University of North Texas at Dallas Fall 2025

BIOL 4312: Developmental Biology: Section: 0071 3Hrs			
Department of	**Life Sciences**	**Division of**	**Liberal Arts and Sciences**

Instructor Name:	Dr. Melissa Lewallen
Office Location:	Founders Hall 244
Office Phone:	972-338-1367
Email Address:	melissa.lewallen@untdallas.edu or via Canvas messages
Office Hours:	Mondays 4-6 PM & Wednesdays, 12-2 PM, or by appointment
Classroom Location:	**online**
Class Meeting Days & Times:	**online**
Course Catalog Description:	Examination of how biological form changes over time, including embryological development from fertilization to tissue differentiation, as well as post-embryological development, including growth, aging, regeneration, and metamorphosis. Topics include cell commitment, patterning, organogenesis, limb development, sex determination, stem cells, metamorphosis, aging, environmental factors, disease development, developmental mechanisms of evolutionary change, model organisms, and ethical questions relevant to the field.
Prerequisites:	BIOL 1710, BIOL 1730, BIOL 1720, and BIOL 1740.
Co-requisites:	None
Required Text:	**Developmental Biology, 13th Edition** **Digital Online Platform** (you will utilize this to complete your online quizzes & homework, in addition to having access to the book) ISBN: 9780197574652 Author: Barresi Publisher: Oxford University Press
Access to Learning Resources: **Learning Commons:** https://learning.untdallas.edu/	**UNT Dallas Library:** phone: (972) 780-1616 web: http://www.untdallas.edu/library email: library@untdallas.edu **UNT Dallas Bookstore:** phone: (972) 780-3652 web: http://www.untdallas.edu/boo kstore e-mail: untdallas@bkstr.com

<table>
<tr>
<td>Canvas Resources
Supported Browsers:
• Chrome

Supported Devices:
• iPhone
• Android
• Chromebook
Note: Tablet users can use the Canvas app

Screen Readers:
• VoiceOver (Safari)
• JAWS (Internet Explorer)
• NVDA (Firefox)
Note: There is no screen reader support for Canvas in Chrome</td>
<td>Getting Help with Canvas:
Canvas 24/7 Phone Support for Students: 1-833-668-8634
Canvas Help Resources:

Canvas Student Guide -
https://community.canvaslms.com/docs/DOC-10701
For additional assistance, contact UNT Dallas Distance Learning:
DAL1, Room 157
Email: distancelearning@untdallas.edu

If you are working with Canvas 24/7 Support to resolve a technical issue, please keep me updated on the troubleshooting progress.

If you have a course-related issue (e.g., course content, assignment trouble, quiz difficulties), please contact me during office hours or by email.</td>
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<tr><td colspan="2">Course Goals or Overview:</td></tr>
<tr><td></td><td>To give students an understanding of developmental biology, how development can be influenced or altered, and the knowledge to apply aspects of developmental biology to other areas of scientific study.</td></tr>
<tr><td colspan="2">Student Learning Objectives:</td></tr>
<tr><td>1</td><td>Learn key stages and mechanisms of development in the formation of an organism.</td></tr>
<tr><td>2</td><td>Understand principles of experimental analysis of developmental processes.</td></tr>
<tr><td>3</td><td>Understand developmental differences and commonalities in various organisms.</td></tr>
<tr><td>4</td><td>Understand how the environment and evolutionary processes shape life in various forms.</td></tr>
<tr><td>5</td><td>Apply concepts in developmental biology to other areas of biological study.</td></tr>
<tr><td>6</td><td>Develop skills in scientific reasoning and writing.</td></tr>
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COURSE EVALUATION METHODS

This course will utilize the following instruments to determine student grades and proficiency of the learning outcomes for the course.

Discussion Boards – There will be 14 discussion board assignments at 10 points each. To receive full credit for each discussion board assignment, you will be required to post a response to the topic and also give a full-sentence response to a classmate's post. Discussion board assignments will comprise 15% of your grade.

Reading Check Quizzes – There will be 14 reading check quizzes worth 20 points each. The quizzes are open book and are designed to assess that you are reading the assigned chapter material and your understanding of key terms and concepts. The quizzes will comprise ~30.5% of your grade.

Exams – There will be two open book written exams (midterm and final) worth 175 points each. The exam questions are designed to test your understanding of key concepts from the chapters and your ability to apply the concepts to hypothetical or real scenarios. The exams will comprise 38% of your grade.

Scientific Literature Review

You will select and review a recent peer-reviewed scientific paper on any aspect of developmental biology that is of interest to you. Your review must be in paragraph form and a minimum of 2 single spaced pages (12-point ARIEL font and 1-inch margins). More instructions will be provided on Canvas. The literature review will be worth 150 points and comprise ~16.5% of your grade. **You'll receive 5 extra credit points if your paper is turned in a week+ early.**

Developmental Tutorials (Extra Credit) – There are 16 Developmental Tutorials (videos with corresponding short quizzes) that you may complete to earn up to 58 extra credit points. Watching the videos and completing the tutorial questions is highly recommended to expand your understanding of various concepts.

