PHYSICS (B.S.) GENERAL

The Physic's departmental philosophy is that each student should be able to reason, collect facts and opinions, think critically, and make informed decisions concerning their physical, social, economic, and political environment. The objective of the Bachelor of Science in Physics program is to prepare students for careers in physics research, engineering, medicine, and other professional fields including physics teaching in high schools. Physics courses prepare students with good mathematical and analytical skills. In every skilled profession, such as engineering, medicine, management, teaching, etc., analytical expertise gained through mathematics and physics courses will provide an added opportunity/tool to choose and succeed in that profession. A thorough study of mechanics, statistical physics, modern physics, electromagnetic theory, and quantum mechanics along with introductory physics courses and introductory math courses enhances students' ability and updates modern technological innovations needed to succeed in alternate career choices.

Alternative physics careers include teaching, medicine, law (especially intellectual property or patent law), science writing, history of science, philosophy of science, science policy, energy policy, government, or management in technical fields.

Requirements for the Major

To receive the BS or BS Ed degree, a student must maintain an overall GPA of at least 2.0 and at least 2.5 in all core science, technology, engineering, and math courses. The total number of hours of coursework for the BS or BS Ed is at least 124 semester hours.

Major Requirements

Code	Title	Hours
PHY 198	PHYSICS STUDENT SEMINAR	0.5
PHY 199	PHYSICS STUDENT SEMINAR	0.5
PHY 298	PHYSICS STUDENT SEMINAR	0.5
PHY 299	PHYSICS STUDENT SEMINAR	0.5
PHY 398	PHYSICS STUDENT SEMINAR	0.5
PHY 399	PHYSICS STUDENT SEMINAR	0.5
PHY 498	PHYSICS STUDENT SEMINAR	0.5
PHY 499	PHYSICS STUDENT SEMINAR	0.5
PHY 211 & PHYL 211	General Physics I and GENERAL PHYSICS LAB I	4
PHY 212 & PHYL 212	General Physics II and GENERAL PHYSICS LAB II	4
PHY 216	MODERN PHYSICS	3
PHY 311	THEORETICAL MECHANICS I	3
PHY 330	METHODS OF EXPERIMENTAL PHYICS	3
PHY 351	THERMAL PHYSICS	3
PHY 361	MATH MET OF PHYSICS &CHEMISTRY	3
PHY 411	ELECTROMAGNETIC THEORY I	3
PHY 422	QUANTUM MECHANICS	3
PHY 431	ATOMIC & NUCLEAR PHYSICS	3
MATH 242	CALCULUS II WITH LABORATORY	3
CHEM 142 & CHML 142	GENERAL CHEMISTRY II and GENERAL CHEMISTRY II LAB	4
Total Hours		**43**

General Physics Concentration

Code	Title	Hours
PHY 297	Research Methods in Physics	2
PHY 312	THEORETICAL MECHANICS II	3
PHY 362	MATH MET OF PHYSICS&CHEMISTRY	3
PHY 342	OPTICS SPECTRA & LASERS	3
PHY 380	INDEPENDENT STUDY	1-6
PHY 412	ELECTROMAGNETIC THEORY II	3
Physics Elective		3
Physics Elective		3
MATH 243	CALCULUS III WITH LABORATORY	3
MATH 244	CALCULUS IV WITH LABORATORY	3
Total Hours		**27-32**

