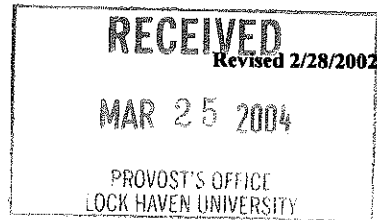


**Lock Haven University  
University Curriculum Committee**



**PROPOSAL COVER SHEET**

Course #: 3102101 Title: Basic Biology 3 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

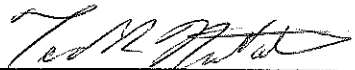
Briefly state the reason for the revision Accreditation

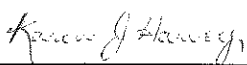
Applicable overlay(s)  IL  MC  EE \_\_\_\_\_ (units)  WE

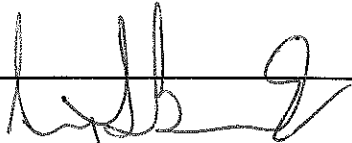
Prerequisites:  Not Applicable  Change (Addition/Removal)

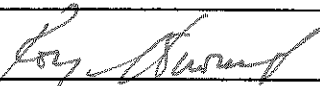
Please Specify any changes \_\_\_\_\_

Please Specify the effective date of these changes Spring 2004


	<u>1/16/04</u>	<input checked="" type="checkbox"/> Approve	<input type="checkbox"/> Disapprove
Signature: Department Chairperson	Date	Recommendation	

	<u>3/20/04</u>	<input checked="" type="checkbox"/> Approve	<input type="checkbox"/> Disapprove
Signature: Chairperson, College Curriculum Subcommittee or Graduate Curriculum Subcommittee	Date	Recommendation	

	<u>3-25-04</u>	<input checked="" type="checkbox"/> Approve	<input type="checkbox"/> Disapprove
Signature: Chairperson, University Curriculum Committee	Date	Recommendation	

	<u>3-26-04</u>	<input checked="" type="checkbox"/> Approve	<input type="checkbox"/> Disapprove
Signature: Vice President for Academic Affairs	Date	Recommendation	

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

	<u>3/26/04</u>	<input checked="" type="checkbox"/> Approve	<input type="checkbox"/> Disapprove
Signature: President	Date	Recommendation	

*Handwritten note:* Sent 3/29/04

Lock Haven University of Pennsylvania  
Department of Biological Sciences

**Basic Biology (BIOL 101)**

**I. Introductory Information**

A. Department:	Biological Sciences
B. Departmental Catalogue Number:	BIOL 101
C. Course Title:	Basic Biology
D. Semester Hours of Credit:	3
E. Clock Hours Per Week:	4 (2 lecture and 2 laboratory hours)
F. Overlays:	None
G. Restriction Upon Student Registration:	None

**II. Description of the Course**

**A. Catalog Description**

Covers topics across the biological hierarchy from atoms to issues of global ecology, including genetics, molecular biology, and evolution. The intent is to further students' understanding of the impact of biological phenomena on their lives. Humans may provide the focus of some discussions; however emphases include broader aspects of biological phenomena. Laboratory exercises provide students with practical experience using the scientific method.

**B. Comprehensive Description**

The content of this course satisfies standards of the Interstate New Teacher Assessment and Support Consortium (INTASC), the National Council for Accreditation of Teacher Education (NCATE), the National Science Teacher Association (NSTA), and the Pennsylvania Department of Education (PDE) Standards for Elementary Education

Specifically this course satisfies INTASC Unit Standard 1. *Subject matter*; NCATE/NSTA Standards 1. *Content*, 2. *Nature of Science*, 3. *Inquiry*, and 4. *Context of Science*; PDE **Biology** Standards at the Introductory Level: I.C. *Classical and molecular genetics and the evolution and diversity of life*; I.D. *Structure, function and development of organisms*; and I.E. *Ecological relationships among populations, communities and ecosystems*; as well as PDE **Elementary Education** Standards at the Introductory Level: I.E. *Science instruction at the elementary level*.

### **III. Exposition**

#### **A. Objectives**

Upon completion of this course students will be able to do the following:

1. Discuss the nature of scientific inquiry and demonstrate correct use of the scientific method.
2. Describe the chemistry of simple biological systems.
3. Describe cell architecture and the mechanisms of cell reproduction.
4. Describe the principles of Mendelian genetics and apply those principles to solving simple problems in transmission genetics.
5. Identify the tenets of the molecular genetics and describe the mechanism of gene expression from DNA to protein.
6. Identify and discuss the tenets of Darwinian Natural Selection.
7. Describe the relationship between evolution and organismal diversity.
8. Describe the nature of energy flow and nutrient cycles in natural communities.
9. Identify the role of ecological interactions in maintaining the structure of natural communities.
10. Describe the patterns of regulated and unregulated population growth.
11. Identify and discuss ecological issues of current global concern.

#### **B. Activities and Requirements**

The lecture component of this course will comprise both formal presentation as well as discussion. Laboratory is considered an integral part of this course and it is hoped that students will be able to make a meaningful connections between lecture discussions and laboratory protocols.

Activities related to Objectives in III.A.

1. Students will complete readings and attend and participate in lectures and discussions concerning the nature of scientific inquiry; they will also participate in a laboratory exercise that will allow them to use the scientific method in problem solving.
2. Students complete assigned readings and participate in discussions concerning the chemistry of biological systems.
3. Students will complete assigned readings and participate in lecture discussions concerning cell architecture and the mechanisms of cell reproduction; they will also participate in a laboratory exercise intended to assist in understanding the mechanisms of cell reproduction.
4. Students will complete assigned readings and participate in lecture discussions concerning the principles of Mendelian genetics; they will also complete laboratory exercises intended to demonstrate patterns of transmission genetics.
5. Students will complete assigned readings and will participate in lecture discussions concerning molecular genetics; they will also participate in laboratory exercises intended to highlight the tenets of the *Central Dogma of Molecular Biology*.
6. Students will complete assigned readings and will participate in lecture discussions concerning the mechanism of Darwinian natural selection.

