



Faculty Senate • http://www.uwrf.edu/faculty_senate/welcome.html

Senators: Chair – David Rainville, Vice Chair – David Furniss, Secretary – Kris Hiney, Executive Committee – Glenn Potts, Ogden Rogers

To: Don Betz, Chancellor
116 North Hall
University of Wisconsin-River Falls

From: David Rainville, Chair
Faculty Senate
University of Wisconsin-River Falls

RE: UW-RF Faculty Senate Motion 2007/2008/57

RECEIVED

APR 30 2008

CHANCELLOR'S OFFICE
UW-RIVER FALLS

At the April 23, 2008 meeting of Wisconsin-River Falls Faculty senate, motion 2007-2008/57 was passed. This motion is forwarded for your action

A motion from AP&P to approve a program change in Biotechnology.

X Approved

Disapproved



Don Betz, Chancellor

5/2/2008

Date

TRANSMITTAL for UNDERGRADUATE PROGRAMS: Changes or Proposals

I. INFORMATION:

- A. Check all that apply: New Program Existing Program
 Name Change Credits Change
 Substantial Major / Minor Content Change Emphasis/Option Change

B. Program Title: **Biotechnology**

C. Department(s) (Originating): **Biotechnology Steering Committee**

D. College(s) (Originating): **College of Arts and Sciences**

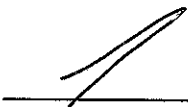
E. Other Programs / Departments Consulted (Requires letters of support from all Departments or Programs substantially affected):

- 1) Plant and Earth Science 2) Biology
 3) Animal and Food Science 4) Chemistry

F. Date of Implementation: **Fall Semester** 2008 Year

4/15/08 *Removed from program* *BIOT 280* *BIOT 380*
 G. Have all courses in this program been approved? Yes No If "No", which ones? **Ethics of Biotechnology, Sophomore Seminar, Junior Seminar, Bioinformatics, Biophysics, Biotechnology Research, Special Topics in Biotechnology**
Removed *BIOT 295* *BIOT 489* *BIOT/CSIS 373*
 H. Attach Request Narrative *Electives, not part of core*

II. **UNIT APPROVALS:** Requires signatures of all Department Chairs and Deans whose programs will be substantially affected by the changes or proposal. Signature lines for the affected Departments and Colleges (noted in "E" above), are on the back of this form. These signatures should be obtained prior to review by all other shared governance levels.

	Signature	Date
Department Curriculum Committee Chair (optional)		
Department Chair	<i>David C. Keutlil</i>	<i>3/5/08</i>
College Curriculum Cmtt. Chair	<i>[Signature]</i> <i>[Signature]</i>	<i>3/12/08</i>
Dean of College	<i>[Signature]</i>	<i>3/12/08</i>
University Curriculum Cmtt. Chair	<i>[Signature]</i>	<i>3/31/08</i>
Academic Policy & Program Cmtt. Chair	<i>[Signature]</i>	<i>4/15/08</i>
Faculty Senate Chair	<i>David P. Reinville</i>	<i>4/30/08</i>
Provost / Vice Chancellor	<i>[Signature]</i>	<i>5-2-08</i>
Chancellor	<i>[Signature]</i>	<i>5/7/08</i>

***NOTE: The master copy of this transmittal & accompanying documents must be filed in the Provost's office upon final approval. The Provost's office will notify all appropriate administrative offices [Registrar, Dean(s), & Department Chair(s)] of approvals & necessary actions to implement changes.**

Biotechnology Curriculum Revision Narrative

Changes in the Biotechnology Program are being proposed in response to the following issues identified in the Program Review, Strategic Planning, and Assessment processes.

1. The number of credits required for graduation is high, frequently requiring students to take five or more years to complete the program or deciding to switch to another program such as the Biology Biomedical Science option.
2. Our students need to have opportunities to take courses in important new areas of biotechnology.
3. Biotechnology is a broad field with numerous application areas and opportunities. Our students need additional flexibility in choosing an emphasis area.
4. Many students lack a clear understanding of what the field of biotechnology encompasses until their last few years of the program.

