New Undergraduate Program (Majors, Minors, Sequences) Proposal
Illinois State University - University Curriculum Committee

Program Department Biological Sciences **Submission Date** Saturday, August 25, 2012
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Title of New Program Plant Biology Sequence **Proposed Starting Catalog Year** 2014-2016

Associated Course Proposal(s):
Revise Course proposal BSC 305 titled *Biological Evolution*

1. Proposed Action

New Major

New Minor

✓ New Sequence

More than 50% of courses in this program are Distance Education

No Is this program an Integrated Bachelors/Masters degree program?

Sequence Major

Biological Sciences

2. Provide *Undergraduate Catalog* copy for new program.

Sequence in Plant Biology

Majors selecting this sequence receive broad training in plant biology. This sequence is designed for students seeking jobs with industries, the government and nonprofit organizations working with plants. This sequence will also prepare students for graduate studies in plant biology. The minimum requirements for this sequence are:

-- 37 hours in Biological Sciences required.

-- Required courses for major (*denotes laboratory course): BSC 196*, 197* 204

-- Required courses for sequence: 212*, 219, 365

--Elective courses as follows: one from the conceptual group (BSC 201*, 203, or 260*) and two from the plant group (BSC 211*, 223*, 330*, 333*, 335 and 336*, 346)

--Additional electives in Biological Sciences as needed to achieve the 37 hour minimum.

--Students must complete five BSC courses with laboratories (*).

-- Research and internships enhance future prospects for employment and acceptance to graduate programs, hence students are strongly encouraged to pursue individual work via one of the following: 2 credit hours 287 independent study, 2 credit hours BSC 398 professional practice, or at least 3 credits of BSC 290. Students are also encouraged to do a formal senior thesis (for more information see http://www.bio.illinoisstate.edu/undergrads/thesis.shtml).

--Required courses outside of Biological Sciences: CHE 110 and 112 or 140 and 141; either CHE 220, or CHE 230 and 231; one of the following: PHY 105, 108 or 110; either MAT 120 and 121, or MAT 145 and 146. NOTE: One of the following may substitute for MAT 121 or 146: ECO 138, GEO 138, or PSY 138.

-- BSC 202, 307 and Biological Sciences courses below 195 may not be used in the major.

-- A minimum of 12 hours in Biological Sciences courses must be completed at Illinois State University.

3. Provide a description for the proposed program.

The proposed sequence will be part of and shares a core curriculum with the Biological Sciences major leading to a BS degree. Additional requirements in the proposed sequence include an introductory course in plant biology (BSC 212) and a choice of electives that includes broad conceptual courses as well as specialized or more advanced courses on plants and algae. This sequence is designed to provide students with the background to pursue careers in plant biology directly after the BS degree or to continue their education in a graduate degree program. Thus this sequence provides students with the opportunity to choose courses suitable for their career goals and to participate in individual experience in the form of independent study (287), professional practice (BSC 398), or undergraduate research (BSC 290) working with plants or algae. Students who choose research may enroll in BSC 303 to complete a formal senior thesis. A student in this sequence can choose to focus on plant biology in the areas of ecology and conservation, plant structure and development, molecular biology or applications of molecular biology to renewable energy by selecting different electives.

4. Provide a rationale of proposed program.

The main goal of this sequence is to provide students with an appropriate and solid background for careers or further education in a diversity of areas in plant biology. While it is possible for a student to take the above group of classes without being in this sequence, this organized sequence will explicitly guide the students and alert potential employers to their more focused training. Faculty will work with students to emphasize the student's area of interest. Potential employers include: government agencies at the federal level (US Department of Agriculture, US Geological Survey, Bureau of Land Management, National Park Service, US Forest Service and US Fish and Wildlife Service) and at the state level (IL DNR and MO DNR); nonprofit organizations (Nature Conservancy, botanical gardens and nature centers); industries with research labs such as agricultural companies (e.g. Monsanto) and others focusing on alternative fuels. A very recent assessment by the Chicago Botanic Garden and Botanic Gardens Conservation International's US office on the training of students in Plant Biology found that the training at universities is declining while the needs from private industry such as the biofuels industry and federal positions are increasing (for a summary of this report see page 122-125 of the Plant Science Bulletin http://www.botany.org/plantsciencebulletin/). For more information about the needs for training in plant biology see the following reference (Sundberg et al. 2011 Perceptions of Strengths and Deficiencies: Disconnects between Graduate Students and Prospective Employers. *BioScience* 61: 133–138). With this sequence we will be in the forefront of preparing students for this need.

