



**Bachelor of Science Program in Physics
(B.Sc. in Physics.)**

**Physics Department
Faculty of Science and Art Qlwah
Albaha University**

1438 – 1439 AH

Establishment of the Faculty

The Faculty of Science was established at the Albaha University by Royal Decree No. 9682 / MB dated 5/8/1426 H. It started in 1427 H to contribute effectively to the expansion of the higher education base in the Kingdom of Saudi Arabia in the fields of basic and applied sciences to meet the needs of the labor market in the governmental and private sectors.

Departments and scientific programs offered by the Faculty

Currently, the Faculty of Science at Albaha University has advanced study programs to provide students with scientific and practical skills and knowledge with a focus on the use of modern technologies in four main departments: Biology, Chemistry, Physics and Mathematics, to prepare qualified graduates to work in governmental and private institutions. The Faculty is seeking to make postgraduate studies available for graduate students in its departments. The duration of the study for bachelor's degree is four years, including the preparatory year.

The faculty offers advanced study programs for the bachelor's degree in the following majors:

No.	Department	Department Code	Program (Major)
1	Bilology	4201	Biology
2	Chemistry	4202	Chemistry
3	Physics	4203	Physics
4	Mathemetics	4204	Mathemetics

Degrees awarded by the faculty of Science

The faculty of science offers bachelor's degrees in four disciplines: Biology, Chemistry, Physics and Mathematics. In addition to that the faculty works to prepare students in entrepreneurship and follow-up of postgraduate studies in these disciplines.

	Program (Major)	Bachelor's degree
1	Biology	Bachelor of Biology
2	Chemistry	Bachelor of Chemistry
3	Physics	Bachelor of Phycis
4	Mathemetics	Bachelor of Mathemetics

The Faculty seeks to develop its programs in cooperation with the best international universities to cope with the changes that are taking place in the field of different disciplines. The Faculty has signed a cooperation agreement with the University of Uppsala, Sweden, to carry out postgraduate programs in Mathematics, Chemistry, Physics and Biology. The agreement has been activated in mathematics and chemistry and the faculty is working on activating the agreement in other disciplines.

	Program	Postgraduate Degree
1	Master of Chemistry	Master of Science in Chemistry
2	Master of Mathematics	Master of Science in Applied mathematics

Strategic Objectives of the Faculty:

The goals of the Faculty of Science include five strategic objectives:

1. Scientific and academic leadership in basic and applied sciences
2. Providing environment for continuous education and learning
3. Scientific research
4. Community service
5. e-faculty

Bachelor of Science Program in Physics

Introduction:

The Physics department offers Bachelor of Science in Physics. The program provides many opportunities for careers in teaching, , scientific and industrial research centers, medical areasetc.. This program, enable students to continue their higher studies and research in different fields of physical sciences. In preparing the curriculum, the department was guided by the academic accreditation requirements, the standards of the National Center for Academic Accreditation and Evaluation and according to the national qualifications framework for higher education in the Kingdom. The Faculty makes a continuous improvement of curricula and study plans so as to respond to the expected changes that may occur in the world.

The study Plan is designed to contain 136 credit hours, spread over eight semesters (four years of study). Courses include the University, Faculty and major requirements and Elective Courses. The curriculum and the study plan meet the minimum requirements for professionals' physicists and prepares graduates to become qualified physics practitionerstoguide them for success in competitive business environments. In this program, students gain broad foundational skills in physics. The curriculum is designed to provide students with the basic knoweldge for postgraduate studies in all branches of physics and other related sciences.

Department Vision

Achieving distinction in physics programs to serve the needs of community through leadership, innovation and partnership.

Department Mission

Offering distinctive educational programs in in physical sciences to prepare a well-qualified generation of students armed with scientific and practical skills in accordance with international standards.

Department Objectives:

1. Provide a high quality programs in physical sciences and develop them to become the main source of physical science education in the Kingdom.
2. Graduating qualified students in the field of physics according to international standards.
3. Provide graduates with modern theories, and develop new skills and techniques in physics according to current and future needs in the Kingdom.
4. Prepare students for postgraduate studies and scientific research in the field of physical sciences and related fields.
5. Provide students with sufficient basic academic, technical and vocational skills through which they can practice physics.
6. Enrich knowledge and contribute to scientific developments in physical sciences through scientific research and follow-up of new discoveries in physical sciences.
7. Seek to achieve academic and scientific leadership in physical sciences.

