	IND1101T	Design thinking	2
3	ELIN1301T	English Language (1)	3
4	BIO1101T	General Biology	3
5	PHYS1101T	General physics (1)	3
6	MTH1101T	Calculus 1	3
7	PHYM2101T	Medical Physics	4
8	QR2102T	The Holy Qur'an (2)	2
9	CUR1101T	University skills	0
10	ELIN1302T	English Language (2)	3
11	PHYS3906T	Fundamentals of Nuclear Physics	3
12	BIO1301T	Anatomy and physiology	3
13	PHYS1102T	General physics (2)	4
14	PHYM4201T	Medical Radiation Physics (1)	4
15	QR2103T	The Holy Qur'an (3)	2
16	AI2001T	Introduction to Artificial Intelligence	2
17	PHYS3902T	Fundamentals of Electricity and magnetism	3
18	PHYS3903T	Introductory Modern Physics	3
19	PHYS3904T	Theoretical Methods in Medical Physics	3
20	PHYS5910T	Fundamentals of Electronics	4
21	QR3104T	The Holy Qur'an (4)	2
22	ICC1201T	Islamic Culture (1)	2
23	PHYM5302T	Physics of Radiation Therapy (1)	4
24	PHYM5303T	Physics of Medical Imaging (1)	3
25	PHYM5301T	Nuclear medicine physics	

Policies and Procedures for Modifying Academic Programs and Courses

Study plans and academic programs in higher education institutions are considered the primary means through which the educational outcomes of an institution and the quality of its graduates are identified and assessed. Therefore, Umm Al-Qura University places great importance on the development and continuous enhancement of academic plans and programs across its colleges. The University is committed to the continuous evaluation and review of its academic programs to ensure excellence in educational offerings and the quality of study plans in alignment with labor market needs and the requirements of local and international academic accreditation.

The University also employs all its academic capabilities and expertise at various levels to develop academic programs that fulfill its mission and vision.

In an effort to standardize the procedures for the preparation and review of academic programs and study plans, the Physics Departments at the main campus and branch campuses have prepared this guide to document the requirements and procedures for the development, review, and updating of academic programs and study plans. This is intended to respond to the evolving demands of the labor market and the requirements of academic accreditation, which call upon educational institutions to periodically review, evaluate, and improve their programs.

Criteria for the Development and Revision of Academic Programs and Study Plans

1. Alignment of the program mission with the University's mission and strategic objectives.
2. Compliance of the program with the requirements of the Saudi Qualifications Framework (SAQF).
3. Alignment of the program with national and international accreditation standards.
4. Clear identification of the graduate attributes and intended learning outcomes of the program.
5. Consideration of community needs and labor market demands in program design.
6. Adoption of teaching and learning strategies, as well as assessment methods, specified

in the program document in accordance with current best educational practices.

7. Clear mechanisms for the periodic review and evaluation of the program.
8. Compliance of the study plan with the minimum and maximum credit hour requirements.
9. Alignment of course offerings with the program mission and objectives.
10. Diversity and integration of study plan courses in a manner that ensures the achievement of the program learning outcomes.
11. Ensuring the currency and integration of program course content during the preparation process, in terms of meeting university and college requirements, while incorporating the core requirements of the specialization and its academic and professional developments.
12. Commitment to the updated and approved templates issued by the National Center for Academic Accreditation and Evaluation (NCAAA)

Development and Updating Procedures

- Analyzing the current status of the program.
- Defining the program objectives and the intended learning outcomes.
- Identifying graduate attributes and potential employment opportunities.
- Coordinating among corresponding departments at the main campus and branch campuses in the preparation of the program study plan.
- Preparing the Program Learning Outcomes Matrix in accordance with the latest templates issued by the National Center for Academic Accreditation and Evaluation (NCAAA).
- Preparing the Program Specification Document in accordance with the latest templates approved by the National Center for Academic Accreditation and Evaluation (NCAAA).

Procedures for the Approval of Academic Programs and Courses

- Forming the Curriculum and Study Plans Committee within the Department through an administrative decision issued by the Department Council, with responsibilities that include the following:
- Monitoring and reviewing academic programs and study plans within the Department to ensure compliance with University requirements, alignment with scientific developments and labor market demands, and conformity with quality requirements and academic accreditation standards.
- Proposing the development or introduction of new academic programs within the Department based on a comprehensive analytical study that demonstrates the justifications for development or establishment, along with the necessary benchmarking and reference comparisons.
- Preparing the proposal for the developed or newly established academic program, including an introduction outlining the program vision and mission, benchmarking references, program objectives, intended learning outcomes, program specification, course specifications, and field experience specifications, in accordance with the latest templates issued by the National Center for Academic Accreditation and Evaluation (NCAAA). The proposal should also include the human and material resources required for program implementation.
- Presenting the proposal to the Department Council for review and issuing the appropriate recommendation.
- Implementing any amendments requested by the Department Council, if applicable, provided that such amendments do not conflict with the standards and regulations of the Saudi Qualifications Framework (SAQF).
- Implementing any amendments required to the program, if applicable, based on the feedback of external reviewers, following the external evaluation of the program.

