

PHYSICS

Degree: B.S., Physics

Department of Chemistry and Physics (<https://cas.umw.edu/physics/>)

The study of physics involves a basis for understanding more deeply all arenas of the physical universe. Because the discipline also provides a framework for problem-solving, studying physics also imports into other fields in/out of STEM disciplines where stubborn problems persist. An understanding of physics also transfers to every technical discipline that involves modern computation and instrumentation. In total, majoring in physics supplies undergraduates with a firm footing to better understand current STEM foundations while also feeding one's curiosity for solving future unforeseen problems.

The Physics major at UMW is part of a nationally recognized program that emphasizes faculty accessibility and student collaboration. The program is keenly aware of the lack of equitable representation in physics and participates in a national cohort to address historical inequities.

The whole program, from students to faculty, elevates awareness for physics education from grades K–12 through informal programming and partnership with UMW's College of Education. Our graduates have a high success rate of moving forward with their expected plans, which mirrors the national statistics for physics majors. Our faculty are contributing members of science abroad, while also collaborating with student majors. This process begins as early as a student's first year. UMW physics facilities are among the best, on-campus and beyond. The Margaret Duke ('44) Endowed Fund supports students in all facets of their journey toward aspiring scientists, including a monthly colloquium series that allows students to interact personally with disciplinary experts.

The Physics track is designed for students who have an interest in graduate studies in physics or physics-related fields. This track provides a solid preparation in four cornerstone subdisciplines (Quantum, Classical, Electromagnetism, and Statistical) while weaving computational problem-solving into each. There are ample elective opportunities to pare with core requirements, and many students choose to complete a capstone research and/or thesis project in their senior year. Physics majors work within well-supported laboratory spaces and are mentored adequately for their next steps.

Major Requirements

Code	Title	Credits
PHYS 105	University Physics, w/Lab	4
PHYS 106	University Physics w/Lab	4
PHYS 211	Modern Physics	3
PHYS 317	Methods of Mathematical Physics	3
PHYS 320	Classical Mechanics I w/Lab	4
PHYS 330	Electricity and Magnetism I w/Lab	4
PHYS 384	Advanced Physics Laboratory	4
PHYS 410	Quantum Mechanics I w/Lab	4
PHYS 482	Physics Seminar	2
Select at least 9 credits of the following:		9
PHYS 201	Thermodynamics and Statistical Mechanics	
PHYS 210	Nuclear Physics	
PHYS 283	Electronics w/Lab	
PHYS 292	Optics w/Lab	
PHYS 319	Astrophysics	

PHYS 471	Selected Topics in Physics
PHYS 472	Solid State Physics

Total Credits

41

General Education Requirements

The general education requirements for Bachelor of Arts/Bachelor of Science degrees (<https://catalog.umw.edu/undergraduate/general-education/requirements-bachelor-arts-bachelor-science-degrees/>) apply to all students who are seeking to earn an undergraduate B.A., B.S. or B.S.Ed. degree.

Students seeking a Bachelor of Liberal Studies degree have a separate set of BLS general education requirements (<https://catalog.umw.edu/undergraduate/general-education/requirements-bachelor-liberal-studies-degrees/>).

Electives

Elective courses are those that are not needed to fulfill a general education requirement or major program requirement but are chosen by the student to complete the 120 credits required for graduation with a B.A./B.S./B.S.Ed. degree or the BLS degree. These courses may be taken graded or pass/fail (or S/U in the case of physical education and 100-level dance). No student in a regular B.A./B.S./B.S.Ed. program may count more than 60 credits in a single discipline toward the 120 credits required for graduation.

Total Credits Required for the Degree: 120 credits

Chemistry and Physics Department

Janet A. Asper, Chair

Janet A. Asper, Career Advisor

Matthew C. Fleenor, Program Coordinator (Physics)

Faculty

(The person's subject field is indicated in parentheses.)

Professors

Janet A. Asper (Chemistry)

K. Nicole Crowder (Chemistry)

Matthew C. Fleenor (Physics)

Kelli M. Slunt (Chemistry)

Associate Professors

Leanna C. Giancarlo (Chemistry)

E. Davis Oldham (Chemistry)

Randall D. Reif (Chemistry)

Assistant Professor

Desmond R. Villabla (Physics)

Sarah E. Smith (Chemistry)

Varun Suresh Makhija (Physics)