

2023-2024 Catalog

Physics

Bachelor of Science
Academic Department
Physics and Engineering

The BS Physics degree trains students in the fundamental natural science of Physics. It prepares students either for a professional career directly following their undergraduate studies, or for additional graduate studies. Besides graduate studies in physics those studies can be in a variety of technical fields such as engineering, medicine, and finance. As the “primary natural science” physics underlies each of the STEM branches, meaning a successful physics major inherits key components from every STEM discipline. Graduates of the BS physics curriculum will have a mastered a combination of a challenging skill set valued by our modern economy: technical problem solving, mathematical reasoning, computer programming and modeling, hands-on laboratory and design skills, and understanding of specialized equipment.

Admission to all PHYS courses with prerequisites require a “C” or better in those prerequisites

Total Credits 89

Physics Required Coursework			
Item #	Course Title		Credits
☐ ENGR 1300	Introduction to Engineering		3
☐ ENGR 1100	Intro to Engineering Lab	ENGR 1100 Prerequisite: ENGR 1300	1
☐ PHYS 2333	University Physics I	PHYS 2333 Corequisites: PHYS 2111, MATH 1431	3
☐ PHYS 2111	University Physics I Laboratory	PHYS 2111 Corequisite: PHYS 2333	1
☐ PHYS 2334	University Physics II	PHYS 2334 Prerequisite: PHYS 2333; Pre/Corequisite: MATH 1432.	3
☐ PHYS 2112	University Physics II Lab	PHYS 2112 Corequisite: PHYS 2334	1
☐ PHYS 3337	Modern Physics	PHYS 3337 Prerequisites: PHYS 2334/2112; Corequisites: PHYS 3137.	3
☐ PHYS 3137	Modern Physics Laboratory	PHYS 3137 Prerequisites: PHYS 2334/2112; Corequisite: PHYS 3337	1
☐ PHYS 3338	Classical Mechanics	PHYS 3338 Prerequisites: PHYS 2334/2112, ENGR/PHYS 3343	3
☐ PHYS 3333	Electrical Circuits I	ENGR/PHYS 3333 Prerequisites: PHYS 2334 or Instructor Permission	3
☐ PHYS 3133	Electrical Circuits Lab	ENGR/PHYS 3133 Prerequisites: PHYS 2334, 2112. Corequisite: ENGR/PHYS 3333.	1
☐ PHYS 3343	Mathematical Methods for Physics and Engineering	PHYS 3343 Prerequisites: PHYS 2334, MATH 1432	3
☐ PHYS 3335	Thermodynamics	PHYS/ENGR 3335 Prerequisites: CHEM 1342; MATH 1432; PHYS 2334	3

☐	PHYS 3130	Junior/Senior Seminar in Physics and Engineering	PHYS 3130 Prerequisites: PHYS 2334, 2112; Junior or Senior Standing	1
☐	PHYS 3138	Advanced Laboratory	PHYS 3138 Prerequisites: Co/Pre-Req: PHYS 3337/3137	1
☐	PHYS 3339	Optics	PHYS 3339 Prerequisites: PHYS 2334, 2112.	3
☐	PHYS 3139	Optics Laboratory	PHYS 3139 Prerequisites: PHYS 2334, 2112.	1
☐	PHYS 4343	Computational Methods for Engineering	PHYS/ENGR 4343 Prerequisites: PHYS 3337, ENGR/PHYS 3343, or instructor permission.	3
☐	PHYS 4364	Fundamentals of Nanotechnology	PHYS 4364 Prerequisites: PHYS 3337; Junior-level standing.	3
☐	PHYS 4333	Electromagnetism	ENGR/PHYS 4333 Prerequisites: PHYS 3333 or Instructor Permission.	3
☐	PHYS 4334	Quantum Mechanics	PHYS 4334 Prerequisites: PHYS 3337, PHYS 3343, and either PHYS 3342 or PHYS 3338	3
☐	PHYS 4150	Laboratory Research Methods in Physics and Engineering	Lab Research Methods Prerequisites: (PHYS 2334, 2112) OR (PHYS 1332, 1112).	1

Physics Electives

Complete 12 ENGR/PHYS elective hours for your Physics concentration. Consult with academic advisor regarding options.

Chemistry

Complete all of the following courses. Must take in order.

Item #	Course Title		Credits
☐ CHEM 1341	General Chemistry I	CHEM 1341 Corequisite: CHEM 1141	3
☐ CHEM 1141	General Chemistry I Laboratory	CHEM 1141 Corequisite: CHEM 1341	1
☐ CHEM 1342	General Chemistry II	CHEM 1342 Prerequisite (C or better): CHEM 1341/1141. Corequisite: CHEM 1142	3
☐ CHEM 1142	General Chemistry II Laboratory	CHEM 1142 Corequisite: CHEM 1342	1

Mathematics

Complete all of the following courses. Must take in order.

Item #	Course Title		Credits
☐ MATH 1431	Calculus I	MATH 1431 Prerequisite: MATH 1430 or department consent.	4
☐ MATH 1432	Calculus II	MATH 1432 Prerequisite: Grade of 'C' or Better in MATH 1431	4

☐ MATH 2431	Calculus III	MATH 2431 Prerequisite: MATH 1432 with a grade of "C" or better	4
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STEM Electives

Complete 9 elective hours in STEM disciplines which complement a student's concentration. Must be done with consultation and approval of academic advisor in the Department of Physics and Engineering.