This course provides an introduction to fundamental concepts in animal physiology. You will gain a deep mechanistic understanding of how the human body functions via the use of examples from multiple animal species. Prerequisites: BIOS 100 and BIOS 101.

Instructor: Dr. David Featherstone (def@uic.edu).

I don’t offer office hours, since I think these disproportionately benefit students with a lot of free time. What about the students who work, volunteer, or have families? I’d rather that students ask questions in class where everyone can benefit from the discussion. However, if you need to meet with me about something that can’t easily be discussed in class, don’t be afraid to talk to me after class or send me an email. Please use your UIC email address. Email from other addresses can be (and often is) filtered as spam by the UIC email system, and therefore there’s no guarantee that it will be received.

This class meets Tuesdays and Thursdays 9:30AM-10:45AM, in room SEL 4289.

Required textbook: “Principles of Animal Physiology, 3rd edition”, by Moyes et al. Be sure to get a copy of the book that comes with access to the companion website. We’ll be using the companion website for homework and exam questions. The companion website should be no extra cost. (We will NOT be using ‘Mastering A&P’ or clickers. Don’t buy those for this class.)

Exams:

100% of your grade will be determined by exam scores. There will be five exams:

Exam 1: Thursday, September 8, 2016
Exam 2: Thursday, September 29, 2016
Exam 3: Thursday, October 20, 2016
Exam 4: Thursday, November 10, 2016
Exam 5: Wednesday, December 7, 2016 (During final exam week) -- 10:30AM-12:30PM.

When calculating your grade, the lowest exam score will be dropped. Therefore, your top four exams are each worth 25% of your final grade. I know that this seems scary, but remember that your worst score is dropped. And by the time you get to each exam you should be well prepared by homework and class.

The exams will be a mix of quantitative problems, multiple choice, short answer, and essay questions. Every exam will be “cumulative”; you will always need to remember things that you learned earlier in the class. You can skip an exam, but you’ll still need to learn everything covered in this class.

Note that the actual points for each exam do not matter. The only thing that matters is the percent of the total points scored. An exam could be 5 points or 1000 points, but it will still count for 25% of your final grade (after your lowest score is dropped).

Throughout the semester, Blackboard will calculate and display your letter grade and average exam score based on all the exams taken so far. Blackboard automatically drops the lowest exam score for
you, so the letter grade you see will always be accurate. (and this is also why Blackboard will not be able to display your letter grade until after you’ve taken at least two exams). Thus, you should always know exactly how well you are doing in the class and how far away from the grade cutoffs you are. At the end of the semester, the letter grades displayed in Blackboard will be used to assign final grades. There will be no curve or rounding. What you see is what you get. If the grade displayed by Blackboard is not what you’d like as a final grade, you should immediately begin work to change it. Do not wait. If you think a grading or grade entry mistake has been made, you must talk to Dr. Featherstone BEFORE THE NEXT EXAM. No changes will be considered after that.

Missed exams: If you don’t take an exam, you will get a zero for that exam. But remember that there will be five exams in this class, and you only need to take four. So don’t worry too much if you have a family obligation or something. If you want to arrange a make-up exam, then you need to contact Dr. Featherstone immediately and be prepared to provide proof that the absence was unforeseen and unavoidable. According to university policy, students who wish to observe their religious holidays must notify the instructor by the tenth day of the semester. Check the exam dates and your religious calendar now.

Final letter grades will be assigned as follows:

- 80% and above = A
- 70-80% = B
- 60-70% = C
- 50-60% = D
- <50% = F.

This scale will not be adjusted and scores will not be rounded or otherwise adjusted at the end of the semester. 69.99999999% is still a C. It’s not fair to change the grade of some students just because they’re close to the cutoff and the instructor likes them. I’ll tell you what you need to know and help you get there. Beyond that, your grade in this class is not up to me — it is up to you.

Homework: Homework assignments will be provided, but none of it will be collected or graded. Despite that, I strongly suggest that you do all of the homework. Exam questions will be based directly on homework assignments. Seriously. I’m not joking. You will see homework questions on the exam. The best way to prepare for the exams is come to class and do the homework. Form a study group.

Extra credit: There is no way to get ‘extra credit’ in this class. Sorry. Do your best on every exam.

Check the BIOS 222 Blackboard site often. Lecture slides and important information will be distributed via Blackboard.

Accommodations for disabled students: The University of Illinois at Chicago is committed to maintaining a barrier-free environment so that individuals with disabilities can fully access programs, courses, services, and activities at UIC. Students with disabilities who require accommodations must be registered with the Disability Resource Center (DRC). Please contact DRC at (312) 413-2183 (voice) or (312) 413- 0123 (TDD). More information: http://drc.uic.edu/guide-to-accommodations/

Attendance Policy: Attendance is strongly recommended, but not required. If you want to pay for a class and not use it, that’s your stupid decision. We will discuss homework and future exam questions in class.
Classroom behavior: If you want to use your cell phones or laptop to access the internet while in class…. Go ahead. I want you to practice finding and using publicly-available information. Fact-check me during class. But remember that there are other people around you trying to learn. Make sure that your phone isn’t ringing or continually buzzing with text alerts. If you tend to type loudly and annoyingly, you might be asked to change. In general, the rule is: Don’t be rude and annoying. Anything else is fine.

