

Biology 317-Developmental Biology

UW-Stevens Point

Spring 2018

Instructor: Dr. Ashley Driver

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Lecture (TNR 460): *M W F* 12:00pm-12:50pm

Lab (TNR 460): *F* 9:00am-11:50am

Office Hours: Wednesdays from 1:00pm-2:00pm or by appointment.

Course description: Developmental biology is a field that encompasses the growth and development of organisms. During this course you will learn fundamental events required for this to occur as well as how internal and external factors can influence them. We will also discuss how these processes differ among species and how model organisms guide us in our understanding. During lab you will be challenged to apply the scientific method for experimental embryology, participate in case-study discussions, and present a developmental biology topic to your colleagues.

Course goals/outcomes: By the end of the course a student should be able to...

- 1.) Understand fundamental developmental biology principles.
- 2.) Define the major events required for embryonic development.
- 3.) Compare and contrast development in model organisms.
- 4.) Apply the scientific method to developmental biology questions.
- 5.) Understand how developmental biology serves important purposes in society.

Recommended textbook and CD: *Developmental Biology, 8th edition* (DB 8) by Gilbert (2006) and the Sinaer Associates, Sunderland, MA and vade mecum CD Course and Laboratory Supplement. Both the book and CD should be available through the UWSP bookstore rental program at the Dreyfus University Center. *Both need to be returned at the end of the semester.*

Course website: Course materials and grades will be posted to Desire2Learn (D2L).

Point Distribution:

Exams (100 pts each x 3 exams)	300 points
Lab Write-ups	125 points
Student presentations (20 points planning sheet, 80 presentation)	100 points
In-class participation	<u>50 points</u>
	575 points

Exams: You will have three total exams in this course, each totaling 100 points. Exams are closed-notes, closed-book. These exams will be given in class on selected dates shown in the schedule. **Attendance is mandatory for exam sessions.**

Lab Write-ups: Lab write-ups will be assigned for certain lab sessions throughout this course. Make sure you follow ALL directions, provide all proper sections and answer ALL questions within the assignment to ensure maximum points. For both the sea urchin and planarian lab you will be asked to create thoughtful and TESTABLE hypotheses and provide interpretation for your data. Quality in your work and thorough answers are expected! *You are allowed one late lab report (up to 7 days after lab) with a 50% point reduction. After this, any late lab reports will get a 0.*

Student Presentations: During this course you will be required to select and research a topic in developmental biology. For this assignment you will first be assigned an initial planning sheet where you will outline your topic, main points, and provide at least 3 instructor approved sources. During each presentation students will provide an in-class activity for your colleagues to complete. Your final presentation grade will consist of the quality of presentation, depth of information, creativity, and effectiveness in presenting (as reflected by your colleagues feedback).

In-class participation: This portion of your grade will be determined by multiple factors related to in-class activities including attendance, active discussion, and participation in select case-studies. It is expected that you are engaged in this course and if you chose to not attend or not participate it will be reflected in your grade!

Grading Scale:

91.0-100	A	81.0-88.9	B	71.0-78.9	C	60.0-68.9	D
90.0-90.9	A-	80.0-80.9	B-	70.0-70.9	C-	00.0-59.9	F
89.0-89.9	B+	79.0-79.9	C+	69.0-69.9	D+		

Course grading: Your grade in this course will be determined by dividing the total number of points that you earn by the total, then multiplying by 100, and rounding to the nearest 0.1%.

Extra Credit: Extra credit assignments will not be given in this course. There is a *possibility* that bonus points may be given in the class—so plan to regularly attend! If you aren't here, you lose the chance to receive extra points!

Absences: It is expected that you will regularly attend both lecture and laboratory sessions for this course. Success cannot be attained if you are not actively participating with your colleagues to understand the material.

- **If you are ill on the day of an exam or an in-class activity, you must contact me before class (if at all possible) and you should be prepared to provide documentation.** I must be notified of other conflicts, such as those arising from University sponsored athletic teams and student organizations, **at least two weeks prior to the event.**
- If you are a student athlete or student organization member whose team/organization will be traveling to away games/events on *any of the dates* on which in class activities or exams are scheduled, it is imperative that you provide

me with your travel letter **as soon as you receive it** from your coach/advisor so we can schedule your makeup activities/exams.

