

Curriculum Proposal Cover Sheet – form is available on-line as an interactive PDF

LSC Use Only Proposal No: LSC Action-Date: <u>App-9/12/13</u>	13-369 UWUCC Use Only Proposal No: 12-1375 UWUCC Action-Date: <u>App-11/19/13</u>	Senate Action Date: <u>App-12/3/13</u>
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Curriculum Proposal Cover Sheet - University-Wide Undergraduate Curriculum Committee

Contact Person(s) Sandra Newell	Email Address sjnewell@iup.edu
Proposing Department/Unit Biology	Phone 724-357-2352

Check all appropriate lines and complete all information. Use a separate cover sheet for each course proposal and/or program proposal.

1. Course Proposals (check all that apply)

New Course Course Prefix Change Course Deletion
 Course Revision Course Number and/or Title Change Catalog Description Change

Current course prefix, number and full title: _____

Proposed course prefix, number and full title, if changing: _____

2. Liberal Studies Course Designations, as appropriate

This course is also proposed as a Liberal Studies Course (please mark the appropriate categories below)

Learning Skills Knowledge Area Global and Multicultural Awareness Writing Intensive (include W cover sheet)
 Liberal Studies Elective (please mark the designation(s) that applies – must meet at least one)

Global Citizenship Information Literacy Oral Communication
 Quantitative Reasoning Scientific Literacy Technological Literacy

Received
APR 29 2013

3. Other Designations, as appropriate

Honors College Course Other. (e.g. Women's Studies, Pan African)

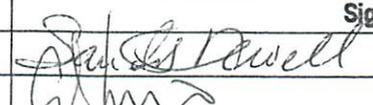
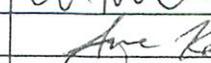
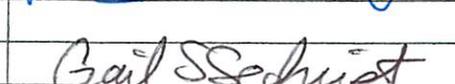
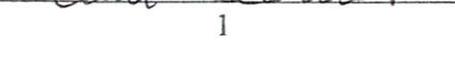
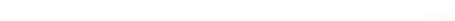
Liberal Studies

4. Program Proposals

Catalog Description Change Program Revision Program Title Change New Track
 New Degree Program New Minor Program Liberal Studies Requirement Changes Other

Current program name: **Bachelor of Science – Biology/Ecology, Conservation, and Environmental Biology Track**

Proposed program name, if changing: _____

5. Approvals	Signature	Date
Department Curriculum Committee Chair(s)		7 Dec. 2012
Department Chairperson(s)		Dec 7 2012
College Curriculum Committee Chair		4/24/13
College Dean		4/29/13
Director of Liberal Studies (as needed)		9/13/13
Director of Honors College (as needed)		5/2/13
Provost (as needed)		
Additional signature (with title) as appropriate		
UWUCC Co-Chairs		11/19/13

Part II. Description of Curriculum Change

1. Catalog description for the revised program in the appropriate form.

Bachelor of Science – Biology/

Ecology, Conservation, and Environmental Biology Track

Liberal Studies: As outlined in Liberal Studies section with the following specifications:

45

Mathematics: MATH 121

Natural Science: CHEM 111-112 or CHEM 113-114

Liberal Studies Electives: 3cr, MATH 216 or 217

Major:

36-37

Required Core Courses:

BIOL 201 Principles of Ecology and Evolution 4cr

BIOL 202 Principles of Cell and Molecular Biology 4cr

BIOL 203 Principles of Genetics and Development 4cr

Required Biology Courses:

BIOL 210 Botany 3cr

BIOL 220 General Zoology 3cr

BIOL 272 Conservation of Plant and Animal Resources 3cr

BIOL 362 Ecology 3cr

BIOL 451 Evolutionary Biology 3cr

BIOL 490 Field Studies in Biology (Field Research Methods section only) or 3-4cr

BIOL 450 Field Biology at Pymatuning Laboratory of Ecology (Field Methods in Ecology and Conservation section only)

Controlled Biology Electives:

Biology electives (major courses only) 6cr (1)

Other Science Requirements:

23

GEOS 201 Foundations of Geology 4cr

PHYS 111 Physics I Lecture 3cr

PHYS 121 Physics I Lab 1cr

Controlled Electives:

15cr

Select 15cr from the following (2):

ANTH 420

BIOC: 301, 302, 311, 312, 401, 480, 490

CHEM: 231, 232, 321, 323, 351

COSC 105, 110

ECON 361

GEOG 343, 345, 419

GEOG/RGPL 213, 314, 316, 415, 417, 440, 464

GEOS: 202, 203, 303, 310, 311, 312, 313, 351, 352, 353, 354, 362, 370, 371

MATH: 122, 417, 418

PHYS: 112, 122, 151, 161

PSYC 290, 291, 315, 331, 341, 342 or 345, 350, 355, 356, 359, 372
RGPL 350, 458

Other Requirements:

Foreign Language Intermediate Level
Exit survey for assessment purposes

0-6cr (3)

0-6

Free Electives:

9-16

Total Degree Requirements:

120

(1) No more than 6cr total from Independent Study, Special Topics, or Internship applies to major; excess applied as free electives.

