Physics and Mathematics

Mathematics and Physics

This program is intended for students who desire additional mathematical background and preparation for graduate school or technical careers in the sciences, especially theoretical physics.

Major Requirements

Major: Mathematics & Physics

Degree Type: B.A. or B.S.
Required Degree Credits to Graduate: 132

General Education Requirements

Code	Title	Credits
First Year Experience (F):		
UNIV 189	Skills For Academic Success (Students transferring in 24 or more credits do not need to take UNIV 189.)	1
Communication (C):		
ENGL 110	College Composition I	3
ENGL 120	College Composition II	3
One Course in Upper Level Writing: Select from current general education list		3
COMM 110	Fundamentals of Public Speaking	3
Quantitative Reasoning (R):		
MATH 165	Calculus I	4
Science & Technology (S):		
PHYS 251 & 251L	University Physics I and University Physics I Laboratory	5
PHYS 252 & 252L	University Physics II and University Physics II Laboratory	5
Humanities & Fine Arts (A): Select from current general education list		6
Social & Behavioral Sciences (B): Select from current general education list		6
Wellness (W): Select from current general education list		2
Cultural Diversity (D): Select from current general education list		
Global Perspectives (G): Select from current general education list		
Total Credits		**41**

College Requirements

Bachelor of Science (BS) Degree – An additional 6 credits in Humanities or Social Sciences[*]

Bachelor of Arts (BA) Degree – An additional 12 credits Humanities and Social Sciences[*] and proficiency at the second year level in a modern foreign language.

* Humanities and Social Sciences may be fulfilled by any course having the following prefix: ADHM, ANTH, ARCH, ART, CJ, CLAS, COMM, ECON, ENGL, FREN, GEOG, GERM, HDFS, HIST, LA, LANG, MUSC, PHIL, POLS, PSYC, RELS, SOC, SPAN, THEA, WGS, or any course from the approved list of general education courses in humanities and social sciences (general education categories A and B). These credits must come from outside the department of the student's major.

Major Requirements

A grade of 'C' or better is required for all MATH, PHYS, and AST prefix courses.

Code	Title	Credits
General Education Requirements		40
College of Science and Mathematics Requirements		6-12
Mathematics Major Requirements		
MATH 166	Calculus II	4
MATH 265	Calculus III	4

MATH 266	Introduction to Differential Equations	3
MATH 270	Introduction to Abstract Mathematics	3
MATH 420	Abstract Algebra I	3
MATH 429	Linear Algebra	3
MATH 450	Real Analysis I	3
MATH 421	Abstract Algebra II	3
or MATH 451	Real Analysis II	
MATH 491	Seminar	2
Mathematics Electives	Any MATH prefix course 400-level or higher (MATH 488 & MATH 489 are recommended)	6
Physics Major Requirements		
PHYS 171	Introductory Projects in Physics	1
PHYS 251R	University Physics I Recitation	1
PHYS 252R	University Physics II Recitation	1
PHYS 350	Modern Physics	3
PHYS 360	Modern Physics II	3
PHYS 361	Electromagnetic Theory (or PHYS 370: Electromagnetic Theory (MSUM))	3-4
PHYS 370	Introduction to Computational Physics	3
Select one of the following:		3-4
PHYS 455	Classical Mechanics	
PHYS 330	Intermediate Mechanics (MSUM)	
PHYS 462	Heat & Thermodynamics	3
PHYS 485	Quantum Mechanics I	3
PHYS 486	Quantum Mechanics II	3
PHYS 489	Physics Projects	3
Physics Electives: Select 3 of the following:		9
PHYS 215	Research For Undergraduates	
PHYS 411	Optics for Scientists & Engineers	
PHYS 413	Lasers for Scientists and Engineers	
PHYS 415	Elements of Photonics	
PHYS 463	Statistical Mechanics	
PHYS 481	Introduction to Solid State Physics	
MSUM AST	Astronomy courses (300/400-level) with departmental pemission	
Related Required Courses		
Computer Science:		
CSCI 160	Computer Science I	4
Chemistry: Select one of the following (150/160 recommended):		4
CHEM 150 & CHEM 160	Principles of Chemistry I and Principles of Chemistry Laboratory I	
CHEM 121 & 121L	General Chemistry I and General Chemistry I Laboratory	
Select one of the following (151/161 recommended):		4
CHEM 151 & CHEM 161	Principles of Chemistry II and Principles of Chemistry Laboratory II	
CHEM 122 & 122L	General Chemistry II and General Chemistry II Laboratory	
Total Credits		**132-140**

Program Notes

- Except for courses offered only as pass/fail grading, no course may be taken Pass/Fail.