Office Hours:
251 Science Building
Mon-Fri 8:00am - 4:30pm
(304) 696-6738
(304) 696-3243 (FAX)

MARSHALL
PHYSICS

Department of Physics
251 Science Building
Marshall University
One John Marshall Drive
Huntington, WV 25755

Double Major in Physics and Applied Math (or Major in Physics with a Minor in Math)

In our physics program, students can easily obtain a Minor in Math or double Major in Applied Mathematics with a B.S. degree in Physics. If you are interested in a double major in physics with Applied Mathematics, or just interested in a physics major with math minor, contact the Physics Department! We can help you!

COURSE REQUIREMENTS

Math Courses

With Math Minor

MTH 229	Calculus with Analytic Geometry I	5 hrs
MTH 230	Calculus with Analytic Geometry II	4 hrs
MTH 231	Calculus with Analytic Geometry III	4 hrs
MTH 300	Intro to Higher Math	4 hrs
MTH 331	Linear Algebra	4 hrs
MTH 335	Ordinary Differential Equations	3 hrs

With Applied Math Major

MTH 229	Calculus with Analytic Geometry I	5 hrs
MTH 230	Calculus with Analytic Geometry II	4 hrs
MTH 231	Calculus with Analytic Geometry III	4 hrs
MTH 300	Intro to Higher Math	4 hrs
MTH 331	Linear Algebra	4 hrs
MTH 335	Ordinary Differential Equations	3 hrs
MTH 415/416	Partial/Advanced Differential Equations	3 hrs
MTH 442	Numerical Linear Algebra	3 hrs
MTH 443	Numerical Analysis	3 hrs
MTH 490	Capstone	2 hrs
§ CS ???	????	? hrs

†MTH 229, 230, 231, 300, 331, 335 (open every semester), 415/416 (open odd/even spring), 442 (open odd spring), 443 (open every fall), and 490/491 (open every semester)
§ Math major requires to take any Computer Science (CS) courses. We strongly recommend to take CS 210 & 300 for both MTH 442 & 443

General Education

Students have to fulfill the general education requirements required by the College of Science (http://www.marshall.edu/gened/).

Physics Courses Requirements

Course Number	Course Title	Credit Hours	BS in Physics	Applied Physics	Bio Physics	Medical Physics	Medical Imaging
PHY 211	University Physics I (CR PHY 202, MTH 229)	4	*	*	*	*	*
PHY 202	General Physics Lab I (CR PHY 211)	1	*	*	*	*	*
§ PHY 213	University Physics II (CR PHY 204, MTH 229)	4	*	*	*	*	*
PHY 204	General Physics Lab II (CR PHY 213)	1	*	*	*	*	*
PHY 300	Electricity & Magnetism I (PR PHY 213)	3	*	*	*	*	*
PHY 302	Electricity & Magnetism II (PR PHY 300)	3	*				*
PHY 304	Optics (PR PHY 213, CR PHY 405)	3	*	*	*	*	*
PHY 405	Optics Advanced Lab (CR PHY 304)	2	*	*	*	*	*
PHY 308	Thermal Physics (PR PHY213)	3	*	*	*	*	*
PHY 320	Intro to Modern Physics (PR PHY 213, CR PHY 421)	3	*	*	*	*	*
PHY 421	Modern Physics Advanced Lab (CR PHY 320)	2	*	*	*	*	*
PHY 330	Mechanics (PR PHY 213)	3	*	*	*	*	*
PHY 442	Quantum Mechanics I (PR PHY 330)	3	*	*	*	*	*
PHY 443	Quantum Mechanics II (PR PHY 442)	3	*				
PHY 445	Mathematical Methods I (PR PHY 213)	3	*	*	*		*
PHY 491/492	Capstone	2	*	*	*	*	*

§ C letter grade is required in PHY 211 & 202 prior to taking this course

Note: MTH 230 & MTH 213 are Prerequisite/ Corequisite course for almost all 300 - 400 level PHY courses

Advanced Courses Requirements & Electives

BS in Physics Elective

Five additional hours of 300 – 400 level physics courses, which must include at least two hours of a lab class

Course Number	Course Title	Credit Hours
PHY 314	Electronic Physics	3
PHY 415	Electronics Lab	2
PHY 425	Solid State Physics	3
PHY 444	Solid State and Quantum Optics Lab (available Spring 2018)	2
PHY 462	Nuclear Physics and Chemistry	3
PHY 463	Nuclear Physics Lab	2
PHY 350	Biological Physics	4
PHY 360	Medical Physics	3
PHY 412	Atmospheric Physics with Computer Simulation Modeling	3
PHY 435	Scientific Computing	3
PHY 431- 432	Seminar I & II (1 hr. each)	2
PHY 446	Mathematical Methods II	3
PHY 447	Mechanics for Teachers	4
PHY 450	Radiation Physics in Life Science	4

If you have questions or find inconsistencies, please contact Dr. Sachiko McBride (mcbridesa@marshall.edu)

BS in Physics with Area of Emphasis (AoE) Courses Requirements

Course Number	Course Title	Credit Hours	Applied Physics	Bio Physics	Medical Physics	Medical Imaging
PHY 360	Medical Physics	3				*
PHY 446	Mathematical Methods II	3				*
CHM 211	Principles of Chemistry I	3	*	*	*	
CHM 217	Principles of Chemistry I Lab	2	*	*	*	
CHM 212	Principles of Chemistry II	3		*	*	
CHM 218	Principles of Chemistry II Lab	2		*	*	
CHM 355	Organic Chemistry I	3			*	
CHM 356	Organic Chemistry II	3			*	
CHM 361	Intro Organic Chemistry Lab	1			*	
BSC 120	Principles of Biology I	4		*	*	
BSC 121	Principles of Biology II	4		*	*	
BSC 227	Human Anatomy	4				*
BSC 228	Human Physiology	4				*
BSC 322	Principles of Cell Biology	4		*		
IST/CIT 163	Programming Practicum with C++	3	*			
IST/CIT 236	Data Structures	3	*			
IST/CIT 238	Algorithms	3	*			
ENGR 111	Engineering Computations	3	*			
MI 201	Introduction to Radiography	3				*
MI 202	Patient Care in Imaging Science	3				*
MI 204	Radiographic Anatomy	3				*
MI 205	Imaging Procedures I	4				*
MI 206	Clinical Practice I	4				*
MI 207	Imaging Procedures II	4				*
MI 208	Pharmacology & Drug Administration for Imaging Science	2				*
MI 210	Clinical Practice II	4				*
SAT 345	Probability & Statistics	3				*
	Additional 300 - 400 Level Courses Requirements		6 hrs§	6 hrs∓	6 hrs*	

§ Applied Physics: PHY 314 & PHY 325 suggested
∓ Bio Physics: 3 hrs Physics (PHY 350 or/and PHY 360) and 4 hrs Biology (BSC 417) suggested
* Medical Physics: 3 hrs Physics (PHY 350 or/and PHY 360) and 3 hrs Chemistry (CHM 365) suggested

If you have questions or find inconsistencies, please contact Dr. Sachiko McBride (mcbridesa@marshall.edu)