(2) Other appropriate major courses at 200-level and above (excluding liberal studies courses) in the above departments may be substituted with permission of the advisor and the biology department chairperson in advance of taking the course.

(3) a) Two courses in one language, including the placement course; or b) intermediate level. In lieu of a foreign language the students may elect to take a sequence of courses in either Computer Science (exclusive of COSC/IFMG 101; COSC 110 and 210 recommended), or Geography/Regional Planning (from the following: GEOG/RGPL 213, 314, 316, 415, 417).

2. Summary of changes:

1. CHEM 113-114 was added as a substitution for CHEM 111-112.

2. The requirement of ECON 101 was removed.

3. BIOL 111 Principles of Biology I, BIOL 112 Principles of Biology II, and BIOL 263 Genetics have been replaced by BIOL 201 Principles of Ecology & Evolution, BIOL 202 Principles of Cell & Molecular Biology, and BIOL 203 Principles of Genetics & Development. BIOL 263 Genetics, a 3 credit course, has been replaced by BIOL 203, a 4 credit course. These three courses, BIOL 201 Principles of Ecology & Evolution, BIOL 202 Principles of Cell & Molecular Biology, and BIOL 203 Principles of Genetics & Development, constitute the biology core courses. The course proposals are attached.

4. BIOL 250 Principles of Microbiology was removed as a required course. Students may take it as a biology elective.

5. BIOL 480 Biology Seminar was removed as a required course. Students may take it as a biology elective.

6. BIOL 271 Evolution was replaced by BIOL 451 Evolutionary Biology.

7. The requirement for BIOL 490 Field Studies in Biology has been expanded to include either BIOL 490 Field Studies in Biology or BIOL 450 Field Biology at Pymatuning Laboratory of Ecology. Since the latter course is 4 credits, this necessitates a change in the credits for this requirement from 3 cr to 3-4 cr.

8. Controlled Biology Electives was introduced as a category, with 6 credits in the proposed curriculum. The requirement for independent study, research, or internship was removed. Students may take these courses as biology electives.

9. Controlled Electives category was changed from 18 credits to 15 credits, and the list of courses was updated and expanded. This reduced the number of Other Requirements credits from 26 to 23. In particular, biology electives are no longer specified; psychology and biochemistry courses were added to the list; an anthropology course was added to the list; and courses were added in chemistry, geoscience, mathematics, and physics.

10. The formatting of the foreign language requirement was made consistent with the other track descriptions. There is no change in the requirement itself.

11. Free electives were increased by 3 credits (3 credits from the controlled electives).

12. Footnotes were added to be consistent with the other tracks within the B.S. in Biology.

Comparison of Old and New Programs:

Current:

Proposed:

Bachelor of Science – Biology/ Ecology, Conservation, and Environmental Biology Track		Bachelor of Science – Biology/ Ecology, Conservation, and Environmental Biology Track	
Liberal Studies: As outlined in Liberal Studies section with the following specifications:	45	Liberal Studies: As outlined in Liberal Studies section with the following specifications:	45
Mathematics: MATH 121		Mathematics: MATH 121	
Natural Science: CHEM 111 and 112		Natural Science: CHEM 111-112 or CHEM 113-114	
Social Science: ECON 101			
Liberal Studies Electives: 3 cr, MATH 216 or 217		Liberal Studies Electives: 3 cr, MATH 216 or 217	
Major:	36-37	Major:	36-37
Required Courses:		Required Core Courses:	
BIOL 111 Principles of Biology I	4cr		
BIOL 112 Principles of Biology II	4cr		
		BIOL 201 Principles of Ecology & Evolution	4cr

