

# PHYSICS MAJOR, B.S.

Everything around you is influenced or governed by physics — the study of matter, energy, and their interactions with one another. Physics seeks to understand the way the universe “works,” from the smallest neutrinos to the structure of the cosmos. It is the foundation of all other natural sciences, including chemistry, biology, oceanography, geography, and radiography.

The Department of Physics and Astronomy offers six B.A. and two B.S. degree tracks:

- B.A. Tracks
  - Physics
  - Astronomy
  - Computational Physics
  - Energy
  - Medical and Biological Physics
  - Quantitative Finance
- B.S. Tracks
  - Physics
  - Astrophysics

Consider a B.A. degree if you're interested in physics but want to apply your training toward a wider variety of career paths after graduation. Students who completed this program have launched careers as lab researchers, application engineers, data scientists, and financial analysts, among other occupations. Some have also pursued an advanced degree in physics, medical physics, business, law, or computer science.

Consider a B.S. degree if you intend to pursue graduate study in physics, astronomy, or a related field, or a career practicing physics.

## Student Learning Outcomes

Upon completion of the physics program, students should be able to:

- Demonstrate knowledge of major concepts, theoretical reasoning, and empirical findings in physics and/or astronomy — Knowledge Base in Physics
- Apply knowledge of physics and mathematics to solve problems — Critical Thinking and Problem Solving
- Effectively conduct research under guidance of faculty member — Research and the Advancement of Physics and Astronomy
- Gain entry to top graduate programs, employment as physicists in industry, teaching positions in high school physics and astronomy, or apply their skills in other rewarding careers — Preparation for Future Career

## Requirements













In addition to the program requirements, students must

- earn a minimum final cumulative GPA of 2.000
- complete a minimum of 45 academic credit hours earned from UNC–Chapel Hill courses
- take at least half of their major core requirements (courses and credit hours) at UNC–Chapel Hill

- earn a minimum cumulative GPA of 2.000 in the major core requirements. Some programs may require higher standards for major or specific courses.

For more information, please consult the degree requirements section of the catalog (<http://catalog.unc.edu/undergraduate/degree-requirements/>).

## Physics Major, B.S. – Standard Option

Code	Title	Hours
<b>Core Requirements</b>		
PHYS 281L	 Experimental Techniques in Physics	3
PHYS 331	Numerical Techniques for the Sciences I	4
PHYS 332	Numerical Techniques for the Sciences II <sup>1</sup>	4
PHYS 401	Mechanics I <sup>2</sup>	3
PHYS 311	Electromagnetism I <sup>1</sup>	3
PHYS 412	Electromagnetism II <sup>2</sup>	3
PHYS 351	Electronics I <sup>1</sup>	4
PHYS 421	Introduction to Quantum Mechanics <sup>2</sup>	3
PHYS 521	Applications of Quantum Mechanics <sup>1</sup>	3
PHYS 441	Thermal Physics <sup>1</sup>	3
PHYS 481L	 Advanced Laboratory I <sup>2</sup>	2
PHYS 395	 Research with Faculty Mentor II	3
	or PHYS 692H  Senior Honor Thesis Research II	
Six additional credit hours chosen from:		6
	ASTR (numbered above 300)	
MATH 528	Mathematical Methods for the Physical Sciences I	
MATH 529	Mathematical Methods for the Physical Sciences II	
PHYS 231	 Physical Computing <sup>2,H</sup>	
	PHYS (numbered above 300)	
<b>Additional Requirements</b>		
PHYS 118	 Introductory Calculus-based Mechanics and Relativity <sup>H,F</sup>	4
PHYS 119	 Introductory Calculus-based Electromagnetism and Quanta <sup>H,F</sup>	4
MATH 231	 Calculus of Functions of One Variable I <sup>H,F</sup>	4
MATH 232	 Calculus of Functions of One Variable II <sup>H,F</sup>	4
MATH 233	 Calculus of Functions of Several Variables <sup>H,F</sup>	4
MATH 383	First Course in Differential Equations <sup>H</sup>	3
CHEM 101 & 101L	 General Descriptive Chemistry I and  Quantitative Chemistry Laboratory I (CHEM 102/CHEM 102L are recommended but not required) <sup>H,F</sup>	4
Remaining General Education requirements and enough free electives to accumulate 120 academic hours		49
<b>Total Hours</b>		<b>120</b>

