

PHYSICS

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

Faculty: M.C. George (Chairperson), R.A. Brooks, , J.S. Marsh, C.S. Prayaga, R.C. Smith (Emeritus), L. Ujj.

Physics is a basic science which covers the study of matter, interactions, radiations, and the measurements thereof. The various subareas 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 Engineering Physics and Physics with Computer Science. 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 civil service, particularly in the Department of Defense, NASA, and the various national labs.

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.

Course descriptions are listed alphabetically by prefix in the back of this catalog.

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.

ENGINEERING PHYSICS SPECIALIZATION

Major (37 sh)

EGM	3512	Engineering Mechanics	4
PHY	3106	Modern Physics I	3
PHY	3106L	Modern Physics Lab	2
PHY	3107	Modern Physics II	3
PHY	3424	Optics	3
PHY	4250	Fluid Mechanics	3
PHY	4323	Electricity & Magnetism I	3
PHY	4325	Electricity & Magnetism II	3
PHY	4513	Thermodynamics & Kinetic Theory	3
PHY	4910	Independent Research	3
		Course offered 1-4 sh per semester	
PHZ	3106	Intermediate-Level Physics Problems	1
PHZ	4113	Mathematical Physics I	3
PHZ	4114	Mathematical Physics II	3

Major-Related (23 sh)

EEL	3111	Circuits I	3
EEL	3303L	Electric Circuits Lab	1
EEL	3304	Electronic Circuits I	3
EEL	3701C	Digital Logic & Computer Systems	4
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)

	<i>Choose One:</i>	
COP 2253	Programming Using Java	3
COP 2334	Programming using C++	3

PHYSICS SPECIALIZATION**Major (43 sh)**

PHY 3106	Modern Physics I	3
PHY 3106L	Modern Physics Lab	2
PHY 3107	Modern Physics II	3
PHY 3220	Intermediate Mechanics	4
PHY 3424	Optics	3
PHY 4323	Electricity & Magnetism I	3
PHY 4325	Electricity & Magnetism II	3
PHY 4445	Lasers and Applications	3
PHY 4513	Thermodynamics & Kinetic Theory	3
PHY 4604	Quantum Theory	3
PHY 4910	Independent Research	3
	Course offered 1-4 sh per semester	
PHZ 3106	Intermediate-Level Physics Problems	1
PHZ 4113	Mathematical Physics I	3
PHZ 4114	Mathematical Physics II	3
3000/4000	Physics (PHY, PHZ) elective	3

Major-Related (17 sh)

EEL 3111	Circuits I	3
EEL 3303L	Electric Circuits Lab	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)**PHYSICS WITH COMPUTER SCIENCE
SPECIALIZATION****Major (30 sh)**

PHY 3106	Modern Physics I	3
PHY 3106L	Modern Physics Lab	2
PHY 3107	Modern Physics II	3
PHY 3424	Optics	3
PHY 4250	Fluid Mechanics	3
PHY 4323	Electricity & Magnetism I	3
PHY 4445	Lasers & Applications	3
PHY 4513	Thermodynamics & Kinetic Theory	3
PHY 4910	Independent Research	3
	Course offered 1-4 sh per semester	
PHZ 3106	Intermediate-Level Physics Problems	1
PHZ 4113	Mathematical Physics I	3

Major-Related (30 sh)

CDA 3100	Microprocessor Systems	3
CDA 3101	Introduction to Computer Organization	3
CIS 3020	Introduction to CIS	3
EEL 3701C	Digital Logic & Computer Systems	4
EGM 3512	Engineering Mechanics	4
MAD 4401	Numerical Analysis	3
MAP 2302	Differential Equations	3
MAS 3105	Linear Algebra	3
3000/4000 level	Physics or Computer Science elective as approved by advisor	1

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.