Keck School of Medicine of USC

Course ID: SCRM 511

Title: Developmental Biology and Human Embryology (4 units)

Fall – Tues 2-4 PM /Wed 10-12 AM
Location: Broad CIRM Center 1st floor conference room

Instructor: Robert Maxson
Office: NOR 5334
Office Hours: By appointment
Contact Info: maxson@usc.edu; tel 323-865-06333

Course Description

This course will survey the anatomical, cellular, and molecular processes that underlie development and congenital malformations. The course is primarily oriented to human development and human anatomy, although incorporates extensive discussion of other species for comparison of similarities and differences. The course is intended primarily for masters degree students in the Stem Cell and Regenerative Medicine M.S. program; other students, including upper level undergraduates with a biological sciences major or minor, masters degree students in other biomedical disciplines, and PhD students in the KSOM Dept. of Stem Cell Biology and Regenerative Medicine, may register with instructor permission.

Learning Objectives

Students are expected to acquire knowledge and understanding of early development and of the developmental programs that underlie morphogenesis of the major organ systems, of the role of stem and progenitor cell types in the development of these organ systems, of the etiology of congenital birth defects, of principles and examples of teratology, and of evolutionary changes in development between species. This course fills a significant gap in, and complements the currently offered classes in the Dornsife College Dept. of Biological Sciences and in the Keck School of Medicine Dept. of Stem Cell Biology and Regenerative Medicine.

Prerequisite(s): Cell Biology (USC courses BISC220L, BISC221L, or equivalent if taken at another institution); Molecular Biology (USC courses BISC320L, or equivalent if taken at another institution)
Co-Requisite (s): None.
Concurrent Enrollment: None.
Recommended Preparation: None.

Required Readings and Supplementary Materials

The Developing Human, K.L. Moore and T.V.N. Persaud, 8th ed (2008); ISBN-13: 978-1416037064; available at USC Bookstore and on reserve at Norris Medical Library.
Developmental Biology, S.F. Gilbert, 10th ed. (2014); ISBN-13: 978-0878939787; available at USC Bookstore and on reserve at Norris Medical Library.

Description and Assessment of Assignments

Students are expected to read assigned sections of textbooks or supplemental materials in advance of class. Students will be expected to participate actively in class discussion and will be called on at random to answer questions asked by the instructor. Midterm and final exams will utilize written short essay format questions. There will not be any written materials submitted by students for grading other than associated with the exams, nor oral presentations other than associated with class questions and discussion.

Grading Breakdown

Assignment	% of Grade
Class participation	15
Midterm 1	20
Midterm 2	20
Final	25
Student presentation	20
Total	**100**

Course Schedule: A Weekly Breakdown

2016 SCRM511 class schedule

Tuesday	Aug 22	Introduction, course overview, teratology
Wednesday	Aug 23	Oogenesis
Tuesday	Aug 29	Oogenesis
Wednesday	Aug 30	Cleavage
Tuesday	Sept 5	No class -
Wednesday	Sept 6	Cleavage
Tuesday	Sept 12	Cytoplasmic localization
Wednesday	Sept 13	Drosophila patterning
Tuesday	Sept 19	Cell lineage specification
Wednesday	Sept 20	No class--Rosh Hashanah
Tuesday	Sept 26	Gastrulation and axis formation
Wednesday	Sept 27	No class -
Tuesday	Oct 3	Midterm 1
Wednesday	Oct 4	Neural development
Tuesday	Oct 10	Paraxial mesoderm
Wednesday	Oct 11	Body cavities
Tuesday	Oct 17	Cardiovascular
Wednesday	Oct 18	Craniofacial
Tuesday	Oct 24	Urogenital
Wednesday	Oct 25	Gastrointestinal
Tuesday	Oct 31	Signaling
Wednesday	Nov 1	Midterm 2
Tuesday	Nov 7	

Wednesday	Nov 8	
Tuesday	Nov 14	
Wednesday	Nov 15	
Tuesday	Nov 21	
Wednesday	Nov 22	No class -
Tuesday	Nov 28	
Wednesday	Nov 29	Last class
Friday	Dec 1	Classes end
Friday	Dec 9	Final exam

Statement for Students with Disabilities

Any student requesting academic accommodations based on a disability is required to register with Disability Services and Programs (DSP) each semester. A letter of verification for approved accommodations can be obtained from DSP. Please be sure the letter is delivered to me (or to TA) as early in the semester as possible. DSP is located in STU 301 and is open 8:30 a.m.–5:00 p.m., Monday through Friday. Website and contact information for DSP: http://sait.usc.edu/academicsupport/centerprograms/dsp/home_index.html, (213) 740-0776 (Phone), (213) 740-6948 (TDD only), (213) 740-8216 (FAX) ability@usc.edu.

Statement on Academic Integrity

USC seeks to maintain an optimal learning environment. General principles of academic honesty include the concept of respect for the intellectual property of others, the expectation that individual work will be submitted unless otherwise allowed by an instructor, and the obligations both to protect one's own academic work from misuse by others as well as to avoid using another's work as one's own. All students are expected to understand and abide by these principles. *SCampus*, the Student Guidebook, (www.usc.edu/scampus or http://scampus.usc.edu) contains the University Student Conduct Code (see University Governance, Section 11.00), while the recommended sanctions are located in Appendix A.

Emergency Preparedness/Course Continuity in a Crisis

In case of a declared emergency if travel to campus is not feasible, USC executive leadership will announce an electronic way for instructors to teach students in their residence halls or homes using a combination of Blackboard, teleconferencing, and other technologies.