

Animal Physiology (Bio 350)

Fall 2011

Lecture Instructor: Dr. Robin Cooper

Email: RLCOOP1@email.uky.edu

If you email me, please allow up to 48 h for a response. Be sure to include **BIO 350** in the subject line of the email so the email will not be mistaken for junk mail.

Phone: (859) 257-5950

Office Location: Room 226 Biology

Website: <http://web.as.uky.edu/Biology/faculty/cooper/default.htm>

Laboratory Instructor: Dr. Melody Danley

Email: mlda227@uky.edu

If you email me, please allow up to 48 h for a response. Be sure to include **BIO 350** in the subject line of the email so the email will not be mistaken for junk mail.

Office hours: Immediately after lab, and by appointment.

Office Location: Room 216A Biology (I will be moving offices mid-semester to 200A, right next to the physiology teaching lab)

Graduate Teaching Assistants

Mr. Cliff Harpole, ceharpole@uky.edu

Ms. Rachel Holsinger, rcholsinger@uky.edu

Ms. WenHui Wu, wuwenhui2@gmail.com

General Course Information

Credits: 4 credit hours

Lecture Location: Room 107 Biology

Lecture Time: Tuesdays and Thursdays 8:00 to 9:15 AM

Lab Location: Room 202 Biology

Lab Times vary as follows:

Section 001: 8-10:50 Monday (Mr. Cliff Harpole ceharpole@uky.edu)

Section 002: 11-13:50 Monday (Ms. Rachel Holsinger, rcholsinger@uky.edu)

Section 003: 14-16:50 Monday (Ms. WenHui Wu wuwenhui2@gmail.com)

Section 004: 8-10:50 Wednesday (Mr. Cliff Harpole ceharpole@uky.edu)

Section 005: 11-13:50 Wednesday (Ms. Rachel Holsinger, rcholsinger@uky.edu)

Section 006: 14-16:50 Wednesday (Ms. WenHui Wu wuwenhui2@gmail.com)

Students must attend only that lab section in which they are officially enrolled. If you are absent for your regularly scheduled lab time, you may not "just show up" for a different section to make-up the missed lab. If you show up unannounced and without instructor consent for a different lab section, you will be asked to leave.

Course Description: An introduction to the basic principles of animal physiology. An elementary discussion of the major vertebrate organ systems including nutrition, metabolism, respiration, circulation, excretion, muscle contraction, peripheral and central nervous system, and endocrine function emphasizing homeostasis. Lecture, three hours; laboratory, three hours.

Course Prerequisites: BIO 150-153 or equivalent introductory biology sequence, BIO 315, and CHE 105, CHE 107.

Official Course Text

Eckert Animal Physiology: Mechanisms and Adaptations, Fifth Edition, by David Randall, Warren Burggren, and Kathleen French.

<http://www.whfreeman.com/newcatalog.aspx?isbn=0716738635>

Other Course Materials

You will need a scientific calculator for lecture and laboratory activities. A calculator should be brought to all lectures and labs. Use of the calculator function on a cell phone or computer is not acceptable, and will not be allowed during quizzes or exams.

There is no separate lab manual to purchase. All lecture and lab hand-outs are available for download by accessing the course website. Bio 350 Web Page (home page):

<http://web.as.uky.edu/Biology/faculty/cooper/bio350/TEACHING350FALL2011.htm>

Organization of Bio 350 Animal Physiology: This course includes both lecture and lab components. The lecture content is organized, presented and overseen by Dr. Robin Cooper. The laboratory content is organized and overseen by Dr. Melody Danley. In addition, each laboratory section has one TA (graduate teaching assistant) that will help guide students through the hands-on portion of the lab, as well as grade all lab submissions. Each lab section has been set-up with a separate lab web page where collected lab data will be posted. This is the data that should be used for the lab report write ups (see below). The data will also be discussed in lecture, and may be used during lecture exams. Content presented in lecture and laboratories are expected to be integrative such that content on quizzes in lecture or the lab can be mixed. No laboratory section will have an advantage over the others as quizzes are different for each section and lecture exams are constructed so as not to cover content that particular sections might not have been exposed to.

The "manual" for the lab exercises will be posted online within the web pages for each experiment. There is no separate lab manual to purchase. You will be responsible for printing out or having, in some means, the protocol to use for each laboratory period. Hard copies will not be provided. We cannot guarantee that the laboratories will have internet access during the lab period, so come prepared with a hard copy.

BIO 350 Grade Progress

Grades for all exams, labs reports, journal submissions, and quizzes will be made available through Blackboard. Space is also provided in the table below for you to track your progress through the course.

