

UNIVERSITY FACULTY SENATE FORMS

Academic Program Approval

This form is a routing document for the approval of new and revised academic programs. Proposing department should complete this form. For more information, call the Faculty Senate Office at 831-2921.

Submitted by: Louis Rossi _____ phone number 831-1880 _____

Department: Mathematical Sciences _____ email address rossi@math.udel.edu

Date: 28 Oct 2011 _____

Action: Minor revision to BS in Quantitative Biology program. _____
(Example: add major/minor/concentration, delete major/minor/concentration, revise major/minor/concentration, academic unit name change, request for permanent status, policy change, etc.)

Effective term Fall 2012 _____
(use format 04F, 05W)

Current degree QBIO-BS _____
(Example: BA, BACH, BACJ, HBA, EDD, MA, MBA, etc.)

Proposed change leads to the degree of: QBIO-BS _____
(Example: BA, BACH, BACJ, HBA, EDD, MA, MBA, etc.)

Proposed name: N/A _____
Proposed new name for revised or new major / minor / concentration / academic unit
(if applicable)

Revising or Deleting:

Undergraduate major: Quantitative Biology _____
(Example: Applied Music – Instrumental degree BMAS)

Undergraduate minor: N/A _____
(Example: African Studies, Business Administration, English, Leadership, etc.)

Graduate Program Policy statement change: N/A _____
(**Must attach** your Graduate Program Policy Statement)

Graduate Program of Study: N/A _____
(Example: Animal Science: MS Animal Science: PHD Economics: MA Economics: PHD)

Graduate minor / concentration: N/A _____

Note: all graduate studies proposals must include an electronic copy of the Graduate Program Policy Document, highlighting the changes made to the original policy document.

List new courses required for the new or revised curriculum. How do they support the overall program objectives of the major/minor/concentrations)?

(Be aware that approval of the curriculum is dependent upon these courses successfully passing through the Course Challenge list. If there are no new courses enter “None”)

None.

Explain, when appropriate, how this new/revised curriculum supports the 10 goals of undergraduate education: <http://www.ugs.udel.edu/gened/>

Not appropriate.

Identify other units affected by the proposed changes:

(Attach permission from the affected units. If no other unit is affected, enter "None")

None.

Describe the rationale for the proposed program change(s):

(Explain your reasons for creating, revising, or deleting the curriculum or program.)

Last year, the Department of Biological Sciences created BISC 484, a new core biology lab, with Quantitative Biology majors and similarly quantitative scientists in mind. This revision adds BISC 484 to the palette of allowable core biology labs that will meet degree requirements.

Program Requirements:

(Show the new or revised curriculum as it should appear in the Course Catalog. If this is a revision, be sure to indicate the changes being made to the current curriculum and **include a side-by-side comparison** of the credit distribution before and after the proposed change.)

See attached. The change is noted in red.

ROUTING AND AUTHORIZATION: (Please do not remove supporting documentation.)

Department Chairperson _____ Date _____

Dean of College _____ Date _____

Chairperson, College Curriculum Committee _____ Date _____

Chairperson, Senate Com. on UG or GR Studies _____ Date _____

Chairperson, Senate Coordinating Com. _____ Date _____

Secretary, Faculty Senate _____ Date _____

Date of Senate Resolution _____ Date to be Effective _____

Registrar _____ Program Code _____ Date _____

Vice Provost for Academic Affairs & International Programs _____ Date _____

Provost _____ Date _____

Board of Trustee Notification _____ Date _____

Revised 02/09/2009 /khs

Academic Year: 2011-2012

[8750]

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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
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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
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Multi-cultural Course	3
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COLLEGE REQUIREMENTS

Writing (minimum grade C-)	3
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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. 9

CREDITS TO TOTAL A MINIMUM OF 125

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DEPARTMENT OF BIOLOGY
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November 15, 2011

Dr. Louis Rossi
Director, Undergraduate Studies
Department of Mathematical Sciences
University of Delaware

Dear Dr. Rossi,

This letter is to state the approval of the Department of Biological Sciences for the modification of the Quantitative Biology (QBio) program to include the addition of BISC 484 *Computer Based Genetics Laboratory* as one of the core biology courses for this major. The Department of Biological Sciences fully supports the Quantitative Biology program and will be able to add the QBio majors to this course without restriction.

I look forward to continued interaction with the Department of Mathematics in the Quantitative Biology Program.

Best regards,

A handwritten signature in black ink that reads "Randall L. Duncan".

Professor and Chair