Scientific Research in the Physics Department

The Physics Department at the College of Science, Umm Al-Qura University demonstrates distinguished scientific activity through its highly qualified academic staff, broad research expertise, and substantial research output.

The Department is characterized by the diversity of its research specializations, which include Medical Physics, Nuclear Physics, Theoretical Physics, Solid-State Physics, Materials Physics, Optics, Spectroscopy, Lasers, Photonics, Nanoscience, Renewable Energy, and Astrophysics/Atomic Physics. This diversity reflects a rich and dynamic research environment that supports innovation and scientific advancement.

In terms of scientific productivity, the Department has established a strong record of published research. Faculty members have contributed significantly to scientific literature, with:

- 485 published papers by Professors
- 521 published papers by Associate Professors
- 255 published papers by Assistant Professors

bringing the total number of published research papers to 1,261 by the year 2025.

Overall, these indicators demonstrate that the Department possesses a strong academic and research foundation that effectively supports teaching, graduate studies, and scientific advancement.

Graduation Projects and Cooperative Training

Graduation projects in the Physics Department represent the culmination of years of academic study, during which students transition from being recipients of knowledge to becoming researchers and investigators.

These projects aim to enhance students' scientific research skills, whether through the theoretical aspect, such as simulating physical phenomena using programming and advanced computational methods, or through the experimental aspect, involving laboratory work to measure the physical properties of materials, study renewable energy, or explore applications in medical and nuclear physics.

The importance of these projects extends beyond merely fulfilling degree requirements; they serve as a bridge connecting students to the labor market and innovation. Graduation projects contribute to the development of students' abilities in logical analysis, complex problem-solving, and scientific report writing, thereby opening broad opportunities for postgraduate studies or careers in industrial and technological sectors.

Field Training Procedures

The field training process proceeds through the following steps:

- The Field Training Committee prepares a comprehensive field training plan based on surveys distributed to faculty members, students, and external institutions, and submits it to the Head of the Department. The Head of the Department then presents the available field training opportunities and affiliated institutions, allowing students to select the option most suitable for them. Students subsequently submit applications for their preferred field training placement.
- Field training agreements serve as formal contracts between the University and the training organization. These agreements are negotiated annually and must be approved by the Dean of the College of Applied Sciences and the director of each participating organization.
- The academic supervisor (a faculty member) provides students with guidance regarding the types of tasks and responsibilities expected to be carried out at the field training site.

- Students complete field training for 16 weeks during the regular academic semester (one day per week, five hours per day) and 8 weeks during the summer semester (two days per week, five hours per day) at the designated training site.
- The field supervisor is responsible for guiding students and assigning tasks, in addition to submitting progress reports to the supervisor in the Physics Department. Both supervisors share responsibility for 60% of the total evaluation grade. Finally, students are required to submit a final report and deliver a presentation on their progress before the Field Training Committee.

Physics Department Laboratories

Physics laboratories are considered the heart of the Department, serving as the environment in which mathematical equations and abstract theories are transformed into measurable and observable realities. These laboratories aim to develop students' analytical thinking skills, enabling them to learn how to use precision instruments and conduct experiments in diverse areas such as mechanics, electricity, optics, and modern physics.

The laboratories also play a fundamental role in teaching students how to deal with experimental errors, analyze statistical data, and derive scientific conclusions with accuracy. Laboratory work not only enhances academic understanding but also helps build the character of a researcher capable of innovation and addressing technical challenges, making the laboratory an ideal environment for exploration and the development of advanced scientific solutions.

The Physics Department provides 12 student laboratories for each of the Al-Abdiyah and Al-Zaher campuses, as follows:

- Physics I Laboratory
- Physics II Laboratory
- Heat and Waves Laboratory
- Electricity and Magnetism Laboratory

- Medical Physics Laboratory
- Medical Radiation Physics Laboratory (I)
- Medical Radiation Physics Laboratory (II)
- Modern Physics Laboratory
- Electronics Laboratory
- Nuclear Physics Laboratory
- Solid-State Physics Laboratory
- Optics Laboratory



UMM AL-QURA UNIVERSITY

DEPARTMENT OF PHYSICS