Item	Max point value	Your Points Earned
Exam 1	100	
Exam 2	100	
Exam 3	100	
Exam 4 (Final Exam)	150	
Lab Quizzes	40	
Lab Reports	30	
Journal Manuscript	30	
Lab Attendance/participation	30	
Total Points for Course	580	

Final course are assigned based on the total points accumulated during the semester. Final course grades are assigned as follows:

522 points to 580 points = A

464 points to 521 points = B

406 points to 463 points = C

348 points to 405 points = D

Less than 348 points = E

Components of the grade

Mid-semester Exams 1, 2, and 3: Exams will cover material from lectures, assigned readings, associated labs, and other assigned topics. Exams dates are given on the topical outline below. Mid-semester exams are not cumulative. Content for the exams comes from both lecture and lab material, and may be composed of multiple choice questions, short answer, essay, and/or fill-in-the-blank questions. Scantron forms will be provided for you. Bring a #2 pencil and your UK ID with you to each exam. **NOTE: You might not be**

permitted to take an exam if you do not have your UK ID with you. Exam results and answer keys will be posted on Blackboard following the exam date.

Final Exam: The final exam (Exam 4) is cumulative and will cover any and all material from the entire semester. The final exam will be composed of multiple choice questions, short answer, essay, and fill-in-the-blank questions. Content for the exam will come from both lecture and lab material.

Lab Quizzes: Each lab exercise has a web page associated with it. On the web page one will find movies, protocols to conduct the laboratory exercises, and hand-outs, and other resources to download. It is expected that you will view the movie and laboratory protocols prior to coming to the lab period. Throughout the semester, approximately 10 unannounced quizzes will be given. Each quiz will address content from the purpose of the laboratory exercise and the basics of how the lab activity will be conducted.

Lab Quizzes are given during the first 10 minutes of lab. If you are late and the quiz is in progress, you will not be given extra time. If you arrive more than 10 minutes late to lab, you will not be permitted to take the quiz. Quizzes are not announced in advance. Quizzes will be normalized to equal 40 points, Quizzes are worth 5 points each approximately, depending on the number of labs conducted. The two lowest quiz scores will be dropped.

Lab Reports: Reports are collected for every lab completed during the semester. In general, completed reports are due at the start of lab the following week. Each report should include introduction, methods, results and discussion sections (two page minimum, five page maximum), plus any summarizing graphs or tables. All work must be computer generated, and properly formatted. Statistical analysis is REQUIRED and discussion of the analysis is expected. No hand written reports (including graphs/tables) are allowed. Students that miss a lab as a result of an unexcused absence, or those failing to provide proper documentation for absences, or those that do not submit work by the submission deadline will not be allowed to make-up the missed work, submit a lab report for credit, or submit work late. Late assignments submitted as a result of unexcused absences will not be accepted. Such submissions (if submitted anyways) will receive an automatic **zero points!** All lab reports must be submitted online through the Safe Assign link available on Blackboard. A separate link will be made available for each lab report due. After the deadline for the report has passed, the link is automatically deactivated, and is no longer available. If you are unable to successfully submit your report through Safe Assign, it is your responsibility to email a copy of the report in MS Word format, to your TA BEFORE THE DEADLINE has passed. Late submissions will not be accepted. Failure to submit your weekly lab reports will negatively affect your lab attendance points, and may negatively affect your lab report points.

A sample report will be provided at the start of the semester. Reports will be used (in part) to assign lab attendance points at the end of the semester. In addition, submissions from three randomly chosen labs will be graded for lab report points. Each graded report will be worth up to 10 points. (30 points total)

Journal Manuscript. There will be one formal journal manuscript write-up due this semester, worth up to 30 points. The manuscript is intended to mimic the research manuscript writing and submission processes required for scientific publication, and will utilize results collected during one of the lab activities. The manuscript must be written independently (no group submissions) and is due no later than Tuesday, November 22, 2011. In addition, one lab session (October 17, Oct 19) will be dedicated to demonstrating and practicing proper formatting of the manuscript, as well as data to be used by each lab section. The writing format described by the Journal of Comparative Biochemistry and Physiology - Part A: Molecular & Integrative Physiology will be used. Go to the journal's web page and look up information for authors at: http://www.elsevier.com/wps/find/journaldescription.cws_home/525464/description

The "guide to authors" provided by the journal provides the formatting guidelines that must be followed for this assignment. Additional information for this assignment will be made available through lab and posted on the course website.

