

**Human Physiology**  
Spring 2001

**Catalog Description:**

ZOOL 2211L HUMAN PHYSIOLOGY LABORATORY Exercises include experiments on osmosis, reflexes, senses, muscle, cardiovascular, and renal function, ventilation, digestion, and metabolism among other topics. Data collection, analysis and report writing are emphasized. Does NOT satisfy the Fulbright College writing requirement.  
Corequisite: ZOOL 2213

ZOOL 2213 HUMAN PHYSIOLOGY (I,II) Fundamental concepts in physiology, with emphasis on humans. Lecture 3 hours. Prerequisite: CHEM 1023/1031L; or 1074/1071L or 1103/1101L; or 1123/1121L; or equivalent. MATH 1203 or equivalent.

**Corequisite: ZOOL 2211L**

**Class Meetings:** LECTURE: T,R 12:30p – 1:50p in BADM 202

LABORATORY: T,R 9:30a – 12:20p, 2:00p – 4:50p, 6:00p – 8:50p, W 2:00p – 4:50p, 6:00p – 8:50p  
All Labs are in SCIE 402

**Instructor:** Dr. Michael B. Ferrari, FERR 213, 575-6372/5349. [ferrari@mail.uark.edu](mailto:ferrari@mail.uark.edu)  
Office Hours: Appointment only – call or email to set up a meeting.

**Laboratory Teaching Assistants:** (Office hours will be provided in lab)

Fred Zaidan, FERR B2 Ph: 575-7558 [fzaidan@mail.uark.edu](mailto:fzaidan@mail.uark.edu)

Jason Johnson FERR B2 Ph: 575-4720 [jmj09@mail.uark.edu](mailto:jmj09@mail.uark.edu)

Melissa Pilgrim, FERR B2 Ph: 575-7558 [mpilgri@mail.uark.edu](mailto:mpilgri@mail.uark.edu)

**Recommended Preparation:**

We will draw heavily on principles of biology, chemistry, and algebra. Physics and anatomy are useful, but not required. The prerequisites listed in the catalog description should be considered minimal requirements.

**Course Materials:**

Lecture: Vander, A. J., J. A. Sherman, and D. S. Luciano. 1998. *Human Physiology: The Mechanisms of Body Function*. 7<sup>th</sup> or 8<sup>th</sup> Edition, McGraw-Hill, New York.

Laboratory: Woodring J. and T. H. Dietz. 1992. *Laboratory Manual for Human Physiology*. 2<sup>nd</sup> Edition. Saunders College Publishing, New York.

Optional: Van Wynsberghe, D. M. 1998. *Study Guide to Accompany Human Physiology*. 7<sup>th</sup> or 8<sup>th</sup> Edition. McGraw-Hill, New York.

Reserve materials: Supplementary textbooks and other materials will be added to Reserves throughout the semester. This information will be posted at the course website and announced in class.

Web materials: Lecture notes, student questions and answers, and other material will be posted at the course website -- [www.uark.edu/campus-resources/ferrari/zool2213web/](http://www.uark.edu/campus-resources/ferrari/zool2213web/)

**Course Description and Objectives:**

Physiology is the integrative study of how organisms work. Physiologists concern themselves with processes that span levels of function from molecular interactions to whole organism processes. These processes are best described within the context of a hierarchical system (molecules - organelles - cells - tissues - organs - organ systems - individuals). We will make use of this organization to study and increase our understanding of the interactive functions of the human body. This course is designed to give you a broad and fundamental survey of human function. It is my hope that you find the information in this course to be of use to you throughout your lives. Scientific and medical literacy is crucial for your ability to understand biomedical and other technological advances in our society.

**Course format:**

The course will use a combination of lecture and laboratory. You must be enrolled in both the Lecture and one Laboratory section to participate in this course. Lectures will provide basic information that will be required to perform well on examinations. Laboratory exercises will provide practical "hands on" experience with fundamental processes and phenomena discussed in lecture. **WARNING: Dissection is a required element of Human Physiology.**

**Assignments and Grading Policy:**

Examinations will be in objective (multiple choice, matching, true-false, and the like) and short-answer format. Please note the timing of exams during the course on the attached schedule - **plan ahead!** There will be three semester exams (100 points each) administered in lecture during the semester. A final exam (200 points), part of which will be cumulative (i.e. will test knowledge from the entire semester), will be given during the scheduled time during Final Examination Week. Material covered between the third semester exam and the final will be covered on the final, and the remainder of the final will be drawn from the entire course. The Laboratory grade will be ~25% of the total grade, and will be determined by quizzes, assignments (including lab reports), and attendance. Although the laboratory is listed as a separate course, the grades will be integrated between lecture and laboratory, thus **the grade earned in the laboratory will be identical to the grade earned in lecture.** This final course grade will be based on the total points you earn divided by the total points offered.

