

Department of Biology Course Outline

SC/BIOL 4450 4.00 Animal Development
Winter 2016

Course Description

Fertilization, cleavage, differentiation and development in selected animals. Three lecture hours, three laboratory hours. One term. Four credits.

Prerequisites

SC/BIOL 2020 3.00, SC/BIOL 2021 3.00, SC/BIOL 2030 4.00, SC/BIOL 2040 3.00, SC/BIOL 2070 3.00.

Course Instructors and Contact Information

Course Director: Dr. Terrance Kubiseski

Life Sciences Building, Rm 329C
416-736-2100 x 40519
tkubises@yorku.ca

Office Hours: Please email for an appointment

Schedule

Lectures: Tuesday and Thursday, 10:00 - 11:30 AM, LSB 101
Labs: Tuesdays and Wednesdays 2:30 - 5:30 PM, LUM 106

Evaluation

Midterm: 20% of overall mark
Critical Evaluation of Paper: 10% of overall mark
Laboratory: 20% of overall mark
Final Exam: 50% of overall mark

The final exam is cumulative.

Exam Format: Mostly short and long answer questions with possibility of some multiple choice questions (will be announced in class). We cannot provide "extra credit" assignments.

Final course grades may be adjusted to conform to Program or Faculty grades distribution profiles.

Important Dates

Midterm: Thursday, February 11

Final Exam: Dates/times/rooms for exams are scheduled and published by the Registrar's Office (RO).

Last day to drop course without receiving a grade: March 4, 2016

Last day to submit course work April 4, 2016

NOTE: for additional important dates such as holidays, refer to the "Important Dates" section of the Registrar's Website at <http://www.yorku.ca/yorkweb/cs.htm>

Resources

Recommended texts:

Scott F. Gilbert. Developmental Biology, 10th edition, 2013. On reserve in the library...8th and 9th editions are acceptable.

For laboratory: S.J. Wright. A Photographic Analysis of Developmental Biology. 1st Edition. 2005. Morton Publishing Co.

Website: <https://moodle.yorku.ca>; will include PDF file of slides presented before lectures.

Learning Outcomes

- (i) To gain background on the history of development research and learn about modern techniques used to investigate developmental biology.
- (ii) To learn the pattern of development for a number of invertebrate and vertebrate organisms.
- (iii) To understand how the genome is involved in regulating developmental processes.
- (iv) To understand the development of specific organs and organ systems in vertebrates.
- (v) To understand the medical implications of current developmental biology research.
- (vi) To gain experience in fundamental laboratory techniques used in developmental biology.

Course Content

The following topics will be covered in lecture although there may be alterations at the discretion of the course director.

1. Introduction, basic questions and approaches
2. Experimental embryology and developmental genetics
3. Gametogenesis and fertilization
4. Cell-cell communication in development
5. Cleavage and gastrulation
6. *C.elegans* development; cell lineage and apoptosis
7. Early development of the frog tadpole
8. Early development of the chick embryo
9. The development of the ectoderm, neural crest cells and axon guidance
10. Development of the paraxial mesoderm
11. Patterning of the limb
12. Regeneration
13. Medical Implications of developmental biology
14. Aging
15. Genetics of sex determination, compensation and dosage

Experiential Education and E-Learning

This course uses a course website (Moodle). Some teaching videos/programs related to course topics will be provided.

Other Information

Attendance is **expected** and all in-class information (even material not written on lecture slides) is testable material in the midterm and final exams.

Course Policies

1. If you miss an exam (midterm or final) with a legitimate documented reason, documentation must be submitted to me (Dr. Kubiseski) in order to avoid receiving a grade of zero on the exam. Only a "York Attending Physician's Statement Form" (can be downloaded as part of the Petitions Package) OR a similarly detailed doctor's note (i.e. not simply a form stating that the student visited a clinic) will be accepted for medical excuses.

2. In the event of a missed midterm with a valid documented reason, the weight of this midterm will be transferred to the final exam. **No makeup exam will be available for the midterm.** In the event of a missed final exam with a valid, documented reason, **one** deferred final exam will be offered during the Biology deferred exam period in the spring of 2015. If the deferred exam is missed, the student will be required to petition the course.