Lab Attendance/Participation: Lab attendance and participation is mandatory for this course. Attendance will be taken every lab by the TA's. It is your (the student's) responsibility to ensure you sign-in each week with your TA, complete all activities, clean-up your workstation, and submit all necessary work to receive credit. Students attending and completing all labs (no absences and all work completed) will receive 30 attendance/participation points towards their overall grade for the course. Students are **deducted 15 points**

for each absence or incomplete/unsubmitted lab work, up to 30 points. Students must complete the lab assignment, submit completed labs on time, and participate in all aspects of the lab to receive attendance/participation credit. Students can also lose up to 5 attendance/participation per lab for failing to participate during the lab, clean-up after the lab, or for demonstrating inappropriate behavior during lab, at the discretion of the instructor or lab TA.

General Course Policies

1. Return of Graded Materials

Graded materials will not be handed back during lecture, nor will they be left in the halls or any other public location. To maintain privacy and minimize class disruption, all graded materials (other than online content) are available by stopping by my office during normal office hours, or immediately following lecture. Other pick-up times are available by appointment. In accordance with University procedures, graded materials will be held for up to one semester after the end of the course. Final exams are not returned: however, students are free to stop by my office to look over their exam.

2. Questions Regarding Scores or Grades

If you have a concern regarding your posted score/grade for an assignment or exam, you have 1 week (7 days) from the day the scores are posted to contest that score. After one week, the score will not be changed. It is your responsibility to check your scores and follow-up in a timely manner. We are happy to fix any errors or irregularities in grades within reason. If you feel that there was an error in grading your exam, you must submit your request in writing, detailing which questions you feel are in error and why your answer(s) should receive additional credit. For instance, if there is information in the text book that supports your answer, quote the information from the book and provide the page and paragraph number. All requests must be submitted within 1 week of posting of the answer key in order for the scores to be changed.

3. Rescheduling Lecture Exams or Labs

Students with documented excusable absences are allowed to make up missed exams or lab activities according to the following guidelines: For excused non-emergencies, students must notify the instructor at least 1 week (7 days) before the excused absence.

For lecture related excused, non-emergency absences, the student must notify Dr. Robin Cooper at least 7 days in advance of the absence.

For lab related absences, the student must notify either their TA or Dr. Melody Danley at least 7 days in advance of the absence. Make-up labs are typically scheduled for Friday morning of the same week during the excused absence. After this point, the lab materials will be put away and it may not be possible to make-up the lab.

For emergency-related absences, students must notify the lecture or lab instructor no later than 48 hours after the missed exam or lab. Acceptable documentation must be submitted no later than 3 days, after missed assignment/exam. Excused, missed work must be completed within one weeks (7 days) of the original scheduled due date, unless other arrangements have been made with the TA/instructor. For lecture, if you miss an EXAM #1, 2 or 3, you will have to make up the missed exam in the hour immediately following the 1st hour of Exam #4. These make-ups will be comprehensive over the entire textbook.

If you miss two lecture exams you will be encouraged to take an incomplete in the course.

In all cases, you must present a doctor's note, or other (as outlined above) to the instructors within 3 calendar days of missing any exam.

There is no make-up exam for Lecture EXAM #4 (Final). If you miss the final, you will not be able to take an incomplete in the course without discussing with us the reasons for missing the exam, and then filling out and signing an incomplete form with the department. If we feel an incomplete is warranted, we will determine the conditions necessary to satisfy the incomplete at that time.

For excused and documented absences, this course adheres to the University policy as follows:

- A. Illness of the student or serious illness of a member of the student's immediate family. The instructor shall have the right to request appropriate verification.
- B. The death of a member of the student's immediate family. The instructor shall have the right to request appropriate verification.
- C. Trips for members of student organizations sponsored by an academic unit, trips for University classes, and trips for participation in intercollegiate athletic events. When feasible, the student must notify the instructor prior to the occurrence of such absences, but in no case shall such notification occur more than one week after the absence. Instructors may request formal notification from appropriate university personnel to document the student's participation in such trips.
- D. Major Religious Holidays. Students are responsible for notifying the instructor in writing of anticipated absences due to their observance of such holidays no later than the last day for adding a class.
- E. Any other circumstances which the instructor finds reasonable cause for nonattendance. Students missing class-work due to an excused absence bear the responsibility of informing the instructor about their excused absence within one week following the period of the excused absence (except where prior notification is required), and of making up the missed work. The instructor shall give the student an opportunity to make up the work and/or the exams missed due to an excused absence, and shall do so, if feasible, during the semester in which the absence occurred.

