APPLIED PHYSICS, EMPHASIS

- General Education Course

- Milestone course: a key success marker for your major. See your advisor to discuss the importance of this course in your plan of study.

Major

The Core Curriculum is designed to foster critical thinking skills and introduce students to basic domains of thinking that transcend disciplines. The Core applies to all majors. Information on specific classes in the Core can be found at https://www.marshall.edu/gened/.

Code	Title	Credit Hours
Core Curriculum		
Core 1: Critical Thinking		
FYS 100	First Yr Sem Critical Thinking	3
MTH 229	Calculus/Analytic Geom I (CT)	5
Critical Thinking Course		3
Core 2		
ENG 101	Beginning Composition	3
ENG 201	Advanced Composition	3
Core II Communication		3
MTH 229	Calculus/Analytic Geom I (CT)	5
Core II Humanities		3
Core II Social Science		3
Core II Fine Arts		3
CHM 211 & CHM 217	Principles of Chemistry I and Principles of Chem Lab I (Core II Natural/ Physical Science)	5
Additional University Requirements		
Writing Intensive		3
Writing Intensive		3
Multicultural or International		3
PHY 491 & PHY 492	Capstone and Capstone	2
Major-Specific		
CHM 211	Principles of Chemistry I	3
CHM 217	Principles of Chem Lab I	2
CHM 212	Principles Chemistry II	3
CHM 218	Principles of Chem Lab II	2
ENGR 111	Engineering Computations	3
CIT 163	Intro to Programming: C++	3
CIT 236	Data Structures	3
CIT 238	Algorithms	3
MTH 230	Calculus/Analytic Geom II	4
MTH 231	Calculus/Analytic Geom III	4
MTH 335	Ordinary Diff Equations	3
PHY 211	University Physics I	4
PHY 202	General Physics I Laboratory	1
PHY 213	University Physics II	4
PHY 204	General Physics 2 Laboratory	1
PHY 308	Thermal Physics	3
PHY 304	Optics	3
PHY 405	Optics Lab	2
PHY 300	Electricity & Magnetism	3
PHY 330	Mechanics	3
PHY 320	Intro Modern Physics	3
PHY 421	Modern Physics Lab	2
PHY 425	Solid State Physics	3
PHY 442	Quantum Mechanics	3
PHY 444	Advanced Laboratory	2
PHY 445	Math Methods of Physics	3
PHY 446	Math Methods of Physics II	3
PHY 491 & PHY 492	Capstone and Capstone	2
PHY Elective		5
PHY 314 & PHY 415	Electronic Physics and Electronics Lab (Recommended)	
Free Elective		3
Free Elective		3

Major Information

- Students are required to know and track their degree requirements for graduation or for entrance to a professional school.
- In addition to the Core General Education requirements, the College of Science requires 3 hours of Calculus, and 40 hours of upper level credit.
- Coursework listed as “elective” may vary for each student. Students are encouraged to use elective hours toward a 2nd minor or toward prerequisites.
- Students are strongly encouraged to select courses that meet two or more Core or College requirements. For example, a writing intensive literature course could satisfy the Core II Humanities requirement as well as the university writing intensive requirement.
- Course offerings and course attributes are subject to change each semester. Please consult each semester’s schedule of courses for availability and attributes.
- Math is based on an ACT Mathematics score of 27 or higher. Students with an ACT Mathematics score less than 27 will be placed in the appropriate prerequisite mathematics and science courses.
- In order to graduate, students must maintain a 2.00 Overall GPA and receive a grade of *C* or better in each course required for the major.
- Advanced physics courses are offered every two to three semesters; check with the Physics Department for availability.
- Let the Department Chair know if you have an interest in a particular elective course as soon as possible.

- General Education Course

- Milestone course: a key success marker for your major. See your advisor to discuss the importance of this course in your plan of study.

Four Year Plan

A course of study in physics, resulting in a B.S. degree in physics, prepares students for a wide variety of opportunities, such as engineering careers in the private sector, careers in the health professions, employment in industry and government laboratories, advanced technology jobs in science and technology related fields, and careers as science teachers. The B.S. degree program is also excellent preparation for advanced degrees in physics, astronomy, engineering, medicine, or law. The Applied Physics major is designed for those who are interested in future study or work in an applied physics or engineering field.

Course	Title	Credit Hours
First Year		
First Semester		
PHY 211	University Physics I	4
PHY 202	General Physics I Laboratory	1
MTH 229	Calculus/Analytic Geom I (CT)	5
FYS 100	First Yr Sem Critical Thinking	3
ENG 101	Beginning Composition	3
UNI 100	Freshman First Class	1
	Credit Hours	17
Second Semester		
MTH 230	Calculus/Analytic Geom II	4
PHY 204	General Physics 2 Laboratory	1
PHY 213	University Physics II	4
ENG 201	Advanced Composition	3
Core I Critical Thinking (MC/I)		3
	Credit Hours	15
Second Year		
First Semester		
MTH 231	Calculus/Analytic Geom III	4
PHY 320	Intro Modern Physics	3
PHY 421	Modern Physics Lab	2
PHY 445	Math Methods of Physics	3
Core II Social Science (WI)		3
	Credit Hours	15
Second Semester		
PHY 446	Math Methods of Physics II	3
PHY 304	Optics	3
PHY 405	Optics Lab	2
MTH 335	Ordinary Diff Equations	3
CIT 163	Intro to Programming: C++	3
	Credit Hours	14
Third Year		
First Semester		
PHY 330	Mechanics	3
PHY 300	Electricity & Magnetism	3
PHY 308	Thermal Physics	3
CIT 236	Data Structures	3
Core II Communication		3
	Credit Hours	15
Second Semester		
PHY Elective		5
PHY 314 & PHY 415	Electronic Physics and Electronics Lab (Recommended)	
PHY 442	Quantum Mechanics	3
ENGR 111	Engineering Computations	3
CIT 238	Algorithms	3
	Credit Hours	14
Fourth Year		
First Semester		
PHY 491	Capstone	1
PHY 425	Solid State Physics	3
PHY 444	Advanced Laboratory	2
CHM 211	Principles of Chemistry I	3
CHM 217	Principles of Chem Lab I	2
Free Elective (CIT Recommended)		3
Writing Intensive		3
	Credit Hours	17
Second Semester		
PHY 492	Capstone	1
CHM 212	Principles Chemistry II	3
CHM 218	Principles of Chem Lab II	2
Core II Humanities (WI)		3
Free Elective (CIT Recommended)		3
Core II Fine Arts		3
	Credit Hours	15
	Total Credit Hours	122