

Biology 336X – Fall, 2006 - Syllabus
Ecological and Evolutionary Animal Physiology
Tues. & Thur 11:00 – 12:20, Room Bessey 203

Instructor: Dr. Carol Vleck, Bessey 243, cvleck@iastate.edu, 294-8646
Office Hours: Tuesday and Thursday 12:20 – 1pm, and by appointment

WebCT GOLD – There is a WebCT GOLD site for the class, which you should be able to access. You can find handouts, grade information, discussion articles, etc. there. You can access WebCT from the ISU homepage using your university ID and password.

Course description:

This comparative physiology course is intended primarily for life science majors at the sophomore-senior level who have already completed the first year of the introductory biology series (Biol 211/212). We will focus on the study of mechanisms by which animals perform life-sustaining functions, the evolution and adaptive significance of physiological traits, the diversity of physiological mechanisms, and how physiology and ecology interact. Those interested in a human-oriented physiology course (especially in preparation for health-related professions) should consider taking Biol 335, Principles of Animal Physiology and associated lab.

Course Objectives:

- Understand the diversity of physiological mechanisms that permit life in environments ranging from hot and cold deserts to the wet tropics and from terrestrial to marine and freshwater environments.
- Understand the importance of integrating physiology with ecology, evolution, behavior, and cell and molecular biology in order to understand life.
- Learn how to read primary scientific literature, evaluate data, and critically discuss current topics in physiology.

Required Textbook: Hill, Wyse, and Anderson: Animal Physiology (Sinauer). I expect you to read the textbook. Use it also to supplement lecture information and to provide background information for article understanding and discussion. **Plus** there will be assigned readings from the primary literature that will either be handed out in class or provided as a PDF file on WebCT or the web site provided. Other resource can be found in the library or on the web. Please ask if you are having any issue finding the information you seek.

Course Evaluation: Essay and objective exams, discussion participation and writing assignments

Two midterms are tentatively scheduled for **Tuesday, Sept 26** and **Tuesday October 31**.
The Final exam is tentatively scheduled for **Tuesday, 12 December**, 9:45 – 11:45 am.

Two midterms @ 50 points	100 points
Cumulative Final	75
Participation	50

Written Article Analysis	50
Article Presentation	25
Attendance	30
TOTAL POINTS POSSIBLE	330

Grading Scale:

A=90-100%

B=80-89%

C=70-79%

D=60-69%

F= below 60%

A plus and minus grading system will be used. And the grades *may* be more generous than stated above, depending on how the class as a whole does.

Course Policies and Procedures.

1. **Attendance.** Attending lecture is expected and will optimize your learning. Roll will be taken. Only a small percentage of points will be based on attendance. If you miss a few class meeting, this will not jeopardize your grade, but missing many class periods probably will.

2. You are expected to take **notes** even if PowerPoint slides are provided, because not all information for which you are responsible is available on these slides.

3. **Make-up exams** will be given only under special circumstances. Exams may be given a day or two early if you contact me **at least one week in advance**. If you miss an exam because of illness, death in the family or some other emergency, **you must provide me with a written explanation as soon as possible, and in any case within one week of the missed exam**. Without this written excuse in my hands you will receive a zero for that exam.

4. **Participation** in class means being involved in the dialogue between students and me, both during regular lectures and particularly during discussion of articles. I expect you to ask questions when I say something that is unclear or one of your classmates does. During discussion of articles, I expect you to have read the articles carefully and come with questions, comments and critical insight. You are not going to be graded based on how right or wrong your comments and questions are (that's done on written exams and assignments), but on how willing you are to contribute to the classes' overall understanding of the course topics. There is no reason why everyone can't earn the maximum points here. Those of you who find group participation easy will need to occasionally sit on your hands and let everyone have a turn.

