Physics majors can select from five distinct specializations to earn their physics degree, as described below in Section 4, Core Requirements. Advanced. While the various specializations share a common core of courses, they also enable students to prepare specifically for certain career paths. Students should consult their faculty advisors when deciding among these tracks.

Admission Requirements
- None

Degree Requirements
- Students who change degree programs and select this major must adopt the most current catalog.
- Grades below “C” (2.0) in any required physics or mathematics courses are not acceptable; they must be repeated with a higher grade.
- Students must achieve a minimum cumulative GPA of 2.0 in all courses taken that could meet major requirements.
- All attempts that could meet requirements are included in the major GPA calculation. All attempts of courses listed for the major taken beyond the minimum required are included in the GPA calculation (e.g., additional restricted electives).
- Departmental Residency Requirement consists of at least 15 semester hours of regularly scheduled 3000-4000 level courses taken from the UCF Department of Physics.
- Physics majors are discouraged from taking courses as a transient student at a Florida College System institution, except in situations where one semester of a two semester sequence has already been taken at the Florida College System institution.
- All prerequisites of courses taught within the College of Sciences will be enforced.
- Courses designated in 2 (Common Program Prerequisites) are usually completed in the first 60 hours.
- AA transfer students are expected to have completed the following courses before enrolling as a Physics major.

These classes are prerequisites for advanced science classes and students entering without these classes will be unable to register for most of the advanced courses.

<table>
<thead>
<tr>
<th>Category</th>
<th>Course Code/Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chemistry</td>
<td>CHM 2045C Chemistry Fundamentals I</td>
<td>4 hrs</td>
</tr>
<tr>
<td></td>
<td>CHM 2046 Chemistry Fundamentals II</td>
<td>3 hrs</td>
</tr>
<tr>
<td></td>
<td>CHM 2046L Chemistry Fundamentals Laboratory</td>
<td>1 hr</td>
</tr>
<tr>
<td></td>
<td>MAC 2311C Calculus with Analytic Geometry I</td>
<td>4 hrs</td>
</tr>
<tr>
<td></td>
<td>MAC 2312 Calculus with Analytic Geometry II</td>
<td>4 hrs</td>
</tr>
<tr>
<td></td>
<td>MAC 2313 Calculus with Analytic Geometry III</td>
<td>4 hrs</td>
</tr>
<tr>
<td></td>
<td>PHY 2048C General Physics Using Calculus I</td>
<td>3 hrs</td>
</tr>
<tr>
<td></td>
<td>PHY 2049C General Physics Using Calculus II</td>
<td>3 hrs</td>
</tr>
</tbody>
</table>

1. UCF General Education Program (GEP) (38 hrs)
- Note: Certain courses must be selected in the GEP for this major which brings the GEP hours above 36.

A: Communication Foundations (9 hrs)
- Choose one course from the following:
  - SPC 1603C Fundamentals of Technical Presentations (3 hrs)

Take all of the following: 6 hrs
- ENC 1101 Composition I and 2 hrs
- ENC 1102 Composition II 3 hrs

B: Cultural & Historical Foundations (9 hrs)
- MAC 2311C Calculus with Analytic Geometry I 4 hrs

C: Mathematical Foundations (7 hrs)
- COP 3502C Computer Science I 3 hrs

E: Science Foundations (6 hrs)
- PHY 2048C General Physics Using Calculus I 4 hrs

2. Life sciences; 3 hrs
- Select from the E2. GEP list. 3 hrs

2. Common Program Prerequisites (CPP) (20 hrs)
- MAC 2311C Calculus with Analytic Geometry I and 4 hrs
- MAC 2312 Calculus with Analytic Geometry II and 4 hrs
- MAC 2313 Calculus with Analytic Geometry III and 4 hrs

Select one of the following sequences of courses:
- CHM 2045C Chemistry Fundamentals I 4 hrs
- CHM 2040 Chemistry Fundamentals IA and 3 hrs
- CHM 2041 Chemistry Fundamentals IB 3 hrs

Take all of the following:
- CHM 2046 Chemistry Fundamentals II 3 hrs
- CHM 2046L Chemistry Fundamentals Laboratory 1 hr
- PHY 2048C General Physics Using Calculus I and 4 hrs
- PHY 2049C General Physics Using Calculus II and 4 hrs

3. Core Requirements: Basic Level (36 hrs)
- Required of all specializations.
- In addition to those courses specified in the Common Program Prerequisites, students also must complete the following.

