BIOL 430
Molecular Genetics of Development

Winter Term (2013-14)

CALENDAR DESCRIPTION

The use of genetic analysis to understand developmental processes such as cell fate determination, pattern formation and morphogenesis. Emphasis will be on the molecular pathways used during embryonic development, highlighting applications and techniques using model organisms.

PREREQUISITE BIOL 330/3.0 or BCHM 218/3.0 or *MBIO 218/3.0*.

SCHEDULE

Lectures: Tuesday 11:30-12:30, Wednesday 13:30-14:30, Friday 12:30-13:30. BIOSC 1120

Instructor	**I. Chin-Sang**
Instructor Contact	chinsang@queensu.ca Phone: 613-533-6124
Office Hours	By appointment
TA:	Gabriel Chamberlain
TA Contact Information	9gc2@queensu.ca
Office Hours	By appointment

Learning Objectives

The goals of Biology 430 are to provide students with a comprehensive appreciation of developmental biology. We will cover:

Introduction, History and Basic Concepts

Model Systems/Nature of Mutations

Isolating Genes in Development

Patterning the vertebrate body Plan

Development of the Drosophila body Plan

C. elegans Development and other invertebrates

Guest Lectures from Developmental Biologists

How to read, understand and present current research in developmental biology journals

Learning Hours

Teaching method		*Average hours per week*	*Number of weeks*	*Total hours*
In-class hours	Lecture	3	12	36
	Seminar	3	6	18
	Laboratory			
	Tutorial			
	Practicum			
	Group learning	2	12	24
	Individual instruction	1	12	12
Other	Online activity	1	12	12
	Off-campus activity			
	Private study	2	12	24
Total hours on task				126

Course Outline

The objective of this course is to introduce students to a sample of strategies and complexities of how animals develop from a single cell to a multicellular organism. We will explore the genetic and molecular mechanisms that orchestrate how cells grow, move, change shape, pattern and differentiate to form various organs and tissues. All of these processes can be influenced by communication between the cells of the embryo. There will be much emphasis on model genetic organisms such as *Drosophila*, *C. elegans* and the mouse. Please see the Moodle course website for further information.

Textbooks/Readings

Principles of Development 4th edition by Lewis Wolpert et al. Oxford University Press ISBN: 9780199549078

Grading Scheme

Component	**Weight (%)**	**Date**
midterm exam	25%	After reading week
quizzes	10%	During the term
seminar presentation	25%	Last 6 weeks
critiques	10%	Last 6 weeks
Final exam	30%	TBD by exams office

Grading Method

In this course, some components will be graded using numerical percentage marks.

Your course average will then be converted to a final letter grade according to Queen's Official Grade Conversion Scale:

Queen's Official Grade Conversion Scale

Grade	**Numerical Course Average (Range)**
A+	90-100

A	85-89
A-	80-84
B+	77-79
B	73-76
B-	70-72
C+	67-69
C	63-66
C-	60-62
D+	57-59
D	53-56
D-	50-52
F	49 and below

Academic Integrity and Queen's Code of Conduct

Students are responsible for familiarizing themselves with the regulations concerning academic integrity and for ensuring that their assignments and conduct conform to the principles of academic integrity. Information is available in the Arts and Science Calendar (see Academic Regulation 1 - http://www.queensu.ca/artsci/academic-calendars/regulations/academic-regulations, on the Arts and Science website (see http://www.queensu.ca/artsci/academics/undergraduate/academic-integrity), and at Biology's website (http://www.queensu.ca/biology/undergrad/integrity.html) and from the instructor of this course. Departures from academic integrity include plagiarism, use of unauthorized materials, facilitation, forgery and falsification, and are antithetical to the development of an academic community at Queen's. Given the seriousness of these matters, actions which contravene the regulations on academic integrity carry sanctions that can range from a warning or the loss of grades on an assignment to the failure of a course to a requirement to withdraw from the university.

Accommodation Policy, Exam Conflicts, and Other Conflicts

Students who feel they need accommodations for disabilities or extenuating circumstances, or have a conflict between exams or other commitments should consult the Biology Department's website for details about how to proceed (http://www.queensu.ca/biology/undergrad/integrity.html). In general, the earlier a course coordinator is apprised of an extenuating circumstance, the more likely an accommodation can be made. Students are encouraged to be proactive in anticipating difficulties, when it is possible to do so.

Students may apply to write a make-up or deferred exam if they have an exam conflict as defined in the Academic Regulations of the Faculty (See Arts and Science Calendar Regulation 8 - http://www.queensu.ca/artsci/academic-calendars/regulations/academic-regulations). In this case, the student should report to the Exams Office first to verify that there is a genuine exam conflict. Biology professors will not consider your situation to be a conflict unless it meets the criteria set out by the Faculty of Arts and Sciences.

Students may request a make-up or deferred exam if they have an exam conflict with off-campus travel associated with a field course (e.g BIOL-307/3.0 or 407/3.0) that is held during the fall or winter terms.

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Accommodation of Disabilities

Queen's University is committed to achieving full accessibility for persons with disabilities. Part of this commitment includes arranging academic accommodations for students with disabilities to ensure they have an equitable opportunity to participate in all of their academic activities. If you are a student with a disability and think you may need accommodations, you are strongly encouraged to contact the Disability Services Office (DSO) and register as early as possible. For more information, including important deadlines, please visit the DSO website at: http://www.queensu.ca/hcds/ds/