MATHEMATICS AND PHYSICS, BS

Degree: Bachelor of Science (BS)
Major: Mathematics and Physics

Program Overview

In contrast to the BS in Applied Mathematics or the BS in Physics with a mathematical physics concentration, this degree provides a synergistic, coherent, and parallel education in mathematics and physics. To a close approximation, the challenging coursework combines the mathematics and physics cores, with the Physics Laboratory cluster replaced by a single, fourth-year laboratory semester. The program is jointly administered by the Department of Physics and the Department of Mathematics, Applied Mathematics, and Statistics. Students may be advised by faculty members from either department.

The BS degree in Mathematics and Physics requires a total of 120 credit hours.

Undergraduate Policies

For undergraduate policies and procedures, please review the Undergraduate Academics section of the General Bulletin.

Accelerated Master's Programs

Undergraduate students may participate in accelerated programs toward graduate or professional degrees. For more information and details of the policies and procedures related to accelerated studies, please visit the Undergraduate Academics section of the General Bulletin.

Program Requirements

Students seeking to complete this major and degree program must meet the general requirements for bachelor's degrees and the Unified General Education Requirements. Students completing this program as a secondary major while completing another undergraduate degree program do not need to satisfy the school-specific requirements associated with this major.

The BS degree in mathematics and physics requires a total of 120 credits, including:

Code	Title	Credit Hours
Mathematics Requirements		
MATH 121	Calculus for Science and Engineering I	4
MATH 122	Calculus for Science and Engineering II	4
or MATH 124	Calculus II	
MATH 223	Calculus for Science and Engineering III	3
or MATH 227	Calculus III	
MATH 224	Elementary Differential Equations	3
or MATH 228	Differential Equations	
MATH 307	Linear Algebra	3
MATH 308	Introduction to Abstract Algebra	3
or MATH 330	Introduction to Scientific Computing	
MATH 321	Fundamentals of Analysis I	3
or MATH 421	Fundamentals of Analysis I	
MATH 322	Fundamentals of Analysis II	3
or MATH 422	Fundamentals of Analysis II	
MATH 324	Introduction to Complex Analysis	3
Approved Mathematics electives		6
Physics Requirements		
PHYS 121	General Physics I - Mechanics	4
or PHYS 123	Physics and Frontiers I - Mechanics	
PHYS 122	General Physics II - Electricity and Magnetism	4
or PHYS 124	Physics and Frontiers II - Electricity and Magnetism	
PHYS 221	Introduction to Modern Physics	3
PHYS 310	Classical Mechanics	3
PHYS 313	Thermodynamics and Statistical Mechanics	3
PHYS 331	Introduction to Quantum Mechanics I	3
or PHYS 481	Quantum Mechanics I	
PHYS 332	Introduction to Quantum Mechanics II	3
or PHYS 482	Quantum Mechanics II	
One of the following:		3
PHYS 423	Classical Electromagnetism	
PHYS 324 & PHYS 325	Electricity and Magnetism I and Electricity and Magnetism II	
PHYS 472	Graduate Physics Laboratory	3
Advanced physics elective; one of the following:		3
PHYS 315	Introduction to Solid State Physics	
PHYS 316	Introduction to Nuclear and Particle Physics	
PHYS 320	Introduction to Biological Physics	
PHYS 326	Physical Optics	
PHYS 327	Laser Physics	
PHYS 328	Cosmology and the Structure of the Universe	
PHYS 336	Modern Cosmology	
PHYS 365	General Relativity	
Mathematical physics; two of the following:		6
PHYS 250	Computational Methods in Physics	
PHYS 349	Methods of Mathematical Physics I	
PHYS 350	Methods of Mathematical Physics II	
Senior Project and Seminar		
One of two options:		6-7
(i) Mathematics Option		
MATH 351	Senior Project for the Mathematics and Physics Program	
MATH 302	Departmental Seminar (or any SAGES departmental seminar in Mathematics)	
(ii) Physics Option		
PHYS 303	Advanced Laboratory Physics Seminar	
PHYS 351	Senior Physics Project	
PHYS 352	Senior Physics Project Seminar	
Other Science Requirements [*]		
CHEM 105	Principles of Chemistry I	3-4
or CHEM 111	Principles of Chemistry for Engineers	
CHEM 106	Principles of Chemistry II	3-4
or ENGR 145	Chemistry of Materials	
ENGR 131	Elementary Computer Programming	3

or ECSE 132	Programming in Java	
Total Credit Hours		**88**

*   If approved by the M&P committee, other science sequence courses may be substituted.