Proposed changes that address each of these respective issues are:

1. The total number of credits (including required supporting courses) has been reduced from 85-87 to 78-81 by making courses options instead of requirements in the major.
 - This includes removing the CHEM 251 and 256 (analytical chemistry and lab) and BIOL 230 (zoology) or BIOL 210 (botany) requirements from the required courses. Students may still select these courses as part of their specialization area if they provide support for the specialization.
 - The BIOL 453 (virology) or BIOL 345 (immunology) and FDSC 335 (food microbiology) courses have been moved from the required courses to Biotechnology Electives since they provide additional exposure to knowledge and techniques used in the field, but not all students need exposure to all of these courses.
2. Offering new courses including BIOT/CSIS 373 (bioinformatics), BIOT 295 and 495 (biotechnology laboratory research and thesis).
3. Flexibility is increased in the following ways:
 - The reorganization of the curriculum allows students to develop their specialization area in coordination with their faculty advisor.
 - ANSC 341 (biometrics) and MATH 226 (fundamentals of statistics) have been added as options for the math requirement, which is currently MATH 166 (calculus I). Graduate and professional school bound students are still encouraged and likely to take calculus, but statistics is appropriate for some students.
4. The inclusion of ANSC 222 Introduction to Biotechnology and BIOT 280 Sophomore Seminar and BIOT 380 Junior Seminar courses will give Biotechnology Majors a better understanding of the field of Biotechnology.

Our current checklists for the major and proposed curriculum are included.

Bachelor of Science in Biotechnology
78-81 credits total for major and supporting courses

New courses in bold face

Required Supporting Courses (23-25 cr)

- MATH 166 Calculus I (4) **OR**
ANSC 341 Biometrics(3) **OR**
MATH 226 Fundamentals of Statistics (3)
CHEM 120 or 121 General Chemistry I (5 or 6).....
CHEM 122 General Chemistry II (5).....
PHYS 151, 152, 156 and 157 (10) **OR**
PHYS 161, 162, 166, and 167 (10)

Biotechnology Core (40-41 cr)

- ANSC 222 Introduction to Biotechnology (2)
BIOL 150 General Biology (3)
BIOL 240 Cell & Molecular Biology (3)
BIOL 324 Microbiology (4).....
BIOL 350 Genetics and Evolution (3) **OR**
ANSC 257 Genetics (3).....
BIOL 451 Molecular Biology (4).....
BIOT 280 Sophomore Seminar (0.5)
BIOT 380 Junior Seminar (0.5)
BIOT 480 Biotech Seminar (1)
CHEM 231 Organic Chemistry I (3).....
CHEM 232 Organic Chemistry II (3).....
CHEM 236/246 Organic Chemistry Lab I (1-2).....
CHEM 237/247 Organic Chemistry Lab II (1).....
CHEM 355 Separations Lab (1)
CHEM 361 Biochemistry I (3).....
CHEM 362 Biochemistry II (3).....
CHEM 366 Biochemistry Lab (1).....
FDSC 460 Fermentation Technology (3) **OR**
HORT 369 Plant Tissue Culture (3) **OR**
BIOL 463 Animal Cell Culture (3)

Biotechnology Elective (6)

Choose at least six credits from the following additional courses on the right to obtain additional training in methods and content particularly relevant to biotechnology. Fermentation Technology, Animal Cell Culture or Plant Tissue Culture may be chosen as electives after one of the courses is completed as a core course (no double counting as core and elective).

Specialization Area (9)

In consultation with a biotechnology faculty advisor, the student will develop a plan that includes at least 9 additional credits of specialization. Up to four credits may include an internship in the specialization area. The total number of internship credits distributed between the Biotechnology Electives and Specialization Area may not exceed 4 credits. The plan will be submitted to the Biotechnology Program Director by the end of the first semester of the junior year for recording and approval. The senior seminar should focus on a research project the student worked on or a topic intimately related to the area of specialization.

Some possible specialization areas/emphases might include:

- Production Animal Biotechnology
- Production Crop Biotechnology
- Business/Management
- Computational Biotechnology/Bioinformatics
- Criminal Justice/Forensic Biotechnology
- Environmental Biotechnology
- Food Science Biotechnology
- Industrial Biotechnology
- Materials Science Biotechnology
- Medical Biotechnology
- Pharmaceutical Biotechnology
- Veterinary Medical Biotechnology

- BIOL 345 Immunology (3)
BIOL 453 Virology (3)
BIOT/CSIS 373 Bioinformatics (3).....
BIOT 295 Biotechnology Lab Research (1)
BIOT 495 Biotechnology Thesis (1-3).....
BIOT 379 Biotechnology Internship (1-4).....
FDSC 335 Food Microbiology (4).....
FDSC 460 Fermentation Technology (3)
HORT 369 Plant Tissue Culture (3)
BIOL 463 Animal Cell Culture (3).....