Failure to follow this procedure on the part of the student will result in an automatic **zero points** for the missed assignment or exam! Special note: **Make-up exams will be composed of a different set of questions compared to the in-class exams given, and will contain short-answer and short essay questions.**

4. Punctuality

Please do not arrive late or leave early. This is disruptive for me and for the other members of the class. If you must enter late or leave early to lecture, please sit near the exits to minimize class disruption. Get your materials out and be ready to take notes **before** you enter the classroom (i.e. do not rummage through your book bag looking for paper and a pen after you've come in 20 min late). For lab, quizzes are given during the first 10 minutes. If you are late, you will not be given extra time.

5. Academic Honesty

Cheating or committing acts of plagiarism on any graded material is not tolerated in this course! All students are expected to uphold a basic standard of academic honesty as outlined by the University of Kentucky Senate Rules (<http://www.uky.edu/USC/New/SenateRulesMain.htm>).

University Senate Rules Regarding Plagiarism (SR 6.3.1)

– **Plagiarism:** All academic work, written or otherwise, submitted by students to their instructors or other academic supervisors, is expected to be the result of their own thought, research, or self-expression. In cases where students feel unsure about a question of plagiarism involving their work, they are obliged to consult their instructors on the matter before submission.

When students submit work purporting to be their own, but which in any way borrows ideas, organization, wording or anything else from another source without appropriate acknowledgment of the fact, the students are guilty of plagiarism.

University Senate Rules Regarding Cheating (SR 6.3.2)

--**Cheating** is defined by its general usage. It includes, but is not limited to, the wrongfully giving, taking, or presenting any information or material by a student with the intent of aiding himself/herself or another on any academic work which is considered in any way in the determination of the final grade. The fact that a student

could not have benefited from an action is not by itself proof that the action does not constitute cheating. Any question of definition shall be referred to the University Appeals Board.

Charges of an academic offense will be made against any student that cheats or commits plagiarism on any graded course material. Penalties for such an offense will be assessed according to the University Rules regarding Academic Offenses. For more information regarding specific procedures, visit the website http://www.uky.edu/Faculty/Senate/rules_regulations/index.htm and click on any of the "University Senate Rules" links.

6. Classroom Behavior, Decorum and Civility

As a student engaging in a myriad of intellectual pursuits, you are expected to maintain a level of dignity and respect towards faculty, staff, and fellow students. You are expected to value differences among all members of our academic community. You have the right to take reasoned exception and to voice opinions contrary to those offered by the instructor and/or other students (S.R. 6.1.2). Equally, a faculty member has the right -- and the responsibility -- to ensure that all academic discourse occurs in a context characterized by respect and civility. Acceptable decorum and civility does not include attacks of a personal nature or statements denigrating another on the basis of race, sex, religion, sexual orientation, age, national/regional origin.

TURN OFF YOUR CELL PHONE! Use of cell phones, iPods, or other similar electronic devices for non-class related activities while class is in session is not allowed. Do not read newspapers, work on other assignments, or carry on conversations during class. Audio recorders for lecture are permitted. Laptops for use in taking notes are also permitted, so long as the privilege is not abused.

7. Disabilities and medical conditions

If you have a documented disability that requires academic accommodation, please contact Disability Resource Center so proper arrangements can be made. To receive special accommodations in this course you must provide a Letter of Accommodation from the Disability Resource Center (Room 2, alumni Gym, 257-2754; email to jkarbes@email.uky.edu) for coordination of the campus disability services available to you.

8. Additional Lab Guidelines

An essential component of learning in physiology requires the use of live animals. It is impossible to demonstrate the full extent of possible responses through textbooks readings or lectures. As emerging professionals, it is expected that all students will demonstrate respect and maturity when working with these animals. If any disrespect or intentional cruelty is inflicted upon the animals, it may be reason to be expelled from the course with an "I" (incomplete), "W" (withdrawal), or automatic "E" (failing grade) depending the timing and degree of the offense.

No horse play, cutting up, playing around, etc. is allowed in the laboratory. There are many students coming and going in the lab throughout the day and materials are sometimes shuffled around. Squirting someone with a solution in a syringe or a bottle can be dangerous. You might "know" it is water but another person does not. A 3M KCl solution can easily be mistaken for water, and can be very harmful if squirted by accident in someone's eye.

We will use a fixative in the lab. The fix solution is a Bouin's solution (Prepared with saturated picric acid, formaldehyde and acetic acid; Sigma-Aldrich Co.). Some people are very allergic to the vapors of formaldehyde. If you know you are allergic please inform the instructor (Dr. Danley) as soon as possible so we can make alternative plans. The fix solution is to remain in the vented hood.

