

DOCUMENT N: COURSE AND PROGRAM DEVELOPMENT COVER SHEET

See Course and Program Development Policy and Procedures for Instructions

SCHOOL: LAW <input type="checkbox"/> MSB <input type="checkbox"/> YGCLA <input checked="" type="checkbox"/>	Contact Name: Wolf T. Pecher	Phone: 410-837-6720
DEPARTMENT / DIVISION: Liberal Studies		
SHORT DESCRIPTION OF PROPOSAL (State Document N action item from Box 3 below and program name OR course name, code, & number as applicable):		
#8 – New Course: ENVS 375 Molecular Genetics and Biotechnology in Society (4.0 cr.)		
PROPOSED SEMESTER OF IMPLEMENTATION: Fall <input checked="" type="checkbox"/> Spring <input type="checkbox"/> Year: 2010		

Box 1: TYPE OF ACTION	ADD(NEW) <input checked="" type="checkbox"/>	DEACTIVATE <input type="checkbox"/>	MODIFY <input type="checkbox"/>	OTHER <input type="checkbox"/>
Box 2: LEVEL OF ACTION	Non-Credit <input type="checkbox"/>	Undergraduate <input checked="" type="checkbox"/>	Graduate <input type="checkbox"/>	OTHER <input type="checkbox"/>

Box 3: ACTION ITEM (check appropriate boxes)		DOCUMENTS REQUIRED (see box 4 below)	IMPACT REVIEWS (see box 5 on back)	APPROVAL SEQUENCE (see box 6 on back)
	1. Experimental Course ¹	N, O, P	a, c, e	AC
	2. Course Title	N, O		ABCD
	3. Course Credits	N, O, (P)		ABCD
	4. Course Number	N, O		ABCD
	5. Course Level	N, O		ABCD
	6. Pre & Co-Requisite	N, O		ABCD
	7. Course Description	N, O, P		ABCDEF
x	8. New Course	N, O, P		ABCDEF
	9. Deactivate a Course	N, O		ABCDEF
	10. Program Requirements	N, O	(b, c, d, e)	ABCDEF
	11a. UG Specialization (24 credits or less)	N, O	a, b, c, d, e	ABCDEF
	11b. Masters Specialization (12 credits or less)	N, O	a, b, c, d, e	ABCDEF
	11c. Doctoral Specialization (18 credits or less)	N, O	a, b, e	ABCDEF
	12. Minor (add or delete)	N, O	a, b, c, d, e	ABCDEF
	13. Closed Site Program	N, O	e	ABCDHIK
	14. Program Suspension	N, O, S	a, e	ABCDEFGIK
	15. Program Reactivation	N, O		
	16a. Certificate Program (ug/g) exclusively within existing degree program	N, O	a, c, e	ABCDEFHIK
	16b. Certificate Program (ug/g) where degree programs do not exist or where courses are selected across degree programs (12 or more credits)	N, O, Q, R, S	a, c, e	ABCDEFHJL
	17. Off-Campus Delivery of Existing Program	N, O, S	a, b, c, e	ABCDHIL
	18a. UG Concentration (exceeds 24 credit hrs)	N, O, S	a, c, d, e	ABCDEFHJL
	18b. Masters Concentration (exceeds 12 credit hrs)	N, O, S	a, c, d, e	ABCDEFHJL
	18c. Doctoral Concentration (exceeds 18 credit hrs)	N, O, S	a, c, d, e	ABCDEFHJL
	19. Program Title Change	N, O, S	a, c, d, e	ABCDEFHJL
	20. Program Termination ²	N, O, S	d, e	ABCDEFHJK
	21. New Degree Program ³ ,	N, O, Q, R, S	a, c, d, e	ABCDEFHJL
	22. Other	Varies	Varies	Varies

Box 4: DOCUMENTATION (check boxes of documents included)			
x	N. This Cover Sheet	Q. Full 5-page MHEC Proposal	T. Other
x	O. Summary Proposal	R. Financial Tables (MHEC)	
x	P. Course Definition Document	S. Other documents as may be required by MHEC/ USM. See http://www.ubalt.edu/downloads/program_approval_Grid-USM-10-07.doc	

¹ Approval of experimental course automatically lapses after two offerings unless permanently approved as a new course.

