

Physics minor

About the Program

The Undergraduate minor in physics is designed to provide students with a sound introduction to both classical and modern physics. It is offered to students in any college at the University of Cincinnati; however, the required physics courses must be taken in the College of Arts and Sciences.

At least 20 credits in physics courses at the 2000 level or above are required; **at least 6 of these must be at the 3000 level or higher.**

The following courses are required for the physics minor:

Physics:

One of the following sequences:

2005-2006, 2005L-2006L (College Physics - for physics majors) **10 cr**

OR

2001-2002, 2001L-2002L (College Physics) **10 cr**

And one or more of the following:

2076 (Semiconductor Physics for Engineers) **3 cr**

3001C (Intermediate Physics I) **5 cr**

3002C (Intermediate Physics II) **5 cr**

Also, the student must have the minimal math:

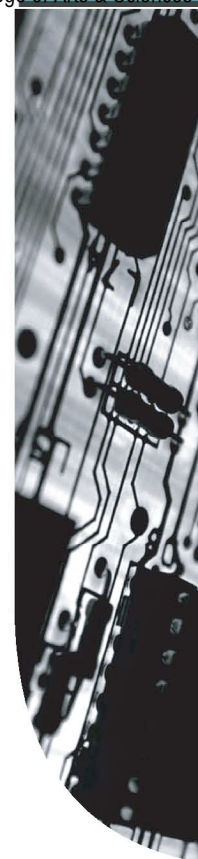
Math: 1061, 1062 (Calculus I, II) **8 cr**

2063 (Multivariable Calculus) **4 cr**

Courses acceptable to apply to the 20 credits in physics:

	Credits
3010 (Mechanics)	4
3020, 3021 (Electricity & Magnetism I, II)	3
3030 (Thermodynamics & Statistical Physics)	4
3041 (Advanced Topics in Astronomy)	3
3061 (Experiments in Modern Physics)	3
4025, 4026 (Introduction to Astrophysics I, II)	3
5001 (Special Problems in Physics)	1-15
5011 (Advanced Laboratory)	3
6010, 6011 (Introductory Quantum Mechanics I, II)	3
6041 (Introduction to Computational Physics)	3
6045 (Introduction to Quantum Computing)	3

For further information please consult the Department of Physics, room 400 Geology/Physics Building, 556-0501, or <http://www.physics.uc.edu/>.



Physics minor (Astrophysics concentration)

About the Program

The Undergraduate minor in physics (concentration in Astrophysics) is designed to provide students with a sound introduction to astronomy and astrophysics. It is offered to students in any college at the University of Cincinnati; however, the required physics courses must be taken in the College of Arts and Sciences.

At least 20 credits in physics courses at the 2000 level or above are required; **at least 6 of these must be at the 3000 level or higher.**

Courses:

The introductory astronomy sequence should be completed:

1020 Astronomy: Solar System

1021 Astronomy: Stars and Galaxies

The following courses are required for the physics minor (astrophysics concentration):

One of the following sequences:

2005-2006, 2005L-2006L (College Physics - for physics majors) **10 cr**

OR

2001-2002, 2001L-2002L (College Physics) **10 cr**

And both of the following:

3041 Advanced Topics in Astronomy **3 cr**

4025 Introduction to Astrophysics I **3 cr**

Also, the student must complete the minimal math:

Math: 1061, 1062 (Calculus I, II) **8 cr**

2063 (Multivariable Calculus) **4 cr**

Courses acceptable to apply to the 20 credits in physics:

	Credits
2076 (Semiconductor Physics for Engineers)	3
3001C (Intermediate Physics I)	5
3002C (Intermediate Physics II)	5
3010 (Mechanics)	4
3020, 3021 (Electricity & Magnetism I, II)	3
3030 (Thermodynamics & Statistical Physics)	4
3061 (Experiments in Modern Physics)	3
4026 (Introduction to Astrophysics II)	3
5001 (Special Problems in Physics)	1-15
5011 (Advanced Laboratory)	3
6010, 6011 (Introductory Quantum Mechanics I, II)	3
6041 (Introduction to Computational Physics)	3
6045 (Introduction to Quantum Computing)	3

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Computational Science (Certification)

About the Program

Computing has become the key enabler of fabulously rapid advances across nearly all disciplines of the academy and throughout all segments of society. Many recent advances of this kind are the result of scientists and engineers building detailed models of physical systems and then simulating their behavior, or solving relevant systems of equations numerically, using powerful hardware and software.

The computational science certificate, offered under the auspices of the State of Ohio's Ralph Regula School of Computational Science, is designed to provide such knowledge and skill. It is offered to students in any college at the University of Cincinnati.

At least 26 credits (including math) are required.

Courses:

The following courses are required for the Computational Science (certification):

	Credits
PHYS 4099 Capstone Project	3
MATH 1061,1062 (Calculus I, II)	8

The following Areas of Emphasis require one 3 credit class each*:

<u>Simulation and Modeling</u>	3
An introductory course on the use of models (continuous and discrete) and simulation in science and engineering.	
<u>Programming and Algorithms</u>	3
A first course on computational thinking, use of a programming language for problem solving, and development of algorithms.	
<u>Numerical Methods</u>	3
An applied introduction to use of numerical methods in solving linear and nonlinear equations, interpolation, numerical solution of differential equations.	
<u>Computational Study</u>	3
Discipline specific computationally oriented course.	
<u>Elective</u>	3

*All courses to be applied to the Computational Science certification must be pre-approved by the program director.

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