

Revised 7/23/07

## PROPOSAL SUMMARY AND ROUTING FORM

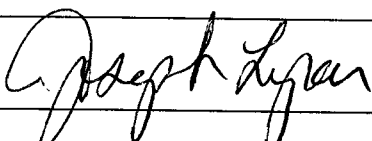

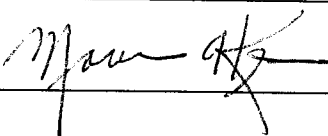
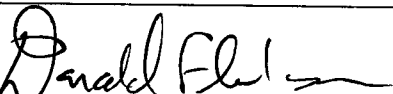
**Proposal Title:** BIOL 490 Advanced Techniques in Biotechnology

**Initiating Unit or Individual:** Strasser/Isler

**Contact Person's Name:** Karen Strasser e-mail: Strassek@ferris.edu phone: 591-2543

**Date or Term of Proposal Implementation:** Fall 2008

- Group I - A – New degree/major or major, redirection of a current offering, or elimination of a degree, major or minor
- Group I - B – New minors or concentrations
- Group II - A – Minor curriculum clean-up and course changes
- Group II - B – New Course
- Group III - Certificates
- Group IV – Off-Campus Programs

Group/Individual	Signature	Date	Vote/Action *
Program or Academic Unit Faculty			<input type="checkbox"/> Support <input type="checkbox"/> Support with Concerns <input type="checkbox"/> Not Support
Department Faculty		3/2/08	16 <input checked="" type="checkbox"/> Support 0 <input type="checkbox"/> Support with Concerns 0 <input type="checkbox"/> Not Support
Department Head		3/3/08	<input checked="" type="checkbox"/> Support <input type="checkbox"/> Support with Concerns <input type="checkbox"/> Not Support
College Curriculum Committee			<input type="checkbox"/> Support <input type="checkbox"/> Support with Concerns <input type="checkbox"/> Not Support
Dean		3/5/08	<input checked="" type="checkbox"/> Support <input type="checkbox"/> Support with Concerns <input type="checkbox"/> Not Support
University Curriculum Committee			<input type="checkbox"/> Support <input type="checkbox"/> Support with Concerns <input type="checkbox"/> Not Support
Senate			<input type="checkbox"/> Support <input type="checkbox"/> Support with Concerns <input type="checkbox"/> Not Support
Academic Affairs		3/9/08	<input checked="" type="checkbox"/> Support <input type="checkbox"/> Support with Concerns <input type="checkbox"/> Not Support

\* Support with Concerns or Not Support must include a list of specific concerns. Votes must be shown for faculty groups. Administrators check appropriate action taken.

**To be completed by Academic Affairs**

\_\_\_\_\_  
President (Date Approved)

\_\_\_\_\_  
Board of Trustees (Date Approved)

\_\_\_\_\_  
President's Council (Date Approved)

## **1. Proposal Summary**

(Summary is generally less than one page. Briefly: state what is proposed with a summary of rationale and highlights. Additional rationale may be attached.)

In the past couple of years we have noted that students with experience in animal handling techniques may have access to a wider array of job opportunities when they graduate. As the biomedical research industry grows, the need for qualified technicians has increased as well. Although our students have always gotten some experience in animal handling in BIOL 388 (Advanced Immunology Laboratory), the larger issues surrounding the use of animals in research cannot be covered with any depth. BIOL 388 is focused on providing students with experience in immunological techniques.

We propose an experimental course BIOL 490 Advanced Techniques in Biotechnology to try a new approach to this material. Students will still be exposed to selected techniques in immunology, but they will be presented in a larger framework of how they (and other lab techniques such as cell culture) can be used in answering research questions. Students will gain experience in navigating the sometimes complicated steps of engaging in animal research, and how to ensure animals are treated humanely and appropriately in the process.

The proposed course will still include lab work, but will require more outside reading and research by the students. We did not want to increase the number of credit hours for this experience and have thus opted for a lecture/lab format that is web-enhanced.

## **2. Summary of All Course Action Required\***

### **a. Newly Created Courses to FSU:**

<b>Prefix</b>	<b>Number</b>	<b>Title</b>
BIOL	490	<b>Advanced Techniques in Immunology</b>

### **b. Courses to be Deleted From FSU Catalog:**

<b>Prefix</b>	<b>Number</b>	<b>Title</b>
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### **c. Existing Course(s) to be Modified:**

<b>Prefix</b>	<b>Number</b>	<b>Title</b>
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### **d. Addition of existing FSU courses to program**

<b>Prefix</b>	<b>Number</b>	<b>Title</b>
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### **e. Removal of existing FSU courses from program**

<b>Prefix</b>	<b>Number</b>	<b>Title</b>
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\*Contact Senate Secretary or UCC Chair if spaces for additional courses are needed.

**CURRICULUM CONSULTATION FORM**

To be completed by each department affected by the proposed change, new degree, new program, new minor, or new course. Potential duplication of coursework is reason for consultation.

1. This completed form must be forwarded with the proposal to the chair/head of the department to be consulted.
2. The department must respond within 20 calendar days of receipt of this form to insure inclusion in the final proposal. The completed form is returned to the initiator and inserted into the proposal.