GRADING MATRIX

Instrument	Value (points)	Total	Weight
Exams (open book essay questions)	2 exams @ 175 pts each	350	40%
Reading Check Quizzes	12 @ 20 points each	240	28%
Discussion Boards	12 @ 10 points each	130	15%
Scientific Literature Review	1 paper @150 points	150	17%
Developmental Tutorials (extra credit)	16 available for up to 58 extra credit points		
Total:		**870**	

Grade Determination:

A = 89.5% or better
B= 79.5%-89.4%
C = 69.5%-79.4%
D =59.5%-69.4%
F = 59.4% and below

Schedule:

This schedule is subject to change by the instructor. Any changes to this schedule will be communicated on Canvas.

Topic	Timeline (week of)	Quizzes, Assignments, Exams Due
Introduction to Course Chapter 1: The Making of a Body and a Field – Introduction to Developmental Biology	8/25/25	**PURCHASE ACCESS AND REGISTER FOR: Developmental Biology, 13th Edition - Digital Online Platform (Gilbert & Barresi)** **Reading Check: Quiz #1** **Discussion Board #1** **Discussion Board #2** **Developmental Tutorial 1.1: Personhood (extra credit):**

Chapter 2: Specifying Identity – Mechanisms of Developmental Patterning Chapter 3: Differential Gene Expression – Mechanisms of Cell Differentiation	9/1/25	**Reading Check: Quiz #2** **Discussion Board #3** **Developmental Tutorial 2.1: Cell Specification (extra credit)** **Developmental Tutorial 3.1: Differential Gene Expression (extra credit)**
Chapter 5: Stem Cells – Their Potential and Their Niches	9/8/25	**Reading Check: Quiz #3** **Discussion Board #4** **Developmental Tutorial 5.1: Stem Cell Basics (extra credit)**
Chapter 6: Sex Determination and Gametogenesis Chapter 7: Fertilization – Beginning a New Organism	9/15/25	**Reading Check: Quiz #4** **Discussion Board #5** **Developmental Tutorial 6.1: Mammalian Sex Determination (extra credit)** **Developmental Tutorial 7.1: Find It / Lose It / Move It (extra credit)** **Developmental Tutorial 7.2: Capacitation (extra credit)** **Developmental Tutorial 7.3: Legends of the Sperm and Egg (extra credit)**
Chapter 8: Conceptualizing Early Development – An Overview of the Essential Processes Chapter 10: Axis Specification in *Drosophila*	9/22/25	**Reading Check: Quiz #5** **Discussion Board #6**

Chapter 12: Amphibians and Fish Chapter 13: Birds and Mammals	9/29/25	**Reading Check: Quiz #6** **Discussion Board #7** **Developmental Tutorial 12.1: Gastrulation (extra credit)**
Chapter 14: Early Human Development	10/6/25	**Reading Check: Quiz #7** **Discussion Board #8** **Developmental Tutorial 14.1: Twinning (extra credit)**
MIDTERM EXAM (written, open book)	10/13/25	**MIDTERM EXAM**
Chapter 15: Neural Tube Formation and Patterning Chapter 16: Brain Growth	10/20/25	**Reading Check: Quiz #8** **Discussion Board #9** **Developmental Tutorial 15.1: Neurulation (extra credit)**
No Assignments This Week (work on Scientific Literature Review Assignment)	10/27/25	No assignments due
WRITING WEEK (work on Scientific Literature Review Assignment)	11/3/25	No assignments due
Organogenesis: Tissue Organization Development of Nervous System Development of the mesodermal organs Development of the endodermal organs	11/10/25	**Reading Check: Quiz #9** **Discussion Board #10** **Developmental Tutorial 17.1: Neural Crest Development (extra credit)**
Chapter 21: Development of the Tetrapod Limb Chapter 23: Metamorphosis: The Hormonal Reactivation of Development (selective pages)	11/17/25	**Reading Check: Quiz #10** **Discussion Board #11** **Developmental Tutorial 21.1: Introduction to Limb**

		Development (extra credit)
Chapter 24: Regeneration – The Development of Rebuilding Chapter 25: The Environmental and Symbiotic Regulation of Development (selective pages) **FALL BREAK**	11/24/25	**Reading Check: Quiz #11** **Discussion Board #12** **Developmental Tutorial 25.1: Developmental Symbiosis (extra credit)** **Bonus Extra Credit – +5pts. if SCIENTIFIC LITERATURE REVIEW is turned in early by Nov. 26th.**
Chapter 26: Developmental Mechanisms of Evolutionary Change **FINAL EXAM AVAILABLE**	12/1/25	**Reading Check: Quiz #12** **No Discussion Board this week** **Developmental Tutorial 26.1: EvoDevo (extra credit)** **SCIENTIFIC LITERATURE REVIEW DUE ON DEC. 3rd BY 11:59 PM CST**
FINAL EXAM	12/8/25	**FINAL EXAM DUE ON MONDAY, 12/08/25 BY 11:59 PM CST**

