

**BISC 102 - INQUIRY INTO LIFE - HUMAN BIOLOGY
COURSE SYLLABUS – FALL 2007**

Instructor: Dr. Tamar Goulet
Fall 2007
Shoemaker Hall 303
Section 2: T, TH 9:30 - 10:45 AM
Teaching Assistant: Cameron Johnson

Office hours: F 9:00 - 11:00 AM
Office hours in 526 Shoemaker Hall
Office phone: (662) 915-7457
Email: cejohnso@olemiss.edu
Write BISC102 sec 02 in subject heading

**BISC 102 applies to the science requirement of the core curricula. The associated laboratory is BISC 103.
Please note that this course will NOT count for credit if BISC 160 is counted.**

GOALS OF COURSE: For students to:

- (1) Understand familiar actions such as eating, breathing and exercise;
- (2) Learn the biology needed to ask good questions of their physician about their own or family members' health, and to evaluate the answers;
- (3) Be able to critically analyze media reports and advertisements on health topics.

ISSUES APPROACH: Students should be aware that we have chosen to cover some controversial issues in this course, like contraception, stem cell technology, etc. Everyone is welcome to share their opinions on these issues, but a respectful attitude is expected from all present, whether or not they agree with the points of view expressed in class.

REQUIRED MATERIAL:

- (1) *Essential Biology with Physiology*. Second edition. 2007. Campbell, Reece and Simon. Benjamin Cummings. ISBN 0-8053-6841-8 bound edition
OR:
Three hole-punched unbound edition of the above. ISBN 0-5364-3163-9
- (2) Assigned readings, including case studies, which will be posted on Blackboard.
- (3) PRS radio frequency clicker (audience response system).

A new textbook or the three hole-punched, unbound textbook, include a mail-in rebate for the PRS clicker. Students who buy a used textbook **must purchase the PRS clicker at full price.**

GRADING:

Exam 1 (50 questions):	100 points
Exam 2 (50 questions):	100 points
Exam 3 (50 questions):	100 points
Final exam (100 questions, cumulative)	200 points
In-class quizzes:	100 points or above
 Total points:	 600 points

- (1) Exams will be based on material taught in class supported by assigned readings from the textbook. Students are responsible for all material and announcements made in class. All exams will include multiple-choice questions or questions requiring one letter/word answers. **Exams will be given using the PRS clickers.**
- (2) The number, frequency and time of quizzes are at the discretion of the instructor, but students need to be ready for a quiz every time class meets. Quizzes will be either on assigned readings or on the material

covered in class. Points earned above the 100 quiz points will be used as extra credit. **To participate in a quiz, students must use their PRS clicker.**

(3) Final Grade: A = 540 - 600; B = 480-539; C = 420 - 479; D = 360 - 419; F = 359 or less.

EXAM MAKE-UP POLICY:

- (1) A student who misses one exam (but not more than one) can make it up, **if the instructor judges that the student had a good reason for missing** (family emergency, health issues). The make up exam will be given within a week of the student's return to school.
- (2) Under special circumstances, and with the instructor's approval (e.g. University-excused absence), students may arrange ahead of time to make-up an exam before the class exam.
- (3) In all cases, students must notify the instructor that they missed the exam as soon as possible, make an arrangement to make-up the exam, and bring appropriate documentation to justify their absence. Otherwise they will earn a zero on that exam. For any more than one exam missed, the student will earn a zero for the exam.

ACADEMIC MISCONDUCT AND ITS CONSEQUENCES:

According to UM Academic Conduct and Discipline policy: "Dishonesty, cheating, or plagiarism, or knowingly furnishing false information to the University are regarded as particularly serious offenses." In this course, for example, cheating on an exam or quiz, or taking an exam or quiz for someone else will be severely punished. At the discretion of the instructor, the student can receive an F on the assignment or an F in the class (without the possibility of invoking the forgiveness policy).

This syllabus is subject to change at the discretion of the instructor to accommodate instructional, and/or student needs.

BIOLOGY 102 - FALL 2007 TOPICS AND ASSIGNED READINGS

Week 1: 21 – 23 August – The Process of Science

Chapter 1: INTRODUCTION: BIOLOGY TODAY

The Process of Science p. 13 - 18 only (terms and definitions: hypothesis, theory)

Week 1-2: 23 August – 28 August – Nutrition & Digestive System

Bring a food label

Chapter 3: THE MOLECULES OF LIFE

Biology and Society: Got Lactose?

