PHYSICS

Degree: Bachelor of Science
Specializations: Computational Physics, Engineering Physics, Physics
Minor: Physics
Department: Physics
Building 13, Room 301
(850) 474-2267
http://uwf.edu/physics/
physics@uwf.edu
College: Arts and Sciences
Semester Hours Required for Degree: 120

Faculty: C.S. Prayaga (Chairperson), J.S. Marsh, B. Murakami, R.C. Smith (Emeritus), L. Ujj.

Physics is a basic science which covers the study of matter, radiations, and interactions. The various topics covered include electricity and magnetism, electronics, fluids, mechanics, optics, quantum phenomena, and concepts of relativity, thermodynamics, waves, and several related laboratory activities.

The Physics Department offers the traditional B.S. program in Physics with additional specializations in Computational Physics and Engineering Physics. These two unique specializations are specifically designed to train students for the present-day industrial job market. UWF is one of the few schools in the southeastern U.S. which offers these two career options.

In addition to attending graduate school, a trained physicist can enter the employment market as a research scientist. Those with an engineering physics background are eligible for entry-level jobs as engineers in organizations such as the Department of Defense, NASA, and the various national labs.

Computational Physics graduates may have career opportunities in research laboratories, national labs, and graduate studies.

Students interested in obtaining certification to teach this subject area in secondary education need to contact an advisor in this department to carefully plan the course work to satisfy degree and some teacher certification requirements. A degree in this major is required for participation in teacher education certification options.

PROGRAM REQUIREMENTS

In addition to general University requirements, students seeking the B.S. in Physics must meet the requirements listed below.

Students should consult with their academic advisor for courses which may satisfy both the General Studies requirements and common prerequisites.

General Studies (36 sh)

Physics majors should take CHM 2045/L and CHM 2046/L to satisfy the natural science component of General Studies.

For additional information see the General Studies section of this *Catalog.*

Common Prerequisites (28 sh)

State mandated common prerequisites must be completed prior to graduation, but are not required for admission to the program. Courses in brackets indicate substitutes from Florida public community/junior colleges and universities.

+	CHM	2045/L	General Chemistry I/Lab	4
			[CHM x045/L, CHM 1045C, CHM 1045E or both CHM 1040 and CHM 1041]	
+	CHM	2046/L	General Chemistry II/Lab	4
			[CHM x046/L, CHM 1046C, CHM 1046E]	
+	MAC	2311	Analytic Geometry & Calculus I	4
			[MAC x311, MAC x281]	
+	MAC	2312	Analytic Geometry & Calculus II	4
			[MAC x312, MAC x282]	
	MAC	2313	Analytic Geometry & Calculus III	4
			[MAC x313, MAC x283]	
+	PHY	2048/L	University Physics I/Lab	4
			[PHY 2048C, PHY x048/L]	
+	PHY	2049/L	University Physics II/Lab	4
			[PHY 2049C, PHY x049/L]	

+Indicates common prerequisites which can be used to satisfy General Studies requirements.

Lower Division Electives (0-9 sh)

Sufficient 1000/2000 level electives to complete at least 60 semester hours in the lower division. Current UWF students may use elective courses at any level (1000-4999) to meet this elective requirement.

Recommend a computer programming language such as COP 2253, COP 2334, or equivalent.

COMPUTATIONAL PHYSICS SPECIALIZATION

Major (33 sh)

Physics Core (23 sh)

PHY	3106	Modern Physics I	3
PHY	3106L	Modern Physics Lab	2
PHY	3107	Modern Physics II	3
PHY	4323	Electricity & Magnetism I	3
PHY	4325	Electricity & Magnetism II	3
PHY	4513	Thermodynamics & Kinetic Theory	3
PHZ	4113	Mathematical Physics I	3
PHZ	4114	Mathematical Physics II	3

Computational Physics Specialization (10 sh)

PHY	3220	Intermediate Mechanics	4
PHY	4604	Quantum Theory	3
3000/4000 level Physics elective			3

Major-Related (27 sh)

COP	2253	Programming Using Java	3
COP	3022	Intermediate Computer Programming	3
COT	3100	Applications of Discrete Structures	3
MAD	4401	Numerical Analysis	3
MAP	2302	Differential Equations	3
MAP	4103	Mathematical Modeling	3
MAP	4341	Partial Differential Equations	3
MAS	3105	Linear Algebra	3
3000/4000 level Mathematics or Physics elective			3

Upper Division Electives (0 sh)

ENGINEERING PHYSICS SPECIALIZATION

Major (36 sh)

Physics Core (23 sh)

Same as Computational Physics

Engineering Physics Specialization (13 sh)

EGM	3512	Engineering Mechanics	4
PHY	3424	Optics	3
PHY	4250	Fluid Mechanics	3
PHY	4910	Independent Research	2
PHZ	3106	Intermediate-Level Physics Problems	1

Major-Related (24 sh)

EEL	3111	Circuits I	3
EEL	3303L	Electric Circuits Laboratory	1
EEL	3304	Electronic Circuits I	3
EEL	3701/L	Digital Logic & Computer Systems/Lab	4
EEL	4304L	Electronics Laboratory	1
MAD	4401	Numerical Analysis	3
MAP	2302	Differential Equations	3
MAS	3105	Linear Algebra	3

Choose one:

COP	2253	Programming Using Java	3
COP	2334	Programming Using C++	3

Upper Division Electives (0 sh)

PHYSICS SPECIALIZATION

Major (43 sh)

Physics Core (23 sh)

Same as Computational Physics

Physics Specialization (20 sh)

PHY	3220	Intermediate Mechanics	4
PHY	3424	Optics	3
PHY	4445	Lasers and Applications	3
PHY	4604	Quantum Theory	3
PHY	4910	Independent Research	2
PHZ	3106	Intermediate-Level Physics Problems	1
3000/4000 Physics (PHY, PHZ) elective			4

Major-Related (17 sh)

EEL	3111	Circuits I	3
EEL	3303L	Electric Circuits Laboratory	1
MAD	4401	Numerical Analysis	3
MAP	2302	Differential Equations	3
MAS	3105	Linear Algebra	3
3000/4000 level Physics or Mathematics elective as approved by advisor			4

Upper Division Electives (0 sh)

MINOR

A Minor in Physics can be earned by completing 15 sh of physics courses above 3100 level, including PHY 3106, PHY 3107, and PHY 4323. Physics majors may not earn this minor.