Every student will have to have completed the on line safety test and bring to the lab on the 1st day of your section meeting time. It is an easy test and you can take it multiple times until you get a 100 %. Either save and email your TA, or print it out and bring it to the first lab of the semester. The TA will check you off for having completed the exercise. The website for the safety test is:

<http://ehs.uky.edu/classes/chemhyg/chemclass.php>

Lecture Schedule FALL 2011 **Biological Sciences, Rm. 107 Tuesday & Thursday 8:00 -9:15 AM**

Lecture	Day	Date	Topic	Reading
1	Th	8/25	Introduction to course and physiology	Chapt 1&2, 3
	T	8/30	Molecules, Energy and Biosynthesis	Chapt 3
2	Th	9/1	Membranes, Channels and Transport/ Physical basis of neuronal function	Chapt. 4, & 5
3	T	9/6	Physical basis of neuronal function	Chapt. 5
4	Th	9/8	Physical basis of neuronal function & start on Chapter 6	Ch. 5/6
5	T	9/13	Communication along and between neurons	Ch. 6
	Th	9/15	Exam 1	Ch1-6part
6	T	9/20	Communication along and between neurons	Ch. 6
7	Th	9/22	Communication along and between neurons	Ch. 6
8	T	9/27	Sensory Mechanisms	Ch. 7
9	Th	9/29	Sensory Mechanisms	Ch. 7
10	T	10/4	Sensory Mechanisms/ Organization of Nervous System	Ch. 7-8
11	Th	10/6	Muscle	Ch. 10
12	T	10/11	Muscle & Behavior	Ch 10-11
13	Th	10/13	Muscle & Behavior	Ch 10-11
	T	10/18	Exam 2	Ch 6-11 (w/o 9)
14	Th	10/20	Hormones, mechanisms of action	Chapt. 9
15	T	10/25	Hypothalamus-Pituitary	Chapt. 9
16	Th	10/27	Thyroid, parathyroid, adrenal and pancreas	Chapt. 9
17	T	11/1	Wrap up endocrine	Chapt. 9
18	Th	11/3	Cardiovascular	Chapt. 9
19	T	11/8	Cardiovascular	Chapt. 12
20	Th	11/10	Cardiovascular	Chapt. 12
	T	11/15	Exam 3	11, 9, 12
21	Th	11/17	Respiration	Chapt. 13
22	T	11/22	Respiration	Chapt. 13
	Th	11/24	Holiday - Thanksgiving	
23	T	11/29	Ionic and Osmotic Balance	Chapt. 14
24	Th	12/1	Ionic and Osmotic Balance	Chapt. 14
25	T	12/6	Digestion	Chapt. 15
26	Th	12/8	Heat and adaptations	Chapt. 15,16, 17
	M	12/12	Monday 12/12/11; FINAL EXAM @ 8:00 AM room 107	

BIO 350 Laboratory Schedule

Mon Lab	Wed Lab	Lab #	Topic
8/29	8/31	1	Modeling biological membranes
---	9/7	2	Human: Heart and EKG modeling
9/12	9/14	3	Crayfish: Electrical conduction of ventral nerve cord
9/19	9/21	4	Crayfish: Proprioception and MRO organ
9/26	9/28	5	Crayfish: Sensory integration
10/3	10/5	6	Crayfish: Intracellular physiology and ion movement
10/10	10/12	7	Crayfish and Rabbit: Neuromuscular physiology
10/17	10/19	8	Scientific writing, data formatting, and manuscript submission procedures
10/24	10/26	9	Invertebrates: Endocrine and behavior
10/31	11/2	10	Human: Whole body physiology, effects of temperature and activity
11/7	11/9	11	Shrimp & Fruit fly: Heart rate control
11/14	11/16	12	Human & Crayfish: Respiration
11/21	---	2	Human: Heart and EKG modeling
-----11/22-----			<i>Final Draft of Journal Manuscript Due</i>
11/28	11/30	13	Human & Crayfish: Salt and water balance (renal physiology)
12/5	12/7	14	Crayfish: GI mobility

IMPORTANT ACADEMIC DATES (Fall 2011)

Aug 24	First day of classes	
Aug 30	Last day to add a class	
Sept 5	Labor Day: Academic holiday	
Sept 14	Last day to drop without W	
Oct 17	Midterm of the semester	
Nov 4	Last day to drop with W	
Nov 23-26	Thanksgiving: Academic holidays	
Dec 9	Last day of classes	
Dec 13-17	Final Exams	

The outline presented above is a tentative plan for the semester. Specific topics and assignments are subject to change.