CLEMSON UNIVERSITY **Curriculum and Course Change System - Print New Course Form**

800000

Course Abbreviation & Number:
X **New Undergraduate Course:** BIOSC- 483
.. **New Honors Course:** --
X **New Graduate Course:** BIOSC- 683

Effective Term: 05/2013

Catalog Title: Stem Cell Biology
Transcript Title: Stem Cell Biology

Fixed Credit Course: 3 (3,0)
Variable Credit Course: - (-), (-)

Method of Instruction	Course Modifier	General Education Designation
X A-Lecture Only	.. Pass/Fail Only	.. English Composition
.. B-Lab (w/fee)	X Graded	.. Oral Communication
.. D-Seminar	.. Variable Title	.. Mathematics
.. E-Independent Study	.. Creative Inquiry	.. Natural Science w/Lab
.. F-Tutorial (w/fee)	.. Repeatable	.. Math or Science
.. G-Studio	maximum credits:	.. A&H (Literature)
.. H-Field course		.. A&H (Non-Literature)
.. I-Study Abroad		.. Social Science
.. L-Lab (no/fee)		.. CCA
.. N/B-Lecture/Lab(w/fee)		.. STS
.. N/L-Lecture/Lab(no fee)		

Add cross-listing with the following child course(s):

Catalog Description: Stem cells are the focus of intense interest because of their utility for treating human diseases. This course ~~will~~ provides a broad treatment of the biology of stem cells and assess their current therapeutic capacity in clinical medicine.

Prerequisite(s): ~~BIOSC 483 and~~ BIOSC 461

Projected Enrollment:
Year 1 - 15 Year 2 - 25 Year 3 - 35 Year 4 - 35

Required course for students in:

Statement of need and justification based on assessment results of student learning outcomes: Stem cells will have an important medical role in coming years, and there is no Clemson course that specifically focuses on the biology of stem cells. Feedback from both faculty and students indicates the need for expanded offerings in biomedicine, including stem cells. This is confirmed by my personal experience--over the past three years, there has been a 300% increase in enrollment in the biomedicine courses I teach. The following numbers of students have expressed interest to me in a course on stem cells: 25 out of 38 in Hematology, 30 out of 35 in Senior Seminar, 8 out of 8 in Creative Inquiry, and 10 former students who have graduated in the last three years. The demand for the course is strong, and the subject matter (stem cells) is the focus of massive research today. A course on stem cells will be popular and will strengthen the offerings of Biological Sciences.

Textbook(s): "Essentials in Stem Cell Biology, 2nd Ed.," 2009. Editor Robert Lanza, 248 pages, Academic Press

Learning Objectives: Students will describe the main features of stem cell biology, will evaluate the clinical successes and failures of stem cells, and will review and critically analyze the stem cell scientific and clinical literature.

Topical Outline: Introduction to stem cell biology (3 hrs)
General Issues - cell cycle control, repopulating patterns, stem cells as common ancestors (3 hr)
Early Development - primordial stem cells, embryonic stem cells, trophoblast stem cells (3 hr)
Mesoderm - hematopoietic stem cells, mesenchymal stem cells (3 hr)
Ectoderm - stem cells and neurogenesis, epidermal stem cells (3 hr)
Endoderm - liver stem cells, pancreatic stem cells, stem cells in the epithelium of the small intestine and colon (3 hr)
Stem cell plasticity (3 hr)
Midterm Exam (2 hr)
Spermatogonial and muscle stem cells (6 hr)
Gene therapy using muscle-derived stem cells (3 hr)
Dental pulp derived from stem cells (3 hr)
Stem cells of the epithelium, liver, and endothelium (3 hr)
Prostate and mammary stem cells (3 hr)
Engineering stem cells, graduate student presentations (4 hr)

TOTAL 45 hr

Evaluation: BIOSC 483: two exams (30% each) and research paper on recent research on stem cell biology (40%)
BIOSC 683: two exams (25% each) and research paper on recent research on stem cell biology (30%) plus a Power Point presentation to the class on the paper (20%)

Grading Scale (undergraduate): A = 90-100, B = 80-89, C = 70-79, D = 60-69, F = less than 60

Grading Scale (graduate): A = 90-100, B = 80-89, C = 70-79, F = less than 70

Duplication (if applicable): None. No other course focuses exclusively on stem cells.

Add course requirements for honors and/or 600-level courses (if applicable): See Evaluation.

Form Originator: VSGALL,Vincent Gallicchio **Date Form Created:** 1/8/2010
Form Last Updated by: , **Date Form Last Updated:** 3/11/2013
Form Number: 2788

Approval

Robert J. Kaminski	3/11/13		4/5/2013
Chair, Department Curriculum Committee	Date	Chair, Undergraduate Curriculum Committee	Date
	3/11/13		
Department Chair	Date	Chair, Graduate Curriculum Committee	Date
Robert J. Kaminski	3/11/13		5/8/13
Chair, College Curriculum Committee	Date	Provost	Date
Jed Whittemore	3/15/13		5/8/13
College Dean	Date	President	Date
Director, Calhoun Honors College	Date		