



# Reedley College

## Syllabus for Biology 5

### Human Biology

### Spring Semester, 2009



#### **Instructor:**

Gary W. Potter (e-mail [GWPOTT@aol.com](mailto:GWPOTT@aol.com) or [gary.potter@reedleycollege.edu](mailto:gary.potter@reedleycollege.edu)),  
Please include **Biol. 3** in the subject line or I will not open your e-mail!

#### **Meeting Times:**

Lecture: Monday & Wednesday, 11:30 AM-12:45.

Lab: Wednesday 1:00-2:50 PM or Wednesday 3:00-4:50 PM

#### **Holidays: No Classes will meet.**

Monday, January 19, 2009: Martin Luther King, Jr. holiday

Friday, February 13: Lincoln's Birthday holiday observed.

Monday, February 16: Washington's Birthday holiday observed.

Monday, April 6-Friday, April 10: Spring Recess.

#### **Exam Dates:**

**Exam # 1:** Wednesday, February 4, 2009

**Exam # 2:** Wednesday, March 4, 2009

**Exam # 3:** Wednesday, April 1, 2009

**Final Exam:** Monday, May 18, 11:00 AM - 12:50 PM

#### **Other Important Dates:**

Sunday, January 25: Last day to drop a full-term class for a refund.

Friday, January 30: Last day to add a Spring 2009 full-term class.

Friday, January 30: Last day to drop a Spring 2009 full-term class to avoid a "W"

Friday, March 13: Last day to drop a Spring 2009 full-term class (letter grades assigned after this date.)

Monday, May 18-Friday May 22: Final Exams week.

Friday, May 22: End of Spring semester/commencement

#### **Course Description:**

Biology 5 is an introductory human biology course that examines science and societal issues. There is special emphasis on the following body systems: Circulatory, Digestive, Respiratory, Urinary, Skeletal, Muscular, Nervous, Sensory, Endocrine, Reproductive, and Genetics.

### **Course Outcomes:**

Upon completion of this course, students will be able to:

- A. understand the process of science and society, microscopy, and the cell.
- B. identify human body levels of organization and homeostatic mechanisms.
- C. understand the chemical basis of life.
- D. evaluate scientific literature and current biological achievements.
- E. apply the principles of genetics to humans and understand the outcome of normal and abnormal DNA.
- F. understand the structure and function of the following systems: circulation, digestive, respiratory, urinary, skeletal, muscular, nervous, sensory, endocrine, reproduction, and genetics and evolution.

### **Course Objectives:**

In the process of completing this course, students will:

- A. read, analyze, evaluate, and discuss scientific method, the cell, and human levels of organization.
- B. learn the periodic table of the elements, the chemistry of the carbon atom, and chemical structure of humans.
- C. analyze and interpret data on the homeostatic mechanisms within the human body.
- D. learn the cell's structure, function, and the cell cycle in relation to the multicellular human body.
- E. observe and document the structure and function of the human body by examining human body systems including: circulatory, digestive, respiratory, urinary, skeletal, muscular, nervous, sensory, endocrine, and reproduction
- F. review classical and molecular genetics and learn the process of replication, transcription, and translation.
- G. perform experiments, observe, and record data.
- H. study evolution.
- I. discuss social issues between humans and science.

**Accommodations for students with disabilities:** If you have a verified need for an academic accommodation or materials in alternate media (*i.e.*, Braille, large print, electronic text, etc.) per the Americans with Disabilities Act (ADA) or Section 504 of the Rehabilitation Act, please contact me as soon as possible.

### **Required Materials:**

1. Textbook: Sylvia S. Mader, Human Biology, 10th ed., McGraw Hill Higher Education
2. Laboratory Manual: Sylvia S. Mader, Human Biology, 10th ed., McGraw Hill Higher Education
3. Notebook or three ring binder for note taking..
4. Biology Drawing Paper & pencil, for lab plates.

### Expectations:

- A. You are expected to attend all class sessions. Two or more absences from laboratory periods and four absences from lecture periods may very likely put you in jeopardy of failing. Unless there are extenuating circumstances, such absences may also get you dropped from the course.
- B. You are responsible for finding out what you missed and for making up missed work due to absence.
- C. Cheating and plagiarism will not be tolerated. Students caught cheating will receive a zero for that assignment, quiz, or test. Cooperative learning is limited to working in groups during labs.
- D. Assignments are expected to be turned in on time. In case of absence, I will accept late papers up to two class meetings after the due date, with a grade deduction of 10% per per each class meeting that it is late.
- E. Guests are not allowed in class!

**Grading:** Your grade will be determined by using an accumulative point total of all laboratory reports, quizzes, and exams. Quizzes and Lab Reports are worth 10 points each, the written exams are worth 100 points each. Each exam will consist of a combination of multiple choice and short answer essay questions. Laboratory practical exams will be given from time to time and will consist of ten to fifteen stations worth 2 points each. Two makeup quizzes will be given. Your score on the makeup quizzes will be used to makeup a missed quiz or to replace the score of a quiz on which you scored lower than on the makeup quiz. No low quiz will be thrown out! **Extra credit will be limited to a few bonus questions on tests and an occasional special quiz or assignment. Extra credit will not be given for any other work!** At the end of the semester, your accumulated point total will be divided by the total number of points possible to determine your percentage grade. Your final letter grade will be determined using the following grading scale:

90% to 100% = A  
80% to 89.9% = B  
70% to 79.9% = C  
60% to 69.9% = D  
0% to 59.9% = F

**Grades will not be rounded! 89.99999999% is a B+ not an A-!**

### Course Outline (With reading assignments):

#### Week

#### Lecture & Lab. Topics.

#### Reading

- 1 **Lecture: Science & Society.** Review the Syllabus.  
What basic characteristics do all living things share? What is the evidence that living things share an evolutionary history? Scientific Method.