Human and Material Resources:**1- Staff Members:**

Academic Rank	Male section	Female section	Total
Professor	1	-	1
Associate Professor	2	-	2
Assistant professor	12	4	16
Lecturer	1	4	5
Teaching Assistant	3	1	4
Total	19	9	28

2- Lecture Rooms and Laboratories:

	Male section	Female Section	Total
Classrooms	10	2	12
Laboratories	7	5	12
Total	17	7	24

Career opportunities

The program offered by the department of physics is designed to provide the students with professional skills to assist them to be successful and distinguished in their jobs.

There are many work opportunities for physics graduates who obtained, including the following fields:

1. Ministry of Education.
2. Ministry of Energy, Industry and Mineral Resources .
3. Ministry of Communications and Information Technology .
4. Ministry of Water and Electricity .
5. Ministry of Environment, Water and Agriculture .
6. Ministry of Defence .
7. Renuable Energies Research Centres .
8. Companies and Factories specialized in industry and development of Materials and Nanotechnology .
9. Companies specialized in field of electronics and Mentinance of electric Instruments and Equipments .
10. Radiation Protection and Ccuring Centres, Operation and Mentinance of Medical Equipments .
11. Saudi Standards , Metrology and Quality Organization
12. Modeling and simulation Centres in industry and scientific experiments.
13. Astronomical Observatories and Meteorology Centres .

Graduation Requirements:

To obtain a Bachelor of Science degree in physics, the student must pass the following:

1. Completion of 136 credit hours.
2. Completion of all compulsory and elective courses and graduation project as described in the study plan.
3. Obtain a GPA of at least 1 of 4.00

The Unified Physics Curriculum (1438 AH)
For Bachelor of Science in Physics

(136 Credit Hours)

Study Plan Structure of the Bachelor of Science Program in Physics

1. University requirements (19 Credit hours)

Course Code	Course Title	Distribution of study units			Prerequisites	Type of the requirement
		Theoretical	Practical	Credit hours		
11030119	English Language (1)	6	0	3	---	University compulsory
11010101	Islamic culture (1)	2	0	2	---	University compulsory
11020204	Health Culture	1	0	1	---	University compulsory
18091501	Arabic editing	2	0	2	---	University compulsory
11030219	English Language (2)	6	0	3	11030119	University compulsory
11020107	Holy Quran	2	0	2	---	University compulsory
11010111	Islamic culture (2)	2	0	2	---	University compulsory
42031277	Specialized English Language	2	0	2	11030219	University compulsory
11010113	Voluntary Community Service 1	0	0	0	---	University compulsory
11010123	Voluntary Community Service 2	0	0	0	---	University compulsory
11010112	Research & Essay Writing Skills	2	0	2	---	University compulsory
Total hours		25	0	19		

2. Faculty requirements (16 Credit hours)

Course Code	Course Title	Distribution of study units			Prerequisites	Type of the requirement
		Theoretical	Practical	Credit hours		
42041103	Calculus (1)	4	0	4	---	Faculty compulsory
42011103	General Biology	3	2	4	---	Faculty compulsory
42032102	General Physics (1)	3	2	4	---	Faculty compulsory
42020102	General Chemistry (1)	3	2	4	---	Faculty compulsory
Total hours		13	6	16		