5. Describe the expected effects of the proposed program on existing campus programs (if applicable).

No particular effects due to establishment of this sequence are expected on programs outside of the School of Biological Science. The students will already be in the Biological Sciences undergraduate program. We anticipate a modest increase in students in the Biological Sciences program, as by having this undergraduate sequence, additional students may be recruited to the School of Biological Sciences.

6. Provide a sample four year plan of study demonstrating that a student could realistically complete the program requirements in a specific number of semesters.

Example plan of study: (* denotes biology course with a laboratory)

	Fall	**Spring**
First Year		
Major requirements	BSC 197* (4)	BSC 196* (4) IC-Science
Non-core requirements	CHE 140 (4) IC-Science, MAT 120 (4),	CHE 141 (4), MAT 121 (4) MC-QR
General education requirements	ENG101 or Com110 (3)	ENG101 or Com110 (3)
	15 term total	15 term total
Second Year		
Major requirements	BSC 204 (1)	
Non-core requirements	CHE220 (5)	PHY 105 (4)
Sequence requirements	BSC 219 (3)	BSC 212* (4)
General education requirements	LAN111 Foreign Language (4) Middle Core Individuals and Civic Life (3)	LAN 112 Foreign Language (4) Middle Core Individuals & Society (3)
	16 term total	15 term total
Third Year		
Sequence requirements	BSC 290 (1)	BSC 290 (1)
Sequence electives	BSC 201* (4)	BSC 335/336* (4)

General education requirements	Middle Core United States Traditions (3) Outer Core Fine Arts (3) University Wide Elective (4)	Outer Core Social Science (3) Outer Core Humanities (3) Global Studies Graduation Requirement if not met in Outer Core or UniversityWide Elective (3)
	15 term total	15 term total
Forth Year		
Sequence requirements	BSC 290 (1)	BSC 365 (3)
Sequence electives	BSC 330* (4)	
Major Electives	BSC 346 (3)	
General education requirements	Senior College University Wide Elective (4) University Wide Elective (3)	Middle Core Language in Humanities (3) University Wide Elective (3) Senior College University Wide Elective (3) Senior College University Wide Elective (3)
	15 term total	15 term total
	Total credits =120	

7. Describe the expected curricular changes required, including new courses. If proposals for new courses have also been submitted, please reference those related proposals here:

There are no expected curricular changes required. All required courses are currently being taught in the School of Biological Sciences.

8. Anticipated funding needs and source of funds.

See attached budget rationale (financial implications form)

9. **No** **Does this program count for teacher education?**

10. **No** **Is this an Interdisciplinary Studies program?**

11. **The following questions must be answered.**

Yes Have you confirmed that Milner Library has sufficient resources for the proposed program?

No Are more than 124 hours required to complete a degree with this major?

No Beyond General Education, does the major require more than 76 semester hours?

No Beyond General Education, does the major require more than 60 semester hours?

No Does this sequence (if in a major) require more than 55 semester hours of major courses?

Yes Does this program stipulate specific general education courses offered in the major department/school as a part of the major requirements only if such courses serve as prerequisites for other courses required by the major?

Explain why specific general education courses are required.

BSC 196 and 197 count as general education courses. They are also prerequisites for all the other biology courses.

No Is the proposed program intended to be longer than four years (as indicated by the plan of study)?

N.A. Have letter(s) of concurrence from affected departments/schools been obtained?
A departments/school is affected if it has a program with significant overlap or if it teaches a required or elective course in the program.

12. Routing and action summary for New Program:

1. Biological Sciences Department Curriculum Committee Chair

Martha Cook (website)	Martha Cook	8/27/2012 9:35:14 AM
Signature	Print	Date

2. Biological Sciences Department Chair/School Director

Craig Gatto (website)	Craig Gatto	8/27/2012 10:07:57 AM
Signature	Print	Date

3. College of Arts & Science College Curriculum Committee Chair

Todd Stewart (website)	Todd Stewart	10/10/2012 4:07:42 PM
Signature	Print	Date

4. College of Arts & Science College Dean

Sally Parry (website)	Sally Parry	10/10/2012 4:33:45 PM
Signature	Print	Date

5. University Curriculum Committee Chair

Jean Standard (website)	Jean Standard	11/7/2012 4:37:48 PM
Signature	Print	Date

All new programs (majors, minors, sequences) are routed by the U.C.C. to the Academic Senate