Course-Specific Policies

Attendance and Participation Policy:
The University attendance policy is in effect for this course. Please refer to Policy 7.005 Student Attendance at https://www.untdallas.edu/hr/upol.
Please be courtesy to the professor and your fellow students. Your attention in class is expected and needed to understand the material. Please no texting, web surfing, or talking in class while the professor is speaking (unless you are addressing the professor specifically).

Exam Policy:
Exams should be taken as scheduled. No makeup examinations will be allowed except for documented emergencies (See Policy 7.005 Student Attendance at https://www.untdallas.edu/hr/upol).

Contacting the Professor:
You may contact me via Canvas messages, email, or telephone. My preferred method is Canvas so that your message does not get buried or missed. I try to return messages as soon as possible, but I may not be immediately available. Therefore, please allow up to 24 hours for a response.

Online Work Due Dates:
Final due dates for online work are set to allow a flexible window of time to complete your work. Please work ahead and follow the initial suggested completion dates. Do not wait until the last minute before the final due date to complete your online work. Unforeseen circumstances or technical issues can arise at the last minute preventing you from completing your work and receiving full credit.

University Policies and Procedures

Students with Disabilities (ADA Compliance):
The University of North Texas at Dallas makes reasonable academic accommodations for students with disabilities. Students seeking accommodation must first register with the Disabilities Services Office (DSO) to verify their eligibility. If a disability is verified, the DSO will provide you with an accommodation letter to be delivered to faculty to begin a private discussion regarding your specific needs in a course. You may request accommodation at any time, however, DSO notices of accommodation should be provided as early as possible in the semester to avoid any delays in implementation. Note that a student must obtain a new letter of accommodation for every semester and must meet/communicate with each faculty member prior to implementation in each class. Students are strongly encouraged to deliver letters of accommodation during faculty office hours or by appointment. Faculty members have the authority to ask students to discuss such letters during their designated office hours to protect the privacy of the student. For additional information see the Disability Services Office website at http://www.untdallas.edu/disability. You may also contact them by phone at 972-338-1777; by email at UNTDdisability@untdallas.edu on the first floor of the Student Center.
Canvas Instructure Accessibility Statement: *optional if you do not use Canvas for the course*
University of North Texas at Dallas is committed to ensuring that online and hybrid courses are usable by all students and faculty including those with disabilities. If you encounter any difficulties with technologies, please contact our ITSS Department. To better assist them, you would want to have the operating system, web browser and information on any assistive technology being used. The Canvas Instructure Accessibility Statement is provided at https://www.canvaslms.com/accessibility.

NOTE: Additional instructional technology tools, such as Turnitin, Respondus, Panopto, and publisher cartridge content (i.e. MyLab, Pearson, etc.) may NOT be fully ADA compliant. Please contact our Disability Office should you require additional assistance utilizing any of these tools.

Academic Integrity:
Academic integrity is a hallmark of higher education. You are expected to abide by the University's code of Academic Integrity policy. Any person suspected of academic dishonesty (i.e., cheating or plagiarism) will be handled in accordance with the University's policies and procedures. Refer to the UNT Dallas Academic Integrity Policy in the appropriate Catalog at http://dallascatalog.unt.edu.
Academic dishonesty includes, but is not limited to, cheating, plagiarizing, fabrication of information or citations, facilitating acts of dishonesty by others, having unauthorized possession of examinations, submitting work of another person or work previously used without informing the instructor, or tampering with the academic work of other students.
Web-based Plagiarism Detection: Please be aware in some courses, students may be required to submit written assignments to Turnitin, a web-based plagiarism detection service, or another method. If submitting to Turnitin, please remove your title page and other personal information.

