

# **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.

MY ADVISOR'S NAME IS:

CORE 1: CRITICAL THINKING						CORE 2:					
	CODE	COURSE NAME		HRS	GRADE		CODE	COURSE NAME		HRS	GRADE
	FYS 100	First Year Seminar	•	3		<b>**</b>	ENG 101	Beginning Composition	•	3	
<b>**</b>	MTH 229	Critical Thinking Course	•	5		<b>**</b>	ENG 201	Advanced Composition	•	3	
		Critical Thinking Course	•	3				Core II Communication	•	3	
							MTH 229	Calculus I	• •	5	
	Additiona	l University Requirements						Core II Humanities	•	3	
		Writing Intensive		3				Core II Social Science	•	3	
		Writing Intensive		3				Core II Fine Arts	•	3	
		Multicultural or International		3			PHY 211/20	02 University Physics I / lab	• •	5	
	PHY	Capstone		2							
	491/492										

#### MAJOR-SPECIFIC

All Physics majors are required to take the following courses:

	CODE	COURSE NAME		HRS	GRADE	CODE	COURSE NAME		HRS	GRADE
	PHY 211	University Physics I	•	4		PHY	Capstone	• •	2	
<b>**</b>	PHY 202	General Physics I Lab	•	1		491/492				
	PHY 213	University Physics II	<b>\</b>	4		MTH 230	Calculus/Analytical Geom II	•	4	
	PHY 204	College Physics II Lab	<b>•</b>	1		MTH 231	Calculus/Analytical Geom III	•	4	
<b>**</b>	PHY 304	Optics	<b>•</b>	3		MTH 335	Ordinary Diff Equations	•	3	
<b>**</b>	PHY 405	Optics Lab	<b>•</b>	2		CHM 211	Principles of Chemistry I (Rcmd.)	•	3	
	PHY 308	Thermal Physics	•	3		CHM 217	Principles of Chemistry I Lab (Rcmd.)	•	2	
<b>***</b>	PHY 300	Electricity & Magnetism	•	3		CHM 212	Principles of Chemistry II (Rcmd.)	•	3	
	PHY 330	Mechanics	•	3		CHM 218	Principles of Chemistry II Lab	•	2	
<b>***</b>	PHY 320	Intro Modern Physics	•	3		CHIVI 216	(Rcmd.)	•	2	
<b>**</b>	PHY 421	Modern Physics Lab	•	2			PHY Elective (PHY 425/444 Rcmd.)	•	5	
<b>***</b>	PHY 442	Quantum Mechanics	•	3			Free Elective		4	
	PHY 445	Math Methods of Physics	•	3			Free Elective		3	
	PHY 446	Math Methods of Physics II	<b>♦</b>	3			Free Elective		3	
	PHY 302	Electricity & Magnetism II	•	3						

**3** \_\_\_\_\_

## MAJOR INFORMATION

PHY 443 Quantum Physics II

- 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, coursework listed as "elective" may vary for each student. Students are encouraged to use elective hours toward a 2nd minor or toward prerequisities.
- 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.
- Marshall offers a Bachelor of Science in Physics with Areas of Emphasis available in Applied, Biological, and Medical Physics. Please speak with your advisor if you are interested in a specific Area of Emphasis.

FOUR YEAR PLAN COLLEGE OF SCIENCE 2024-2025

**PHYSICS** 

MY ADVISOR'S NAME IS:

