

Fall 2020

## **BIOL 342-001: Developmental Biology**

Daphne Soares

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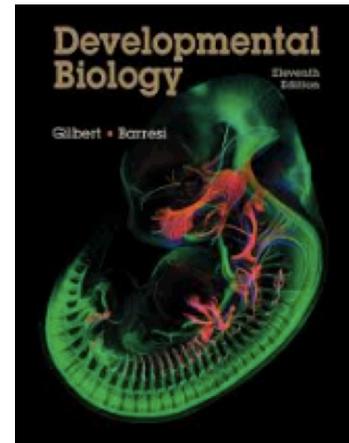
Developmental Biology  
Professor Daphne Soares PhD  
Soares@NJIT.edu

Mondays and Wednesdays 9-10:20

Office hours: Mondays after class or by appointment.

**Recommended Book:**

Developmental Biology 12<sup>th</sup> edition  
Michael J.F. Barresi, Scott F. Gilbert  
eISBN-13: 9781605358239



**Purpose:**

Students who successfully complete the course will be able to:

- Name, describe and order the main stages of development common to most multicellular organisms.
- Describe the main anatomical changes that occur during development.
- Identify the cellular behaviors that lead to morphological change during development.
- Describe the hierarchy of gene activation that occurs in early Drosophila development.
- Understand how gene activation plays a role in differentiation and development.
- Describe the unique characteristics of the Hox genes and explain how they act as master regulators of development in multicellular organisms.
- Describe the main signaling pathways that play important roles in development.
- Explain how embryonic stem cells and their alternatives can be used in medical treatments.

**Grading policy:**

- There will be three exams during the semester and each will consist of essay questions along with some short-answer questions. The exams will cover mainly new material (since the previous exam), although some concepts from earlier in the course will be revisited on the later exams. Exam questions will be based on the lecture material.
- The final exam will be comprehensive and will also consist of multiple-choice and short-answer questions. Approximately half of the final exam will count for the last section of the course with the remaining half devoted to the first three sections.

Exam 1	10 points
Exam 2	10 points
Exam 3	10 points
Final Exam	10 points
	Total = 40 points

Grading Scale	
A	90-100%
B+	85-89%
B	80-85%
C+	75-80%
C	70-74%
D	60-69%
F	0-59%

There is no extra credit.

### Academic Honesty:

The university has approved a Code of Academic Integrity. The code prohibits students from cheating on exams, plagiarizing papers, submitting the same paper for credit in two courses without authorization, buying papers, submitting fraudulent documents, and forging signatures. The University Senate requires that students sign a statement on each examination or assignment as follows: "I pledge on my honor that I have not given or received any unauthorized assistance on this examination (or assignment)." Please review the university policies on academic integrity (including what happens if you are caught doing something you shouldn't)

Academic Integrity is the cornerstone of higher education and is central to the ideals of this course and the university. Cheating is strictly prohibited and devalues the degree that you are working on. As a member of the NJIT community, it is your responsibility to protect your educational investment by knowing and following the academic code of integrity policy that is found at:

<http://www5.njit.edu/policies/sites/policies/files/academic-integrity-code.pdf>.

I will not tolerate cheating or plagiarism in this class.

	Date	Topic	
1	9/2 W	Introduction	Chapter 1
2	9/8 T	Specifying Identity	Chapter 2
3	9/9 W	Differential Gene Expression	Chapter 3
4	9/13	Last day to drop add	
5	9/14 M	Cell to cell communication	Chapter 4
6	9/16 W	Stem Cells	Chapter 5

7	9/21 M	Gametogenesis and fertilization	Chapter 6 and 7
8	9/23 M	Gametogenesis and fertilization	Chapter 6 and 7
	9/28 W	<b>Exam I (Covers Lectures 1-6)</b>	
8	10/5 M	Early development in snails flowers and nematodes	Chapter 8
9	10/7 W	Sea urchins and tunicates	Chapter 10
10	10/12 M	Amphibians and Fish	Chapter 11
11	10/14 W	Birds and mammals	Chapter 12
12	10/19 M	Neural tube	Chapter 13
13	10/21 W	Brain development	Chapter 14
	10/26 M	<b>Exam II (Covers Lectures 8-13)</b>	
14	10/28 W	Neural crest	Chapter 15
15	11/2 M	Ectoderm	Chapter 16
16	11/4 W	Mesoderm	Chapters 17,18
17	11/9 M	Mesoderm II	Chapter 19
18	11/11 W	Endoderm	Chapter 20
	11/16 M	Metamorphosis	Chapter 21
19	11/18 W	Regeneration	Chapter 22
	11/23 M	<b>Exam III (Covers Lectures 14-19)</b>	
20	11/25 M	Friday classes meet	
21	11/30M	Symbiosis and development	Chapter 24
22	12/2 W	Evodevo	Chapter 25
23	12/7 M	Health and disease	Chapter 23
24	12/9 W	Open for discussion/review	

### COVID-19 Safety Requirements

All persons physically present in any department facility or classroom shall comply fully with the NJIT COVID-19 safety policy at all times. Masks must be worn before entry to all department facilities, and social distancing guidelines must be followed. Individuals who are unable to wear a face mask due to medical reasons should contact the Office of Disability Services or Human Resources. Students who enter a classroom without wearing a mask properly, or remove their mask, will be cautioned by the instructor. The same is true for students who disregard the seating order or guidelines for social distancing. Students with obvious symptoms of respiratory illness should not come to campus and will be asked to leave. Students who do not comply with a request by a department instructor to adjust their behavior, in accordance with the University Policy, will be subject to disciplinary

actions. Instructors have the right to expel the student or terminate the class session at which any student fails to comply with the University Policy.