

**COURSE:** ANSC 612, Energy Nutrition  
Fall Semester, 2003 (3 credits)

**MEETING TIME AND PLACE:** Monday and Wednesday, 10:30 to 11:45 a.m. Room 1125  
Plant Sciences.

**COURSE OBJECTIVES:**

1. Provide an introduction to the field of nutritional energetics and discuss methodologies used in energy nutrition and metabolism research.
2. Discuss factors which influence and regulate the utilization and partition of metabolizable energy in a variety of animals including humans.
3. Discuss current systems for defining energy requirements in humans and other animal species.

**SUPPLEMENTAL TEXT:**

*"Energy Metabolism in Animals and Man"* by Kenneth Blaxter. Cambridge University Press, last published in 1989.

Please note that this text is out of print but is available on a used basis via resellers. I consider this book to be the most comprehensive text on comparative energy metabolism published during the last 30 years.

**INSTRUCTOR:** Dr. Richard Erdman  
Room 1413, Animal Sciences Building  
Phone: 301- 405-1366  
Email: re13@umail.umd.edu

**OFFICE HOURS:** I do not keep set office hours but I am accessible. One option is to send an email message which I typically read at least twice daily. If you need to reach me, the best times are always early morning 7:30 a.m. - 9:00 a.m. Please do not hesitate to call me at 301-405-1366 and leave a message. If you need to make an appointment, please contact my administrative assistant, Carol Connor.

**CLASS FORMAT:**

This is my first attempt at offering a course over the Interactive Video Network. In the past, the class included a lecture and discussion system and as much as is feasible, we will try to maintain that atmosphere. Since this is a graduate course, class discussion of current research in energy nutrition and metabolism will be encouraged. Selected current papers relating course topics will be assigned for class discussion purposes. Two types of exams will be administered during the course. The first exam will deal with problems and calculations dealing with energy metabolism research and nutritional models. Because of the time involved in these calculations, this exam will be take-home and you will be allowed at least a week to complete the exam. The second hourly exam and the final will be a familiar short answer and essay question format that is given in many courses. A short paper dealing with a topic in energy nutrition of your choice

that has been approved by the instructor will be due at the end of the semester. The paper should be no more than 10 pages in length and should be written in a journal article format (i.e. abstract, introduction, discussion, bibliography). Each exam including the final and the term paper will be worth 100 points with the total points for the course of 400.

**TENTATIVE COURSE OUTLINE:**

<b>Date</b>	<b>Topic</b>
9-3	Introduction and history of nutritional energetics (Chapter 1)
9-8	Bioenergetics and thermodynamics (Chapters 2 and 6)
9-10	Energy budgets: metabolizable energy (Chapter 3)
9-15	Energy budgets: heat production (Chapter 4)
9-17, 22, 24	Energy budgets: Energy retention, measurement techniques, and factors affecting body composition (Chapter 5)
9-29	Tour of human and animal calorimetry chambers at USDA-Beltsville (tentative)
10-1	Intermediary metabolism, energy exchange and theoretical efficiency of use of energy substrates. <b>Take-home Exam I distributed (Due 10-08).</b>
10-6	Energy exchanges by radiation, convection, conduction and evaporation (Chapter 7).
10-8	Metabolic effects of the animal's physical environment (Chapter 10)
10-13, 15	Homeothermy, heterothermy and regulation of body temperature
10-15, 20	Basal metabolic rate and maintenance energy requirements (Chapter 8)
10-22	Uncoupling proteins, cellular, organ, and tissue contributions to basal metabolism.
10-27	Utilization of metabolizable energy for exercise and muscular work (Chapter 9)
10-29, 11-3	Utilization of metabolizable energy for reproduction, lactation and growth (Chapter 11)
11-5	<b>Exam II</b>
11-10	Hormonal regulation and physiological control of energy partitioning
11-12, 17	Regulation of caloric intake
11-19, 11-24	Failures in regulation of caloric intake: obesity, eating disorders, dieting, etc.
11-26, 12-1,3,8	Description of and the basis for systems used to describe energy requirements including the new RDA's for humans and NRC requirements for selected domestic species.

- 12-10**                    **Term papers due, discussion of paper topics**
- 12-17**                    **Final Exam, 1:30-3:30 p.m. (Room to be Arranged)**