Exam 1:	100
Exam 2:	100
Exam 3:	100
Project:	100
Laboratory:	200
<u>Final Exam:</u>	<u>200</u>
Total:	800

There is no question that students who utilize office hours and ask questions for clarification of material consistently do better than those who do not - please use office hours or make appointments.

**Projects:** Research Projects (100 points) must be 8-10 written pages or the equivalent. While we determine the content of lectures and laboratories, YOU determine the quality and content of your project. I encourage you to be as creative and progressive with this assignment as you desire. You will work in groups of up to 4 people (most likely created within your laboratory section) and produce a presentation of value. The idea is to expand on covered topics or cover a topic we don't have time for in lecture. A list of general topic ideas is posted on the course webpage. Besides a written report, some possible ideas include building a working model of a physiological or pathological process (e.g. sliding filaments and cross-bridge formation), creating an informative and resourceful webpage, interviewing experts, videotaping and describing a physiological or biomedical process (e.g. fMRI, Ultrasound, etc.). These ideas are neither exhaustive nor mutually exclusive. You will present your projects during the last laboratory period.

**Statement on Academic Integrity:**

High standards of integrity and ethical conduct are expected from you. Do not allow yourself to become "forced" into unethical conduct. If you are having difficulty please seek help, as cheating on any graded activity will not be tolerated, and will be prosecuted to the fullest allowable extent.

**Important Dates:**

General: see page 3 of the Spring 2001 Schedule of Classes or [www.uark.edu/classes/](http://www.uark.edu/classes/)

Project Topic selection deadline is February 9<sup>th</sup>

Projects are due April 12<sup>th</sup>

**Final Exam:** Monday, May 7<sup>th</sup>, 10:00am

**Tentative Topics and Schedule:**

Dates	Lecture	Laboratory <sup>1</sup>	Readings <sup>2</sup>
January 16 January 18	1) Introduction, Physiology Soup 2) Physiology Soup	No Lab	1, 2
January 23 January 25	3) Macromolecules and Organelles 4) Cellular Energetics	Introduction Orientation	3, 4
January 30 February 1	5) Getting through the Membrane 6) Homeostasis, Signal Transduction	Enzymes, Digestion (Chapt. 23, 24)	6,7
February 6 February 8	7) <b>EXAM I</b> 8) Neural control, Potentials	Osmosis, (Chapt. 1)	8A,B
February 13 February 15	9) Action Potential, Synapses 10) Structure of Nervous System	Neural Function (Chapt 4)	8C,D
February 20 February 22	11) Sensory Systems 12) Sensory Systems	Sensory Systems (Chapt. 6,7)	9
February 27 March 1	13) Skeletal Muscle 14) Motor Control	Digital Muscle (Chapt. 9)	11A, 12
March 6 March 8	15) Cardiovascular I 16) <b>EXAM II</b>	Twitch, Tetanus (Chapt 11, Demo 12)	14B,C
March 13 March 15	17) Cardiovascular II 18) Cardiovascular III	Blood Pressure, EKG (Chapt. 14, 15)	14D-F
March 20,22	<b>Spring Break</b> (pathophysiology)	Beach or ski slope?	Ha!
March 27 March 29	19) Cardiovascular IV 20) Hormones, Neuroendocrine Axis	Cardiac Control (Chapt. 13)	14A,G
April 3 April 5	21) Hormone Structure, Transport 22) Respiration I	Blood (Chapt. 18,19)	10
April 10 April 12	23) Respiration II 24) Osmoregulation	Respiration (Chapt. 20)	15
April 17 April 19	25) <b>EXAM III</b> 26) Kidney Function	Metabolism (Chapt. 22, Demo 21)	16A-C
April 24 April 26	27) Digestion and Absorption 28) Metabolism	Excretion (Chapt. 25, 26)	17, 18A
May 1 May 3	29) Reproduction 30) Catch-up, Review	Project Presentations	19

May 7	31) <b>Final Exam:</b> 10:00am	Monday, ugh.	
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**NOTES:**

Project Topic selection deadline is February 9<sup>th</sup>

Projects are due April 12<sup>th</sup>

<sup>1</sup>Chapter numbers refer to Laboratory Exercises in Woodring and Dietz

<sup>2</sup>Numbers refer to Chapters in Vander et al.