² See USM Policy on the Review and Abolition of Academic Programs (<http://www.usmd.edu/regents/bylaws/SectionIII/III702.html>) for list of information that must be provided for this action.

³ Letter of Intent is required by USM at least 30 days before a full proposal can be submitted. Letter of Intent requires only the approval of the dean and the provost and is forwarded to USM by the Office of the Provost.

DOCUMENT N: COURSE AND PROGRAM DEVELOPMENT COVER SHEET (Page 2 of 2)

SCHOOL: LAW <input type="checkbox"/> MSB <input type="checkbox"/> YGCLA x	Contact Name: Wolf T. Pecher	Phone: 410-837-6720
DEPARTMENT / DIVISION: Liberal Studies		
SHORT DESCRIPTION OF PROPOSAL (State Document N action item from Box 3 and program name OR course name, code, & number as applicable):		
#8 – New Course: ENVS 375 Molecular Genetics and Biotechnology in Society (4.0 cr.)		
PROPOSED SEMESTER OF IMPLEMENTATION: Fall x Spring <input type="checkbox"/> Year: 2010		

Box 5: IMPACT REVIEW	SIGNATURES (see procedures for authorized signers)	DATE
a. Library <input type="checkbox"/> No impact <input type="checkbox"/> Impact statement attached	Director or designee:	
b. OTS <input type="checkbox"/> No impact <input type="checkbox"/> Impact statement attached	CIO or designee:	
c. University Relations <input type="checkbox"/> No impact <input type="checkbox"/> Impact statement attached	Director or designee:	
d. Admissions <input type="checkbox"/> No impact <input type="checkbox"/> Impact statement attached	Director or designee:	
e. Records <input type="checkbox"/> No impact <input type="checkbox"/> Impact statement attached	Registrar or designee:	

Box 6: APPROVAL SEQUENCE	APPROVAL SIGNATURES	DATE
A. Department / Division	Chair: Deborah Kehl	10-6-09
B. General Education (as required for #7, #8)	N/A	
C. Final faculty review body within each School	Chair: Margaret J. Potthast	10-23-09
D. College Dean	Dean: Greg W. Turner	10/27/09
E. Provost and Senior Vice President for Academic Affairs	Provost: Mark S. W. for Joseph Wood	11/02/09
F. Curriculum Review Committee (UFS subcommittee)	Chair:	
G. University Faculty Senate (UFS option)	Chair:	
H. University Council ⁴	Chair:	
I. President	President:	
J. Board of Regents – notification only		
K. Board of Regents – approval		
L. MHEC – notification only		
M. MHEC – approval		
N. Middle States Association notification	Required only if the mission of the University is changed by the action	

⁴ University Council *review* (for a recommendation to the President or back to the Provost) shall be limited to curricular or academic policy issues that may potentially affect the University's mission and strategic planning, or have a significant impact on the generation or allocation of its financial resources.

DOCUMENT O: SUMMARY PROPOSAL

See Course and Program Development Policy and Procedures for Instructions

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DEPARTMENT / DIVISION: Liberal Studies		
SHORT DESCRIPTION OF PROPOSAL (state action item 1-23 and course name & number or program affected):		
#8 – New Course: ENVS 375 Molecular Genetics and Biotechnology in Society (4.0 cr.)		
PROPOSED SEMESTER OF IMPLEMENTATION: Fall <input checked="" type="checkbox"/> Spring <input type="checkbox"/> Year: 2010		

O-1: Briefly describe what is being requested:

This is a request to approve a new science course, primarily for the third year students, which fulfills the major requirements for the new *Environmental Sustainability and Human Ecology* major and add it to the curriculum.

For new courses or changes in existing courses (needed by Registrar)

OLD Title:	Course # / HEGIS Code:	Credits:
NEW Title: Molecular Genetics and Biotechnology in Society	Course # / HEGIS Code: ENVS 375	Credits: 4.0

O-2: Set forth the rationale for the proposal:

The implementation of the *Environmental Sustainability and Human Ecology* major at the University of Baltimore has necessitated the development of new laboratory and non-laboratory courses to fulfill upper division major requirements. This laboratory course will diversify current offerings and will cover essential topics of molecular genetics and biotechnology. Biotechnology has an increasing impact on our society and our environment and, at the same time, advances at an incredible rate. Its advances however, while intended to be beneficial to the wellbeing of our society and our environment, may carry high risks. Understanding and addressing the complex issues related to advances in molecular genetics and biotechnology (e.g. cloning, genetic engineered food resources, alternative energies) requires familiarity with the science and technology behind these advances. Students not only will become aware of the need for biotechnology, but also will understand and be capable to evaluate the impacts of biotechnology methods designed to enhance human health and sustainability of the human society and their environment.