If you have a problem with an instructor or other students: I am here to help. But if for any reason you feel like you can’t go to me, there are other options. UIC is committed to academic freedom, equal opportunity, and human dignity. Freedom from discrimination is a foundation for all decision making at UIC. Students are encouraged to study the University’s “Nondiscrimination Statement”, “Public Formal Grievance Procedures”, and web pages of the Office of Access and Equity: http://oae.uic.edu/.

Cheating: Most students don’t cheat. I work hard to help students who are struggling, but I can’t help people that lie to me about how well they know things. Therefore, I assume that everyone is honest. However, fairness and university regulations require action when that trust is broken. Students caught cheating will receive a failing grade and the case will be transferred to the Dean's office. More information about that process is here: http://dos.uic.edu/conductforstudents.shtml

Course evaluations: At the end of the semester, you will receive an email asking you to complete course evaluations. These evaluations are important. They go in the instructors ‘permanent file’ and are used when the administration determines promotions and pay raises. The administration focuses on the numbers, but if you really want change, the best way to help is by writing comments. I read them all carefully. For more information, please refer to the UIC Course Evaluation Handbook: https://faculty.uic.edu/course-evaluations/ Also: Don’t be afraid to give me suggestions at about the class any time. You can post anonymously in the Blackboard BIOS 240 course discussion board.

Course topics (chapters and page numbers are from Principles of Animal Physiology, 3rd Edition):

First, we will consider what it means to be alive. Organisms are self-sustaining collections of physical material. As self-sustaining collections of material, all animals must gather certain types of molecules from the environment. This is eating, digestion, and nutrient absorption (Ch 14; Ch 3 pgs 51-80). But how do animals accumulate only the things that they need and at the same time get rid of the things that they don’t need? Respiration (Ch 11) allows animals to gather oxygen while getting rid of carbon dioxide and controlling blood pH. Animals that live in salty and/or dry environments need to get rid of salt and accumulate water. Animals that live in watery environments or environments without much salt need to get rid of water and accumulate salts. The mechanisms by which animals do these things is ion and water balance (Ch 13). The same mechanisms that control ion and water balance can also be responsible for excretion (Ch 13), in which animals get rid of chemicals that they don’t want. In addition to controlling the types and amounts of different molecules inside them, animals must also control their temperature. This is thermoregulation (Ch 15). All of these processes involve movement of things around inside the animal’s body. This is circulation (Ch 9). If you are starting to think that staying alive is mostly a struggle to sustain your chemical and physical self despite a harsh and changing environment, you are right. This struggle is made easier by the ability to move. If an animal needs something from the environment, it can go to where there’s more of that thing. On the other hand, if an animal is getting too much of something from the environment, it can move to where there is less of that thing. How do animals sense where to go and move there? First, they have specialized
cells that can send signals very rapidly. These cells work via electrical and chemical signaling (Ch 3 pgs 81-83; Ch 5). Animals also have cells and organs that are adapted for sensation (Ch 7). Sensation allows animals to ‘know’ what needs to happen. But animals still need to coordinate all the systems in the body to make necessary changes. This coordination is done by the endocrine (Ch 4) and nervous system (Ch 8). Then, finally, the animal relies on muscle function and movement (Ch 6; Ch 12).

We will spend several class periods discussing each topic (underlined, above). These topics are discussed in the textbook, as indicated. You should read the section of the book corresponding to each topic BEFORE we discuss the topic in class. You will also be assigned homework for each topic. You should do the homework, because exam questions will be based on the homework. One piece of homework, for example, might be to learn in detail how your favorite food is digested, from breakdown in the digestive system to uptake of the molecules in the gut. On the exam, you might be asked to describe how your favorite food is digested, from breakdown in the digestive system to uptake of the molecules in the gut. If you’ve done the homework, all you’ll need to do is write down what you learned. Easy. But if you haven’t done the homework… Good luck.

In general, the course will cover the topics in the order listed above. But information from each topic will also be woven together to help you better understand how animals solve physiological problems and stay alive. This approach is called ‘interleaving’, and it’s a far superior way to understand a subject compared to ‘one topic after another’ approach. This is why all the exams for this course are cumulative; each topic will be spread throughout the entire class.

Watch this video: https://vimeo.com/169193980 The video explains why this course is structured the way it is, and gives excellent advice for learning any subject.

### Fall Semester 2016

<table>
<thead>
<tr>
<th>Date</th>
<th>Event</th>
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<tbody>
<tr>
<td>August 24, M</td>
<td>Instruction begins.</td>
</tr>
<tr>
<td>September 2, F</td>
<td>Last day to complete late registration; last day to add a course(s) or make section changes; last day to drop individual courses via Student Self-Service without receiving W (Withdrawn) grade on academic record. Last day to submit Withdraw from Term request via Student Self-Service and receive 100% cancellation of tuition and fees.</td>
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<tr>
<td>September 5, M</td>
<td>Labor Day holiday. No classes.</td>
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<tr>
<td>September 12, Sa</td>
<td>CampusCare Waiver deadline.</td>
</tr>
<tr>
<td>October 28, F</td>
<td>Last day for undergraduate students to use optional late drop in college office and receive grade of W on academic record.</td>
</tr>
<tr>
<td>November 24–25, Th–F</td>
<td>Thanksgiving holiday. No classes.</td>
</tr>
<tr>
<td>December 2, F</td>
<td>Instruction ends.</td>
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