Agenda Item #14-49
Effective: Summer 2015

Eastern Illinois University

New/Revised Course Proposal Format

(Approved by CAA on 4/3/14 and CGS on 2/17/15, Effective Fall 2015)

Banner/Catalog Information (Coversheet)

1. **__X__New Course or _____Revision of Existing Course**
2. **Course prefix and number:** _____BCT 5000_____
3. **Short title:** Techniques in Biotechnology_____
4. **Long title:** __ Techniques in Biotechnology _____
5. **Hours per week:** ___ Class _9__ Lab _3__ Credit
6. **Terms:** ___ Fall ___ Spring _x__ Summer ___ On demand
7. **Initial term**: ___ Fall ___ Spring _x__ Summer Year: _2015_____
8. **Catalog course description:** __This course will give students advanced training in laboratory techniques used in biotechnology from both a biological and chemical perspective.
9. **Course attributes:**

   General education component: _____**n/a**_____

   ___ Cultural diversity ___ Honors ___ Writing centered ___ Writing intensive ___Writing active

10. **Instructional delivery**
    Type of Course:

    ___ Lecture _x__ Lab ___ Lecture/lab combined ___ Independent study/research

    ___ Internship ___ Performance ___ Practicum/clinical ___ Other, specify: _____

    Mode(s) of Delivery:

    _x__ Face to Face ___ Online ___ Study Abroad

    ___ Hybrid, specify approximate amount of on-line and face-to-face instruction_____

    Course(s) to be deleted from the catalog once this course is approved. _____n/a_____

11. **Equivalent course(s):** _____n/a_____

    a. Are students allowed to take equivalent course(s) for credit? ___ Yes ___ No

12. **Prerequisite(s):** Admission to the Masters in Biochemistry and Biotechnology program or by permission of the Program Coordinator.

a. **Can prerequisite be taken concurrently?** ___ Yes ___ No

b. **Minimum grade required for the prerequisite course(s)? ___**

c. **Use Banner coding to enforce prerequisite course(s)?** _x__ Yes ___ No

d. **Who may waive prerequisite(s)?**

___ No one ___ Chair ___ Instructor ___ Advisor _x__ Other (Program Coordinator of the Masters in Biochemistry and Biotechnology Program).

13. **Co-requisite(s):** _____n/a_____

14. **Enrollment restrictions**

a. **Degrees, colleges, majors, levels, classes which <u>may</u> take the course:** Restricted to students enrolled in the Master's Program in Biochemistry and Biotechnology or by permission of the Program Coordinator**.**

b. **Degrees, colleges, majors, levels, classes which may <u>not</u> take the course:** Students not enrolled in the Master's Program in Biochemistry and Biotechnology or by permission of the Program Coordinator.

15. **Repeat status:** _x__ May not be repeated ___ May be repeated once with credit

16. **Enter the limit, if any, on hours which may be applied to a major or minor:** _none

17. **Grading methods:** _x__ Standard ___ CR/NC __ Audit ___ ABC/NC

18. **Special grading provisions:**

___ Grade for course will <u>not</u> count in a student's grade point average.

___ Grade for course will <u>not</u> count in hours toward graduation.

___ Grade for course will be removed from GPA if student already has credit for or is registered in: _____

___ Credit hours for course will be removed from student's hours toward graduation if student already has credit for or is registered in: _____

19. **Additional costs to students:**
Supplemental Materials or Software_____

Course Fee ___No _x__Yes, Explain if yes. The course fee is necessary because the reagents, chemicals, and biological supplies needed for this course have very high costs.

20. **Community college transfer:**

___ A community college course may be judged equivalent.

___ A community college may not be judged equivalent.

Note: Upper division credit (3000+) will not be granted for a community college course, even if the content is judged to be equivalent.

Rationale, Justifications, and Assurances (Part I)

1. _x__Course is required for the major(s) of Master's in Biochemistry and Biotechnology

   ___Course is required for the minor(s) of _____

   ___Course is required for the certificate program(s) of _____

   ___ Course is used as an elective

2. **Rationale for proposal** : This course has been developed to serve the needs of the new Master's in Biochemistry and Biotechnology being proposed by the Departments of Biological Sciences and Chemistry. This course will serve as the required central techniques course to prepare students for employment in the Biotechnology industry and/or related fields.

