

Biology 804P- Developmental Biology Spring 2022

Instructor: Dr. Nicholas Hobbs

Office: 220 Bruner Hall of Science

Office Hours: 11:00am – 12:00pm Monday, 930am – 10:30am Tuesday, and 1:30pm – 2:30pm Wednesday, or by appointment

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Email: hobbsjn@unk.edu

NOTE: Email is my preferred method of contact, if you inquire about a personal issue. Please give me 24 hours to respond to all emails. General questions about the course can be posted on the Frequently Asked Questions Discussion Board in Canvas.

COURSE MATERIALS

- Required: Developmental Biology (12th Edition), by Michael J. F. Barresi and Scott F. Gilbert
- Announcements, assignments, tests, and quizzes: All information for this class will be available on Canvas. You should check it regularly.
- Respondus Lockdown Browser REQUIRED/MANDATORY for all quizzes and tests! Please use the following link to download the Respondus Lockdown Browser:
<https://download.respondus.com/lockdown/download.php?id=477439341%20>.
More information is on Canvas. This will NOT work on a Chromebook or Linux computer.
- E-mail: All students MUST use their UNK email account so that I can reach them. All emails to Dr. Hobbs should be sent from your email account and **not** through Canvas.

COURSE INTRODUCTION

Developmental Biology focuses on the cellular and molecular mechanisms of animal embryogenesis, with an emphasis on comparisons of systems that illustrate common developmental strategies. It also serves as an integrative subject in biology by encompassing applications of biological disciplines from genetics and molecular biology to anatomy and evolution. Topics include fertilization, cleavage, gastrulation, axis specification, organogenesis, morphogens, and stem cells. This advanced course concerns the mechanisms responsible for building multicellular organisms. The continuum of development will be examined at the molecular and cellular levels.

COURSE OBJECTIVES:

- 1) Describe the molecular and cellular mechanisms involved in controlling development.
- 2) Identify the similarities and differences in development between different animal taxa.
- 3) Describe environmental factors that affect development.
- 4) Apply critical thinking skills to construct an argument using data to support the claim.

GRADING SCHEME:

	Points	Due Date
Introduction Post	5	Friday, January 28 th by 11:55 pm CST
Syllabus Discussion Board	5	Friday, January 28 th by 11:55 pm CST
Exam #1	100	Friday, February 25 th by 11:55 pm CST
Exam #2	100	Friday, April 8 th by 11:55 pm CST
Exam #3	100	Wednesday, May 11 th by <u>8:00 am CST</u>
Quizzes (12 @ 10 pts each)	120	Weekly from Monday 8:00 am CST to Friday 11:55 pm

Discussion Boards (6 @ 10 points each)	60	11:55 pm CST on the Friday of the week when discussion board ends
Group Participation (3 @ 20 points each)	60	11:55 pm CST on 2/25, 4/8 and 5/11
Grant Proposal	100	Wednesday, May 4 th by 11:55 pm
Total Points	650	

GRADE ASSIGNMENT: Grades will be assigned using the standard grading scale for the Department of Biology, as follows: A (93-100%), A- (90-92%), B+ (88-89%), B (83-87%), B- (80-82%), C+ (78-79%), C (73-77%), C- (70-72%), D+ (68-69%), D (63-67%), D- (60-62%), and F (below 60%). FYI, I do not round up grades. Therefore, if you have an 82.6%, you have earned a letter grade of a B-, not a B. Also, 1% = 6.8 points not 1 point. Grade assignments are final unless there is a calculation error.

LECTURE QUIZZES

Throughout the semester, you will be given twelve quizzes worth 10 points each. Quizzes will make up 120 points of your grade. The purpose of these quizzes is to make sure that you are keeping up with the course material. Quizzes occur every week there is not a scheduled lecture exam (see Course Outline section below).

LECTURE EXAMS

Each exam will consist of two parts. The first part will be taken on Canvas, is worth 30 points, and will consist of multiple choice, true-false, and matching questions. The second part of each exam will be a take-home portion, consisting of problems and short essays. The exams are not comprehensive, in that, the questions asked will specifically address material covered since the last exam or in the case of the first exam, material since the first day of class. Everyone is expected to take all of the exams. **You must take all three exams to receive full credit. If you miss an exam, you will automatically fail and receive a letter grade of an "F".** The dates for the exams are listed on the schedule. **MAKEUP EXAMS WILL BE GIVEN ONLY UNDER EXTREME OR EXTENUATING CIRCUMSTANCES, WHICH CAN BE DOCUMENTED! In any and all cases, the final validity and acceptability of any excuse for absence are at my sole discretion.** I also realize that most, if not all, of you work to support your education, in ALL cases, however, your work schedule should accommodate your class schedule, and not the reverse. You should schedule around work during the class registration process, and not try to mold your existing class schedule around your work. Lastly, do not ask to take an exam at a different time because you have two tests on the same day; this is not a valid reason.

