

Academic Year: 2011-2012

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BACHELOR OF

SCIENCE: QUANTITATIVE

BIOLOGY

**DEGREE: BACHELOR OF SCIENCE
MAJOR: QUANTITATIVE BIOLOGY**

The College of Arts and Sciences administers an interdisciplinary major program in Quantitative Biology leading to the Bachelor of Science degree. The major provides a strong background in mathematics, biology, chemistry and physics appropriate for students who wish to pursue a career or graduate studies in biomedical and life sciences.

CURRICULUM**CREDITS****UNIVERSITY REQUIREMENTS**

ENGL 110 Critical Reading and Writing 3
(minimum grade C-)

First Year Experience (FYE) 0-4

University Breadth Requirement (minimum grade C-) 12
Up to 3 credits from each of the University Breadth Requirement categories may be used to simultaneously satisfy the College of Arts and Sciences Breadth Requirements.

Discovery Learning Experience (DLE) 3

Multi-cultural Course 3

COLLEGE REQUIREMENTS

Writing (minimum grade C-) 3

A second writing course involving significant writing experience including two papers with a combined minimum of 3,000 words to be submitted for extended faculty critique of both composition and content. This course must be taken after completion of 60 credit hours

BREADTH REQUIREMENTS (minimum grade C-)

Eighteen credits from Groups A, B and C with a minimum of six credits from each group. One of the courses should be in the area of Bioethics

Group A	6
Group B	6
Group C	6

MAJOR REQUIREMENTS

A grade of C- or better is required for major courses and related work.

Biology

BISC 207	Introduction to Biology I	4
BISC 208	Introduction to Biology II	4
Three of the following three-credit courses		9
BISC 302	General Ecology	
BISC 305	Cell Physiology	
BISC 306	General Physiology	
BISC 401	Molecular Biology of the Cell	
BISC 403	Genetic and Evolutionary Biology	
One of the following three-credit laboratory classes		3
BISC 312	General Ecology Laboratory	
BISC 315	Experimental Cell Biology	
BISC 316	Experimental Physiology	
BISC 411	Experimental Molecular Biology	
BISC 413	Advanced Genetics Laboratory	
BISC 484	Computer Based Genetics Laboratory	
Either CISC 106 or CISC 108 (for those with no previous equivalent experience), or CISC 181		3

Chemistry

One of the following options (A, B or C) 8-12

Option A

CHEM 103	General Chemistry	4
CHEM 104	General Chemistry	4

Option B

CHEM 111	General Chemistry	3
CHEM 112	General Chemistry	3
CHEM 119	Quantitative Chemistry I	3
CHEM 120	Quantitative Chemistry II	3

Option C

CHEM 111	General Chemistry	3
CHEM 112	General Chemistry	3
CHEM 220	Quantitative Analysis	3
CHEM 221	Quantitative Laboratory	1
CHEM 321	Organic Chemistry	4
CHEM 322	Organic Chemistry	4

CHEM 527	Introductory Biochemistry	3
Mathematics		
MATH 210	Discrete Mathematics I	3
MATH 241	Analytic Geometry and Calculus A	4
MATH 242	Analytic Geometry and Calculus B	4
MATH 243	Analytic Geometry and Calculus C	4
MATH 302	Ordinary Differential Equations	3
MATH 349	Elementary Linear Algebra	3
MATH 350	Probability Theory and Simulation Methods	3
MATH 426	Introduction to Numerical Analysis and Algorithmic Computation	3
MATH 450	Mathematical Statistics	3
MATH 460	Introduction to Systems Biology	3
MATH 535	Introduction to Partial Differential Equations	3

Physics

PHYS 207	Fundamentals of Physics I	4
PHYS 208	Fundamentals of Physics II	4

OTHER REQUIREMENTS

Two one-credit integrative seminars 2

MATH 260 Integrative Seminar

Three integrative or technical electives, 6 credits of which should be integrative electives from a list maintained by the Department of Mathematical Sciences. In addition, undergraduate research is strongly recommended.

CREDITS TO TOTAL A MINIMUM OF 125

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