		BIOL 202 Principles of Cell & Molecular Biology	4cr
		BIOL 203 Principles of Genetics & Development	4cr
		Required Biology Courses:	
BIOL 210 Botany	3cr	BIOL 210 Botany	3cr
BIOL 220 General Zoology	3cr	BIOL 220 General Zoology	3cr
BIOL 250 Principles of Microbiology	3cr		
BIOL 263 Genetics	3cr		
BIOL 271 Evolution	3cr		
BIOL 272 Conservation of Plant and Animal Resources	3cr	BIOL 272 Conservation of Plant and Animal Resources	3cr
BIOL 362 Ecology	3cr	BIOL 362 Ecology	3cr
		BIOL 451 Evolutionary Biology	3cr
BIOL 480 Biology Seminar	1cr		
BIOL 480 Biology Seminar	1cr		
BIOL 490 Field Studies in Biology	3cr	BIOL 490 Field Studies in Biology (Field Research Methods section only) or BIOL 450 Field Biology at Pymatuning Laboratory of Ecology (Field Methods in Ecology and Conservation section only)	3-4cr
		Controlled Biology Electives:	
		Biology electives (major courses only)	6 cr (1)
Independent Study or Internship			
Must take one of the following:			
BIOL 483 Honors Thesis/Independent Study	2cr		
BIOL 493 Biology Internship	3cr		
BIOL 499 Biology Research	3cr		
Other Requirements:	26	Other Science Requirements:	23
GEOS 201 Foundations of Geology	4cr	GEOS 201 Foundations of Geology	4cr
PHYS 111 Physics I Lecture	3cr	PHYS 111 Physics I Lecture	3cr
PHYS 121 Physics I Lab	1cr	PHYS 121 Physics I Lab	1cr
Controlled Electives:	18cr	Controlled Electives:	15cr
Select 18cr from the following: BIOL 251, 252, 261, 262, 281, 310, 425, 450, 455, 456, 463, 471, 473, 475, 480, 481, 482, 483, 484, 490; CHEM 231, 232, 323, 351; COSC 105, 110; ECON 361; ENVH 221, 456; GEOG 343, 345, 419; GEOG/RGPL 231, 314, 316, 415, 417, 440, 464; GEOS 310; MATH 122;		Select 15cr from the following (2): ANTH 420 BIOC: 301, 302, 311, 312, 401, 480, 490 CHEM: 231, 232, 321, 323, 351 COSC 105, 110 ECON 361 GEOG 343, 345, 419	

PHYS 112, 122; RGPL 350, 458		GEOG/RGPL 213, 314, 316, 415, 417, 440, 464 GEOS: 202, 203, 303, 310, 311, 312, 313, 351, 352, 353, 354, 362, 370, 371 MATH: 122, 417, 418 PHYS: 112, 122, 151, 161 PSYC 290, 291, 315, 331, 341, 342 or 345, 350, 355, 356, 359, 372 RGPL 350, 458	
College: Foreign Language	0-6	Other Requirements:	0-6
Two courses beyond placement or intermediate level. In lieu of a foreign language the students may elect to take a sequence of courses in either Computer Science (exclusive of COSC/IFMG 101; COSC 110 and 210 recommended), or Regional Planning from the list of controlled electives (or with permission of advisor.)	0-6cr	Foreign Language Intermediate Level	0-6cr (3)
		Exit survey for assessment purposes	
Free Electives:	6-13	Free Electives:	9-16
Total Degree Requirements:	120	Total Degree Requirements:	120
		(1) No more than 6cr total from Independent Study, Special Topics, or Internship applies to major; excess applied as free electives.	
		(2) Other appropriate major courses at 200-level and above (excluding liberal studies courses) in the above departments may be substituted with permission of the advisor and the biology department chairperson in advance of taking the course.	
		(3) a) Two courses in one language, including the placement course; or b) intermediate level. In lieu of a foreign language the students may elect to take a sequence of two courses in either Computer Science (exclusive of COSC/IFMG 101; COSC 110 and 210 recommended), or two courses in Geography/Regional Planning (from	

		Geography/Regional Planning (from the following: GEOG/RGPL 213, 314, 316, 415, 417).	
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3. Rationale for changes:

1. Students who are adequately prepared may take a higher level of freshman chemistry than CHEM 111-112. We are clarifying this option for students by including it here.

2. Students may elect to take ECON 101, but there is no need to require it of all students in the track. Removing ECON 101 as a specific requirement increases the flexibility of the program. This improves the feasibility of completion this track, especially by transfer students.

3. The revision of the core courses is a complete restructuring of the Principles of Biology. We are revising our core curriculum to create three pillars of biology: BIOL 201 Principles of Ecology & Evolution, BIOL 202 Principles of Cell & Molecular Biology, and BIOL 203 Principles of Genetics & Development. The change in the core curriculum constitutes a shift in philosophy, moving away from a lengthy list of topics to a more integrated and focused cluster of courses. Also, we are shifting away from the old-fashioned botany-zoology dichotomy to a modern levels-of-organization approach.