DISCUSSION BOARDS: Throughout the semester, students will be presented with six discussion boards related to the topics listed on the course outline below. In these discussion boards, you will be separated into groups and asked to work together. This is a good practice for "real world" situations, in that, in science we rarely work alone. The Discussion Boards will be posted on Canvas. As a group, you will need to turn in one answer for the question(s) posed in the instructions for the discussion board. **NOT ALL QUESTIONS FOUND IN THE CASE STUDY WILL HAVE TO BE ANSWERED!** You are to discuss the case during the week and turn in the final document to me at hobbsjn@unk.edu. Do NOT submit through Canvas or Google Docs. **You are to format the document as follows:** 1" margins all around, 12pt Arial font, Double spacing, Group name and contributing students in the *right hand corner of the header* (if a student does not participate, do not give them credit!), Discussion Board # and Chapter in *left hand corner of the header*. **The document must contain 2 peer reviewed primary science research articles.** You do not have a limit to the

number of references used, but you must have a minimum of **2 peer-reviewed scientific primary research** journal articles. You may also want to consult OMIM (www.ncbi.nlm.nih.gov/sites/entrez?db=omim), NCBI's Genes and Disease (www.ncbi.nlm.nih.gov/disease/), & Genetic and Rare Conditions Site (www.kumc.edu/gec/support/) for your answer. These will not count as your 2 peer reviewed references, but you can use them and they should be cited as used. These are the only two websites allowed! Books and other websites are not counted as references. In the text, cite references should be by superscripted number¹. In your reference list, use the following format (note punctuation, capitalization, and abbreviation). The references are listed in the order they are cited in the paper, not in alphabetical or chronological order. They should be single spaced and this is the only part of the paper that is single spaced.

Journal articles:

1. Sinoway MP, Kitagawa K, Timsit S, Hashim GA, Colman DR. 1994. Proteolipid protein interactions in transfectants: implications for myelin assembly. J Neurosci Res 37:551-562.

Web page:

2. Converse PJ. 2006. Zinc finger protein 175; ZNF175. OMIM. Retrieved on August 1, 2018 from <https://omim.org/entry/601139>.

This is a good practice in having an **informed** opinion. Your answer(s) must be typed and sent to me by email. I will accept only one set of answers per group. I would **highly** recommend that you assign a different group leader for each week and have that person compile all of the answers for the group. All of your discussions to answer these questions should be made over Canvas so that I can witness the interactions among the group. I will not be grading these discussions, but will be grading the answers you turn in to me. Your group answers **must** be emailed to me by 11:55 pm CST on the Friday of the week when discussion board ends. For example, the first Case Study is due on Friday, February 4th by 11:55 pm CST. **LATE PAPERS WILL NOT BE ACCEPTED UNDER ANY CIRCUMSTANCES!** You will have a chance to grade your interactions/participation with each other as part of this process three times during the semester, after each pair of discussion topics. During each exam week, you will score yourself and everyone in your group on a 20-point scale using a rubric I will provide to you. I will compile the scores and the comments each of you make. The comments and scores will be returned to each of you, but in an anonymous fashion, so that problems do not arise. If you do not turn in the Group Participation Scores for yourself and your group mates by the due date, you will receive 0 out of 20 points as your score.

As this is an online format, tone and expression may not be readily discerned from your posts. Please avoid the use of online or text message abbreviations or symbols. Your posts should show respect for the views and experiences of your other classmates. I will remove any offensive posts from the board and these posts will not be considered for grading purposes.

GRANT PROPOSAL: Students will write a letter of intent (LOI) for a grant proposal associated with a topic discussed in lecture. The due date for this paper is listed in the Grading Scheme section above. More detailed instructions on the topic and how to write, format, and submit the LOI will be posted on Canvas by February 4th. Late papers will be penalized **20% per day late**.

COURSE OUTLINE:

Week	Beginning	Topic	Chapter(s)	Discussion Board
1	Jan 24	The Making of a Body and a Field Specifying Identity	1 2	
2	Jan 31	Differential Gene Expression	3	Discussion Topic #1
3	Feb 7	Cell-to-Cell Communication	4	
4	Feb 14	Stem Cells	5	Discussion Topic #2
5	Feb 21			Exam #1, Group Participation #1
6	Feb 28	Sex Determination and Gametogenesis	6	Discussion Topic #3
7	Mar 7	Fertilization	7	
8	Mar 14	NO CHAPTER, SPRING BREAK		
9	Mar 21	Snails, Flowers, and Nematodes	8	
10	Mar 28	The Genetics of Axis Determination in <i>Drosophila</i>	9	Discussion Topic #4
11	Apr 4			Exam #2, Group Participation #2
12	Apr 11	Sea Urchins and Tunicates	10	
13	Apr 18	Neural Tube Formation and Patterning	13	Discussion Topic #5
14	Apr 25	Neural Crest Cells and Axonal Specificity	15	
15	May 2	Development of the Tetrapod Limb	19	Discussion Topic #6
	May 9			Exam #3 , Group Participation #3

ACADEMIC INTEGRITY: UNK's policy is the maintenance of academic honesty and integrity is a vital concern of the University community. This policy is stated in the Graduate Catalog or at <http://catalog.unk.edu/graduate/academics/academic-regulations/expectations-in-the-classroom/academic-integrity-policy/>. Any student found in violation of this policy will be subjected to both academic and disciplinary sanctions. Violation of this policy includes Plagiarism, Cheating, Fabrication and Falsification, and Other Acts of Academic Dishonesty.

