

Biology 317-Developmental Biology

UW-Stevens Point

Spring 2019

Instructor: Dr. Ashley Driver

Office: CBB 307

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Office Phone: (715)-346-4256

Lecture (CBB 269): M W 2:00pm-3:15pm

Lab (CBB 120): T 1:00pm-3:50pm

Office Hours: Wednesdays from 3:30-5:00pm 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. Additionally, we will 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, 11th edition* (DB 11) by Gilbert (2016) available through the UWSP bookstore rental program at the Dreyfus University Center.

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 (30 points planning sheets, 70 presentation)	100 points
Online Discussions	<u>25 points</u>
	550 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. During the semester you will be assigned planning sheets that are meant to help build your presentation topic. Final presentations will be conducted during the lab period during the last few weeks of the course. In addition to giving a Powerpoint-based presentation, students will also be responsible for providing an in-class activity on their topic. The final presentation grade will focus on the quality of presentation, depth of information, creativity, and effectiveness in presenting.

Online Discussions: During the semester various developmental biology topics will be posted to the D2L Discussion board. Topics may range from popular media/news articles or case-studies in developmental biology. The topic will be open for one week during which you need to post *at least once* to receive 5 points. Posts must add to the discussion (e.g.- ask a question on the topic, raise a point using something we've discussed in class, provide evidence/counter arguments). The goal if this is to apply what we are learning in class to relevant issues in society and the discussion will only be as good as it's contributions. *Critical thinking is key! There are no make-up points for this-* if you don't contribute, you will get a 0 for that particular discussion!

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 assignment/exam/etc. is handed back in class or presentation grade is posted. After this time, the grade will stand with whatever was originally granted.

Emergencies:

In the event of a medical emergency call 9-1-1. 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 CBB 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.

Recommendations for improving course performance...i.e.- “How can I achieve my goals for this course”

1.) Understand that as your professor, I do not hand out grades...you earn them.

You are accountable for your performance which goes beyond assignments or exams. You are observed for performance and interactions in lab and lecture periods. You are accountable to reach out to me should you have questions or need assistance. As your professor *I am your resource*, so make sure you are following through when you need it!

2.) Assess your learning methods.

Research has shown that individuals take in information in different ways. There are four main categories for learning styles (VARK; V: Visual, A: Aural, R: Reading/writing, K: Kinesthetic). In certain cases, you may be a combination of learning styles (requiring visual and kinesthetic). By understanding how you take information, it can improve your study and even lecture habits. There are online quizzes that can help you understand what learning style fits you best (<http://vark-learn.com/the-vark-questionnaire/>). It may be helpful to take the quiz and see if you have a definitive learning style or if you are multi-modal. Does this fit with your study habits? Could it change them?

3.) Assess how you study.

One of the biggest errors I see with students is that when they study, they do so in a passive way. That is, they study with the book or answers right in front of them. The issue with this is that it isn't requiring the person to create an answer from blank and may allow them to "cheat" themselves by looking at the answer and assuming they know it. I recommend to all of my students that they *study in a way that mimics a testing environment*. Put yourself *under pressure* to create an answer from nothing. For example: create practice questions while studying, then close your notes/book/etc. and attempt to answer these questions on a *blank* sheet of paper. Once you have completed a set of questions, *grade your answer*. Then go back over material you answered incorrectly, review material, and retest yourself. Another way to be more active in your studying is to form *study groups*. Meet at the library and test each other- have one person at the white board and another asking questions. *If you can teach it to your peers, you know it!*

4.) Find balance.

While regular attendance and studying are essential for this course, there are other factors you must keep in mind! SLEEP is absolutely necessary (and no, that short nap between cramming does not count!). It is recommended to get 7-8 hours of sleep to allow your body to rest and repair each day. Avoid cramming and stressing yourself out. *Don't believe me?* Well I hope you'd believe science, which has shown that lack of sleep is detrimental to brain cell function: <https://www.nature.com/articles/nm.4433>.

5.) Be realistic.

To succeed you must be realistic in terms of your input and expected output. You will need to both attend and engage in course sessions (whether it be lecture or lab). You will need to *regularly* (yes, on *at least a weekly* basis) review information in this course to stay on track. You may need to seek assistance with course material (tutoring, study groups, office hours). You should seek out the instructor if you have questions or concerns. I have posted office hours, but should those not fit your schedule, please e-mail me and we can set up an alternate time. *You are accountable for your performance* and should regularly review your progress to determine whether you are on track for your goals.

Date	Lecture Topic	Book Chapters	Lab topic
1/23	Introduction: Basic principles of body organization	Chapter 1	Safety overview, Mapping abstracts and the scientific method
1/28	Developmental patterning and cell differentiation	Chapters 2,3	Microscopy and embryo manipulation
1/30			
2/4	Cell-to-cell communication and stem cells	Chapter 4, 5	Presentation Research (ALB ???)
2/6			
2/11	Sex determination and gametogenesis	Chapter 6	Gametogenesis
2/13			
2/18	Fertilization	Chapter 7	Sea Urchin Husbandry and Development
2/20			
2/25	Exam 1		
2/27	Early development in sea urchins	Chapter 10	Sea Urchin Experiment Design
3/4	Early development in amphibians and fish	Chapter 11	Run Sea Urchin Experiments
3/6			
3/11	Early development in birds and mammals	Chapters 12	Early Chick Development
3/13			
SPRING BREAK			
3/25	Ectoderm: Neural tube formation and patterning and brain growth	Chapter 13,14	Late Chick Development
3/27			
4/1	Ectoderm: Neural crest cells and ectodermal placodes	Chapters 15, 16	Planaria Regeneration Experimental Design
4/3			
4/8	Exam 2		
4/10	Paraxial mesoderm	Chapters 17	Run Planaria Experiments
4/15	Intermediate and lateral plate mesoderm	Chapter 18,19	Student Presentations
4/17			
4/22	The endoderm	Chapters 20	Student Presentations
4/24			
4/29	Regeneration and aging	Chapters 22, 23	Student Presentations
5/1			
5/6	Medical implications and environmental influences on development	Chapters 24, 25	Student Presentations/Check-out
5/8			
Final Exam (Exam 3): 5/14/19 from 8:00AM-10:00AM in CBB 269			

*Course topics are subject to change.