**Failure to respond is interpreted as support for the proposal.**

3. The Proposing Department must address any concerns raised by the department. This response will be in writing and be included in the proposal following the consultation form.

**RE: Proposal Title BIOL 490 Advanced Techniques in Biotechnology**

**Initiator(s):** Strasser/Isler

**Proposal Contact:** Karen Strasser **Date Sent:** Feb 8, 2008

**Department:** BIOL **Campus Address:** ASC 2004  
(Please print)

**Responding Department:** Physical Sciences

**Chair/Head/Coordinator:** David Frank **Date Returned:** \_\_\_\_\_

Based upon department faculty review on \_\_\_\_\_ (date), we

- Support the above proposal.
- Support the above proposal with the modifications and concerns listed below.
- Do not support the proposal for the reasons listed below.

Comment regarding the impact this proposal has on scheduling, room assignments, faculty load, and prerequisites for your department. Use additional pages, if necessary.

## FLITE SERVICES CONSULTATION FORM

To be completed by the liaison librarian and approved by the Dean of FLITE. All returned forms should be included in the proposal. **FLITE must respond within 20 calendar days of receipt of this form to insure that the form is included in the final proposal.**

**FAILURE TO RESPOND IS CONSIDERED AS SUPPORT OF THE CHANGE.**

**RE: Proposal Title:** BIOL 490 Advanced Techniques in Biotechnology

**Projected number of students per year affected by proposed change:** 13

<p><b>Initiator(s):</b> <u>Strasser/Isler</u></p> <p><b>Proposal Contact:</b> <u>Strasser</u> <b>Date Sent:</b> <u>Feb 8, 2008</u></p> <p><b>Department:</b> <u>BIOL</u> <b>Campus Address:</b> <u>ASC 2004</u> (Please print)</p>
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<p><b>Liaison Librarian Signature:</b> _____ <b>Date:</b> _____</p> <p><b>Dean of FLITE Signature:</b> _____ <b>Date Returned:</b> _____</p>
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Based upon our review on \_\_\_\_\_ (date), FLITE concludes that:

- Library resources to support the proposed curriculum change are currently available.
- Additional Library resources are needed but can be obtained from current funds.
- Support, but significant additional Library funds/resources are required in the amount of \$\_\_\_\_\_.
- Does not support the proposal for reasons listed below.

**Comment regarding the impact this proposal will have on library resources, collection development, programs, etc. Use additional pages if necessary.**

## NEW COURSE INFORMATION FORM

*See Sample – Limit to Two Pages Please*

### Course Identification:

Prefix:	Number	Title
BIOL	490	Advanced Techniques in Biotechnology

### Course Description:

Students will gain practical experience required for conducting laboratory research, including: 1) the appropriate and humane handling of laboratory animals, 2) development and presentation of a clearly defined research protocol, 3) use of immunological and other laboratory techniques to test hypotheses, 4) development of a primary cell culture, 5) assessment of proper laboratory design and safety, and 6) the maintenance of a research quality laboratory notebook.

### Course Outcomes and Assessment Plan:

#### Course Outcomes:

Upon completion of this course the student will have:

1. Gained an appreciation of the importance of appropriate animal care in research and come to understand the role of an institutional animal care and use committee (IACUC).
2. Weighed, transferred, determined the sex of, and assessed the general physiological parameters of birds, mice, rats, frogs, turtles, and rabbits.
3. Immunized and collected blood from rabbits.
4. Immunized mice, harvested lymphocytes from immunized mice, and initiated a primary cell culture of the lymphocytes.
5. Performed a variety of immunological procedures including: immunodiffusion, immunoelectrophoresis, enzyme-linked immunosorbant assay, affinity chromatography, and blood typing.
6. Maintained a research-quality laboratory notebook that includes appropriately collected, analyzed, and interpreted data.
7. Successfully completed Ferris State University IACUC animal care certifications.
8. Developed and orally presented a research protocol that meets IACUC accepted animal care guidelines.

#### Assessment of Course Outcomes

Many of the course outcomes will be assessed by observation of the student's performance in the laboratory and in the animal care facility.

Assessment of the research protocol and its presentation will be based upon the extent to which they meet clearly stated criteria for the protocol itself and for the oral presentation.

Assessment of the lab notebook will be based upon the extent to which it meets clearly stated criteria for its format and content entries.

Assessment of the student's acquisition of factual information will be through quizzes and exams that will be a combination of multiple choice, short answer, and essay questions as well as through a comprehensive final exam (also a combination of question types).