3. Department requirements (97 Credit hours)

Course Code	Course Title	Distribution of study units			Prerequisites	Type of the requirement
		Theoretical	Practical	Credit hours		
42031219	General Physics (2)	3	2	4	42032102	Major compulsory
42021218	General Chemistry for physics	2	2	3	42020102	Major compulsory
42031207	Mathematical Physics (1)	3	0	3	---	Major compulsory
42041229	Calculus (2)	3	0	3	42041103	Major compulsory
42031211	Waves and Vibrations	2	2	3	42032102	Major compulsory
42031213	Alternating Current Circuits	2	2	3	42031219	Major compulsory
42031206	Mathematical Physics (2)	3	0	3	42031207	Major compulsory
42031208	Classical Mechanics (1)	3	0	3	42031207	Major compulsory
42031214	Electromagnetism	3	0	3	42031219	Major compulsory
42031212	Thermodynamics	2	0	2	42032102	Major compulsory
42031210	Physical Optics	2	2	3	42031211	Major compulsory
42031321	Mathematical Physics (3)	3	0	3	42031206	Major compulsory
42031325	Classical Mechanics (2)	3	0	3	42031208	Major compulsory
42031311	Electronics (1)	2	2	3	42031219	Major compulsory
42031323	Scientific Programming	2	2	3	42031206	Major compulsory
42031313	Modern Physics	2	2	3	42031219	Major compulsory
42031315	Statistical Physics	3	0	3	42031212	Major compulsory
42031306	Solid State Physics (1)	2	2	3	42031219	Major compulsory
42031306	Quantum Mechanics (1)	3	0	3	42031325	Major compulsory
42031324	Nuclear Physics (1)	2	2	3	42031313	Major compulsory
42031407	Computational Physics	2	2	3	42031323	Major compulsory
42031320	Electronics (2)	2	2	3	42031311	Major compulsory
42031322	Electrodynamics	3	0	3	42031214	Major compulsory

Cont.: Department requirements

Course Code	Course Title	Distribution of study units			Prerequisites	Type of the requirement
		Theoretical	Practical	Credit hours		
42031403	Quantum Mechanics (2)	3	0	3	42031306	Major compulsory
42031411	Atomic Physics	3	0	3	42031313	Major compulsory
42031413	Solid State Physics (2)	2	2	3	42031306	Major compulsory
42031415	Radiation Physics	2	0	2	42031324	Major compulsory
42031455	Introduction to Plasma Physics	2	0	2	42031322	Major compulsory
42031428	Nuclear Physics (2)	2	2	3	42031324	Major compulsory
42031430	Laser Physics	2	0	2	42031411	Major compulsory
42031432	Semiconductors Physics	2	2	3	42031413	Major compulsory
42031434	Graduation Research	3	0	3	Completion of 101 Credit hrs	Major compulsory
42031436	Molecular Spectroscopy	2	0	2	42031411	Major compulsory
42031438	Materials Physics	2	0	2	42031413	Major compulsory
Total hours		82	30	97		

4. Elective courses

Course Code	Course Title	Distribution of study units			Prerequisites	Type of the requirement
		Theoretical	Practical	Credit hours		
42031423	Biophysics	2	0	2	Completion of 83 Credit hrs	Major Elective (1)
42031425	Physics of Thin Films	2	0	2	Completion of 83 Credit hrs	Major Elective (1)
42031427	Advanced Laboratory Techniques	2	0	2	Completion of 83 Credit hrs	Major Elective (1)
42031440	Nanostructures	2	0	2	Completion of 101 Credit hrs	Major Elective (2)
42031444	Elementary Particles	2	0	2	Completion of 101 Credit hrs	Major Elective (2)
42031446	Physics of Renewable Energy	2	0	2	Completion of 101 Credit hrs	Major Elective (2)
Total hours		12	0	12		

5. B.Sc. Study Program

First Level

No. of Courses (6)

Course Code	Course Title	Distribution of study units			Prerequisites	Type of the requirement
		Theoretical	Practical	Credit hours		
11030119	English Language (1)	6	0	3	---	University compulsory
42041103	Calculus (1)	4	0	4	---	Faculty compulsory
42011103	General Biology	3	2	4	---	Faculty compulsory
11010101	Islamic culture (1)	2	0	2	---	University compulsory
11020204	Health Culture	1	0	1	---	University compulsory
18091501	Arabic editing	2	0	2	---	University compulsory
Total hours		18	2	16		

Second Level

No. of Courses (5)

Course Code	Course Title	Distribution of study units			Prerequisites	Type of the requirement
		Theoretical	Practical	Credit hours		
11030219	English Language (2)	6	0	3	11030119	University compulsory
42032102	General Physics (1)	3	2	4	---	Faculty compulsory
42020102	General Chemistry (1)	3	2	4	---	Faculty compulsory
11020107	Holy Quran	2	0	2	---	University compulsory
11010111	Islamic culture (2)	2	0	2	---	University compulsory
Total hours		16	4	15		

Third Level

No. of Courses (7)