H Honors version available. An honors course fulfills the same requirements as the nonhonors version of that course. Enrollment and GPA restrictions may apply.











F FY-Launch class sections may be available. A FY-Launch section fulfills the same requirements as a standard section of that course, but also fulfills the FY-SEMINAR/FY-LAUNCH First-Year Foundations requirement. Students can search for FY-Launch sections in ConnectCarolina using the FY-LAUNCH attribute.

<sup>1</sup> Fall course.

<sup>2</sup> Spring course.

Astronomy (ASTR) and Physics (PHYS) course descriptions (<http://catalog.unc.edu/undergraduate/departments/physics-astronomy/#coursestext>).

## Physics Major, B.S.–Astrophysics Option

Code	Title	Hours
<b>Core Requirements</b>		
PHYS 281L	 Experimental Techniques in Physics	3
PHYS 331	Numerical Techniques for the Sciences I	4
PHYS 332	Numerical Techniques for the Sciences II <sup>1</sup>	4
PHYS 401	Mechanics I <sup>2</sup>	3
PHYS 311	Electromagnetism I <sup>1</sup>	3
PHYS 412	Electromagnetism II <sup>2</sup>	3
PHYS 421	Introduction to Quantum Mechanics <sup>2</sup>	3
PHYS 521	Applications of Quantum Mechanics <sup>1</sup>	3
PHYS 441	Thermal Physics <sup>1</sup>	3
ASTR 519	 Observational Astronomy <sup>1</sup>	4
PHYS 395	 Research with Faculty Mentor II	3
	or PHYS 692H  Senior Honor Thesis Research II	
One additional course chosen from ASTR (numbered above 300)		3
Six or more additional credit hours chosen from:		6
ASTR (numbered above 300)		
MATH 528	Mathematical Methods for the Physical Sciences I	
MATH 529	Mathematical Methods for the Physical Sciences II	
PHYS 231	 Physical Computing <sup>2, H</sup>	
PHYS 351	Electronics I <sup>1</sup>	
PHYS 632	Advanced Research Analytics	
<b>Additional Requirements</b>		
PHYS 118	 Introductory Calculus-based Mechanics and Relativity <sup>H, F</sup>	4
PHYS 119	 Introductory Calculus-based Electromagnetism and Quanta <sup>H, F</sup>	4
ASTR 202	Introduction to Astrophysics (CHEM 101/ CHEM 101L are recommended but not required) <sup>1</sup>	3
MATH 231	 Calculus of Functions of One Variable I <sup>H, F</sup>	4
MATH 232	 Calculus of Functions of One Variable II <sup>H, F</sup>	4
MATH 233	 Calculus of Functions of Several Variables <sup>H, F</sup>	4
MATH 383	First Course in Differential Equations <sup>H</sup>	3
Remaining General Education requirements and enough free electives to accumulate 120 academic hours		49
<b>Total Hours</b>		<b>120</b>

H Honors version available. An honors course fulfills the same requirements as the nonhonors version of that course. Enrollment and GPA restrictions may apply.

F FY-Launch class sections may be available. A FY-Launch section fulfills the same requirements as a standard section of that course, but also fulfills the FY-SEMINAR/FY-LAUNCH First-Year Foundations requirement. Students can search for FY-Launch sections in ConnectCarolina using the FY-LAUNCH attribute.

<sup>1</sup> Fall course.

<sup>2</sup> Spring course.