Document P: Course Definition
Molecular Genetics and Biotechnology in Society

1. Date Prepared: September 25, 2009
2. Prepared by: Wolf T. Pecher
3. Department/ Division: Liberal Studies
4. Course Numbers: ENVS 375
5. Course Title: Molecular Genetics and Biotechnology in Society
6. Credit Hours: 4.0
7. Catalog Description:

The science behind practices such as cloning, genetic engineering, and advances in biotechnology in human health, agriculture, aquaculture and environmental sciences are discussed. Raises awareness of the impact of biotechnology on human society and discusses related ethical issues. Provides students with the knowledge to evaluate risks and impact of advances in biotechnology. The laboratory portion of the course introduces students to the techniques used in molecular genetics, molecular biology, and biotechnology.

8. Prerequisites: CHEM 101 Chemistry and the Modern World
9. Course Purpose: required Environmental Sustainability and Human Ecology program element
10. General Education area: none
11. Course type/ Component: ~~Lecture~~, Laboratory
12. Faculty qualified to teach course: Wolf T. Pecher
13. Content outline:

Topics to be covered in the lecture portion of the course include: an introduction to molecular genetics and biotechnology; basic molecular biology and biochemistry; environmental genomics and proteomics; bioremediation; biotechnology and generation of sustainable energy sources; biotechnology, agriculture, and aquaculture: concept, benefits, and risks of genetic engineering; ethical issues in biotechnology; and selected topics on biotechnological advances.

Projected laboratory exercises will be composed of laboratory experiments and computer based labs. Students will be introduced to cloning and genetic engineering. Experiments will be conducted aimed at the identification and characterization of genes. Environmental samples will be collected and analyzed using molecular biology methods. Computer based labs will introduce students to bioinformatic and *in silico* gene analysis tools and complement the laboratory experiments.

14. Learning Goals:

At the end of the course students will be able to:

- I. describe and explain fundamental concepts of molecular genetics & molecular biology, bioinformatics and biotechnology.
- II. explain the utility of biotechnology towards building a sustainable society.
- III. utilize methods and tools used by molecular biologists for collecting data and to analyze that data.
- IV. construct lab reports in a scientific format summarizing and analyzing laboratory experiments in molecular biology and bioinformatics.
- V. summarize and analyze scientific literature related to biotechnology.
- VI. identify, describe, and evaluate benefits and risks of biotechnological advances for the environment and human society and to construct reports aimed at the general public.
- VII. analyze and evaluate reports on biotechnological advances and techniques for their soundness.

15. Assessment strategies

Assessment strategies include

- I. non-comprehensive and/or comprehensive examinations (Learning goals I, II, III)
- II. quizzes based on material presented in lecture and/ or laboratory (learning goals I, II, III)
- III. written record of laboratory experiments, and laboratory reports in scientific format, (learning goals III, IV, and V)
- IV. either an end of term oral presentation or term paper on a topic related to biotechnology of the student's choice, using a specified amount of peer reviewed literature (learning goal V, VI, VII)
- V. periodic summaries of news articles describing current issues in environmental science, plus in- class discussion (Learning goals V, VI, VII)

16. Suggested texts and materials:

- D. P. Clark, N. J. Pazdernik, 2008. *Biotechnology: Applying the Genetic Revolution*. Academic Press, ISBN 0121755525
- E. Daugherty, 2006. *Biotechnology: Science for the New Millennium, First Edition Lab Manual*. ISBN: 978-0-76382-902-5

Other appropriate text:

Channarayappa, 2008. Molecular Biotechnology: Principles and Practices. CRC Press, ISBN: 9781420051575

V.K. Yadav and Neelam Yadav, Pointer, 2007. Biochemistry and Biotechnology: A Laboratory Manual. Vedams. ISBN : 81-7132-490-8

17. Suggested Class Size: 24 students

18. Lab Fees: yes