B.S. in Applied Physics

Bachelor of Science in Applied Physics - Astronomy Option

First Year		
1st Semester		**Term Credits**
HUM 101	English Composition: Writing, Speaking, Thinking I	3
PHYS 111	Physics I	3
PHYS 111A	Physics I Laboratory	1
MATH 111	Calculus I	4
CS 113 or CS 115	Introduction to Computer Science or Intro. to CS I in C++	3
CHEM 121 or CHEM 125	Fundamentals of Chemical Principles I or General Chemistry I	3
FRSH SEM	Freshman Seminar	0
	Term Credits	**17**
2nd Semester		
PHYS 114	Introduction to Data Reduction with Applications	3
PHYS 121	Physics II	3
PHYS 121A	Physics II Laboratory	1
MATH 112	Calculus II	4
CHEM 122 or CHEM 126	Fundamentals of Chemical Principles II or General Chemistry II	3
CHEM 124	General Chemistry Laboratory	1
Physical Education:GUR Elective		1
	Term Credits	**16**
Second Year		
1st Semester		
MATH 211	Calculus III A	3
MATH 225	Survey of Probability and Statistics	1
PHYS 234	Physics III	3
PHYS 231A	Physics III Laboratory	1
Social Science (lower-level):GUR Elective		3
HUM 102	English Composition: Writing, Speaking, Thinking II	3
Physical Education:GUR Elective		1
	Term Credits	**15**
2nd Semester		
MATH 222	Differential Equations	4
MATH 328	Mathematical Methods for Scientists and Engineers	3
PHYS 335	Introductory Thermodynamics	3
Social Science (lower-level):GUR Elective		3
English Composition and Cultural History (lower-level):GUR Elective		3
	Term Credits	**16**
Third Year		
1st Semester		
PHYS 418	Fundamentals of Optical Imaging	3
PHYS 432	Electromagnetism I	3
PHYS 320	Astronomy and Astrophysics I	3
Humanities and Social Sciences (upper-level):GUR Elective		3
PHYS 430	Classical Mechanics I	3
	Term Credits	**15**
2nd Semester		

PHYS 433	Electromagnetism II	3
PHYS 321	Astronomy and Astrophysics II	3
Math Elective		3
Capstone Seminar:GUR Elective		3
Humanities and Social Sciences (upper-level):GUR Elective		3
Math/Phys/CS Elective		3
	Term Credits	**18**
Fourth Year		
1st Semester		
PHYS 420	Special Relativity	3
PHYS 442	Introduction to Quantum Mechanics	3
Math/Phys/CS Elective		3
Technical Elective		3
Management:GUR Elective		3
	Term Credits	**15**
2nd Semester		
PHYS 322	Observational Astronomy	3
PHYS 421	General Relativity	3
PHYS 450	Advanced Physics Laboratory	3
Technical Elective		3
Technical Elective		3
	Term Credits	**15**
	Total Credits	**127**

Electives

Math/Phys/CS

Consult the physics department for information about qualifying courses.

Technical

Consult the physics department for information about qualifying courses.

Refer to the **General University Requirements** for further information on GUR electives.

Co-op Courses

Co-op courses bearing degree credit replace a technical elective or another course approved by the faculty advisor in the students major department. In applied physics, both PHYS 311 Co-op Work Experience I and PHYS 411 Co-op Work Experience II are taken for degree Credit with permission.

Bachelor of Science in Applied Physics - Optical Science and Engineering Option

First Year		
1st Semester		**Term Credits**
HUM 101	English Composition: Writing, Speaking, Thinking I	3
PHYS 111	Physics I	3
PHYS 111A	Physics I Laboratory	1
MATH 111	Calculus I	4
CS 113 or CS 115	Introduction to Computer Science or Intro. to CS I in C++	3
CHEM 125	General Chemistry I	3
FRSH SEM	Freshman Seminar	0
	Term Credits	**17**
2nd Semester		
PHYS 114	Introduction to Data Reduction with Applications	3
PHYS 121	Physics II	3
PHYS 121A	Physics II Laboratory	1

MATH 112	Calculus II	4
CHEM 126	General Chemistry II	3
CHEM 124	General Chemistry Laboratory	1
Physical Education:GUR Elective		1
	Term Credits	**16**
Second Year		
1st Semester		
MATH 211	Calculus III A	3
MATH 225	Survey of Probability and Statistics	1
PHYS 234	Physics III	3
PHYS 231A	Physics III Laboratory	1
Social Science (lower-level):GUR Elective		3
English Composition and Cultural History (lower-level):GUR Elective		3
Physical Education:GUR Elective		1
	Term Credits	**15**
2nd Semester		
MATH 222	Differential Equations	4
MATH 328	Mathematical Methods for Scientists and Engineers	3
MATH 335	Vector Analysis	3
Social Sciences (lower-level):GUR Elective		3
English Composition and Cultural History (lower-level):GUR Elective		3
	Term Credits	**16**
Third Year		
1st Semester		
OPSE 301	Introduction to Optical Science and Engineering	3
PHYS 418	Fundamentals of Optical Imaging	3
PHYS 430	Classical Mechanics I	3
PHYS 432	Electromagnetism I	3
Humanities and Social Sciences (upper-level):GUR Elective		3
	Term Credits	**15**
2nd Semester		
PHYS 433	Electromagnetism II	3
PHYS 446	Solid State Physics	3
OPSE 402	High Power Laser and Photonics Applications	3
Free Elective		3
Humanities and Social Sciences (upper-level):GUR Elective		3
Phys/OPSE Elective		3
	Term Credits	**18**
Fourth Year		
1st Semester		
PHYS 442	Introduction to Quantum Mechanics	3
Technical Elective		3
Management Elective		3
Technical Elective		3
Phys/OPSE/EE Elective		3
	Term Credits	**15**
2nd Semester		
OPSE 310	Virtual Instrumentation	3
PHYS 450	Advanced Physics Laboratory	3
Phys/EE Elective		3
Technical Elective		3

Capstone Seminar Elective	3
Term Credits	**15**
Total Credits	**127**

Electives

Phys/OPSE

Consult the physics department for information about qualifying courses.

Math/Phys/CS

Consult the physics department for information about qualifying courses.

Math/Phys/EE/CS

Consult the physics department for information about qualifying courses.

Technical

Consult the physics department for information about qualifying courses.

Refer to the **General University Requirements** for further information on GUR electives.

Co-op Courses

Co-op courses bearing degree credit replace a technical elective or another course approved by the faculty advisor in the students major department. In applied physics, both PHYS 311 Co-op Work Experience I and PHYS 411 Co-op Work Experience II are taken for degree Credit with permission.

This curriculum represents the maximum number of credits per semester for which a student is advised to register. A full-time credit load is 12 credits. First-year students are placed in a curriculum that positions them for success which may result in additional time needed to complete curriculum requirements. Continuing students should consult with their academic advisor to determine the appropriate credit load.