

Developmental Biology

BIOL 3090-001 - FALL 2009

Classes: TR from 9:30-10:45 a.m. in BO1045

Instructor

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Hrs: M 10-11 am & Th 1-2:30 pm

Course Description

This course will introduce students to the molecular and cellular mechanisms that underlie the early development of organisms. The focus will be on the genes and proteins involved in controlling the behavior of cells in the processes of differentiation, morphogenesis and growth. Developmental mechanisms and processes will be examined in genetic model organisms such as the fruit fly (*D. melanogaster*) and the worm (*C. elegans*) as well as in vertebrates such as the frog (*X. laevis*), chicken, mouse and humans.

Required Text

Principles of Development (Third Edition), Lewis Wolpert editor. Oxford University Press (ISBN 978-0-19-927537-3). This is a new edition (2007) and it is available in the UT bookstore.

General Information

- BIOL 3030 (Cell Biology) is a prerequisite for this course.
- Please attend every class. Material presented during class will be emphasized for the exams. Discussing the material in class and reading it from the textbook (preferably before the class) will aid in your ability to understand and retain the presented concepts.
- This course is web assisted: lecture slides will be available for download the day before class.
- Please ask questions during the lecture if you feel something was not explained clearly. You also have the option of asking questions by email or discussing the topics during my office hours.
- Please turn OFF cell phones while in the class.
- Please do not bring food into the room, although a drink is acceptable.

Student Evaluation

- There will be three in-class exams during the semester and each will be worth 100 points (20% of your final grade). The in-class exams will cover only new material (since the last exam). Exam questions will be based on the lecture material and assigned readings from the textbook.
- The final exam will be comprehensive and it will count for 200 points (40% of your final grade).
- The exams will be a mix of multiple choice, fill-in-the-blank and short answer questions.
- Participation in class discussion throughout the year may result in up to a 10 point bonus added to your final grade.
- Note that make-up exams will only be provided for serious medical or personal reasons. They will consist of essay questions, which tend to be more difficult than the multiple choice and short answer formats. Please let me know as soon as possible if you find that you cannot take an exam.
- Bring a #2 pencil to the exams.
- Students will be asked to present a picture ID when turning in exams.

Tentative Grading Scale:	92-100%	A
	89-91%	A-
	85-88%	B+
	80-84%	B
	76-79%	B-
	70-75%	C+
	66-69%	C
	60-65%	C-
	56-59%	D+
	50-55%	D
	<50%	F

Course Schedule

Date	Lecture	Topic	Chapter
Aug 25	1	Introduction and History	1
Aug 27	2	Concepts In Development	1
Sept 1	3	Development of the <i>Drosophila</i> Body Plan I	2
Sept 3	4	Development of the <i>Drosophila</i> Body Plan II	2
Sept 8	5	Patterning the Vertebrate Body: Axes Specification	3
Sept 10	6	Patterning the Vertebrate Body: Origin of the Germ Layers	3
Sept 15	7	Patterning the Vertebrate Body: Somites and AP Patterning	4
Sept 17		Exam I	
Sept 22	8	Patterning the Vertebrate Body: Neural Induction	4
Sept 24	9	<i>C. elegans</i> and Echinoderms	5
Sept 29	10	Ascidians and Slime Mold	5
Oct 1	11	Plant Development	6
Oct 6		Fall Break	
Oct 8	12	Morphogenesis: Cleavage	7
Oct 13	13	Morphogenesis: Gastrulation	7
Oct 15		Exam II	
Oct 20	14	Morphogenesis: Neural Tube Formation and Cell Migrations	7
Oct 22	15	Cell Differentiation: Control of Gene Expression	8
Oct 27	16	Cell Differentiation: Plasticity of Gene Expression	8
Oct 29	17	Organogenesis: The Vertebrate Limb	9
Nov 3	18	Organogenesis: <i>Drosophila</i> Imaginal Discs	9
Nov 5	19	Organogenesis: Internal Organs	9
Nov 10	20	NS Development: Cell Specification	10
Nov 12		Exam III	
Nov 17	21	NS Development: Axon Guidance and Synapse Formation	10
Nov 19	22	Germ Cell Development	11
Nov 24	23	Fertilization and Sex Determination	11
Nov 26		Thanksgiving Day	
Dec 1	24	Growth and Post Embryonic Development	12
Dec 3	25	Regeneration	13
Dec 8	26	Evolution of Development	14
Dec 10	27	Review	
Dec 16		Final Exam (8-10am)	

Other Important Dates:

Last day to add/drop: Sept. 8
 Last day to withdraw: Oct. 30