

Bio3338a Developmental Biology 2024 Syllabus

General Course Information

Instructor: Dr. Sashko Damjanovski

Email: sdamjano@uwo.ca

Students must use their Western (@uwo.ca) email addresses when contacting their instructors.

List of Prerequisites

Unless you have either the prerequisites for this course or written special permission from your Dean to enroll in it, you may be removed from this course and it will be deleted from your record. This decision may not be appealed. You will receive no adjustment to your fees if you are dropped from a course for failing to have the necessary prerequisites. The prerequisites for this class are:

[Biochemistry 2280a](#); [Biology 2581a/b](#), and [Biology 2382a/b](#)

Modes of Delivery (as of September 2024):

The course will be delivered in person:

Lectures – In-person Monday and Wednesday @. Course material (PowerPoint slides, etc) will be posted to OWL: <https://owl.uwo.ca>. Other teaching activities aimed to reinforce lecture material may also be posted occasionally. No recordings of this material will be available.

Office Hour –.

Tutorials – Students must attend the (5) tutorials associated with their section.

Evaluations – Four online tests. In-person final exam, date to be set by the registrar.

Should situations force REMOTE DELIVERY:

Lectures – Lectures will be asynchronous, with recorded lectures posted on OWL each week of the term. Teaching activities aimed to reinforce lecture material will be posted approximately every other week. All course material will be posted to OWL: <https://owl.uwo.ca>.

Office Hours - Synchronous office hours will be held weekly via Zoom (details posted on OWL).

Tutorials – Tutorials will be synchronous, during which students must attend a “live” tutorial – likely via Zoom

2024 Course Description

First Bio3338a Class:

Tutorials begin:

Office hours:

Truth and Reconciliation Day:

Reading Week:

Last Bio3338a Class:

Exams:

Lecture Topics (anticipated)

- Introduction: Overview of Development
- Developmental Concepts, Terms, and Tools
- Cytoplasmic Determinants and Positional Information
- Signal Transduction
- Gametogenesis and Fertilization
- Egg Activation and Cleavage Patterns
- Sea Urchin Gastrulation
- Frog Gastrulation
- Chick Gastrulation
- Establishment and Patterning of Body - axes and germ layers
- Neural Induction and Patterning
- Somitogenesis and mesoderm derivatives
- Neural Crest Cells
- Vertebrate Limb Formation

Learning outcomes

Upon successful completion of Bio3338a Developmental Biology, students will be able to:

- 1) Understand the fundamental principles of embryonic cell fate, commitment, competence, and induction as they relate to the development of multicellular organisms.
- 2) Recollect fundamental cell signalling cascades (wnt, RTK, TGF-beta, notch etc).
- 3) Understand the process of species-specific sexual fertilization and explain fundamental mechanisms that prevent polyspermy.
- 4) Recognize the importance of early cellular cleavage patterns in dividing up asymmetric maternal determinants and how these determinants facilitate future cellular signalling.
- 5) Relate signalling and inductive interactions and the knowledge of cellular movements that result during embryonic gastrulation and neurulation as result in the formation and patterning of the three germ layers (endoderm, mesoderm, ectoderm), as well as the neural tube.
- 6) Understand the developmental consequences of alterations to normal gastrulation or neurulation, particularly focusing on limb development and motor neuron function.
- 7) Apply knowledge of the principles of body axis patterning as they relate to the generation of the axes found in the fore and hind limbs.
- 8) Read primary scientific papers in the field of developmental biology at sufficient depth to be able to critically assess and synthesize information.

Participation and Engagement - Students are expected to engage with content as much as possible. Ask questions! Students are required to attend and participate during tutorial sessions.

Tutorial Structure:

An introductory talk regarding tutorials will be given by Dr. Damjanovski *in class*. The tutorial schedule below will be explained by Dr. Damjanovski

If one person in the presentation group **cannot present** for a valid reason (see Academic Consideration for Student Absence), the group presentation will be re-scheduled and may involve a tutorial presentation to the course TAs and instructor alone, depending on circumstances.

Tutorial Schedule:

Section 002:

Section 003:

Section 004:

Section 005:

Course Materials

All course material will be posted to OWL: <http://owl.uwo.ca> . Students are responsible for checking OWL on a regular basis. If students need assistance, they can seek support on the OWL Help page, or contact the Western Technology Services Helpdesk - 519-661-3800 or ext. 83800.

Textbook: Barresi and Gilbert, Developmental Biology **13th. Ed.** (recommended).

A reading list from the text will be provided in various lectures.

Methods of Evaluation

Material from tutorials will NOT be tested on Tests or Exam.

Test 1	(- 15%)	
Test 2 (non-cumulative)	(- 15%)	
Test 3 (non-cumulative)	(- 15%)	
Test 4 (non-cumulative)	(- 15%)	
(makeup test – cumulative)	(?%)	
Top 3 tests counted	- 45%	
Tutorial presentation	- 12.5%	
Tutorial participation	- 2.5%	
Final exam (cumulative)	- 40%	- Scheduled by Registrar. 90 min (?) – in person

TESTs will be online (Brightspace/Owl) and everyone will be universally accommodated. The time of any test will be the maximum accommodation any one student has with AE for a 30 min test.

You will get a large time window during the day to write this test. Tests will be mixed format – T/F multiple choice, fill-in-the-blank, label diagrams, one-word answers.

After an assessment is returned, please wait 24 hours before contacting the evaluator.

Click [here](#) for a detailed and comprehensive set of policies and regulations concerning examinations and grading. The table below outlines the University-wide grade descriptors.

A+	90-100	One could scarcely expect better from a student at this level
A	80-89	Superior work which is clearly above average
B	70-79	Good work, meeting all requirements, and eminently satisfactory
C	60-69	Competent work, meeting requirements
D	50-59	Fair work, minimally acceptable
F	Below 50	Fail

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Students with disabilities work with Accessible Education (formerly SSD)

address. It is the responsibility of the account holder to ensure that e-mail received from the University at their official university address is attended to in a timely manner.

Support Services