

PHYSICS APPLIED PHYSICS

REQUIREMENTS

CORE CURRICULUM 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 marshall.edu/gened.

CORE 1: CRITICAL THINKING

CODE	COURSE NAME	HRS	GRADE
FYS 100	First Year Seminar	3	_____
MTH 229	Critical Thinking Course	5	_____
_____	Critical Thinking Course	3	_____
Additional University Requirements			
_____	Writing Intensive	3	_____
_____	Writing Intensive	3	_____
_____	Multicultural or International	3	_____
PHY 491/492	Capstone	2	_____

CORE 2:

CODE	COURSE NAME	HRS	GRADE
ENG 101	Beginning Composition	3	_____
ENG 201	Advanced Composition	3	_____
_____	Core II Communication	3	_____
MTH 229	Calculus I	5	_____
_____	Core II Humanities	3	_____
_____	Core II Social Science	3	_____
_____	Core II Fine Arts	3	_____
CHM 211/17	Principles of Chemistry I / Lab	5	_____

MAJOR-SPECIFIC

All Applied Physics majors are required to take the following courses:

CODE	COURSE NAME	HRS	GRADE	CODE	COURSE NAME	HRS	GRADE
CHM 211	Principles of Chemistry I	3	_____	PHY 304	Optics	3	_____
CHM 217	Principles of Chemistry I Lab	2	_____	PHY 405	Optics Lab	2	_____
CHM 212	Principles of Chemistry II	3	_____	PHY 300	Electricity & Magnetism	3	_____
CHM 218	Principles of Chemistry II Lab	2	_____	PHY 330	Mechanics	3	_____
ENGR 111	Engineering Computations	3	_____	PHY 320	Intro Modern Physics	3	_____
CIT 163	Intro to Programming: C++	3	_____	PHY 421	Modern Physics Lab	2	_____
CIT 236	Data Structures	3	_____	PHY 425	Solid State Physics	3	_____
CIT 238	Algorithms	3	_____	PHY 442	Quantum Mechanics	3	_____
MTH 230	Calculus/Analytical Geom II	4	_____	PHY 444	Advanced Laboratory	2	_____
MTH 231	Calculus/Analytical Geom III	4	_____	PHY 445	Math Methods of Physics	3	_____
MTH 335	Ordinary Diff Equations	3	_____	PHY 446	Math Methods of Physics II	3	_____
PHY 211	University Physics	4	_____	PHY 491/492	Capstone	2	_____
PHY 202	General Physics I Lab	1	_____	_____	PHY Elective (PHY 314/415 Rec.)	5	_____
PHY 213	University Physics II	4	_____	_____	Free Elective (CIT Rec.)	3	_____
PHY 204	General Physics II Lab	1	_____	_____	Free Elective (CIT Rec.)	3	_____
PHY 308	Thermal Physics	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.

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

PHYSICS APPLIED PHYSICS

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.

YEAR ONE	FALL SEMESTER				SPRING SEMESTER			
	CODE	COURSE NAME	HRS	GRADE	CODE	COURSE NAME	HRS	GRADE
PHY 211	University Physics	4	_____	MTH 230	Calculus/Analytical Geom II	4	_____	
PHY 202	General Physics I Lab	1	_____	PHY 204	General Physics II Lab	1	_____	
MTH 229	Calculus I (CT)	5	_____	PHY 213	University Physics II	4	_____	
FYS 100	First Year Sem Crit Thinking	3	_____	ENG 201	Advanced Composition	3	_____	
ENG 101	Beginning Composition	3	_____	_____	Core I Critical Thinking (MC/I)	3	_____	
UNI 100	Freshman First Class	1	_____					
	TOTAL HOURS	17			TOTAL HOURS	15		
	Summer Term (optional):							

YEAR TWO	FALL SEMESTER				SPRING SEMESTER			
	CODE	COURSE NAME	HRS	GRADE	CODE	COURSE NAME	HRS	GRADE
MTH 231	Calculus/Analytical Geom III	4	_____	PHY 446	Math Methods of Physics II	3	_____	
PHY 320	Intro Modern Physics	3	_____	PHY 304	Optics	3	_____	
PHY 421	Modern Physics Lab	2	_____	PHY 405	Optics Lab	2	_____	
PHY 445	Math Methods of Physics	3	_____	MTH 335	Ordinary Diff Equations	3	_____	
_____	Core II Social Science (WI)	3	_____	CIT 163	Intro to Programming: C++	3	_____	
	TOTAL HOURS	15			TOTAL HOURS	14		
	Summer Term (optional):							

YEAR THREE	FALL SEMESTER				SPRING SEMESTER			
	CODE	COURSE NAME	HRS	GRADE	CODE	COURSE NAME	HRS	GRADE
PHY 330	Mechanics	3	_____	_____	PHY Elective (PHY 314/415 Rec.)	5	_____	
PHY 300	Electricity & Magnetism	3	_____	PHY 442	Quantum Mechanics	3	_____	
PHY 308	Thermal Physics	3	_____	ENGR 111	Engineering Computations	3	_____	
CIT 236	Data Structures	3	_____	CIT 238	Algorithms	3	_____	
_____	Core II Communication	3	_____					
	TOTAL HOURS	15			TOTAL HOURS	14		
	Summer Term (optional):							