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

		FALL SEMESTER						SPRING SEMESTER			
	CODE	COURSE NAME		HRS	GRADE		CODE	COURSE NAME		HRS	GRADE
17	PHY 202	General Physics I Lab	• •	1		<b>₹</b>	MTH 230	Calculus/Analytical Geom II	•	4	
	PHY 211	University Physics I	• •	4			PHY 204	General Physics II Lab	•	1	
17	MTH 229	Calculus I (CT)	• •	5			PHY 213	University Physics II	•	4	
•	FYS 100	First Year Sem Crit Thinking	•	3		<b>***</b>	ENG 201	Advanced Composition	•	3	
	ENG 101	Beginning Composition	•	3				Core I Critical Thinking	•	3	
	UNI 100	Freshman First Class		1							
	TOTAL H			17			TOTAL HO	DURS		15	
Sun	TOTAL HO	ptional):		17			TOTAL HO			15	
Sun	nmer Term (o	ptional): FALL SEMESTER		_				SPRING SEMESTER			
Sun	nmer Term (o	FALL SEMESTER COURSE NAME		_	GRADE		CODE	SPRING SEMESTER		HRS	GRADE
Sun	CODE MTH 231	FALL SEMESTER  COURSE NAME  Calculus/Analytical Geom III	•	_	GRADE		CODE PHY 446	SPRING SEMESTER COURSE NAME Math Methods of Physics II	•	HRS 3	GRADE
·	CODE MTH 231 PHY 320	FALL SEMESTER  COURSE NAME  Calculus/Analytical Geom III Intro Modern Physics	• •	_	GRADE	•	<b>CODE</b> PHY 446 PHY 304	SPRING SEMESTER  COURSE NAME  Math Methods of Physics II  Optics	• •	HRS 3	GRADE
·	CODE MTH 231	FALL SEMESTER  COURSE NAME  Calculus/Analytical Geom III	* *	_	GRADE		CODE PHY 446	SPRING SEMESTER COURSE NAME Math Methods of Physics II	•	HRS 3	GRADE
	CODE MTH 231 PHY 320	FALL SEMESTER  COURSE NAME  Calculus/Analytical Geom III Intro Modern Physics	• •	_	GRADE		<b>CODE</b> PHY 446 PHY 304	SPRING SEMESTER  COURSE NAME  Math Methods of Physics II  Optics	* *	HRS 3	GRADE
	CODE MTH 231 PHY 320 PHY 421	FALL SEMESTER  COURSE NAME  Calculus/Analytical Geom III  Intro Modern Physics  Modern Physics Lab	• •	_	GRADE	<del>(**</del>	<b>CODE</b> PHY 446 PHY 304 PHY 405	SPRING SEMESTER COURSE NAME Math Methods of Physics II Optics Optics Lab	* *	HRS 3 3 2	GRADE
·	CODE MTH 231 PHY 320 PHY 421	FALL SEMESTER  COURSE NAME  Calculus/Analytical Geom III Intro Modern Physics Modern Physics Lab Math Methods of Physics	• •	HRS 4 3 2 3	GRADE		<b>CODE</b> PHY 446 PHY 304 PHY 405	SPRING SEMESTER  COURSE NAME  Math Methods of Physics II  Optics  Optics Lab  Ordinary Diff Equations	* *	HRS 3 3 2 3	GRADE

			FALL SEMESTER						SPRING SEMESTER			
		CODE	COURSE NAME		HRS	GRADE		CODE	COURSE NAME		HRS	GRADE
		PHY 308	Thermal Physics	•	3			PHY 302	Electricity & Magnetism II	•	3	
		PHY 330	Mechanics	•	3		<b>**</b>	PHY 442	Quantum Mechanics	•	3	
田田	<b>**</b>	PHY 300	Electricity & Magnetism	•	3				Core II Humanities	•	3	
HRE			Writing Intensive Elective	•	3				Multicultural or International	•	3	
			Free Elective		3				Core II Fine Arts	•	3	
m AR												
Σ E												
		TOTAL HO	DURS		15			TOTAL HO	DURS		15	
	Sumi	mer Term (op	otional):									

		FALL SEMESTER					SPRING SEMESTER			
	CODE	COURSE NAME		HRS	GRADE	CODE	COURSE NAME		HRS	GRADE
	PHY 443	Quantum Mechanics II	•	3		CHM 212	Principles of Chemistry II (Rcmd.)	•	3	
	PHY 491	Capstone	• •	1		CHM 218	Principles of Chemistry II Lab (Rcmd.)	•	2	
	CHM 211	Principles of Chemistry I (Rcmd.)	•	3		PHY 492	Capstone	• •	1	
	CHM 217	Principles of Chemistry I Lab	•	2			Free Elective		4	
		(Rcmd.)					Free Elective		3	
(		PHY Elective (PHY 425/444 Rcmd.)	•	5						
4										
	TOTAL HO	DURS		14		TOTAL HO	OURS		13	
Sum	mer Term (op	otional):								

#### **INVOLVEMENT OPPORTUNITIES**

- · 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 twoyear 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.

## 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



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



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



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.





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!



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

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

## YEAR THREE



Submit your work for annual competitions and awards.



PHYSICS — 2024-2025

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



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



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.



requirements you have left.



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 FOUR





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



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



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



YEAR TWO

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.

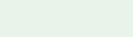


Begin your Math Methods of Physics to meet your prerequisites for upper division classes.



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

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.



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



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



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



Career Expo to seek employment opportunities and network with employers in your field.



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

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



TRANSFERABLE SKILLS

· Mathematical Ability

· Attention to Detail

Organizational Skills

Accoustical Physics

Chemical Physics

Nuclear Physics

High Energy Physics

Science Education

Astronomy

 Astrophysics Biophysics

ASSOCIATED CAREERS

Research and Development

Scientific Ability

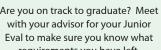
Skills

ASSOCIATED WITH THIS MAJOR

• Strong Oral and Written Communication

Marshall University College of Science One John Marshall Drive Huntington, WV 25755 1-304-696-2371 cos@marshall.edu marshall.edu/cos











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