Electronic Devices: Laptops will be allowed in lecture with the premise that they are used for the sole purpose of accessing course material during class time. It is expected that you stay on task and do not cause distraction during the class period. Moreover, it is expected that you will silence your cell phone during class and refrain from using text messaging/surfing the web/etc. during the class period. Please be respectful!

Academic Policies:

Academic misconduct (as outlined and defined by Chapter 14 in the Academic Handbook.<https://www.uwsp.edu/acadaff/Pages/handbook.aspx>) will NOT be tolerated in this course. As a student you are expected to show integrity and honesty! Cheating or plagiarism related to any of the course assessments **will not be tolerated** and **result in a score of zero for that assessment.**

Disability Services:

Any student who feels that he/she may need an accommodation based on the impact of a disability should contact the Disability and Assistive Technology Center (Room 609 Albertson Hall, datctr@uwsp.edu). If you have already registered with this office and would like to discuss your class accommodations for the semester, please set up an appointment to meet with me privately.

Grade Discrepancies:

Grades will be posted on D2L throughout the semester. If there are discrepancies on any assignments, quizzes, or exams they can be addressed with the instructor, in person, up to *one week* after the grade is posted (for online quizzes) or the assignment/exam/etc. is handed back in class. After this time, the grade will stand with whatever was originally granted.

Emergencies:

In the event of a medical emergency call 9-1-1 or use Red Emergency Phone in the hallway outside of TNR 460. Offer assistance if trained and willing to do so. Guide emergency responders to victim.

In the event of a tornado warning, proceed to the first floor of TNR Building where there is designated shelter rooms. In the event of a fire alarm, evacuate the building in a calm manner. Meet outside the building and notify instructor or emergency command personnel of any missing individuals.

Active Shooter/Code React – Run/Escape, Hide, Fight. If trapped hide, lock doors, turn off lights, spread out and remain quiet. Call 9-1-1 when it is safe to do so. Follow instructions of emergency responders.

See UW-Stevens Point Emergency Procedures at www.uwsp.edu/rmgt/Pages/em/procedures for details on all emergency response at UW-Stevens Point.

Date	Lecture Topic	Book Chapters	Lab topic
1/22	Introduction Early principles, Model organisms	Chapter 1,2	Safety overview, Scientific Method
1/24			
1/26			
1/29	Life cycles Embryo influences	Chapters 2,3	Microscopy and embryo manipulation
1/31			
2/2			
2/5	Developmental genetics	Chapter 4, 5	Presentation Research (ALB 107)
2/7			
2/9			
2/12	Cell communication and signaling, stem cells	Chapter 6	Slime mold life cycles
2/14			
2/16			
2/19	Gametogenesis	Chapter 19	Gametogenesis
2/21			
2/23			
2/26			
Exam 1			
2/28	Fertilization	Chapter 7	Sea Urchin Husbandry and Development
3/2			
3/5	Early development and gastrulation	Chapter 8, 11	Sea Urchin Experiment Design and Critique
3/7			
3/9			
3/12	Axis formation	Chapters 10	Run Sea Urchin Experiments
3/14			
3/16			
3/19	Ectoderm development: Neural tube	Chapter 12	Early Chick Development
3/21			
3/23			
Spring Break			
4/2	Ectoderm development: Neurogenesis, epidermis	Chapters 13	Late Chick Development
4/4			
4/6			
4/9	Exam 2		
4/11	Mesoderm and Endoderm development: Organ development	Chapters 14, 15	Planaria Regeneration Experimental Design
4/13			
4/16	Limb development, tissue regeneration, aging	Chapter 17, 18	Run Planaria Experiments
4/18			
4/20			
4/23	Sex determination	Chapters 19	Student Presentations
4/25			
4/27			
4/30	Medical implications of developmental biology	Chapters 21	Student Presentations
5/2			
5/4			
5/7	Environmental influences on development	Chapters 22	Case-study debate/check-out
5/9			
5/11			
Final Exam (Exam 3)			

*Course topics are subject to change.