Curriculum Map

Course	Title	Hours
Freshman		
Fall		
CHEM 141 & CHML 141	GENERAL CHEMISTRY I and GENERAL CHEMISTRY LAB	4
ENG 104 or ENG 103 or ENG 111	COMPOSITION I or English Composition I with Co-requisite Support or COMPOSITION & LITERATURE FOR L	3
MATH 241	CALCULUS I WITH LABORATORY	3
PHY 198	PHYSICS STUDENT SEMINAR	0.5
UNIV 100	UNIVERSITY SUCCESS	2
Humanities & Fine Arts Option		3
	Hours	**15.5**
Spring		
CHEM 142 & CHML 142	GENERAL CHEMISTRY II and GENERAL CHEMISTRY II LAB	4
ENG 105 or ENG 112	COMPOSITION II or COMPOSITION	3
MATH 242	CALCULUS II WITH LABORATORY	3
PHY 199	PHYSICS STUDENT SEMINAR	0.5
Pathway Option		3
PHY 211 & PHYL 211	General Physics I and GENERAL PHYSICS LAB I	4
	Hours	**17.5**
Sophomore		
Fall		
BIO 111 & BIOL 111	GENERAL BIOLOGY and GENERAL BIOLOGY LAB	4
MATH 243	CALCULUS III WITH LABORATORY	3
PHY 212 & PHYL 212	General Physics II and GENERAL PHYSICS LAB II	4
PHY 298	PHYSICS STUDENT SEMINAR	0.5
Pathway Option		3
	Hours	**14.5**
Spring		
MATH 244	CALCULUS IV WITH LABORATORY	3
PHY 216	MODERN PHYSICS	3
PHY 299	PHYSICS STUDENT SEMINAR	0.5
PHY 297	Research Methods in Physics	2
UNIV 200	CIVIC ENGAGEMENT	1
Humanities & Fine Arts Option		3
Pathway Option		3
	Hours	**15.5**

Junior		
Fall		
PHY 311	THEORETICAL MECHANICS I	3
PHY 351	THERMAL PHYSICS	3
PHY 361	MATH MET OF PHYSICS &CHEMISTRY	3
PHY 398	PHYSICS STUDENT SEMINAR	0.5
Physics Elective		3
Social & Behavioral Science Option		3
	Hours	**15.5**
Spring		
PHY 312	THEORETICAL MECHANICS II	3
PHY 330	METHODS OF EXPERIMENTAL PHYICS	3
PHY 342	OPTICS SPECTRA & LASERS	3
PHY 362	MATH MET OF PHYSICS&CHEMISTRY	3
PHY 399	PHYSICS STUDENT SEMINAR	0.5
Social & Behavioral Science Option		3
	Hours	**15.5**
Senior		
Fall		
PHY 411	ELECTROMAGNETIC THEORY I	3
PHY 422	QUANTUM MECHANICS	3
PHY 498	PHYSICS STUDENT SEMINAR	0.5
Physics Elective		3
Restricted Electives		3
General Elective		3
	Hours	**15.5**
Spring		
PHY 412	ELECTROMAGNETIC THEORY II	3
PHY 431	ATOMIC & NUCLEAR PHYSICS	3
PHY 499	PHYSICS STUDENT SEMINAR	0.5
Humanities & Fine Arts Option		3
Restricted Elective		3
	Hours	**12.5**
	Total Hours	**122**

Notes:

- Candidates that transfer 12 or more hours of college credit are exempt from UNIV 100 UNIVERSITY SUCCESS; however, the student must take 2 hours of general electives to replace the UNIV course.
- Online Graduation Clearance (**to be completed during the graduating semester only**).

Code	Title	Hours
Restricted Elective Course Options:		
ECE 220	CIRCUIT THEORY	3
ECEL 220	CIRCUITS LABORATORY	1
ECE 320	CIRCUIT THEORY II	3
ECE 330	ELECTRONICS	3
ECEL 330	ELECTRONICS LABORATORY	1
ECE 331	ELECTRONICS II	3
ECE 335	SEMICONDUCTOR DEVICES	3
ECE 345	ELECTROMAGNETIC FIELDS	3
ECE 480	POWER SYSTEM ANALYSIS	3
ECE 481	ELECTRIC MACHINES	3
CSC 118	COMPUTER SCIENCE I	3
CSC 119	COMPUTER SCIENCE II	3
CSC 215	DATA ANALYTICS	3
CSC 225	DISCRETE STRUCTURES	3
CSC 228	DATA STRUCTURES & ALGORITHMS	3
CSC 235	SECURITY AWARENESS	3
CSC 245	INTRODUCTION TO BIOINFORMATICS	3
CSC 330	DATABASE SYSTEMS	3
Any Math course that is MATH 240 or higher		3-4

Student Learning Outcomes

Student Learning Outcome 1
Students completing a BS degree in Physics will apply mathematics and science knowledge to solve problems that require critical and analytical thinking.

Student Learning Outcome 2
Students completing a BS degree in CPAS will have a broad knowledge of global perspectives as they relate to their field of study and obtain experimental learning within the international scientific community.

Student Learning Outcome 3
Students completing a BS degree in CPAS will be prepared to enter the workforce in their field and/or engage in advanced studies and research in their fields.