Astronomy (ASTR) and Physics (PHYS) course descriptions (<http://catalog.unc.edu/undergraduate/departments/physics-astronomy/#coursestext>).

It is strongly recommended that students planning to major in physics fulfill the Foundations requirement in English composition and rhetoric by enrolling in ENGL 105I.








Most students will find it advantageous to defer some of the General Education requirements to the junior and/or senior year(s).

## Sample Plan of Study


Sample plans can be used as a guide to identify the courses required to complete the major and other requirements needed for degree completion within the expected eight semesters. The actual degree plan may differ depending on the course of study selected (second major, minor, etc.). Students should meet with their academic advisor to create a degree plan that is specific and unique to their interests. The sample plans represented in this catalog are intended for first-year students entering UNC–Chapel Hill in the fall term. Some courses may not be offered every term.

## Standard Option

### Sample I (for students placed into MATH 231)

First Year	Hours
<b>First-Year Foundation Courses</b>	
IDST 101  College Thriving	1
ENGL 105  English Composition and Rhetoric	3
or ENGL 105I  English Composition and Rhetoric (Interdisciplinary)	
First-Year Seminar or First-Year Launch ( <a href="http://catalog.unc.edu/undergraduate/ideas-in-action/first-year-seminars-launches/">http://catalog.unc.edu/undergraduate/ideas-in-action/first-year-seminars-launches/</a> ) <sup>F</sup>	3
Triple-I and Data Literacy ( <a href="http://catalog.unc.edu/undergraduate/ideas-in-action/triple-i/">http://catalog.unc.edu/undergraduate/ideas-in-action/triple-i/</a> )	4
Global Language through level 3 ( <a href="http://catalog.unc.edu/undergraduate/ideas-in-action/global-language/">http://catalog.unc.edu/undergraduate/ideas-in-action/global-language/</a> )	varies
<b>Hours</b>	<b>11</b>
<b>Fall Semester</b>	
MATH 231  Calculus of Functions of One Variable I <sup>H, F</sup>	4
CHEM 101  General Descriptive Chemistry I	4
& 101L  and  Quantitative Chemistry Laboratory I <sup>H, F</sup>	
<b>Hours</b>	<b>8</b>


**Spring Semester**


PHYS 118	 Introductory Calculus-based Mechanics and Relativity <sup>H, F</sup>	4
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MATH 232	 Calculus of Functions of One Variable II <sup>H, F</sup>	4
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<b>Hours</b>		<b>8</b>
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**Sophomore Year****Fall Semester**

PHYS 119	 Introductory Calculus-based Electromagnetism and Quanta <sup>H, F</sup>	4
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MATH 233	 Calculus of Functions of Several Variables <sup>H, F</sup>	4
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<b>Hours</b>		<b>8</b>
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**Spring Semester**

PHYS 281L	 Experimental Techniques in Physics	3
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PHYS 401	Mechanics I	3
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PHYS 331	Numerical Techniques for the Sciences I	4
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MATH 383	First Course in Differential Equations <sup>H</sup>	3
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<b>Hours</b>		<b>13</b>
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**Junior Year****Fall Semester**

PHYS 311	Electromagnetism I	3
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PHYS 351	Electronics I	4
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PHYS 332	Numerical Techniques for the Sciences II	4
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<b>Hours</b>		<b>11</b>
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**Spring Semester**

PHYS 412	Electromagnetism II	3
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PHYS 421	Introduction to Quantum Mechanics	3
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PHYS 395	Research with Faculty Mentor II <sup>2</sup>	3
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<b>Hours</b>		<b>9</b>
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**Senior Year****Fall Semester**


PHYS 441	Thermal Physics	3
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PHYS 521	Applications of Quantum Mechanics	3
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One elective course <sup>1</sup>		3
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<b>Hours</b>		<b>9</b>
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**Spring Semester**

PHYS 481L	 Advanced Laboratory I	2
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One elective course <sup>1</sup>		3
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<b>Hours</b>		<b>5</b>
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<b>Total Hours</b>		<b>82</b>
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<sup>H</sup> Honors version available. An honors course fulfills the same requirements as the nonhonors version of that course. Enrollment and GPA restrictions may apply.