**Course Outline including Time Allocation:**

W 9/3	introduction, animal rights, Ferris Connect (access to immunology pre-course assessment), FSU IACUC certifications for OSHA (20 pts) and for rabbits (20 pts), rabbit handling
W 9/10	laboratory safety, pre-immunization blood collection from rabbits, FSU IACUC certifications for pigeons (20 pts), frogs (15 pts), and turtles (20 pts),
W 9/17	frog, turtle, and pigeon handling; FSU IACUC certifications for mice (20 pts) and rats (20 pts)
W 9/24	immunization of rabbits (bovine serum albumin or bacteriophage T <sub>4</sub> ), rat handling
W 10/1	animal nutrition, FSU IACUC certification for laws & regulations (25 pts)
W 10/8	post-immunization blood collection from rabbits, mouse handling, introduction to euthanasia & mouse splenectomy
W 10/15	<i>immunology pre-course assessment due</i> , immunization of mice, animals in research, career opportunities
W 10/22	introduction to cell culture, mouse splenectomies, initiation of primary lymphocyte cell culture, Quiz # 1 (20 pts)
W 10/29	<i>mid-term grade will be posted</i> , preparation of cell culture lysate, precipitin ring test, introductions to immunodiffusion & enzyme-linked immunosorbant assay (ELISA), Quiz # 2 (20 pts)
W 11/5	immunodiffusion (Ouchterlony & SRID), immunofluorescence, introduction to affinity chromatography, Quiz # 3 (20 pts)
W 11/12	immunodiffusion follow-ups, ELISA, Quiz # 4 (20 pts)
W 11/19	<i>cell culture lab redesign due</i> (30 pts), blood typing, affinity chromatography, Quiz # 5 (20 pts)
W 11/26	NO CLASS – THANKSGIVING RECESS
W 12/3	<i>hardcopy of protocol due</i> , affinity chromatography continued, immunoelectrophoresis (IEP), Quiz # 6 (20 pts)
W 12/10	IEP follow-up, protocol presentation (100 pts)
Week of 12/15	Comprehensive Final Exam (150 pts)

This course will be offered in Fall 2008 in place of BIOL 388 Advanced Techniques in Immunology.

**CREATE NEW COURSE**  
Course Data Entry Form

**FORM F**

Create New Course  
Rev. 07/23/07

**I. ACTION TO BE TAKEN: CREATE A NEW COURSE**

Notes

1. Complete each item in Section I and Section II.
2. If this course is to be used as a prerequisite for other university courses, Form Fs that reflect the prerequisite change must be submitted for those courses as well.

Term Effective (6 digit code only): 200808 Examples: 200801(Spring), 200805(Summer), 200808(Fall)

Note: The first four digits indicate year, the next two digits indicate month in which term begins.

**II. PROPOSED FOR NEW COURSE: Complete all sections a through r.** See manual for clarification.

a. Course Prefix

BIOL

b. Number

490

c. Enter Contact Hours per week in boxes.

LECTure 1

LAB 2

INDEpendent Study – Check (x)

Practicum:

Seminar:

d. Course Title: Advanced Techniques in Biotechnology (Limit to 30 characters/spaces.)

e. College Code: AS

f. Department Code: BIOL

Credit Hours: Check (x) type and enter maximum and minimum hours in boxes.

g. Type:  Variable  Fixed h. Minimum Credit Hours 2 i. Maximum Credit Hours 2

j. May Be Repeated for Added Credit: Check (x)  Yes  No

k. Levels: Check (x)  Undergraduate  Graduate  Professional

l. Grade Method: Check (x)  Normal Grading  Credit/No Credit only (Pass/Fail)

m. Does proposed new course replace an equivalent course? Check (x)  Yes  No

n. Equivalent course: Prefix BIOL Number 388 See instructions on Replacement courses.

**o. CATALOG DESCRIPTION – Limit to 75 words – PLEASE BE CONCISE.**

Students will gain practical experience required for conducting laboratory research, including: 1) the appropriate and humane handling of laboratory animals, 2) development and presentation of a clearly defined research protocol, 3) use of immunological and other laboratory techniques to test hypotheses, 4) development of a primary cell culture, 5) assessment of proper laboratory design and safety, and 6) the maintenance of a research quality laboratory notebook.

p. Term(s) Offered: Fall (See instructions for listing.) q. Max. Section Enrollment: 13

**r. Prerequisites/Co-requisites/Restrictions: (If none, leave blank.) Limited to 100 spaces.** Prerequisites are BIOL 386 and CHEM 333.

UCC Chair Signature/Date:

\_\_\_\_\_ 1/1

Academic Affairs Approval Signature/Date:

Donda Plutecki 3/2/08

To be completed by Academic Affairs Office: - Standard & Measures Coding and General Education Code

Basic Skill (BS)  General Education (GE)  Occupational Education (OC)  G.E. Codes

Office of the Registrar use ONLY

Date Rec'd: \_\_\_\_\_ Date Completed: \_\_\_\_\_ Entered: SCACRSE \_\_\_ SCADETL \_\_\_ SCARRES \_\_\_ SCAPREQ \_\_\_

## College of Arts and Sciences

March 5, 2008

**TO: Thomas Oldfield, Vice President of Academic Affairs  
Meral Topcu, Chair, College Curriculum Committee**

**FR: Matthew A. Klein, Dean** *max*

**RE: BIOL 490 – Advanced Techniques in Biotechnology**

Enclosed for your information is the proposal for BIOL 490 – Advanced Techniques in Biotechnology which I have approved to be offered Fall 2008 by the Biology Department.

Thank you.

Cc: Karen Strasser  
Valerie Greenfield

REC'D MAR 07 2008