BIOLOGY 474/573 – Principles of Developmental Biology
Course Syllabus: Spring 2018

Instructor: Dr. Deborah Stenkamp
Office: LSS 266D
e-mail: dstenkam@uidaho.edu
Office Hours: by appointment (usually right after class is best)

Course Meets: TTh, 2:00 – 3:15, LSS 163

Textbook: The following text is required. Most course material will be related to this text, although I (along with several guest lecturers) plan to use multiple resources.


Learning Outcomes:

Developmental biology is a diverse field of knowledge with practical and biotechnological implications for fields such as medicine and agriculture. Developmental biology encompasses embryology, as well as regenerative biology, stem cells, and aging. In this course we will examine the basic animal models and principles of development, with some discussion of the underlying molecular and genetic mechanisms. Particular emphasis will be placed on the key experiments, both historical and contemporary, that led to our current understanding of the development of multicellular organisms.

The course will always start on time. Please turn off any device that might make a noise.
Material will be presented using PowerPoint and through some step-by-step generation of illustrations representing developmental processes. We will also access other resources to view animations and video.

Class notes, assignments, and other course information can be found on the BBLearn course site.

All notes will be posted by 5 pm the day prior to class meeting time. If they are not available, notify me and I will email them to everyone in the course.

Exams, Assignments and Grading:

Course grades will be based on four in-class exams, a paper critique, and an essay describing a seminar related to developmental biology. There will not be a cumulative final; rather, the fourth in-class exam will be scheduled on the day of the final. Exams will consist of a combination of multiple choice questions, fill-in-the-blank style questions, along with some short essay questions. Some of the latter will require you to generate illustrations or provide information related to an illustration. Exam questions are designed to test your understanding of the material and your ability to apply this understanding to novel situations. Exams will include material covered by guest lecturers. The study questions at the end of each chapter in the Wolpert et al. text serve as useful guides for the depth at which you are expected to understand the material.
Please take the time to double-check that your score was summed correctly on any exam or assignment. If there was an error, see me and I will correct it. If you believe that your answer was correct (or more correct) than it was graded, please explain why you think so, in writing, then see me during office hours or by appointment and we'll discuss it.

You may request a make-up exam date/time only if you have 3 exams on the same day. Please bring syllabi for other courses to verify. Absence from exams will only be excused for reasons of illness, family emergency or conflict with an official University function. People with excused absences during the exam period must notify me in advance. Failure to notify me in advance will result in you NOT being allowed to make-up the exam. Scores will not be curved. Letter grades are awarded based on the following scale:

- A 90 – 100%
- B 80 – 89.9%
- C 70 – 79.9%
- D 60 – 69.9%
- F 0 – 59.9%

Two writing assignments are required. The first is a 2-3 page critique of a paper from the original literature. More information regarding this assignment will be posted, and discussed early in the course. The second assignment consists of a brief essay, approximately 3 pages, on the topic of a local seminar related to developmental biology. Early in the semester I will provide a list of recommended seminars, but you get to select the seminar. Suitable seminars appear as part of our Biological Sciences Departmental seminar series and the Workshop series for the UI-WSU Center for Reproductive Biology (viewable on the UI campus via PolyCom). More information regarding this assignment will be posted as well.

Grading scheme:

<table>
<thead>
<tr>
<th>Bi 474</th>
<th>Points</th>
<th>Subtotal</th>
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<tbody>
<tr>
<td>In-class exams</td>
<td>100 ea, X 4</td>
<td>400</td>
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<tr>
<td>Paper critique</td>
<td>50</td>
<td>50</td>
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<tr>
<td>Essay related to a seminar</td>
<td>50</td>
<td>50</td>
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<td><strong>Total:</strong></td>
<td></td>
<td><strong>500</strong></td>
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# COURSE SCHEDULE SPRING 2018

