DEVELOPMENTAL BIOLOGY:
Syllabus SPRING TERM 2026 (in person course)

DEVELOPMENTAL BIOLOGY
SYLLABUS - BIOL 4330 & 5330

University of North Texas, Denton, Texas 76203
Time: 5:00 -7:50 pm Tuesdays Evenings
Location: BIOL A419

Professor & Instructor: Ione Hunt von Herbing, Ph.D.
Office: LSCA 253, Phone number: 940-565-3595,
Email : vonherbing@unt.edu
Office Hours: 3-5pm Tuesdays

Text Book references:

Developmental Biology, Thirteenth Edition. Michael J.F. Barresi & Scott F. Gilbert (2024) (required). The accompanying website, http://www.devbio.com/, can be searched by topic. (Required)

Also available as an eBook. Contact www.coursesmart.com

Other sources: If you are having difficulty understanding a concept, reading a second author's take on the topic can be remarkably clarifying and I encourage you to try this approach.

For background information on Cell Biology, consult Molecular Biology of the Cell, by Alberts et al., available online at the Bookshelf: http://www.ncbi.nlm.nih.gov/books/bv.fcgi?call=bv.View..ShowTOC&rid=cell.TOC&depth=2

Course Web Page: This syllabus, including the attached schedule, is subject to change as posted on the course web site on Canvas. Many essential course materials will be posted on the course web site.

Course Procedure:
Attendance: Attendance is expected at all lectures.
EXAMINATION AND GRADES: ALL EXAMS WILL BE TAKE-HOME & SUBMITTED THROUGH EMAIL TO: vonherbing@unt.edu
Undergraduate: The course grade will be based ONE MID-TERM (25%); ONE FINAL (40%), & ONE ORAL PRESENTATION (30%) of a peer-reviewed scientific paper (selected by the student) or other piece of writing and its presentation. Relevant to the topics covered in the course for discussion and (5%) for CLASS PARTICIPATION. Attendance will be taken in all classes and will go toward the participation mark. Exams will be based on ALL material covered in lectures, lecture notes reading assignments, handouts including journal articles.

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Graduate: Same as undergraduate, but with an added essay (**Maximum** 5 pages long on any topic in developmental biology (10%). Total mark for graduate students will be out of 110%.

Grading: All exam grades and other grades are recorded as letter grades. At the end of the course, final numerical averages are used to determine final letter grades. Percentages used to divide letter grades will be at or below the following values: A 90-100%, B 80-90%, C 70-80% D 60-70%. These dividing points can vary from year to year because the dividing points are often lowered to allow a reasonable distribution of letter grades. There is always at least one "A", and there are usually several.

Accommodations for students with learning disabilities: **Students with learning disabilities must inform the professor of measures needed to account for those disabilities by the end of the third class.**

Student Athletes: Students wishing that their course grades be released to advisors in the UNT athletics program must give the professor a signed dated letter indicating that wish and indicating the name and address of the person to whom the grades should be sent.

Expectations: The professor also assumes that the students want to learn and are willing to work in order to learn. Learning at the college level requires focused reading, daily review of lecture notes, and assimilation of the material covered. Students who want to learn and are willing to work will do well in the course

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Withdrawal: The instructor reserves the right to submit statements of withdrawal for students who do not take the first mid-term examination. Students withdrawing before the midterm withdrawal deadline will be given grades of W.

Classroom etiquette: Class meetings are intended for lecture on and discussion of the subject matter, and for students to ask questions about that material. Students are strongly encouraged to ask questions and to remember that there are no stupid questions. To allow the students to hear all the lectures and participate in all the discussions for which they are paying, no private personal conversations can take place during class. Failure to adhere to this basic maxim of civilized behavior, or repeated disruption of the class by some other means will result in removal from the class.