BIOL 201 Principles of Ecology & Evolution is designed to be the first biology course for freshman biology majors. We have reversed the order of the material, placing the more familiar concepts of ecology and evolution in the first semester and moving the less familiar concepts of molecular and cellular biology into the second semester. BIOL 201 will replace BIOL 112 Principles of Biology II. BIOL 112 included evolution, ecology, and reproduction and development. The new course will focus only on ecology and evolution. As BIOL 201 Principles of Ecology & Evolution is proposed to be the first biology course for incoming students, the amount of content is being reduced to better serve the needs of students with diverse levels of preparation for college-level work.

BIOL 202 Principles of Cell & Molecular Biology will replace BIOL 111 Principles of Biology I. Placing the cell and molecular topics in the spring semester allows for the prerequisite of CHEM 111 or CHEM 113 to better prepare students for these topics.

BIOL 203 Principles of Genetics & Development will replace BIOL 263 Genetics. Modern developmental biology emphasizes cell, molecular, and genetic aspects of development, so development is being shifted to the third and final course in the core, linking it with genetics. The subject of genetics has expanded into a multidisciplinary science that covers material from population genetics to molecular genetics. The current system only allows two 50 minute lectures a week, which results in the elimination of a great deal of material from the course. A schedule with 3 lectures a week would allow for a more complete coverage for the student. In order to provide the level of rigor necessary, the course needs additional time in the lecture component.

The numbering system follows the model of the Geoscience department, in which majors courses begin at the 200-level and the 100-level courses are designated for nonmajors and liberal studies courses.

4. Students may elect to take BIOL 250 Principles of Microbiology, but the course is not essential for this track.
5. BIOL 480 Biology Seminar is difficult to offer for small groups of students and is being removed as a requirement.
6. BIOL 271 Evolution is being replaced by a 400-level course (BIOL 451 Evolutionary Biology) that will cover more advanced topics, while introductory material will be covered as part of BIOL 201 Principles of Biology: Ecology and Evolution.
7. Adding BIOL 450 Field Biology at Pymatuning Laboratory allows students additional flexibility to complete the requirement of a research methods course.
8. The removal 3 required biology courses and placing most of these credits into Controlled Biology Electives increases the flexibility of the program.
9. The changes in the Controlled Electives, along with an increase in Free Electives, were made to increase the flexibility of the program. This improves the feasibility of completion this track, especially by transfer students. The reduction in the number of credits in Other Requirements is to comply with the PASSHE mandate of 60 cr in the major and ancillary sciences.
10. The change in formatting of the foreign language requirement was to make it consistent with the other tracks in the program.
11. The credits in Other Requirements were reduced to comply with the PASSHE mandate of 60 cr in the major and ancillary sciences thereby increasing free elective credits. The increase in free elective credits also allows for greater flexibility in the program.
12. Footnotes were added to be consistent with the other tracks in the program.

Part III. Implementation

1. How will the proposed revision affect students in the existing program?

Students may elect to finish with the requirements of the catalog at the time of their matriculation, or students may choose to switch to the new requirements.

2. Are faculty resources adequate?

Faculty resources are adequate. The overall credits in the major remains the same. By removing specific biology courses from the list of required courses, the enrollment in these courses will likely decrease and fewer sections of each will be necessary. BIOL 450 Field Biology at Pymatuning Laboratory of Ecology is taught in summer only, and allowing it to substitute for BIOL 490 Field Studies in Biology may increase enrollment in summer sessions.

3. Are other resources adequate?

Other resources are adequate.

4. Do you expect an increase or decrease in the number of students as a result of these revisions?

Greater flexibility may allow more students to transfer into the track, but we do not expect a large change in the number of students in the program due to this revision.

Part IV. Periodic Assessment

The Biology Department conducts a review of all programs every five years. Criteria include both quantitative and qualitative evaluation of the programs. In addition, every year the outgoing seniors are surveyed for feedback about the nature of their experiences in the various programs within the department. The biology minor is included in this review process.

Part V. Course Proposals

BIOL 201 Principles of Ecology & Evolution – proposal attached

BIOL 202 Principles of Cell & Molecular Biology – proposal attached

BIOL 203 Principles of Genetics & Development – proposal attached

BIOL 451/551 Evolutionary Biology – Proposal attached

Part VI. Letters of Support or Acknowledgment

Anthropology

Biochemistry

Chemistry

Economics

Geosciences

Mathematics

Physics

Psychology