3. **Justifications for (answer N/A if not applicable)**

   Similarity to other courses: **n/a**

   Prerequisites: The admission to the Master's in Biochemistry and Biotechnology is needed to ensure that students have the necessary background and knowledge for this course.

   Co-requisites: **n/a**

   Enrollment restrictions: This course will be limited to six students due to the availability of laboratory equipment.

   Writing active, intensive, centered: **n/a**

4. **General education assurances (answer N/A if not applicable)**

   General education component: **n/a**

   Curriculum: **n/a**

   Instruction: **n/a**

   Assessment: **n/a**

5. **Online/Hybrid delivery justification & assurances (answer N/A if not applicable)**

   Online or hybrid delivery justification: **n/a**

   Instruction: **n/a**

   Integrity: **n/a**

Interaction: **n/a**

Model Syllabus (Part II)

Please include the following information:

1. Course number and title: BCT 5000, Techniques in Biotechnology
2. Catalog description: This course will give students advanced training in laboratory techniques used in biotechnology from both a biological and chemical perspective.
3. Learning objectives:
Through hands-on laboratory experiments and exercises, students will:

A. Demonstrate proficiency in laboratory techniques integral to biochemistry and biotechnology.
*Meets graduate learning goals: a. Depth of content knowledge.

B. Analyze data both collected in lab and presented in the scientific literature.
*Meets graduate learning goals: b. Effective critical thinking and problem solving, c. Effective oral and written communication.

C. Demonstrate proficiency in quantitative analysis as it applies to biochemistry and biotechnology.
*Meets graduate learning goals: b. Effective critical thinking and problem solving, d. Advanced scholarship through research and creative activity.

D. Demonstrate how to make data-driven decisions in order to design experimental approaches to an identified endpoint.
*Meets graduate learning goals: a. Depth of content knowledge, b. Effective critical thinking and problem solving, d. Advanced scholarship through research and creative activity.

E. Demonstrate proficiency in communicating scientific results through writing
Meets graduate learning goals: c. Effective oral and written communication.

4. Course materials: Biotechnology, A Laboratory Skills Course (BioRad Laboratories, Inc. 2011; ISBN 978-0-9832396-0-4) and selected primary scientific literature.

5. Weekly outline of content:

Week/contact hours	Content Covered
Department of Chemistry	
1. 22.5 hrs /week	Course Introduction, DNA Manipulation and Protein Expression in Bacterial Systems
2. 22.5 hrs /week	Protein Purification and Protein Structure Analysis
3. 22.5 hrs /week	Protein Function Analysis and Separation Technologies
Department of Biological Sciences	
4. 22.5 hrs /week	Mammalian and Insect Cell Culture Techniques
5. 22.5 hrs /week	Development of advanced Cloning Strategies
6. 22.5 hrs /week	Verification of Cloning Success Using Immunological Applications Techniques

6. Assignments and evaluation, including weights for final course grade.

Laboratory Notebook	(10%)
Laboratory Reports	(30%)
Laboratory Exercises	(30%)
Experimental Design	(20%)
Discussion	(10%)

7. Grading scale.

90-100% - A
80-89% - B
70-79% - C
60-69% - D
50-59% - F

8. Correlation of learning objectives to assignments and evaluation. For correlation of course specific learning goals to graduate school learning goals please see II.3.

	Learning Objective A	Learning Objective B	Learning Objective C	Learning Objective D	Learning Objective E
Notebook			**X**		**X**
Reports		**X**	**X**	**X**	**X**
Exercises	**X**		**X**		
Experimental Design	**X**	**X**		**X**	
Discussion		**X**		**X**	**X**

Date approved by the Department of Biological Sciences: May 9, 2014

Date approved by the Department of Chemistry: November 22, 2014

Date approved by the college curriculum committee: December 12, 2014

Date approved by the Honors Council *(if this is an honors course):*

Date approved by CAA: **CGS:**