You are encouraged to make use of the online tools and resources provided at www.plagiarism.org/ to help you identify the various types of plagiarism, learn how to effectively paraphrase, as well as adequately cite your sources.

POLICY ON INCOMPLETES: Under very unusual circumstances an "Incomplete" may be assigned. To be considered for an "Incomplete" in Biology 804P:

1. You must submit the reasons you cannot complete the scheduled work. This must include a copy of your class schedule and description of your responsibilities outside the classroom. This should be done in writing and include confirmation from your employer when appropriate.
2. You must specify the assignments you have missed and a schedule of plans to complete them

University Policies Related to COVID-19: The university community is deeply concerned for the well-being of its students, faculty, and staff. Keeping each other as safe as possible will require commitment from each of us; failure to do so will literally place lives in danger. The full policy relating to mitigation of the spread of infectious diseases can be found at <https://www.unk.edu/coronavirus/>. Policies that apply to all courses (online, remote, blended, or face-to-face) include:

- Students shall monitor their health daily. No student shall attend classes in person while sick. Those who have had contact with positive-tested individuals or show COVID-19 related symptoms must have clearance from the Public Health Center prior to returning to face-to-face classes. There will be no penalties for missing classes for COVID-19 related absences. Students will still be responsible for course content through alternative attendance or other options arranged with the instructor.

Additional policies specific to face-to-face instruction include the following:

1. None for this course

Questions regarding COVID-19 should be directed to the Public Health Center unkhealth@unk.edu or 308-865-8254. Questions regarding the COVID-19 academic policy should be directed to Sr. Vice Chancellor Bicak at bicakc@unk.edu. Questions regarding department specific requirements should be directed to the chair of Biology, Julie Shaffer, at shafferj@unk.edu.

The above directions must be followed by everyone for the health and safety of our University. Students who do not comply may face disciplinary action from the university. Violations of any University or Campus Policy is a violation of the Student Code of Conduct.

Students with Disabilities

It is the policy of the University of Nebraska at Kearney to provide flexible and individualized reasonable accommodation to students with documented disabilities. To receive accommodation services for a disability, students must be registered with the UNK Disabilities Services for Students (DSS) office, 175 Memorial Student Affairs Building, 308-865-8214 or by email unkdso@unk.edu

UNK Statement of Diversity & Inclusion

UNK stands in solidarity and unity with our students of color, our Latinx and international students, our LGBTQIA+ students and students from other marginalized groups in opposition to racism and prejudice in any form, wherever it may exist. It is the job of institutions of higher education, indeed their duty, to provide a haven for the safe and meaningful exchange of ideas and to support peaceful disagreement and discussion. In our classes, we strive to maintain a positive learning environment based upon open communication and mutual respect. UNK does not discriminate on the basis of race, color, national origin, age, religion, sex, gender, sexual orientation, disability or political affiliation. Respect for the diversity of our backgrounds and varied life experiences is essential to learning from our similarities as well as our differences. The following link provides resources and other information regarding D&I: <https://www.unk.edu/about/equity-access-diversity.php>

Students Who are Pregnant

It is the policy of the University of Nebraska at Kearney to provide flexible and individualized reasonable accommodation to students who are pregnant. To receive accommodation services due to pregnancy, students must contact Sarah Mattson the Academic Success office at 308.865.8797. The following link provides information for students and faculty regarding pregnancy rights. <http://www.nwlc.org/resource/pregnant-and-parenting-students-rights-faqs-college-and-graduate-students>

Reporting Student Sexual Harassment, Sexual Violence or Sexual Assault

Reporting allegations of rape, domestic violence, dating violence, sexual assault, sexual harassment, and stalking enables the University to promptly provide support to the impacted student(s), and to take appropriate action to prevent a recurrence of such sexual misconduct and protect the campus community. Confidentiality will be respected to the greatest degree possible. Any student who

believes she or he may be the victim of sexual misconduct is encouraged to report to one or more of the following resources:

Local Domestic Violence, Sexual Assault Advocacy Agency 308-237-2599

Campus Police (or Security) 308-865-8911

Title IX Coordinator 308-865-8655

Retaliation against the student making the report, whether by students or University employees, will not be tolerated.

Problems/Questions

If you have questions then ask or come and see me or contact me via e-mail or phone. If you are having problems with the course come and see me before it is too late (not the week before your grant proposal is due or when the course is over).