

























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.

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/>.

Course Requirements


| Code | Title | Credit Hours |
|---|---|--------------|
| Core Curriculum | | |
| <i>Core 1: Critical Thinking</i> | | |
| FYS 100 | First Yr Sem Critical Thinking | 3 |
| MTH 229   | Calculus/Analytic Geom I (CT) | 5 |
| | Critical Thinking Course | 3 |
| <i>Core 2</i> | | |
| 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 |
| <i>Additional University Requirements</i> | | |
| | 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 |
| MTH 230   | Calculus/Analytic Geom II | 4 |
| CS 120 | Computer Science II | 3 |
| CS 210 | Data Structures and Algorithms | 3 |
| 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.









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Semester 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.

First Year




| First Semester | Credit Hours |
|---|--------------|
| 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 |
| CS 120 Computer Science II | 3 |
| Core II Communication | 3 |
| Credit Hours | 15 |

Second Semester




| | |
|---|-----------|
| PHY Elective | 5 |
| PHY 314 & PHY 415 Electronic Physics and Electronics Lab (Recommended) | 3 |
| PHY 442  Quantum Mechanics | 3 |
| ENGR 111 Engineering Computations | 3 |
| CS 210 Data Structures and 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 |