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Revised 5/22/2006

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PROPOSAL COVER SHEET

Course #: B10L 202 Title: Genetics sh

** See the back for instructions on listing the course number and how this document should be routed through the curricular process.

New Course Drop Course New Degree Drop Degree Revision Other

Briefly state the reason for the revision _____

Applicable overlay(s) IL MC EE _____ (units) WE

***Only check overlay if it is a NEW overlay

Prerequisites: Not Applicable Change (Addition/Removal)

Please Specify any changes Addition of CHEM 121 as a prerequisite

Please Specify the effective date of these changes Fall 2007

<u>Ralph J. Harmitzky</u>	<u>2/16/07</u>	<u>Approve</u>	Disapprove
Signature: Department Chairperson	Date	Recommendation	

		Approve	Disapprove
Signature: Dean of College	Date	Recommendation	

New programs and new courses require the approval of the Dean **BEFORE** distribution at the college curriculum subcommittee. Revisions to existing courses including addition of overlays do not require the signature of the Dean and may go directly to the college curriculum subcommittee.

<u>Lynette Kutz</u>	<u>3/2/07</u>	<u>Approve</u>	Disapprove
Signature: Chairperson, College Curriculum Subcommittee or Graduate Curriculum Subcommittee	Date	Recommendation	

<u>[Signature]</u>	<u>4/12/07</u>	<u>Approve</u>	Disapprove
Signature: Chairperson, University Curriculum Committee	Date	Recommendation	

<u>[Signature]</u>	<u>4/27/07</u>	<u>Approve</u>	Disapprove
Signature: Vice President for Academic Affairs	Date	Recommendation	

PROVOST - Does this proposal need to go to the: Board of Governors Council of Trustees

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5/3/07
[Signature]

FROM: Carina Howell, Assistant Professor
Department of Biological Sciences

TO: Arts and Science Curriculum Committee members

DATE: February 16, 2007

RE: **Addition of CHEM121 as prerequisite for BIOL202**

BIOL202 Genetics is a requirement for the Biology and Biology/Chemistry degrees. As it is a requirement for admissions to a variety of professional programs in the allied health fields, many Health Science majors also take the course.

Most students who enroll in BIOL202 have completed the Principles of Chemistry series (CHEM120 and CHEM121). However, students without the chemistry preparation consistently struggle in Genetics, particularly with the portions of the syllabus dealing with molecular biology.

The topics of DNA replication, DNA transcription, and protein synthesis are fundamental to the study of genetics. Students without at least a first-year introductory background in chemistry encounter enormous obstacles with these topics. In addition, we believe that students who complete the Principles of Chemistry series cultivate mathematical skills and problem solving discipline that help prepare them for the rigors of the problem sets they encounter in Genetics.

For the Spring 2007 semester, 57% of students in the lowest 10 percentile in BIOL202 have not completed CHEM121, while the remaining 43% of the lowest 10% averaged a D+ in CHEM121. Of students in the top 10 percentile of the class, 86% have completed CHEM121.

In order to increase the chances for success for all of the students who enroll in BIOL202 Genetics, we propose to add completion of CHEM121 as a prerequisite.

Lock Haven University of Pennsylvania
Lock Haven, Pennsylvania

Department of Biological Sciences
Genetics (BIOL202)

I. Introductory Information

- A. **Department Name:** Biological Sciences
B. **Department Catalog Number:** BIOL202
C. **Course Title:** Genetics
D. **Semester Hours of Credit:** Three (3)
E. **Clock Hours Per Week:** Five (5) (2 lecture and 3 laboratory hours)
F. **Overlays:** None
G. **Restrictions Upon Student Registration:**
Enrollment will be limited to those students who have completed BIOL106 and BIOL107, or by permission of the instructor.

II. Description of the Course

A. Catalog Description:

An overview of the basic principles of Mendelian genetics, cytogenetics, molecular genetics, and population genetics. Laboratory exercises emphasize molecular techniques, statistical evaluation of results, and case studies.

B. Comprehensive Description:

This course will cover Mendelian genetics including his experiments that showed dominant and recessive alleles, and mathematical relationships of inheritance. Additional modes of inheritance include deviations from Mendelian genetics, sex determination, and cytogenetics. Coverage of molecular genetics includes DNA replication, transcription, translation, and gene mutations as the basis of evolutionary change. The topic of evolutionary genetics includes Hardy-Weinberg statistics, allele frequency changes, population genetics, and the basis for evolutionary change. Laboratories will include elements of proper experimental design, statistical analysis, molecular techniques applicable to genetic inquiry and biotechnology, and the application of genetic theory to case studies.

The content of this course relates to standards of the Interstate New Teacher Assessment and Support Consortium (INTASC) Standards, the National Council for Accreditation of Teacher Education (NCATE), National Science Teachers Association (NSTA), and the Pennsylvania Department of Education (PDE) Standards for Secondary Education Biology.

This course addresses INTASC Unit Standard One: Subject Matter and NCATE/NSTA standards: 1. Content, 2. Nature of Science, 3. Inquiry, 4. Context of Science, and 7. Social Context.

This course also addresses the following PDE Biology Standards at upper-course level:

- I. B. Molecular and cellular biology and chemical basis of life.
- I. C. Classical and molecular genetics and evolution.
- I. D. Structure, function and development of organisms.
- I. F. Technology and commercial issues and applications of biological systems.
- I. G. Implications of scientific and technological developments on ethical questions.