**Lab. 1: Scientific method & use of the microscope.**



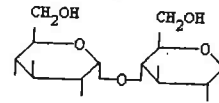
Ch. 1

- 2 **Lecture: The Chemistry of life.** Basic chemistry used in the understanding of human biology. *i.e.* Atomic elements, the carbon cycle, bonding patterns of elements, and water the essential compound of life. The major macromolecules

Ch. 2

of life: carbohydrates, lipids, proteins, & nucleic acids.

**Lab. 2: Chemistry and the macromolecules of life.**



3 **Lecture: The Cell: Eukaryotes vs. Prokaryotes.**

The plasma membrane, intracellular structures and functions, and the cell cycle.  
Human cells use cellular respiration and fermentation to generate ATP.

Mitosis & Meiosis: in normal and abnormal cells.

**Lab. 3: The cell: its cycle, mitosis, meiosis.** (Labs 4 & 17 in your lab manual)

Ch. 3



Ch. 4

4 **Lecture: Human Body Organization and Homeostasis.**

The human body from the cell to its complex organ systems.  
The skin as an organ system.

Internal homeostasis is maintained by negative and positive feedback systems.

**Lab. 4: Human organization and histology:** epithelial, connective, muscular and nervous tissues. (Lab 5 in the laboratory manual)

**Test# 1: Wednesday, February 4, 2009: Scientific method, chemistry, cells, human body organization and homeostasis.**

5 **Lecture: Maintenance of the Human Body: Circulatory System & blood.** The structures and functions of the cells, organs, and related structures, of the cardiovascular system

**Lab. 5: Cardiovascular system and blood:** (Labs 7 & 8 in lab manual)



Ch. 8

6 **Lecture: Maintenance of the Human Body: Digestive System.**

The structures and functions of the cells, organs, and related structures, of the digestive system.

**Lab. 6:** The digestive system. (Labs. 6 & 9 in Lab manual).



Ch. 9

7 **Lecture: Maintenance of the Human Body: Respiratory System.**

The structures and functions of the cells, organs, and related structures, of the respiratory system.

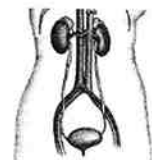
**Lab. 7:** Basic anatomy II, respiratory & urinary systems. (Lab 11 in lab manual)

8 **Lecture: Maintenance of the Human Body: Urinary System.**

The structures and functions of the cells, organs, and related structures, of the urinary system.

**Lab. 8:** Homeostasis (Lab 12 in lab manual)

Ch. 10



**Test# 2: Wednesday, March 4, 2009: Maintenance of the Human Body, Cardiovascular, Digestive, Respiratory, and Urinary Systems.**

9 **Lecture: Control and Coordination of the Human Body: The Skeletal System.** The structures and functions of the cells, organs, and related structures, of the skeletal system.

**Lab. 9:** Skeletal System (first half of Lab 13 in lab manual)

Ch. 11

10 **Lecture: Control and Coordination of the Human Body: The Muscular System.** The structures and functions of the cells, organs, and related structures, of the muscular system.

**Lab. 10:** Muscular System (second half of Lab 13 in lab manual)

Ch. 12



- 11 **Lecture: Control and Coordination of the Human Body: The Nervous System and senses.** The structures and functions of the cells, organs, and related structures, of the nervous system, and sense organs. **Ch. 13 & 14**  
**Lab. 11:** Nervous System and Senses (Lab 14 in lab manual)



- 12 **Lecture: Control and Coordination of the Human Body: The Endocrine System.** The structures and functions of the cells, organs, and related structures, of the endocrine system. **Ch. 15**  
**Lab. 12:**

**Test # 3: Wednesday, April 1, 2009: Skeletal, muscular, nervous, and sensory systems.**

- 13 **Lecture: Reproductive systems:** The structures and functions of the male and female systems. The male system from production and delivery of sperm. The female system from production of eggs, to conception, to nurturing of the embryo and fetus. **Ch. 16 & 17**  
**Lab 13:** Reproduction & Meiosis (Labs 15 and 17 in lab manual)

- 14 **Lecture: DNA: Structure & Function:** The structure of DNA is nucleotides. Replication, Transcription, and Translation. **Ch. 21**  
Biotechnology & cloning, recombinant DNA, and stem cell research.  
**Lab 14:** DNA and Biotechnology (Lab 19 in lab manual)



- 15 **Lecture: Inheritance & Mendelian Genetics:** Set up and perform genetic cross matches Demonstrating Mendelian patterns of inheritance. Create and interpret Human pedigree charts. **Ch. 20**  
**Lab. 15:** Patterns of heredity (Lab 18 in the lab manual)

- 16 **Lecture: Evolution:** Natural selection, artificial selection, mutation and the Hardy-Weinberg Equilibrium. Evidence for evolution: fossil record, biochemistry, comparative anatomy and embryology **Ch. 22**  
**Lab. 16:** Human evolution (Lab 21 in the lab manual)

- 17 **Lecture: Biodiversity:** Ecosystems, Energy flow, conservation, and extinction of species. **Ch. 23 & 24**  
**Lab. 17:** Lab Final Exam

**Final Exam: Monday, May 18, 2009: Reproduction, DNA, Genetics, Evolution and Ecology**