<sup>F</sup> FY-Launch class sections may be available. A FY-Launch section fulfills the same requirements as a standard section of that course, but also fulfills the FY-SEMINAR/FY-LAUNCH First-Year Foundations requirement. Students can search for FY-Launch sections in ConnectCarolina using the FY-LAUNCH attribute.


<sup>1</sup> Courses may be chosen from ASTR (numbered above 300), MATH 528, MATH 529, PHYS 231, PHYS (numbered above 300).



<sup>2</sup> Students who complete a senior honors thesis (PHYS 691H and PHYS 692H) may use PHYS 692H to fulfill the PHYS 395 requirement in the major.

**Sample II (for students placed into MATH 232)**

<b>First Year</b>		<b>Hours</b>
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**First-Year Foundation Courses**

IDST 101	 College Thriving	1
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ENGL 105	 English Composition and Rhetoric	3
or ENGL 105I	or  English Composition and Rhetoric (Interdisciplinary)	


First-Year Seminar or First-Year Launch ( <a href="http://catalog.unc.edu/undergraduate/ideas-in-action/first-year-seminars-launches/">http://catalog.unc.edu/undergraduate/ideas-in-action/first-year-seminars-launches/</a> ) <sup>F</sup>		3
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Triple-I and Data Literacy ( <a href="http://catalog.unc.edu/undergraduate/ideas-in-action/triple-i/">http://catalog.unc.edu/undergraduate/ideas-in-action/triple-i/</a> )		4
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Global Language through level 3 ( <a href="http://catalog.unc.edu/undergraduate/ideas-in-action/global-language/">http://catalog.unc.edu/undergraduate/ideas-in-action/global-language/</a> )		varies
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<b>Hours</b>		<b>11</b>
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**Fall Semester**


PHYS 118	 Introductory Calculus-based Mechanics and Relativity <sup>H, F</sup>	4
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MATH 232	 Calculus of Functions of One Variable II <sup>H, F</sup>	4
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<b>Hours</b>		<b>8</b>
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**Spring Semester**

PHYS 119	 Introductory Calculus-based Electromagnetism and Quanta <sup>H, F</sup>	4
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MATH 233	 Calculus of Functions of Several Variables <sup>H, F</sup>	4
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CHEM 101 & 101L	 General Descriptive Chemistry I and  Quantitative Chemistry Laboratory I <sup>H, F</sup>	4
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<b>Hours</b>		<b>12</b>
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**Sophomore Year****Fall Semester**

PHYS 281L	 Experimental Techniques in Physics	3
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MATH 383	First Course in Differential Equations <sup>H</sup>	3
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PHYS 331	Numerical Techniques for the Sciences I	4
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<b>Hours</b>		<b>10</b>
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**Spring Semester**

PHYS 401	Mechanics I	3
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One elective course <sup>1</sup>		3
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<b>Hours</b>		<b>6</b>
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**Junior Year****Fall Semester**

PHYS 311	Electromagnetism I	3
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PHYS 332	Numerical Techniques for the Sciences II	4
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PHYS 351	Electronics I	4
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<b>Hours</b>		<b>11</b>
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**Spring Semester**

PHYS 412	Electromagnetism II	3
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PHYS 421	Introduction to Quantum Mechanics	3
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PHYS 395	 Research with Faculty Mentor II <sup>2</sup>	3
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<b>Hours</b>		<b>9</b>
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**Senior Year****Fall Semester**

PHYS 441	Thermal Physics	3
PHYS 521	Applications of Quantum Mechanics	3

**Hours** 6

**Spring Semester**

PHYS 481L	Advanced Laboratory I	2
One elective course <sup>1</sup>		3

**Hours** 5

**Total Hours** 78

H Honors version available. An honors course fulfills the same requirements as the nonhonors version of that course. Enrollment and GPA restrictions may apply.