Core: Required, satisfies the CPP
- CHM 2045C Chemistry Fundamentals I CPP
- CHM 2040 Chemistry Fundamentals IA and CPP
- CHM 2041 Chemistry Fundamentals IB and CPP

- and
- MAC 2311C Calculus with Analytic Geometry I and 4 hrs
- MAC 2312 Calculus with Analytic Geometry II and 4 hrs
- MAC 2313 Calculus with Analytic Geometry III and 4 hrs
- PHY 2048C General Physics Using Calculus I and 4 hrs
- PHY 2049C General Physics Using Calculus II and 4 hrs

Core: Additional requirements
- MAP 2302 Ordinary Differential Equations I 3 hrs
- PHY 3101 General Physics Using Calculus III 3 hrs
- PHZ 3113 Introduction to Theoretical Methods of Physics 3 hrs
- PHY 3220 Mechanics I 3 hrs
- PHY 3513 Thermal and Statistical Physics 3 hrs
- PHY 3323 Electricity and Magnetism I 3 hrs
- PHY 4324 Electricity and Magnetism II 3 hrs
- PHY 4604 Wave Mechanics I 3 hrs
- PHY 4605 Wave Mechanics II 3 hrs
- PHY 4912 Directed Independent Research (in area of specialization) 3 hrs

Laboratory Requirement 6 hrs
- PHY 3802L Intermediate Physics Laboratory 3 hrs
- and either
- PHY 3752C Physics of Scientific Instruments or 3 hrs
- PHY 3722C Physics Laboratory-Electronics 3 hrs

4. Core Requirements: Advanced Level
- Select one specialization

4.1. General Physics Specialization 18 hrs
- PHY 4803L Advanced Physics Laboratory 3 hrs

- Restricted Electives: 6 hrs
  - Select from upper division PHY, PHZ, or AST courses 6 hrs

- Directed Electives: 9 hrs
  - Select courses at a 3000 level or higher, approved by the Physics Department. Courses must be chosen in Physics, Mathematics, Chemistry, Computer Science, or Engineering.
4.2. Materials Physics Specialization 18 hrs
- Select 1 3 hrs
  PHY 4803L Advanced Physics Laboratory or EEE 5356C Fabrication of Solid-State Devices 3 hrs
  EEE 3350 Fabrication of Solid-State Devices 4 hrs
- Select 3 9 hrs
  EEG 3365 Structure and Properties of Materials or EMA 4413 Fundamentals of Electronic Materials or CHM 3411L Physical Chemistry Laboratory or PHZ 5405 Condensed Matter Physics or EEE 5352C Semiconductor Material and Device Characterization 3 hrs
  Select 2 6 hrs
  Select 3 9 hrs
  Directed Electives: 6 hrs
  Select courses at a 3000 level or higher, approved by the Physics Department. Courses must be chosen in Physics, Mathematics, Chemistry, Computer Science, or Engineering.

4.3. Optics and Lasers Specialization 18 hrs
- Select 2 6 hrs
  EEL 4440 Optical Engineering or PHY 4445 Lasers or OSE 5203 Geometrical Optics or OSE 5312 Light Matter Interaction or OSE 5414 Fundamentals of Optoelectronic Devices 3 hrs
  PHY 4424 Optics 3 hrs
- Directed Electives: 9 hrs
  Select courses at a 3000 level or higher, approved by the Physics Department. Courses must be chosen in Physics, Mathematics, Chemistry, Computer Science, or Engineering.