5. **Text book.** I believe that you will find the textbook interesting and stimulating as well as increase your knowledge in the field. I expect you to read it, but I realize there's a lot there. I will indicate which chapters you should be reading for each section of the class and point out which study questions at the end of the chapters are fair game for exams (whether or not we have discussed the specific information in class).

6. **Discussion articles.** You will have a template of questions for analyzing each article that we read. Answers to questions will need to be done on a word processor. Each such written analysis

will be worth 10 points. We will discuss several articles during the semester and you are expected to **read them all** before coming to class and be prepared to discuss them, but I will only expect you to hand in 6 of your written analyses. I will grade all 6 and you will keep the highest 5 scores.

7. Student-led discussion. Each student (or possibly pair of students) will lead the discussion on one of the articles, including providing background information and an overview of the article (total of 20-30 minutes per article—maybe a little longer). I will lead the first one or two discussions, and then students will be assigned to handle the others.

Special needs & Disabilities. If you have a documented disability and anticipate needing accommodations in this course, please make arrangements to meet with me soon. Please request that a Disability Resources staff send a SAAR form verifying your disability and specifying the accommodation you will need.

Major topics to be addressed:

- I Introduction to evolution of physiological traits
 - Interaction of organisms with their environment (role of physiology)
- II. Fundamentals of Physiology
 - Basic molecular and cellular concepts, transport mechanisms,
- III. Food, Energy and Temperature
 - Nutrition
 - Metabolism (aerobic and anaerobic)
 - Energetics
 - Thermal relationships with environment
- IV. Integrating Systems: neural and endocrine control
 - Biological clocks, navigation and seasonality
 - Ecological immunology
 - Development, reproduction and aging.
- V. Muscle and Movement
 - Muscle structure and function
 - Cost of transport (swimming, flying, running, burrowing)
- VI. Gas exchange and internal transport
 - Respiratory gas exchange in water and air
 - Transitions between water and air: diving physiology
 - Circulatory systems: diversity and adaptive significance
- VII. Water and Electrolyte Balance

Taken from Thomas H Benton. A Tough-Love Manifesto for Professors. Chronicle of Higher Education, June 9, 2006 (<http://chronicle.com/jobs/news/2006/06/2006060901c/careers.html>)

I. Students are not customers. Teachers are not employees.

II. Students and teachers have obligations to each other.

III. Here is what I expect from students:

- You will treat everyone in the class, including the professor, with the respect due to all human beings.
- You will attend every class, give your full attention to the material, and conduct yourself in an appropriate manner.
- You will agree to do the work outlined in the syllabus on time.
- You will acknowledge that previous academic preparation (e.g., writing skills) will affect your performance in this course.
- You will acknowledge that your perception of effort, by itself, is not enough to justify a distinguished grade.
- You will not plagiarize or otherwise steal the work of others.
- You will not make excuses for your failure to do what you ought.
- You will accept the consequences -- good and bad -- of your actions.

IV. Here is what students can expect from me:

- I will treat you with the respect due to all human beings.
- I will know your name and treat you as an individual.
- I will not discriminate against you on the basis of your identity or your well-informed viewpoints.
- I will manage the class in a professional manner. That may include educating you in appropriate behavior.
- I will prepare carefully for every class.
- I will begin and end class on time.
- I will teach only in areas of my professional expertise. If I do not know something, I will say so.
- I will conduct scholarly research and publication with the aim of making myself a more informed teacher.
- I will return your assignments quickly with detailed feedback.
- I will pursue the maximum punishment for plagiarism, cheating, and other violations of academic integrity.
- I will keep careful records of your attendance, performance, and progress.
- I will investigate every excuse for nonattendance of classes and noncompletion of assignments.
- I will make myself available to you for advising.
- I will maintain confidentiality concerning your performance.
- I will provide you with professional support and write recommendations for you if appropriate.
- I will be honest with you.
- Your grade will reflect the quality of your work and nothing else.
- I am interested in your feedback about the class, but I am more interested in what you learned than how you feel.