F FY-Launch class sections may be available. A FY-Launch section fulfills the same requirements as a standard section of that course, but also fulfills the FY-SEMINAR/FY-LAUNCH First-Year Foundations requirement. Students can search for FY-Launch sections in ConnectCarolina using the FY-LAUNCH attribute.

<sup>1</sup> Courses may be chosen from ASTR (numbered above 300), MATH 528, MATH 529, PHYS 231, PHYS (numbered above 300).

<sup>2</sup> Students who complete a senior honors thesis (PHYS 691H and PHYS 692H) may use PHYS 692H to fulfill the PHYS 395 requirement in the major.

**Astrophysics Option****Sample I (for students placed into MATH 231)**

**First Year** **Hours**

**First-Year Foundation Courses**

IDST 101	College Thriving	1
ENGL 105	English Composition and Rhetoric	3
or		
ENGL 105I	English Composition and Rhetoric (Interdisciplinary)	

First-Year Seminar or First-Year Launch (<http://catalog.unc.edu/undergraduate/ideas-in-action/first-year-seminars-launches/>)<sup>F</sup> 3

Triple-I and Data Literacy (<http://catalog.unc.edu/undergraduate/ideas-in-action/triple-i/>) 4

Global Language through level 3 (<http://catalog.unc.edu/undergraduate/ideas-in-action/global-language/>) varies

**Hours** 11

**Fall Semester**

MATH 231	Calculus of Functions of One Variable I <sup>H, F</sup>	4
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**Hours** 4

**Spring Semester**

PHYS 118	Introductory Calculus-based Mechanics and Relativity <sup>H, F</sup>	4
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MATH 232	Calculus of Functions of One Variable II <sup>H, F</sup>	4
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**Hours** 8

**Sophomore Year****Fall Semester**

PHYS 119	Introductory Calculus-based Electromagnetism and Quanta <sup>H, F</sup>	4
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MATH 233	Calculus of Functions of Several Variables <sup>H, F</sup>	4
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ASTR 202	Introduction to Astrophysics	3
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**Hours** 11

**Spring Semester**

PHYS 281L	Experimental Techniques in Physics	3
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PHYS 331	Numerical Techniques for the Sciences I	4
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PHYS 401	Mechanics I	3
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MATH 383	First Course in Differential Equations <sup>H</sup>	3
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**Hours** 13

**Junior Year****Fall Semester**

PHYS 311	Electromagnetism I	3
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PHYS 332	Numerical Techniques for the Sciences II	4
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ASTR 519	Observational Astronomy	4
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**Hours** 11

**Spring Semester**

PHYS 412	Electromagnetism II	3
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PHYS 421	Introduction to Quantum Mechanics	3
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One additional course chosen from ASTR (numbered above 300) 3

PHYS 395	Research with Faculty Mentor II <sup>2</sup>	3
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**Hours** 12

**Senior Year****Fall Semester**

PHYS 441	Thermal Physics	3
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PHYS 521	Applications of Quantum Mechanics	3
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One elective course<sup>1</sup> 3

**Hours** 9

**Spring Semester**

One elective course<sup>1</sup> 3

**Hours** 3

**Total Hours** 82

H Honors version available. An honors course fulfills the same requirements as the nonhonors version of that course. Enrollment and GPA restrictions may apply.

F FY-Launch class sections may be available. A FY-Launch section fulfills the same requirements as a standard section of that course, but also fulfills the FY-SEMINAR/FY-LAUNCH First-Year Foundations requirement. Students can search for FY-Launch sections in ConnectCarolina using the FY-LAUNCH attribute.