7. Students will complete assigned readings and will participate in lecture discussions concerning the relationship between evolution and organismal diversity. Students will also complete a laboratory exercise concerning taxonomy and classification.
8. Students will complete assigned readings and will participate in lecture discussions concerning the nature of energy flow and nutrient cycles in natural communities.
9. Students will complete assigned readings and will participate in lecture discussions concerning the role of ecological interactions in maintaining the structure of natural communities.
10. Students will complete assigned readings and will participate in lecture discussions concerning the patterns of regulated and unregulated population growth; they will also complete a laboratory exercise that highlights this phenomenon.
11. Students will complete assigned readings and will participate in lecture discussions concerning ecological issues of current global concern.

### C. Major Units and Time Allotted

	Hours
1. Scientific method	3
2. Biological chemistry	6
3. Cell Theory	6
3. Transmission genetics	8
4. The Central Dogma	10
5. Evolution	6
6. Ecology	6

Course includes one 2-hour laboratory session per week.

### D. Materials and Bibliography

1. Suggested textbook: Johnson, G. B, 2003. *The Living World*, 3<sup>rd</sup> Edition. McGraw-Hill Companies, Inc.

2. Other Materials: *In-house* laboratory notebook.

3. Bibliographic Support:

#### Selected Bibliography:

Audesirk, T., G. Audesirk, and B.E. Byers. 2003. *Life on Earth*, 3<sup>rd</sup> Edition. Prentice Hall, New Jersey. 635 pp.

Cain, M.L., H. Damman, R.A. Lue., and C.K. Yoon. 2000. *Discover Biology*. Sinauer Associates, Massachusetts. 683 pp.

Campbell, N.A., L.G. Mitchell, and J.B. Reece. 2000. *Biology: Concepts and Connections*, 3<sup>rd</sup> Edition. Addison Wesley Longman. New York 809 pp.

Hoagland, M., B. Dodson, and J. Hauck. 2001. *Exploring the Way Life Works: The Science of Biology*. Jones and Bartlett. Canada. 376 pp.

Pruitt, N.L., L.S. Underwood, and W. Surver. 2003. *BioInquiry: Making Connections in Biology*, 2<sup>nd</sup> Edition. John Wiley and Sons. New York. 604 pp.

Starr, C. 2000. *Biology: Concepts and Applications*, 4<sup>th</sup> Edition. Brooks/Cole. Connecticut. 788 pp.

#### **IV. Standards**

Students will be evaluated on their ability to assimilate materials presented in lecture, readings, and in laboratory. Grades will be assigned in accordance with University policy, and will be based upon student demonstration of mastery of course material through lecture examinations and laboratory quizzes.

##### **Assessment:**

1. Achievement on lecture examinations and laboratory quizzes and/or written assignments will be used to assess student understanding of the nature of scientific inquiry.
2. Achievement on lecture examinations and laboratory quizzes and/or written assignments will be used to assess student understanding of the chemistry of biological systems.
3. Achievement on lecture examinations and laboratory quizzes and/or written assignments will be used to assess student understanding of cell architecture and the mechanisms of cell reproduction.
4. Achievement on lecture examinations and laboratory quizzes and/or written assignments will be used to assess student understanding of the principles of Mendelian genetics.
5. Achievement on lecture examinations and laboratory quizzes and/or written assignments will be used to assess student understanding of the tenets of the *Central Dogma of Molecular Biology*.
6. Achievement on lecture examinations and laboratory quizzes and/or written assignments will be used to assess student understanding of the mechanism of Darwinian natural selection.
7. Achievement on lecture examinations and laboratory quizzes and/or written assignments will be used to assess student understanding of the relationship between evolution and organismal diversity.
8. Achievement on lecture examinations and laboratory quizzes and/or written assignments will be used to assess student understanding of the nature of energy flow and nutrient cycles in natural communities.
9. Achievement on lecture examinations and laboratory quizzes and/or written assignments will be used to assess student understanding of the role of ecological interactions in maintaining the structure of natural communities.
10. Achievement on lecture examinations and laboratory quizzes and/or written assignments will be used to assess student understanding of the patterns of regulated and unregulated population growth.

11. Achievement on lecture examinations and laboratory quizzes and/or written assignments will be used to assess student understanding of ecological issues of current global concern.

## **V. Rationale and Impact**

- A. It is imperative that student-citizens understand the full and potential impact of science and technology on their current and future lives. As our technical and practical understanding grows in fields such as medical biotechnology, genomics, and ecology it will be important that each of us understands enough about these and related phenomena to enable us to us make informed decisions in a variety of arenas spanning the personal to the political. This course provides a broad-based introduction to a number of areas within which individuals may be asked to make informed decisions in their future lives. This revision is necessary to meet PDE and NCATE accreditation requirements.
- B. This course fulfills the Lock Haven University general education laboratory science requirement. It may not be used for biology credit by departmental majors.
- C. No other department will be affected by the revision of this established offering.

## **VI. Cost and Staff Analysis**

- A. This is a revision of the syllabus of an existing course. Costs are anticipated to be those normally associated with a multi-section laboratory science course.
- B. This course will be taught during both the fall and spring semesters; it may also be offered during one, or the other, or both summer sessions.

## **VII. Date Approved by University President:**

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(Signature)

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(Date)