Classroom etiquette:
Students are encouraged to contribute their perspectives and insights to class discussions. However, offensive & inappropriate language (swearing) and remarks offensive to others of nationalities, ethnic groups, sexual preferences, religious groups, genders, or other ascribed statuses will not be tolerated. Disruptions which violate the Code of Student's Rights, Responsibilities, and Conduct will be referred to the Dean of Students as the instructor deems appropriate (UNTD Policy 7.001 found at https://untsystem.policytech.com/dotNet/documents/?docid=1278&public=true**).**

Classroom Disruption:
Students are expected to always engage with the instructor and other students in this class in a respectful and civil manner to promote a classroom environment that is conducive to teaching and learning. Students who engage in disruptive behavior will be directed to leave the classroom. A student who is directed to leave class due to disruptive behavior is not permitted to return to class until the student meets with a representative from the Dean of Students Office. It is the student's responsibility to meet with the Dean of Students before class meets again and to provide the instructor confirmation of the meeting. A student who is directed to leave class will be assigned an unexcused absence for that class period and any other classes the student misses because of not meeting with the Dean of Students. The student is responsible for material missed during all absences, and the instructor is not responsible for providing missed material. In addition, the student will be assigned a failing grade for assignments, quizzes or examinations missed and will not be allowed to make up the work.
The Code of Student's Rights, Responsibilities, and Conduct **(UNTD Policy 7.001 found at** https://untsystem.policytech.com/dotNet/documents/?docid=1278&public=true**)** describes disruption as the obstructing or interfering with university functions or activity, including any behavior that interferes with students, faculty, or staff access to an appropriate educational environment. Examples of disruptive behavior that may result in a student being directed to leave the classroom include but are not limited to: failure to comply with reasonable directive of University officials, action or combination of actions that unreasonably interfere with, hinder, obstruct, or prevents the right of others to freely participate, threatening, assaulting, or causing harm to oneself or to another, uttering any words or performing any acts that cause physical injury, or threaten any individual, or interfere with any individual's rightful actions, and harassment. You are encouraged to read the Code of Student's Rights, Responsibilities, and Conduct for more information related to behaviors that could be considered disruptive.

Course Evaluations:
Student evaluations of teaching effectiveness are a requirement for all organized classes at UNT Dallas. This short survey will be made available to you at the end of the semester via your campus email, providing you a chance to comment on how this class is taught. I (as the instructor) will not have access to the results of the evaluations until after final grades have been posted. I am very interested in the feedback I get from students, as I work to continually improve my teaching. I consider students' evaluations to be an important part of your participation in this class.

Sexual Harassment, Sexual Misconduct, Intimate Partner Violence and Stalking
UNT Dallas is committed to creating a safe learning environment for all members of our community, free from gender and sex-based discrimination, including sexual harassment, domestic and dating violence, sexual assault, and stalking, in accordance with Title IX, Texas laws and University Policies. Please note that all employees are mandated reporters and must report all instances of sexual misconduct, dating violence, sexual assault, domestic violence and stalking to the Title IX Coordinator. If you or someone you know has experienced any form of sex or gender-based discrimination or violence and wish to speak to the Title IX Coordinator, you can email them at titleix@untdallas.edu or file a report here.

Pregnancy, Pregnancy Related Conditions and Parenting Modifications Under Title IX

UNT Dallas is committed to compliance with Title IX, and to supporting the academic success of pregnant and parenting students and students with pregnancy related conditions. If you are a pregnant, have pregnant related conditions or a parenting student (child under one-year needs documented medical care) who wishes to request reasonable related modifications from the University under Title IX, please email the Title IX Coordinator at titleix@untdallas.edu The Title IX Coordinator will work with your professors and academic unit to provide reasonable modifications needed to be supportive of your education while pregnant or as a parent under Title IX.

Bad Weather Policy:
Campus facilities will close, and operations will be suspended when adverse weather and/or safety hazards exist on the UNTD campus or if travel to the campus is deemed dangerous as the result of ice, sleet or snow. In the event of a campus closure, the Marketing and Communication Department will report closure information to all appropriate major media by 7 a.m. That department will also update the UNTD website, Facebook and Twitter with closing information as soon as it is possible. For more information, please refer to http://www.untdallas.edu/police/resources/notifications.

Inclement Weather and Online Classes:
Online classes may or may not be affected by campus closures due to inclement weather. Unless otherwise notified by your instructor via e-mail, online messaging, or online announcement, students should assume that assignments are due as scheduled.

Technology Assistance:
To successfully access the materials in Canvas, UNT Dallas advises that your computer be equipped with the minimum system requirements listed on the first page of the syllabus.

If you have trouble accessing or using components of the course, try using Google Chrome browser. If you still experience technical difficulties, first, notify your instructor.
If the problem is still not resolved, call Distance Learning at the phone number listed on the first page of the syllabus. Also, no matter what browser you use, always enable pop-ups.
For more information see:

- UNT Dallas Canvas Technical Requirements: https://community.canvaslms.com/docs/DOC-10721
- Canvas Instructure Support & Unsupported Operating Systems: https://community.canvaslms.com/docs/DOC-10720

AI Policy:
UNT Dallas acknowledges the evolving capabilities of Artificial Intelligence (AI) technologies and their various effects on student writing and content creation. The Department of Natural Sciences takes a use-with-permission approach to AI. Students are only permitted to use AI technology in the creation of any course content if permitted by the course instructor. If the use of AI technology is detected, without specific instructor permission, the student will be deemed in violation of the plagiarism policy.