3. In order to be fair and consistent to the entire class, individual grades are not negotiable. Contact me about marks **ONLY** if there is a clear error in your mark (calculation, clerical, etc.) as soon as possible at tkubises@yorku.ca.

4. Students are allowed to record lectures using their own recording devices. However, taking pictures of slides and exam questions will **NOT** be allowed. **Absolutely** no cell phones are allowed in the exam hall during the midterm or the final exam.

5. Please refer to the lab manual for further course policies regarding the laboratories.

University Policies

Academic Honesty and Integrity

York students are required to maintain the highest standards of academic honesty and they are subject to the Senate Policy on Academic Honesty (<http://secretariat-policies.info.yorku.ca/policies/academic-honesty-senate-policy-on/>). The Policy affirms the responsibility of faculty members to foster acceptable standards of academic conduct and of the student to abide by such standards.

There is also an academic integrity website with comprehensive information about academic honesty and how to find resources at York to help improve students' research and writing skills, and cope with University life. Students are expected to review the materials on the Academic Integrity website at - <http://www.yorku.ca/academicintegrity/>

Access/Disability

York University is committed to principles of respect, inclusion and equality of all persons with disabilities across campus. The University provides services for students with disabilities (including physical, medical, learning and psychiatric disabilities) needing accommodation related to teaching and evaluation methods/materials. These services are made available to students in all Faculties and programs at York University.

Students in need of these services are asked to register with disability services as early as possible to ensure that appropriate academic accommodation can be provided with advance notice. You are encouraged to schedule a time early in the term to meet with each professor to discuss your accommodation needs. Please note that registering with disabilities services and discussing your needs with your professors is necessary to avoid any impediment to receiving the necessary academic accommodations to meet your needs.

Additional information is available at the following websites:

Counselling & Disability Services - <http://cds.info.yorku.ca/>

Counselling & Disability Services at Glendon - <http://www.glendon.yorku.ca/counselling/personal.html>

York Accessibility Hub - <http://accessibilityhub.info.yorku.ca/>

Ethics Review Process

York students are subject to the York University *Policy for the Ethics Review Process for Research Involving Human Participants*. In particular, students proposing to undertake research involving human participants (e.g., interviewing the director of a company or government agency, having students complete a questionnaire, etc.) are required to submit an *Application for Ethical Approval of Research Involving Human Participants* at least one month before you plan to begin the research. If you are in doubt as to whether this requirement applies to you, contact your Course Director immediately.

Religious Observance Accommodation

York University is committed to respecting the religious beliefs and practices of all members of the community, and making accommodations for observances of special significance to adherents. Should any of the dates specified in this syllabus for an in-class test or examination pose such a conflict for you, contact the Course Director within the first three weeks of class. Similarly, should an assignment to be completed in a lab, practicum placement, workshop, etc., scheduled later in the term pose such a conflict, contact the Course director immediately. Please note that to arrange an alternative date or time for an examination scheduled in the formal examination periods (December and April/May), students must complete an Examination Accommodation Form, which can be obtained from Student Client Services, Student Services Centre or online at

http://www.registrar.yorku.ca/pdf/exam_accommodation.pdf (PDF)

Student Conduct in Academic Situations

Students who miss the final exam and would like an opportunity to write it must request and obtain deferred standing. A Deferred Standing Agreement form must be completed and submitted with

appropriate supporting documentation (such as an Attending Physician's Statement for illness) to the professor or Biology Undergraduate Office. Senate Policy requires that "Normal requests for deferred standing must be communicated within one week following a missed examination, or on the last day to submit course work". The policy and forms for obtaining deferred standing may be found at <http://www.registrar.yorku.ca/exams/deferred/index.htm>

Students and instructors are expected to maintain a professional relationship characterized by courtesy and mutual respect. Moreover, it is the responsibility of the instructor to maintain an appropriate academic atmosphere in the classroom and other academic settings, and the responsibility of the student to cooperate in that endeavour. Further, the instructor is the best person to decide, in the first instance, whether such an atmosphere is present in the class. The policy and procedures governing disruptive and/or harassing behaviour by students in academic situations is available at - <http://secretariat-policies.info.yorku.ca/policies/disruptive-andor-harassing-behaviour-in-academic-situations-senate-policy/>