ODA Statement:
The University of North Texas makes reasonable academic accommodation for students with disabilities. Students seeking accommodation must first register with the Office of Disability Accommodation (ODA) to verify their eligibility. If a disability is verified, the ODA 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 accommodations at any time, however, ODA notices of accommodation should be provided as early as possible in the semester to avoid any delay in implementation. Note

that students must obtain a new letter of accommodation for every semester and must meet with each faculty member prior to implementation in each class. For additional information see the Office of Disability Accommodation website at http://www.unt.edu/oda. You may also contact them by phone at 940.565.4323.

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This statement and other ODA information is available on the ODA website http://www.unt.edu/oda

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Lecture Outline*: *(the instructor reserves the right to change the course content at any time)

Schedule of Classes

WEEKS 1 - 3 (Jan. 13, 20, 27)

PART 1 – TOOLKIT LECTURES - Patterns & Processes of Becoming: A Framework for Understanding Animal Development

Lecture 1 (Jan. 13): Generating New Cells and Organs & Specifying Cell Patterning
Barresi & Gilbert: Chapters 1 & 2

Lecture 2 (Jan. 20): Differential gene expression & mechanisms of cell differentiation
Barresi & Gilbert: Chapter 3

Lecture 3 (Jan 27): Cell-cell communication in development
Barresi & Gilbert: Chapter 4

WEEKS 4 - 8 (Feb. 3, 10, 17, 24)

PART 2 – Specification - Introducing Cell Commitment and Early Embryonic Development

Lecture 4 (Feb. 3): Stem cells & Introduction to Genetic of Axis Determination - Drosophila

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Gilbert & Barresi: Chapter 5 & 10

Lecture 5 (Feb. 10): Finish Axis Determination - Drosophila & Amphibians & Fish
Gilbert & Barresi: Chapter 10 & 12

Note: You are responsible for all the information in Chapters 9 and 11 even though we don't specifically cover invertebrate development in class (these chapters cover snails, nematodes, sea urchins & tunicates)

Lecture 6 (Feb. 17): Amphibians & Fish
Gilbert & Barresi: Chapter 12

MID-TERM WILL BE POSTED ON FEB. 17 & DUE March 3, 2025
Completed tests are emailed to vonherbing@unt.edu
– You have 2 weeks to complete take home

Lecture 7 (Feb. 24): Development in Birds, Mammals & Early Human Development
Gilbert & Barresi: Chapter 13 &14

WEEKS 9 – 11 (March 3, 17, 24)

PART 3 – Building with Ectoderm

Lecture 8 (Mar. 3) - Neural Tube Formation & Developmental Patterning
Gilbert & Barresi: Chapter 15

MARCH 9 – 13, 2026 SPRING BREAK

Lecture 9 (March 17): Brain Growth,
Gilbert & Barresi: Chapter 16

Lecture 10 (March 24): Neural Crest Cells and Axonal Specificity
Gilbert & Barresi: Chapter 17

WEEKS 11 – 12 (March 31, April 7)

PART 4 – Building with Mesoderm & Endoderm

Lecture 11 (March 31): Paraxial & Intermediate Mesoderm
Gilbert & Barresi: Chapter 19 & 20

Lecture 12 (April 7): Development of the Tetrapod Limb, Endoderm
Gilbert & Barresi: Chapter 21 & 22

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WEEKS 13 – 15 (April 14, 21, 28)

PART 5 – Postembryonic Development & Development in Wider Contexts

Lecture 13 (April 14): Metamorphosis, Regeneration and Aging
Gilbert & Barresi: Chapter 23 & 24

Lecture 14 (April 21): Development and the Environment: Biotic, Abiotic, & Symbiotic Regulation of Development
Gilbert & Barresi: Chapter 25

FINAL TAKEHOME EXAM POSTED ON CANVAS April 21th – DUE May 5, 2026 (in finals week) – Emailed to vonherbing@unt.edu

Lecture 15 (April 28): Evolutionary Developmental Biology & Epigenetics
Gilbert & Barresi: Chapter 26

GRADUATE ESSAYS ARE DUE May 5TH, 2026 WITH FINAL Emailed to vonherbing@unt.edu