<sup>1</sup> Course may be chosen from ASTR (numbered above 300), MATH 528, MATH 529, PHYS 231, PHYS 351, PHYS 632.

<sup>2</sup> Students who complete a senior honors thesis (PHYS 691H and PHYS 692H) may use PHYS 692H to fulfill the PHYS 395 requirement in the major.

**Sample II (for students placed into MATH 232)**

First Year		Hours
<b>First-Year Foundation Courses</b>		
IDST 101	College Thriving	1
ENGL 105	English Composition and Rhetoric	3
or ENGL 105I	or English Composition and Rhetoric (Interdisciplinary)	
First-Year Seminar or First-Year Launch ( <a href="http://catalog.unc.edu/undergraduate/ideas-in-action/first-year-seminars-launches/">http://catalog.unc.edu/undergraduate/ideas-in-action/first-year-seminars-launches/</a> ) <sup>F</sup>		3
Triple-I and Data Literacy ( <a href="http://catalog.unc.edu/undergraduate/ideas-in-action/triple-i/">http://catalog.unc.edu/undergraduate/ideas-in-action/triple-i/</a> )		4
Global Language through level 3 ( <a href="http://catalog.unc.edu/undergraduate/ideas-in-action/global-language/">http://catalog.unc.edu/undergraduate/ideas-in-action/global-language/</a> )		varies
<b>Hours</b>		<b>11</b>
<b>Fall Semester</b>		
PHYS 118	Introductory Calculus-based Mechanics and Relativity <sup>H, F</sup>	4
MATH 232	Calculus of Functions of One Variable II <sup>H, F</sup>	4
<b>Hours</b>		<b>8</b>
<b>Spring Semester</b>		
PHYS 119	Introductory Calculus-based Electromagnetism and Quanta <sup>H, F</sup>	4
MATH 233	Calculus of Functions of Several Variables <sup>H, F</sup>	4
<b>Hours</b>		<b>8</b>
<b>Sophomore Year</b>		
<b>Fall Semester</b>		
PHYS 281L	Experimental Techniques in Physics	3
MATH 383	First Course in Differential Equations <sup>H</sup>	3
ASTR 202	Introduction to Astrophysics	3
<b>Hours</b>		<b>9</b>
<b>Spring Semester</b>		
PHYS 401	Mechanics I	3
PHYS 331	Numerical Techniques for the Sciences I	4
One additional course chosen from ASTR (numbered above 300)		3
<b>Hours</b>		<b>10</b>
<b>Junior Year</b>		
<b>Fall Semester</b>		
PHYS 311	Electromagnetism I	3
PHYS 332	Numerical Techniques for the Sciences II	4
ASTR 519	Observational Astronomy	4
<b>Hours</b>		<b>11</b>
<b>Spring Semester</b>		
PHYS 412	Electromagnetism II	3
PHYS 421	Introduction to Quantum Mechanics	3
PHYS 395	Research with Faculty Mentor II <sup>2</sup>	3
One elective course <sup>1</sup>		3
<b>Hours</b>		<b>12</b>
<b>Senior Year</b>		
<b>Fall Semester</b>		
PHYS 441	Thermal Physics	3

PHYS 521	Applications of Quantum Mechanics	3
<b>Hours</b>		<b>6</b>
<b>Spring Semester</b>		
One elective course <sup>1</sup>		3
<b>Hours</b>		<b>3</b>
<b>Total Hours</b>		<b>78</b>

H Honors version available. An honors course fulfills the same requirements as the nonhonors version of that course. Enrollment and GPA restrictions may apply.

F FY-Launch class sections may be available. A FY-Launch section fulfills the same requirements as a standard section of that course, but also fulfills the FY-SEMINAR/FY-LAUNCH First-Year Foundations requirement. Students can search for FY-Launch sections in ConnectCarolina using the FY-LAUNCH attribute.