Schedule subject to change

<table>
<thead>
<tr>
<th>Day/date</th>
<th>Instructor</th>
<th>Topic</th>
<th>Wolpert &amp; Tickle</th>
<th>Assignments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Th Jan 11</td>
<td>Stenkamp</td>
<td>Introduction and history</td>
<td></td>
<td></td>
</tr>
<tr>
<td>T Jan 16</td>
<td>Stenkamp</td>
<td>Concepts</td>
<td></td>
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<tr>
<td>Th Jan 18</td>
<td>Stenkamp</td>
<td>Experimental approaches</td>
<td></td>
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<tr>
<td>T Jan 23</td>
<td>Stenkamp</td>
<td>Development of the animal body plan: <em>Drosophila</em></td>
<td>Chapter 2</td>
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</tr>
<tr>
<td>Th Jan 25</td>
<td>Stenkamp</td>
<td>Development of the animal body plan: Vertebrate gastrulation and germ layers</td>
<td>Chapters 4 and 5</td>
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</tr>
<tr>
<td>T Feb 1</td>
<td>Stenkamp</td>
<td>Development of the animal body plan: Neural induction and neurulation</td>
<td>Chapter 5</td>
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<tr>
<td>T Feb 6</td>
<td>Stenkamp</td>
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<td>Th Feb 8</td>
<td>Stenkamp</td>
<td></td>
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<tr>
<td>T Feb 13</td>
<td></td>
<td>Exam 1: covers material from Jan 11 – Feb 6</td>
<td>Deadline for identifying paper for critique</td>
<td></td>
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<tr>
<td>Th Feb 15</td>
<td>Stenkamp</td>
<td>Development of the animal body plan: Somitogenesis</td>
<td>Chapter 5</td>
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<tr>
<td>T Feb 20</td>
<td>Stenkamp</td>
<td>Differentiation and stem cells in animals</td>
<td>Chapter 8</td>
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<td>Th Feb 22</td>
<td>Stenkamp</td>
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<td>T Feb 27</td>
<td>Guest: Hong</td>
<td>Stem cells in plants</td>
<td>Chapter 7</td>
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<tr>
<td>Th Mar 1</td>
<td>Guest: Hong</td>
<td>Plant development: flowers</td>
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<td>T Mar 6</td>
<td>Guest: Fuerst</td>
<td>Cell adhesion and other developmental mechanisms</td>
<td>Chapter 9</td>
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<td>Th Mar 8</td>
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<td>Exam 2: covers material from Feb 8 – Mar 1</td>
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<td>14-28</td>
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<td>SPRING BREAK</td>
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<td>T Mar 11</td>
<td>Stenkamp</td>
<td>Reproductive biology I: germ cells</td>
<td>Chapter 10</td>
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<td>Th Mar 13</td>
<td>Stenkamp</td>
<td>Reproductive biology II: fertilization</td>
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<td>T Mar 18</td>
<td>Stenkamp</td>
<td>Reproductive biology III: determination of the sexual phenotype</td>
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<td>Th Mar 29</td>
<td>Stenkamp</td>
<td>Organogenesis: limbs</td>
<td>Chapter 11</td>
<td>Paper Critique due</td>
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<td>T Apr 3</td>
<td>Graduate Student Presentations</td>
<td>Organogenesis: Internal organs, vasculature</td>
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<td>Th Apr 5</td>
<td>Guest: Murdoch</td>
<td>Growth and muscle development</td>
<td>Chapter 13</td>
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<td>T Apr 10</td>
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<td>Exam 3: covers material from Mar 6 – Apr 3</td>
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<td>Th Apr 12</td>
<td>Stenkamp</td>
<td>Organogenesis: nervous system 1</td>
<td>Chapter 12</td>
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<td>T Apr 17</td>
<td>Stenkamp</td>
<td>Organogenesis: nervous system 2</td>
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<tr>
<td>Th Apr 19</td>
<td>Stenkamp</td>
<td>Organogenesis: nervous system 3</td>
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<td>T Apr 24</td>
<td>Stenkamp</td>
<td>Regeneration and other responses to damage</td>
<td>Chapter 13</td>
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<td>Th Apr 26</td>
<td>Stenkamp</td>
<td></td>
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<tr>
<td>T May 1</td>
<td>Guest: Holmes</td>
<td>Aging</td>
<td>Chapter 13</td>
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<tr>
<td>Th May 3</td>
<td>Guest: Crespi</td>
<td>Metamorphosis, and eco-evo-devo</td>
<td>Chapters 13 and 15</td>
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<tr>
<td>T May 8 12:30-2:30</td>
<td></td>
<td>Exam 4: covers material from Apr 5 – May 3</td>
<td>Seminar Summary due</td>
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Withdrawal from Course:
January 24, 2018: Last day to withdraw without a W
March 30, 2018: Last day to withdraw

Academic Dishonesty:

Unfortunately, recent events obligate me to include the following written warning. Acts of cheating or plagiarism in this class will not be tolerated. It will result in zero points for that assignment and may ultimately result in you failing this class. All persons involved will be held accountable.

Cheating refers to the acquisition of answers to test questions in a dishonest fashion.

Plagiarism is defined as i) the representation of another persons work as your own, in its entirety or with slight changing of wording, ii) the use of writing from published sources without citing the author(s) or iii) downloading material from the internet and presenting it as your own work.

UI Faculty-Staff Handbook: http://www.webpages.uidaho.edu/fsh/2300.html outlines the expected code of conduct for students at the University of Idaho. Article II addresses academic honesty of students.

CENTER FOR DISABILITY ACCESS AND RESOURCES REASONABLE ACCOMMODATIONS STATEMENT:

- Reasonable accommodations are available for students who have documented temporary or permanent disabilities. All accommodations must be approved through the Center for Disability Access and Resources located in the Bruce M. Pitman Center, Suite 127 in order to notify your instructor(s) as soon as possible regarding accommodation(s) needed for the course.
- Phone: 208-885-6307
- Email: cdar@uidaho.edu
- Website: www.uidaho.edu/current-students/cdar