4.4. Computational Physics Specialization 19 hrs
- Select 2 6 hrs
  COP 3502C Computer Science I or COP 3503C Computer Science II or COT 4500 Numerical Calculus 3 hrs
  PHZ 3151 Computer Methods in Physics 3 hrs
- Directed Electives: 6 hrs
  Select courses at a 3000 level or higher, approved by the Physics Department. Courses must be chosen in Physics, Mathematics, Chemistry, Computer Science, or Engineering.

4.5. Astronomy Specialization 18 hrs
- Select one 3 hrs
  AST 4700 Experimental Methods in Astronomy or AST 4702C Astronomical Data Analysis or AST 5765C Advanced Astronomical Data Analysis 3 hrs
  PHZ 2040C plus CHM 2041C: may use CHM 1040 plus CHM 1041 or CHM 1045C
- and 6 hrs
  Select from upper division AST courses
- Directed Electives: 6 hrs
  Select courses at a 3000 level or higher, approved by the Physics Department. Courses must be chosen in Physics, Mathematics, Chemistry, Computer Science, or Engineering.

5. Restricted Electives
- None

6. Capstone Requirements
- None

7. Foreign Language Requirements
Admissions
- Two years high school, or one year college language (or equivalent proficiency exam) prior to graduation.

Graduation
- None

8. Electives
- Select primarily from upper level courses after meeting with a departmental advisor. Courses may be outside the department.
Although all classes are listed during the academic year, you may be required to complete 9 hours of them during the Summer. Consult with an advisor to determine if you are exempt.

**Freshman Year - Fall**  
14 hrs  
MAC 2311C Calculus with Analytic Geometry I 4 hrs  
CHM 2045C Chemistry Fundamentals I 4 hrs  
GEP 3 hrs  
GEP 3 hrs

**Freshman Year - Spring**  
15 hrs  
PHY 2048C General Physics Using Calculus I 4 hrs  
MAC 2312 Calculus with Analytic Geometry II 4 hrs  
CHM 2046 Chemistry Fundamentals II 3 hrs  
CHM 2046L Chemistry Fundamentals Laboratory 1 hr  
Note: Lab may be taken later if seats are not available  
GEP 3 hrs

**Sophomore Year - Fall**  
17 hrs  
PHY 2049C General Physics Using Calculus II 4 hrs  
MAC 2313 Calculus with Analytic Geometry III 4 hrs  
COP 3502C Computer Science I 3 hrs  
GEP 3 hrs  
GEP 3 hrs

**Sophomore Year - Spring**  
15 hrs  
PHY 3101 General Physics Using Calculus III 3 hrs  
PHZ 3113 Introduction to Theoretical Methods of Physics 3 hrs  
MAP 2302 Ordinary Differential Equations I 3 hrs  
GEP 3 hrs  
GEP 3 hrs

**Junior Year - Fall**  
15 hrs  
PHY 3802L Intermediate Physics Laboratory 3 hrs  
PHY 3323 Electricity and Magnetism I 3 hrs  
PHY 3513 Thermal and Statistical Physics 3 hrs  
Core Course 3 hrs  
Restricted Elective 3 hrs

**Junior Year - Spring**  
15 hrs  
PHY 3220 Mechanics I 3 hrs  
PHY 4324 Electricity and Magnetism II 3 hrs  
Restricted Elective 3 hrs  
Restricted Elective 3 hrs  
GEP 3 hrs

**Senior Year - Fall**  
15 hrs  
PHY 4604 Wave Mechanics I 3 hrs  
PHY 4912 Independent Research 3 hrs  
Restricted Elective 3 hrs  
Restricted Elective 3 hrs  
Free Elective 3 hrs

**Senior Year - Spring**  
14 hrs  
PHY 4605 Wave Mechanics II 3 hrs  
Restricted Elective 3 hrs  
GEP 3 hrs  
Free Elective 2 hrs  
Free Elective 3 hrs  
Physics Test-Nationally normed

**Program Academic Learning Compacts**  
Program Academic Learning Compacts (student learning outcomes) for undergraduate programs are located at:  
http://www.oes.ucf.edu/alc/academic_learning_compacts.htm

**Equipment Fees**  
- Part-Time Student: $12.40 per term  
- Full-Time Student: $24.80 per term