<sup>1</sup> Course may be chosen from ASTR (numbered above 300), MATH 528, MATH 529, PHYS 231, PHYS 351, PHYS 632.

<sup>2</sup> Students who complete a senior honors thesis (PHYS 691H and PHYS 692H) may use PHYS 692H to fulfill the PHYS 395 requirement in the major.

## Special Opportunities in Physics and Astronomy

### Honors in Physics and Astronomy

The honors program offers exceptionally well-qualified students an opportunity to perform original research with a faculty member and graduate with honors or highest honors. It requires an overall grade point average of at least 3.3 and a grade point average of at least 3.4 for physics courses at the end of the junior year.

Students who wish to enter the honors program should consult with the departmental coordinator (<http://physics.unc.edu/undergraduate-program/undergraduate-research/>) for the program no later than the preregistration period in the spring semester of their junior year.

### Undergraduate Research

All majors conduct at least one semester of research under the supervision of a faculty member. Many enjoy the experience so much that they continue for several semesters. PHYS 395 Research with Faculty Mentor II is a required course for all of our BS majors. In addition to PHYS 395, students may also take PHYS 295 Research with Faculty Mentor I as an elective as many times as desired. These courses give students the opportunity to participate in leading-edge research and to gain hands-on experience with a variety of experimental tools and techniques that will enhance their resume. An approved learning contract is required prior to registering for PHYS 295 and PHYS 395, and students must be registered within the first week of classes.



### Departmental Involvement

The Society of Physics Students (<https://physics.unc.edu/undergraduate/student-organizations/society-of-physics-students/>) is open to anyone interested in physics and is meant to build connections between undergraduates, graduate students, faculty, and alumni. The society invites visitors to give talks and sponsors a number of events for students each year.

The Visibility in Physics (<https://physics.unc.edu/undergraduate/student-organizations/visibility-in-physics/>) is a student organization that aims to provide resources, advice, and a welcoming and encouraging social atmosphere for underrepresented minorities and allies in the field of physics.

## UNC–BEST

The UNC Baccalaureate Education in Science and Teaching (UNC–BEST) Program is a collaboration between the School of Education and the College of Arts and Sciences and is designed to allow undergraduate science majors interested in teaching high school science the opportunity to earn their science degree and obtain licensure as a North Carolina high school science teacher in four years. UNC–BEST students also fulfill teaching licensure coursework requirements as well as many General Education and elective requirements as they complete courses in teaching and learning.

Code	Title	Hours
<b>Pedagogy Course</b>		
EDUC 760	Methods and Materials for Teaching Secondary/ K-12 Subjects I	3
<b>Educational Foundations</b>		
EDUC 532	 Human Development and Learning	3
EDUC 615	Schools and Community Collaboration	3
EDUC 689	Foundations of Special Education	3
<b>Student Teaching</b>		
EDUC 593	 Internship/Student Teaching (final semester)	12
<b>Seminar</b>		
EDUC 601	Education Workshops (must be completed during student teaching semester)	1
<b>Total Hours</b>		<b>25</b>

## Undergraduate Awards

The department gives awards each year to the senior (Shearin Award) and junior (Johnson Award) who demonstrate the greatest academic achievement. In addition, the department awards the major with the most research achievement the Robert Sheldon Award for Undergraduate Research.

## Department Programs

### Majors

- Physics Major, B.A. (<http://catalog.unc.edu/undergraduate/programs-study/physics-major-ba/>)
- Physics Major, B.S. (p. 1)

### Minors

- Astronomy Minor (<http://catalog.unc.edu/undergraduate/programs-study/astronomy-minor/>)
- Physics Minor (<http://catalog.unc.edu/undergraduate/programs-study/physics-minor/>)

### Graduate Programs

- M.S. in Physics (<http://catalog.unc.edu/graduate/schools-departments/physics-astronomy/>)
- Ph.D. in Physics (<http://catalog.unc.edu/graduate/schools-departments/physics-astronomy/>)

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