

NEW COURSE PROPOSAL**Courses must be submitted by November 3, 2008, for priority catalog review.**DATE (*Change if modified and redate file with current date*)

10-9-08 REV 11.17.08

PROGRAM AREA(S)

BIOLOGY

1. Course Information. *[Follow accepted catalog format.]***Prefix(es)** (Add additional prefixes if cross-listed) and **Course No.** BIOL 511**Title:** Advanced Stem Cell Technology **Units:** 3☒ Prerequisites BIOL 427, BIOL 510☐ Corequisites☐ Consent of Instructor Required for Enrollment

Catalog Description (Do not use any symbols): A laboratory intensive course focused on the technical aspects of human embryonic stem cell technology. Develops specific technical skills to successfully culture, characterize and maintain pluripotent human embryonic stem cell lines.

Grading Scheme:☒ A-F Grades☐ Credit/No Credit☐ Optional (Student Choice)**Repeatability:**☐ Repeatable for a maximum of units☐ Total Completions Allowed☐ Multiple Enrollment in Same Semester**Course Level Information:**☐ Undergraduate☐ Post-Baccalaureate/Credential☒ Graduate**Mode of Instruction/Components** (*Hours per Unit are defaulted*).

	Units	Hours per Unit	Benchmark Enrollment	Graded Component	CS & HEGIS # (Filled in by the Dean)
Lecture	1	1	15	<input checked="" type="checkbox"/>	
Seminar		1		<input type="checkbox"/>	
Laboratory	2	3	15	<input checked="" type="checkbox"/>	
Activity		2		<input type="checkbox"/>	
Field Studies				<input type="checkbox"/>	
Indep Study				<input type="checkbox"/>	
Other Blank				<input type="checkbox"/>	

Leave the following hours per week areas blank. The hours per week will be filled out for you.

1 hours **lecture** per week

6 hours lab per week

2. Course Attributes:

General Education Categories: All courses with GE category notations (including deletions) must be submitted to the GE website: <http://summit.csuci.edu/geapproval>. Upon completion, the GE Committee will forward your documents to the Curriculum Committee for further processing.

A (English Language, Communication, Critical Thinking)☐ A-1 Oral Communication☐ A-2 English Writing☐ A-3 Critical Thinking**B (Mathematics, Sciences & Technology)**☐ B-1 Physical Sciences☐ B-2 Life Sciences – Biology☐ B-3 Mathematics – Mathematics and Applications☐ B-4 Computers and Information Technology**C (Fine Arts, Literature, Languages & Cultures)**☐ C-1 Art☐ C-2 Literature Courses☐ C-3a Language

C-3b Multicultural
D (Social Perspectives)
E (Human Psychological and Physiological Perspectives)
UDIGE/INTD Interdisciplinary
Meets University Writing Requirement
Meets University Language Requirement

American Institutions, Title V Section 40404: Government US Constitution US History
Refer to website, Exec Order 405, for more information: <http://senate.csuci.edu/comm/curriculum/resources.htm>

Service Learning Course (Approval from the Center for Community Engagement must be received before you can request this course attribute).

3. Justification and Requirements for the Course. (Make a brief statement to justify the need for the course)

A. Justification: This course is a requirement for the MS in Biotechnology and Bioinformatics program with an Emphasis in Stem Cell Technology and Laboratory Management. It is going to be offered through Extended Education as part of a self-supported program. The technology required to culture human embryonic stem cells is complex and highly specialized. The course aims at providing students with the skills required to culture, characterize and maintain human embryonic stem cells lines. The course will provide students with access to highly specialized technical and professional scientific personnel and specific equipment for the culture of embryonic stem cells. Students trained in these techniques will be able to meet the demand for highly skilled technical professionals in the field of stem cell technology.

B. Degree Requirement: ☒ Requirement for the Major/Minor
☐ Elective for the Major/Minor
☐ Free Elective

Note: Submit Program Modification if this course changes your program.

