DUAL MAJOR IN CHEMISTRY AND PHYSICS

The dual major in Chemistry and Physics is designed for students who are pursuing a regular B.S. degree in Chemistry (http://bulletin.miami.edu/undergraduate-academic-programs/arts-sciences/chemistry/#text) and want to pursue a second major in Physics.

In addition to the major in Chemistry (http://bulletin.miami.edu/undergraduate-academic-programs/arts-sciences/chemistry/chemistry-bs/), the dual major requires 22 credit hours in physics and specific courses in Chemistry. The physics courses must include one of the University Physics sequences with two labs, plus PHY 350 and PHY 360. The remaining courses must receive advanced permission from the physics advisor. The specific Chemistry courses include CHM 360, CHM 364, CHM 365, CHM 464, and one among CHM 530, CHM 553, or CHM 575.

Students pursuing this dual major will have to satisfy the College of Arts and Sciences writing requirement for the Chemistry major.

Curriculum Requirements

Code	Title	Credit Hours
Physics Requirements		
University Physics Sequence		10-11
Option 1:		
PHY 221	University Physics I	
PHY 222	University Physics II	
PHY 223	University Physics III	
PHY 224	University Physics II Lab	
PHY 225	University Physics III Lab	
Option 2:		
PHY 221	University Physics I	
PHY 230	Honors University Physics II-III	
PHY 224	University Physics II Lab	
PHY 225	University Physics III Lab	
Option 3:		
PHY 201	University Physics I for the Sciences	
PHY 202	University Physics II for the Sciences	
PHY 106	College Physics Laboratory I	
or PHY 224	University Physics II Lab	
PHY 108	College Physics Laboratory II	
or PHY 225	University Physics III Lab	
Option 4:		
PHY 211	University Physics I for PRISM	
PHY 212	University Physics II for PRISM	
PHY 106	College Physics Laboratory I	
or PHY 224	University Physics II Lab	
PHY 108	College Physics Laboratory II	
Upper Level Courses		
PHY 350	Intermediate Electricity and Magnetism	3
PHY 360	Introduction to Modern Physics	3
PHY 321	Thermodynamics and Kinetic Theory	3
or PHY 340	Classical Mechanics I	
or PHY 560	Quantum Mechanics and Modern Physics I	
One 300 level (or higher) physics courses, excluding PHY 315		2-3
Chemistry Requirements		
CHM 121	Principles of Chemistry	4
CHM 221	Introduction to Structure and Dynamics	4
CHM 222	Organic Reactions and Synthesis	4
CHM 113	Chemistry Laboratory I	1
CHM 205	Chemical Dynamics Laboratory	1

CHM 206	Organic Reactions and Synthesis Laboratory	2
CHM 214	Quantitative Analytical Chemistry	3
CHM 316	Instrumental Analytical Chemistry	3
CHM 320	Instrumental Methods in Chemistry and Biochemistry	2
CHM 360	Physical Chemistry I (Lecture)	3
CHM 364	Physical Chemistry (Laboratory I)	1
CHM 365	Physical Chemistry II (Lecture)	3
CHM 441	Inorganic Chemistry (Lecture)	3
CHM 464	Physical Chemistry (Laboratory II)	1
CHM 530	Fluorescence Spectroscopy and Microscopy	3
or CHM 553	Modern Quantum Chemistry	
or CHM 575	Principles of Nuclear Magnetic Resonance and Multidimensional Spectroscopy	
BMB 401	Biochemistry for the Biomedical Sciences	4
Math Requirements		
MTH 161	Calculus I	4
or MTH 151	Calculus I for Engineers	
or MTH 171	Calculus I	
MTH 162	Calculus II	4
or MTH 172	Calculus II	
MTH 210	Introduction to Linear Algebra	3
or PHY 315	Mathematical Tools for Physics	
MTH 211	Calculus III	3
or MTH 310	Multivariable Calculus	
or PHY 315	Mathematical Tools for Physics	
MTH 311	Introduction to Ordinary Differential Equations	3
or PHY 315	Mathematical Tools for Physics	
General Education Requirements		
CSC 120	Computer Programming I	4
ENG 105	English Composition I	3
ENG 106	English Composition II	3
Second Language Proficiency		3-9
Arts and Humanities Cognate		9
People and Society Cognate		9
Electives		10
Total Credit Hours		**121-129**

* Other courses may be approved after consultation with a Physics/Chemistry faculty advisor.

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CHM 206	Organic Reactions and Synthesis Laboratory	2
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CHM 316	Instrumental Analytical Chemistry	3
CHM 320	Instrumental Methods in Chemistry and Biochemistry	2
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CHM 364	Physical Chemistry (Laboratory I)	1
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