YEAR FOUR	FALL SEMESTER				SPRING SEMESTER			
	CODE	COURSE NAME	HRS	GRADE	CODE	COURSE NAME	HRS	GRADE
PHY 491	Capstone	1	_____	PHY 492	Capstone	1	_____	
PHY 425	Solid State Physics	3	_____	CHM 212	Principles of Chemistry II	3	_____	
PHY 444	Advanced Laboratory	2	_____	CHM 218	Principles of Chemistry II Lab	2	_____	
CHM 211	Principles of Chemistry I	3	_____	_____	Core II Humanities (WI)	3	_____	
CHM 217	Principles of Chemistry I Lab	2	_____	_____	Free Elective (CIT Rec.)	3	_____	
_____	Free Elective (CIT Rec.)	3	_____	_____	Core II Fine Arts	3	_____	
_____	Writing Intensive	3	_____					
	TOTAL HOURS	17			TOTAL HOURS	15		
	Summer Term (optional):							

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

Area of Emphasis
 Major Requirement
 College Requirement
 General Education Requirement

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

INVOLVEMENT OPPORTUNITIES

- SGA
- Campus Activity Board
- JMELI
- Commuter Student Advisory Board
- Community Engagement Ambassadors
- Club Sports
- Religious Organizations
- Political Organizations
- Residence Hall Association
- Cultural Organizations
- National Society of Leadership and Success
- Greek Life

RELATED MAJORS

- Mechanical Engineering
- Civil Engineering
- Safety Technology
- Computer Science
- Chemistry
- Biology

GRADUATION REQUIREMENTS

- Have a minimum of 120 credit hours (some colleges or majors require more);
- Have an overall and Marshall Grade Point Average of 2.00 or higher;
- Have an overall Grade Point Average of 2.00 or higher in the major area of study;
- Have earned a grade of C or better in English 201 or 201 H;
- Have met all major(s) and college requirements;
- Have met the requirements of the Core Curriculum;
- Have met the residence requirements of Marshall University, including 12 hours of 300/400 level coursework in the student's college (see section entitled "Residence Requirements" in the undergraduate catalogue);
- Be enrolled at Marshall at least one semester of the senior year;
- Have transferred no more than 72 credit hours from an accredited West Virginia two-year institution of higher education.

Colleges and specific programs may have unique requirements that are more stringent than those noted above. Students are responsible for staying informed about and ensuring that they meet the requirements for graduation.

This academic map is to be used as a guide in planning your coursework toward a degree. Due to the complexities of degree programs, it is unfortunate but inevitable that an error may occur in the creation of this document. The official source of degree requirements at Marshall University is DegreeWorks available in your myMU portal. Always consult regularly with your advisor.

APPLIED PHYSICS – 2023-2024

YEAR ONE



Have questions? Need to talk? You already have a Friend-At-Marshall ready to help you succeed. Find your FAM Peer Mentor here: www.marshall.edu/fam



Stay on the Herd Path and come to class! Class attendance is more important to your success than your high school GPA, your class standing, or your ACT/SAT scores.



Participate in a Career Exploration Experience (job shadow) to help identify your career goals.



In order to graduate on time, you need to take an average of 15 credits per semester. Are you on track? Take 15 to Finish!



Join or create a club or organization on campus about a particular issue you care about. Marshall has more than 200 student organizations.



College is a great time to experience the world! Consider studying abroad in the summer, during Spring Break, or for an entire semester.



Take a career self-assessment to help determine what majors fit your talents and interests.

YEAR THREE



Submit your work for the annual competitions and awards.



Meet with a career education specialist to conduct a "gap analysis." Figure out the skills you'll need for the career you want while you still have time to build them.



Complete graduate admissions exams (GRE, MCAT, LSAT) the summer before your senior year.



Are you on track to graduate? Meet with your advisor for your Junior Eval to make sure you know what requirements you have left.



Apply to be a New Student Orientation Leader or a Campus Tour Guide.



Take an elective course that links diversity to your field of study.



Want to continue your education and increase your opportunities? Talk to a faculty member about whether graduate school fits your career goals.

YEAR TWO



Develop relationships with professors who can serve as future references by attending their office hours.



Are you completing enough credits to graduate on time? Dropping or failing a class can put you behind. Use summer terms to quickly get back on track.



Did you do really well in a hard course? Become a Tutor or a Supplemental Instructor.



Begin your Math Methods of Physics to meet your prerequisites for upper division classes.



Take a pulse check. Know what you need to do every year to keep your grants, scholarships, or federal financial aid.



No need to wait until graduate school. Discuss undergraduate research opportunities with faculty in your major right now.



Think about who can help you grow as a student and a professional—professors, advisors, alumni, etc.—and ask at least one to be your mentor.

YEAR FOUR



This is it! Are you on track to graduate? Meet with your advisor for your Senior Eval to see what requirements you have left.



Strengthen your resume and enhance your presentation skills. Present what you've learned at an academic conference off campus.



Did you do really well in a hard course? Become a Tutor or a Supplemental Instructor.



Networking is key! Attend a Career Expo to seek employment opportunities and network with employers in your field.



Be at the top of your professional game! Prepare a final resume and practice your interview skills with a career coach in Career Education.



Prepare to present at Physics Department Research and Convocation Day and CoS Research EXPO in April.



Participate in Department of Physics outreach events with local high school students. Stay engaged and make a difference.

TRANSFERABLE SKILLS ASSOCIATED WITH THIS MAJOR

- Mathematical Ability
- Scientific Ability
- Attention to Detail
- Strong Oral and Written Communication Skills
- Organizational Skills

ASSOCIATED CAREERS

- Acoustical Physics
- Astronomy
- Astrophysics
- Biophysics
- Chemical Physics
- Research and Development
- Nuclear Physics
- High Energy Physics
- Science Education



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