Bachelor of Science in Biotechnology
Requirements Check list – Updated Fall 2006 (Current Curriculum)

Required Biology (19 cr)

- BIOL 150 General Biology (3)
- BIOL 210 General Botany (3) **OR**
- BIOL 230 General Zoology (3)
- BIOL 240 Cell & Molecular Biology (3)
- BIOL 324 Microbiology (4).....
- BIOL 350 Genetics and Evolution (3).....
- BIOL 453 Virology (3) **OR**
- BIOL 345 Immunology (3).....

Required Chemistry (22 or 23 cr)

- CHEM 120 or 121 General Chemistry I (5 or 6).....
- CHEM 122 General Chemistry II (5).....
- CHEM 231 Organic Chemistry I (3).....
- CHEM 232 Organic Chemistry II (3).....
- CHEM 236 Organic Chemistry Lab I (1)
- CHEM 237 Organic Chemistry Lab II (1)
- CHEM 251 Analytical Chemistry (2).....
- CHEM 256 Analytical Chemistry Lab (1).....
- CHEM 355 Separations Lab (1).....

Interdepartmental Requirements (30 cr)

Required Courses (22)

- FDSC 335 Food Microbiology (4)
- FDSC 460 Fermentation Technology (3).....
- CHEM 361 Biochemistry I (3).....
- CHEM 362 Biochemistry II (3).....
- CHEM 366 Biochemistry Lab (1).....
- HORT 369 Plant Tissue Culture (3) **OR**
- BIOL 463 Animal Cell Culture (3)
- BIOL 451 Molecular Biology (4).....
- BIOT 480 Biotech Seminar (1)

Elective Courses (8)

Choose from: (Six credits must be at the 300/400 level. Four credits of internship may be substituted for the 300/400 level course requirement. Elective courses may not be double counted except for university requirements and as noted for broad area majors in the general education guidelines.)

- ANSC 111 Introduction to Animal Science (3).....
- ANSC 231 Principals of Nutrition (3)
- ANSC 260 Animal Physiology (4)
- ANSC 341 Biometrics (3).....
- ANSC 346 Principals of Animal Breeding (3)
- ANSC 447 Endocrinology (2).....

- ANSC 448 Reproductive Physiology (3).....
- ANSC490 Independent Study in An Sci (1-3).....
- BIOL 210 General Botany (3) **OR**
- BIOL 230 General Zoology (3)
- BIOL 295 Laboratory Research Experience (2).....
- BIOL 314 Plant Pathology (3)
- BIOL320 Plant Physiology (3)
- BIOL 341 Anatomy & Physiology I (4)
- BIOL 342 Anatomy & Physiology II (4)
- BIOL 345 Immunology (3) **OR**
- BIOL 453 Virology (3)
- BIOL 353 Histology (4).....
- BIOL 360 Ecology (3)
- HORT 369 Plant tissue Culture (3) **OR**
- BIOL 463 Animal Cell Culture (3).....
- BIOL 495 Undergraduate Research (3)
- BIOL 499 Independent Study (1-3).....
- CHEM 295 Intro to Undergrad Research (1).....
- CHEM 311 Polymer Chemistry (3).....
- CHEM 340 Phys Chemistry of Biological Sys (3).....
- CHEM 356 Chemical Instrumentation Lab (1).....
- CHEM 452 Instrumental Analysis (3)
- CHEM 461 Pharmacology (3)
- CHEM 495 Undergraduate Research (1).....
- CROP/HORT 161 Intro to Plant Science (3).....
- CROP 263 Forage Crop Production (3).....
- CROP 410 Plant Breeding & Crop Improv (3).....
- CROP 435 Crop Physiology (4)
- CROP 490 Independent Study (1-3)
- ESM 305 Environmental Impact Assessment (2)
- ESM 412 Chemical Fate & Transport (3)
- ESM 413 Environmental Analysis (4)
- FDSC 110 The Science of Food (3).....
- FDSC 302 Dairy Manufacturing II (3).....
- FDSC 312 Food Processing (4).....
- FDSC 360 Food Chemistry (3).....
- FDSC 461 Food Analysis (4).....
- FDSC 490 Ind Study in Food Science (1-3).....
- HORT 169 Introduction to Horticulture (3).....
- HORT 200 Plant Propagation (3)

