

Physics BS Health Physics Concentration

The program is designed for those students who have interests in nuclear physics and the practical application of nuclear physics to modern society. This program prepares undergraduate students for careers as a nuclear worker in university, industrial, medical, and government laboratory settings. Students successfully completing this degree program will have satisfied the standard undergraduate requirements for admission to graduate programs in physics, medical physics, and health physics.

Course Availability: This is when courses are typically offered and is subject to change:
F (Fall), S (Spring), SS (Summer) F = Fall, S = Spring, SS = Summer

Common Prerequisites (38 credits)

Complete all of the following with a grade of "C" or better (16 credits)

Course	Description	Pre-requisites	Term offered	Units
MAC 2311	Calculus I	Grade of "C" or higher in MAC 1147 or MAC 1140 + MAC 1114 (or placement score without prior coursework)	F, S, SS	4
MAC 2312	Calculus II	MAC 2311	F, S, SS	4
MAC 2313	Multivariable Calculus	MAC 2312	F, S, SS	4
MAP 2302	Differential Equations	MAC 2312	F, S, SS	3
PHY 1033	Physics Pathways	N/A	F,S	1

Complete all of the following with a grade of "C" or better (22 credits)

CHM 1045	General Chemistry I	"C" grade or higher in MAC 1105 or appropriate placement score (if no prior coursework in Math/Chem) Co-requisite: CHM 1045L	F, S, SS	3
CHM 1045L	General Chemistry I Lab	Co-requisite: CHM 1045	F, S, SS	1
CHM 1046	General Chemistry II	Pre-requisite: CHM 1045 Co-requisite: CHM 1046L	F, S, SS	3
CHM 1046L	General Chemistry II Lab	Co-requisite: CHM 1046	F, S, SS	1
BSC 2010	General Biology I	N/A	F, S, SS	3
BSC 2010L	General Biology Lab I	Co-requisite: BSC 2010	F, S, SS	1
PHY2048	Physics W/Calculus I	Pre- or Co-requisite: MAC2311	F, S, SS	4
PHY2048L	General Physics Lab I	N/A	F, S, SS	1
PHY2049	Physics W/Calculus II	Pre- or Co-requisite: MAC2312 Pre-requisite: PHY 2048	F, S, SS	4
PHY2049L	General Physics Lab II	Pre-requisite: PHY 2048L	F, S, SS	1

Required Courses (60 credits)

Complete all of the following with a grade of "C" or better (41 credits)

Course	Description	Pre-requisites	Term offered	Units
PHY 3106	Modern Physics I	PHY 2049	F, S	3
PHY 3802L	Intermediate lab	Co-requisite PHY 3106	F, S	3
PHZ 3113	Methods in Theoretical Physics	MAC 2313	S	3
PHY 3513	Thermodynamics	PHY 2049, Pre or Co-requisite MAC 2313	F, S	3
PHY 4604	Quantum Mechanics I	PHY 3106, MAC 2313 and MAP 2302	F	3
PHY 4605	Quantum Mechanics II	PHY 4604	S	3
PHY 4323	Intermediate Electromagnetism I	PHY 2049, MAC 2313, Pre or co-requisite MAP 2302	F	3
PHY 4324	Intermediate Electromagnetism II	Pre-req PHY 4323	S	3
PHY 4221	Classical Mechanics I	PHY 2049, MAC 2313	F	4
PHY 4821L	Advanced Physics Lab	MAC 2313, PHY 3802L	F, S	3
PHZ 3360	Intro to Radiation Protection	PHY 2049	S	1
PHZ 3308	Application of Nuclear Physics	PHY 3106	S	3
PHZ 3361	Radiation Detection and Measurement	PHY 3106 or CHM 3411	S	3
PHZ 4731	Intro to Health Physics	PHZ 3361	F	3

Complete 6 or 7 upper division Science electives courses with a grade of “C” or better (19 credits)

May include but not limited to below courses:

Course	Description	Pre-requisites	Term offered	Units
PHZ 4710	Intro to Biophysics	PHY 2049 or PHY 3106 or CHM 3411	F	3
PCB 3063	Genetics	BSC 2010	F, S, SS	3
PCB 3063L	Genetics Lab	PCB 3063 Co-Requisite	F, S, SS	1
PCB 4023	Cell Biology	PCB 3063 and CHM 1046	F, S, SS	3

Electives must be chosen in consultation with assigned academic advisor

Graduation Requirements:

- University Core Curriculum (UCC)
- Minimum of a 2.0 GPA
- 45 credits of Upper Division hours (3000-4000 level)
- 120 credit hours required for graduation
- Foreign Language requirement (FLENT/FLEX)
- Civic Literacy requirement

Students interested in Secondary Teacher Certification should contact the College of Arts, Sciences & Education Center for Advising & Student Success at (305) 348-2978.

Mathematics Progression Milestone Requirements

Students in the BS in Physics must meet the following mathematics progression milestone:

- Students are required to enroll in a mathematics course in both the Fall and Spring terms and in the Summer term as needed to remain on track with program milestones.
- Students admitted in the Fall or Summer terms must successfully complete MAC1105 with a grade of C or better by the end of their first Spring term and complete MAC1147 with a grade of C or better by the end of their second Fall term.
- Students admitted in the Spring term must successfully complete MAC1105 with a grade of C or better by the end of their first Fall term and complete MAC1147 with a grade of C or better by the end of their second Spring term.
- No more than two attempts in either course is permitted.

Students who do not meet this mathematics progression milestone will be redirected to a more appropriate academic program

Success Markers are guideposts that help students remain on track for graduation. The Physics Department has identified important courses in the major that indicate you are on track for successful degree completion.

- 15 credits - PHY 1033 (1), PHY 2048 (4), PHY 2048L (1), MAC 2311 (3)
- 30 credits - PHY 2049 (4), PHY 2049L (1), MAC 2312 (4),
- 45 credits - PHY 3106 (3), PHY 3802L (3), PHY 3513 (3), MAP 2302 (3), MAC 2313 (4)
- 60 credits - CHM 1045 (3), CHM 1045L (1), PHZ 3113 (3)
- 75 credits - CHM 1046 (3), CHM 1046L (1), PHY 4323 (3), PHY 4604 (3), PHY 4221 (3)
- 90 credits - PHY 4324 (3), PHY 4605 (3)
- 105 credits - PHY 4821L (3)

In cases where students are not making good progress, a change of major may be required.