

Curriculum Structure for BSc in Physics

The Bachelor of Science in Physics includes 120 credit hours. Students are expected to complete the program degree requirements in four academic years.

Overall Curriculum Structure

Curriculum Component	Number of Courses	Required Credit Hours
General Education Requirements (Core Curriculum Courses)	11	33
Supporting Courses	8	22
Major Core Courses	24	47
Focus Area Courses	7-8	18
Total		120

1. Core Curriculum Program Courses (33 Credit Hours)

a. Identity and Communication Package (18 Credit Hours)

Students must complete 18 Credit Hours as described in the table below.

Course	Course Title	Credit Hours
ARAB 100	Arabic Language I	3
ARAB 200	Arabic Language II	3
ENGL 202	English Language I – Post Foundation	3
ENGL 203	English Language II – Post Foundation	3
DAWA 111	Islamic Culture	3
HIST 121	History of Qatar	3

b. Social/Behavioral Sciences Package (3 Credit Hours)

Students must complete 3 Credit Hours from the courses listed in this package

c. Natural Science/Mathematics Package (3 Credit Hours)

Students must complete MATH 101 course (3 Credit Hours)

d. Core Knowledge and Skills Package (6 Credit Hours)

Students must complete 6 Credit Hours from this package including STAT 101

e. Supplemental College/Program Package (3 Credit Hours)

Students must complete UNIV 100 (3 Credit Hours)

2. Supporting Courses (22 Credit Hours)

Course Code	Course Title	Credit Hours	Pre /Co-requisites
MATH 102	Calculus II	3	MATH 101
MATH 211	Calculus III	3	MATH 102
MATH 231	Linear Algebra	3	MATH 101
MATH 285	Mathematics for Electrical Engineering	3	MATH 102, MATH 231
CHEM 101	General Chemistry (I)	3	ENGL 202
CHEM 103	Experimental General Chemistry (I)	1	Pre /Co CHEM 101
BIOL 101	Biology I	3	ENGL 202
GEOL 101	Principles of General Geology	3	ENGL 202
Total		22	

3. Major Courses (65 Credit Hours)

a. Major Core Courses (47 Credit Hours)

Course Code	Course Title	Credit Hours	Pre /Co-requisites
PHYS 101	General Physics I	3	Pre /Co MATH 101
PHYS 120	General Physics Lab I	1	Pre /Co PHYS 101
PHYS 115	Electricity & Magnetism	3	PHYS 101, PHYS 120, Pre /Co/ MATH 102
PHYS 116	Electricity & Magnetism Lab	1	Pre/Co PHYS 115
PHYS 219	Electronics I	2	PHYS 116
PHYS 223	Electronics I Lab	1	Pre/Co PHYS219
PHYS 229	Introductory Modern Physics	3	PHYS 115
PHYS 230	Introduction to Modern Physics Lab	1	Pre/Co PHYS229
PHYS 258	Thermodynamics & Statistical Physics	3	PHYS 116, Pre/Co MATH 211
PHYS 260	Thermodynamics and Statistical Physics Lab	1	Pre/Co PHYS 258
PHYS 251	Vibrations, and Waves	2	PHYS 116
PHYS 303	Mathematical Methods of Physics	3	MATH 211
PHYS 301	Electromagnetic Theory	3	PHYS 115, PHYS 303
PHYS 331	Classical Mechanics	3	PHYS 101, PHYS 303
PHYS 333	Quantum Mechanics I	3	PHYS 229, PHYS 303
PHYS 375	Optics	2	PHYS 251
PHYS 376	Optics Lab	1	Pre/Co PHYS 375
PHYS 462	Statistical Mechanics	2	PHYS 333
PHYS 341	Solid State Physics I	2	PHYS 229- PHYS 230
PHYS 353	Introductory Nuclear Physics	3	PHYS 229 & PHYS 230

PHYS 354	Introductory Nuclear Physics Lab	1	Pre/Co PHYS353
PHYS 378	Computational Physics	2	PHYS 303, MATH 285
PHYS 490	Internship	0	Department Approval and minimum of 90 CH
PHYS 499	Senior Project	1	Department Approval
Total		47	

b. Focus Area Courses (18 Credit Hours)

Students must complete 18 credit hours from the courses below.

Course Code	Course Title	Credit Hours	Pre /Co-requisites
PHYS 322	Advanced Electronics	2	PHYS 223
PHYS 324	Advanced Electronics Lab	1	Pre/Co PHYS 322
PHYS 361	Properties of Matter	3	PHYS 341
PHYS 440	Solid State Physics II	2	PHYS 341
PHYS 442	Solid State Physics II Lab	1	Pre/Co PHYS 440
PHYS 445	Semiconductors	3	PHYS 341
PHYS 452	Advanced Nuclear Physics	2	PHYS 354
PHYS 453	Advanced Nuclear Physics Lab	1	Pre/Co PHYS 452
PHYS 456	Radiation Physics	3	PHYS 354
PHYS 475	Laser Physics & Its Applications	3	PHYS 333
PHYS 482	Cosmic Rays & Particle Physics	3	PHYS 333
PHYS 410	Atomic & Molecular Physics	3	PHYS 230
PHYS 433	Quantum Mechanics II	3	PHYS 333
PHYS 493	Special Topics	3	Department Approval