

Course Outline

Course:

Biology 366/2 01 Mechanisms of Development

Year/term:

2011/2012

Credits:

3

Lectures:

Tuesdays and Thursdays, 10:15 to 11:30, CC310 Loyola campus

Instructor:

Dr. Chiara Gamberi

Part-time Faculty

Department of Biology

Faculty of Arts and Science

Concordia University

And

Research Associate

Department of Biology

McGill University

Contact information:

Email: cgamberi@alcor.concordia.ca

Office hours: Tuesdays 11.45 am-12.45 pm and Thursdays 9-10 am. **Please take an appointment.**

Office: **SP**-437-13

****Use email for communication whenever possible; do not drop by without an appointment****

Course description:

Calendar description: This course deals with the mechanisms of cellular interaction and genetic control which govern animal development and cell differentiation. This includes how cell movement and cell recognition take place, how the genome is restricted in differentiation, how cytoplasmic signals influence differentiation, how gradients affect development, how genes control segmentation, and how oncogenes, growth factors and hormones influence development. The role of genetic engineering and molecular biology in the understanding of developmental processes will be discussed.

Expanded description: BIOL366 is a survey course dealing with the basic principles and molecular mechanisms of development. This course covers fertilization, cleavage, gastrulation, axis formation, morphogenesis, organogenesis, limb development, sex determination and gametogenesis with a strong emphasis on the experimental research and methodologies underlying our current knowledge in the field. This course will also present examples of medical applications of principles from developmental biology. We will discuss how a single cell can originate multiple different cell types and tissues, despite genome equivalence and how different organisms develop to identify commonalities conserved during evolution and special peculiarities. We will compare different model systems used in developmental biology research with particular attention to their suitability to address distinct biological questions.

Throughout the course we will study classic experiments and selected examples of modern approaches and we will also discuss research methodologies and learn how to design experiments to address specific developmental questions.

Course Objectives:

Students will gain a broad knowledge of basic animal and model system development, including descriptive embryology and core mechanisms underlying critical developmental processes. Students will also learn how to interpret experimental data and design experiments to test various questions in development. This course will provide a solid foundational knowledge for subsequent advanced courses in development and/or cell/molecular biology.

Course material:

Text: Developmental Biology, Scott F. Gilbert, 9th edition

Course requirements: Biol 261, Biol 266

Class material is predominantly based on the text, but supplementary material from other sources will occasionally be included. The power point lectures will be available on the class website, after class. **The exams will be based on the lecture material, any supplementary comments made by the instructor during lectures, and the assigned pages for reading in the various chapters of the text. Students will also be tested on their ability to apply the information, and thus will be asked to interpret new data that is similar or related to what was covered in class, as well as design experiments, as discussed during lectures.**

Grading/evaluation:

Course evaluation will be based on 1 midterm exam and one final examination. There is no lab component for this course. The midterm covers *approximately* 1/3 of the course material. Experimental tools/approaches that are discussed throughout the course are cumulative and subject to questioning on ANY exam. The final exam is based on the final 2/3 of the course and includes cumulative tools covered throughout the course.

25 marks are derived from the midterm, and 75 marks are derived from the final exam.

MIDTERM EXAMS: OCT. 7; FINAL EXAM: DURING REGULAR FINAL EXAM PERIOD IN DECEMBER

If you miss a midterm exam for medical or other reasons considered legitimate by the university (consult undergraduate calendar), **YOU MUST PROVIDE FORMAL DOCUMENTATION IN PERSON TO THE INSTRUCTOR, NO MORE THAN 1 WEEK FOLLOWING THE MIDTERM, OR YOU WILL AUTOMATICALLY RECEIVE A GRADE OF "0".** All documentation will be VERIFIED, and if approved, your course mark will be based on the remaining exam and the final grade will be based on the final exam alone.

Under no circumstances will there be any make-up exams for a midterm. If you miss the FINAL examination, you must contact the Examination Office to apply for and schedule a deferred examination.

Grade scale: A+: ≥ 90 ; A: 85-89; A-: 80-84; B+: 77-79; B: 74-76; B-: 70-73; C+: 67-69; C: 64-66; C-: 60-63; D+: 57-59; D: 54-56; D-: 50-53; F < 50

*******In the event of extraordinary circumstances beyond the University's control, the content and/or evaluation scheme in this course is subject to change.***

List of Services:

-Concordia Counseling and Development (<http://cdev.concordia.ca>)

- Concordia Library Citation guide: <http://library.concordia.ca/help/howto/citations.html>)
- Advocacy and Support Services: <http://supportservices.concordia.ca>
- Student transition center: <http://stc.concordia.ca>
- New student program: <http://newstudent.concordia.ca>
- Access center for students with disabilities: <http://supportservices.concordia.ca/disabilities>
- Student success center: <http://studentsuccess.concordia.ca>
- The academic integrity website: <http://provost.concordia.ca/academicintegrity>
- Financial aid and awards: <http://web2.concordia.ca/financialaid/>
- Health services: <http://www-health.concordia.ca/>