Required Supporting Courses (14 cr)

- MATH 166 Calculus I (4)
- PHYS 151 **OR** 161 Gen Physics I (4)
- PHYS 152 **OR** 162 Gen Physics II (4)
- PHYS 156 **OR** 101 Gen Physics Lab I (1)
- PHYS 157 **OR** 102 Gen Physics Lab II (1)

Subject: Biotechnology curriculum changes
From: Karen Klyczek <karen.k.klyczek@uwrf.edu>
Date: Thu, 13 Mar 2008 13:04:28 -0500
To: Lisa Kroutil <lisa.c.kroutil@uwrf.edu>

Lisa,

The Biology Department supports the proposed changes to the Biotechnology curriculum. The new plan is more flexible and allows for specialization, which will benefit students. Biology faculty have agreed to participate in the new Bioinformatics course, and we will continue our participation in the Seminar course and mentoring student research projects. Thank you for your hard work on this effort.

Best regards,
Karen

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Karen Klyczek
Chair, Biology Department
University of Wisconsin-River Falls
410 S. Third St.
River Falls, WI 54022
Ph 715-425-3591 Fx 715-425-0738
Skype kklyczek



Department of Chemistry • (715) 425-3523 • Fax (715) 425-0652
The UW System Center of Excellence in Undergraduate Chemistry and Physics

Thursday, March 6, 2008

Letter of Support for the 2008 Biotechnology Curriculum Revision

The faculty of the Chemistry Department supports the proposed curriculum changes for the Biotechnology Program. As identified in the biotechnology program review, strategic planning, and assessment, the program currently has an unusually large credit requirement that has become an impediment to graduation and does not allow for individual program flexibility. Additionally, new courses must be developed that will provide the students with a better understanding of the field of biotechnology. The graduates of our biotechnology program need to be aware of the broad scope of the field of biotechnology, they need to have been introduced to new developments and to have confronted important ethical concerns.

Jeff Rosenthal
Chemistry Department Chair



Department of Plant and Earth Science • College of Agriculture, Food and Environmental Sciences
Recipient of the UW Regents Teaching Excellence Award
(715) 425-3345 • Fax (715) 425-3785 • pes@uwrf.edu

March 10, 2008

To: UWRF Academic Program and Policy Committee

From: Terry Ferriss *Terry Ferriss*
Chair, Plant and Earth Science Department

RE: Support for the Proposed Changes in the Biotechnology Major

The Plant and Earth Science Department supports the recent proposed changes in the requirements for the Biotechnology Major. A PES faculty member has been involved in the committee process that developed the changes and his insight to the benefits of these changes is shared by faculty in the department.

All Biotech students will now get a better glimpse of what the major (and career opportunities) are all about due to the new AnSc 222 requirement, and the sophomore/junior seminars. They will benefit from the inclusion of the Bioethics and Bioinformatics courses, and the proposed revisions in the physics requirements should provide them with better flexibility in terms of course selection in their required courses and chosen electives. Students will now have formal internship possibilities, as well as biotech research opportunities.

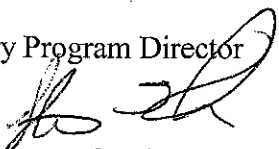
The CAFES Internship Program is prepared to assist our Biotechnology students in securing strong internship experiences.



Department of Animal and Food Science • College of Agriculture, Food and Environmental Sciences • (715) 425-3704 • Fax (715) 425-3785

DATE: March 12, 2008

TO: Lisa Kroutil
Biotechnology Program Director

FROM: Steve Kelm 
Chair, Department of Animal and Food Science

RE: Support for proposed changes within the Biotechnology major

I have reviewed the proposed changes in curriculum within the Biotechnology major and the narrative that accompanied the curriculum changes. Our Department supports the proposed changes. The reduction in credits is in the best interests of the students and the shift of courses from required to elective courses will allow students to assemble a curriculum that better meets their interests. Furthermore, the development and incorporation of an ethics course, specifically within the realm of biotechnology, and incorporation of seminar courses at the sophomore and junior level may help to address current shortcomings within the major.