Course Code	Course Title	Distribution of study units			Prerequisites	Type of the requirement
		Theoretical	Practical	Credit hours		
42031219	General Physics (2)	3	2	4	42032102	Major compulsory
42021218	General Chemistry for physics	2	2	3	42020102	Major compulsory
42031207	Mathematical Physics (1)	3	0	3	---	Major compulsory
42041229	Calculus (2)	3	0	3	42041103	Major compulsory
42031211	Waves and Vibrations	2	2	3	42032102	Major compulsory
42031277	Specialized English Language	2	0	2	11030219	University compulsory
11010113	Voluntary Community Service 1	0	0	0	---	University compulsory
Total hours		15	6	18		

Fourth Level

No. of Courses (7)

Course Code	Course Title	Distribution of study units			Prerequisites	Type of the requirement
		Theoretical	Practical	Credit hours		
42031213	Alternating Current Circuits	2	2	3	42031219	Major compulsory
42031206	Mathematical Physics (2)	3	0	3	42031207	Major compulsory
42031208	Classical Mechanics (1)	3	0	3	42031207	Major compulsory
42031214	Electromagnetism	3	0	3	42031219	Major compulsory
42031212	Thermodynamics	2	0	2	42032102	Major compulsory
42031210	Physical Optics	2	2	3	42031211	Major compulsory
11010123	Voluntary Community Service 2	0	0	0	---	University compulsory
Total hours		15	4	17		

Fifth Level

No. of Courses (6)

Course Code	Course Title	Distribution of study units			Prerequisites	Type of the requirement
		Theoretical	Practical	Credit hours		
42031321	Mathematical Physics (3)	3	0	3	42031206	Major compulsory
42031325	Classical Mechanics (2)	3	0	3	42031208	Major compulsory
42031311	Electronics (1)	2	2	3	42031219	Major compulsory
42031323	Scientific Programming	2	2	3	42031206	Major compulsory
42031313	Modern Physics	2	2	3	42031219	Major compulsory
42031315	Statistical Physics	3	0	3	42031212	Major compulsory
Total hours		15	6	18		

Sixth Level

No. of Courses (6)

Course Code	Course Title	Distribution of study units			Prerequisites	Type of the requirement
		Theoretical	Practical	Credit hours		
42031306	Solid State Physics (1)	2	2	3	42031219	Major compulsory
42031306	Quantum Mechanics (1)	3	0	3	42031325	Major compulsory
42031324	Nuclear Physics (1)	2	2	3	42031313	Major compulsory
42031407	Computational Physics	2	2	3	42031323	Major compulsory
42031320	Electronics (2)	2	2	3	42031311	Major compulsory
42031322	Electrodynamics	3	0	3	42031214	Major compulsory
Total hours		14	8	18		

Seventh Level

No. of Courses (7)

Course Code	Course Title	Distribution of study units			Prerequisites	Type of the requirement
		Theoretical	Practical	Credit hours		
42031403	Quantum Mechanics (2)	3	0	3	42031306	Major compulsory
42031411	Atomic Physics	3	0	3	42031313	Major compulsory
42031413	Solid State Physics (2)	2	2	3	42031306	Major compulsory
	Elective Course (1)	2	0	2	Completion of 83 Credit hrs	Major elective
11010112	Research & Essay Writing Skills	2	0	2	---	University compulsory
42031415	Radiation Physics	2	0	2	42031324	Major compulsory
42031455	Introduction to Plasma Physics	2	0	2	42031322	Major compulsory
Total hours		16	2	17		

Eighth Level

No. of Courses (7)

Course Code	Course Title	Distribution of study units			Prerequisites	Type of the requirement
		Theoretical	Practical	Credit hours		
42031428	Nuclear Physics (2)	2	2	3	42031324	Major compulsory
42031430	Laser Physics	2	0	2	42031411	Major compulsory
42031432	Semiconductors Physics	2	2	3	42031413	Major compulsory
42031434	Graduation Research	3	0	3	Completion of 101 Credit hrs	Major compulsory
	Elective Course (2)	2	0	2	Completion of 101 Credit hrs	Major elective
42031436	Molecular Spectroscopy	2	0	2	42031411	Major compulsory
42031438	Materials Physics	2	0	2	42031413	Major compulsory
Total hours		15	4	17		

6. Summary of the Study Plan

Requirement	Total contact hours	Total Credit hours
University requirements	25	19
Faculty requirements	19	16
Department requirements	112	97
University requirements	4	4
Total hours	160	136