4. Learning Objectives. (List in numerical order)

Upon completion of the course, the student will be able to:

1. Identify and apply all laboratory safety rules related to the use of a Biosafety Level 3 Stem Cell Culture Laboratory using biological materials of human origin.
2. Identify human embryonic stem cell cultures using a phase contrast inverted microscope and discriminate between differentiated and pluripotent colonies in these cell cultures.
3. Describe the specific culture requirements and characteristics of various human embryonic stem cell lines.
4. Demonstrate ability to routinely culture and maintain human embryonic stem cells lines.
5. Perform current and scientifically accepted laboratory tests to establish pluripotency of human embryonic stem cell lines, including chromosomal analysis, teratoma formation and immuno-analysis of pluripotency and lineage differentiation markers.

5. Course Content in Outline Form. [Be as brief as possible, but use as much space as necessary]

1. Review of laboratory safety and sterile techniques
2. Record keeping and cell documentation using microphotography
3. Culture media requirements and preparation
4. Freezing and thawing techniques
5. Feeder cell isolation, culture and cell bank storage
6. Human embryonic stem cell culturing using feeder layers
7. Embryoid body techniques
8. Embryonic stem cell culturing under feeder-free conditions

9. Immunocytochemistry for human stem cell characterization
10. Fluorescence microscopy applied to human stem cell culture characterization
11. Flow cytometry and cell sorting of human embryonic stem cells
12. PCR technology applied to characterization of human stem cell culture

Does this course content overlap with a course offered in your academic program? **Yes** ☐ **No** ☒ x
 If YES, what course(s) and provide a justification of the overlap. ☐

Does this course content overlap a course offered in another academic area? **Yes** ☐ **No** ☒ x
 If YES, what course(s) and provide a justification of the overlap. ☐

Overlapping courses require Chairs' signatures.

6. Cross-listed Courses (Please note each prefix in item No. 1)

A. List Cross-listed Courses (Signature of Academic Chair(s) of the other academic area(s) is required).
 List each cross-listed prefix for the course: ☐

B. Program responsible for staffing: Biology

7. References. [Provide 3 - 5 references]

1. Human Stem Cell Manual: A Laboratory Guide (Spiral-bound) by [Jeanne F. Loring](#) (Editor), Academic Press, 2007
2. Human Embryonic Stem Cells: The Practical Handbook (Hardcover) by [Stephen Sullivan](#) (Editor), [Chad A Cowan](#) (Editor), [Kevin Eggan](#) (Editor), Wiley, 2007
3. Human Embryonic Stem Cell Protocols (Methods in Molecular Biology) (Hardcover) by [Kursad Turksen](#) (Editor), Humana Press, 2006

8. Tenure Track Faculty Qualified to Teach This Course.

Biology faculty

9. Requested Effective Date:

First semester offered: Summer 2009

10. New Resources Requested. **Yes** ☐ **No** ☒ x

If YES, list the resources needed.

A. Computer Needs (data processing, audio visual, broadcasting, other equipment, etc.)
☐

B. Library Needs (streaming media, video hosting, databases, exhibit space, etc.)
☐

C. Facility/Space/Transportation Needs

This course will be offered off-site at facilities funded by the California Institute for Regenerative Medicine. We have an agreement set up for this course to be offered to our students.

D. Lab Fee Requested (please refer to Dean's Office for additional processing) **Yes** ☐ **No** ☒ x

E. Other



11. Will this new course alter any degree, credential, certificate, or minor in your program? Yes ☒ No ☐

If, YES attach a program update or program modification form for all programs affected.

Priority deadline for New Minors and Programs: October 6, 2008 of preceding year.

Priority deadline for Course Proposals and Modifications: November 3, 2008, of preceding year.

Last day to submit forms to be considered during the current academic year: April 15th.

Ching-Hua Wang

10-9-08

Proposer of Course (Type in name. Signatures will be collected after Curriculum approval)

Date

Approval Sheet

Program/Course:

If your course has a General Education Component or involves Center affiliation, the Center will also sign off during the approval process.

Multiple Chair fields are available for cross-listed courses.

Program Chair		
	Signature	Date
Program Chair		
	Signature	Date
Program Chair		
	Signature	Date
General Education Chair		
	Signature	Date
Center for International Affairs Director		
	Signature	Date
Center for Integrative Studies Director		
	Signature	Date
Center for Multicultural Engagement Director		
	Signature	Date
Center for Civic Engagement Director		
	Signature	Date
Curriculum Chair		
	Signature	Date
Dean of Faculty		
	Signature	Date