Organic Molecules

Biological Molecules

Week 2: 28 August - 30 August – Nutrition & Digestive System

Chapter 5: THE WORKING CELL pp. 72-79

Biology and Society: Stonewashing Without the Stones

Some Basic Energy concepts

ATP and Cellular Work

Enzymes

Week 2-3: 30 August - 6 September – Nutrition & Digestive System

Chapter 22 NUTRITION AND DIGESTION (all terms and definitions)

Biology and Society: Eating Disorders

Overview of Animal Nutrition

A Tour of the Human Digestive System

Human Nutritional Requirements

Nutritional Disorders

Week 3: 6 September

Chapter 21: UNIFYING CONCEPTS OF ANIMAL STRUCTURE AND FUNCTION

***** TEST #1 September 11 *****

Week 4-5: 13 - 18 September – Circulatory & Respiratory Systems

Chapter 23 CIRCULATION AND RESPIRATION (all terms and definitions)

Biology and Society: The ABCs of Saving Lives

Unifying Concepts of Animal Circulation

The Human Cardiovascular System

Unifying Concepts of Animal Respiration

The Human Respiratory System

Week 5-6: 20 - 27 September – Immune System

Chapter 24. THE BODY'S DEFENSES (all terms and definitions)

Biology and Society: The Discovery of AIDS

Nonspecific Defenses

Specific Defenses: The Immune System

Immune Disorders

The Yearly Battle with the Flu

Week 6-7: 27 September – 4 October – Hormone System

Chapter 25 HORMONES (no terms and definitions assigned)

Biology and Society: Hormone Replacement Therapy

Hormones: An Overview

The Human Endocrine System

***** TEST #2, October 4 *****

Week 8: 9 - 11 October – Nervous, Sensory & Motor Systems

Chapter 27: NERVOUS, SENSORY AND MOTOR SYSTEMS (terms and definitions: biological clock, effector cell, mechanoreceptor, myelin sheath, nerve, nervous system, neuron, neurotransmitter, pain receptor, sensory input, sensory neuron, spinal cord, stimulus, synapse, thermoreceptor)
Biology and Society: Battling Depression
An Overview of Animal Systems
Organization of Nervous Systems
Neurons
OMIT Sending a Signal Through a Neuron
The Human Nervous System: A Closer Look
The Senses
Motor Systems

Week 9-10: 16 - 25 October - Genetics

Chapter 10: MOLECULAR BIOLOGY OF THE GENE (terms and definitions: adenine, AIDS, codon, cytosine, double helix, exon, genetic code, HIV, intron, mutagen mutation, nucleotide, polynucleotide, stop codon, sugar-phosphate backbone, thymine, transcription, Transfer RNA, translation, uracil)
Biology and Society: Sabotaging HIV
The Structure and Replication of DNA
The Flow of Genetic Information from DNA t RNA to Protein
Viruses: Genes in Packages

Chapter 11: GENE REGULATION (terms and definitions: stem cell, carcinogen)
Only cover cloning and stem cells

Chapter 12: DNA TECHNOLOGY (terms and definitions: biotechnology, DNA fingerprint, gene cloning, genetically modified (GM), organism, recombinant DNA technology, transgenic organism)
Biology and Society: Hunting for Genes
Recombinant DNA Technology
 From Humulin to Genetically Modified Foods
 OMIT Recombinant DNA Techniques
DNA Fingerprinting and Forensic Science
Genomics
 OMIT Gene Mapping Techniques
Human Gene Therapy
Safety and Ethical Issues

***** TEST #3 October 30 *****

Week 11-12: 1 - 8 November – Reproduction & Inheritance

Chapter 8: THE CELLULAR BASIS OF REPRODUCTION AND INHERITANCE (terms and definitions benign tumor, cancer cells, carcinomas, chromosome, diploid cell, Down syndrome, fertilization, gamete, genome, haploid, homologous chromosomes, leukemia, malignant tumor, meiosis, metastasis, mitosis, radiation therapy, sarcomas, sexual reproduction, somatic cell, trisomy 21, zygote)
Biology and Society: A \$50,000 egg!
What Cell Reproduction Accomplishes
The Cell Cycle and Mitosis (with emphasis on Cancer Cells)
Meiosis, the Basis of Sexual Reproduction
 Homologous Chromosomes
 Gametes and the Life cycle of a Sexual Organism
 The Origins of Genetic Variation
 When Meiosis goes Awry

Chapter 9: PATTERNS OF INHERITANCE (terms and definitions: ABO blood groups, alleles, autosome, carrier, dominant allele, heterozygous, homozygous, Huntington disease, hybrids, locus, pedigree, phenotype, recessive allele, sex chromosomes, sex-linked gene, sickle-cell disease)
Biology and Society: Testing Your Baby
Heritable Variation and patterns of Inheritance
Beyond Mendel
The Chromosomal Basis of Inheritance; Sex Chromosomes and Sex-Linked Genes

Week 13: 13 - 15 November – Reproductive System

Chapter 26. REPRODUCTION AND DEVELOPMENT (terms and definitions: barrier methods, chorionic villi, fertilization, hermaphrodite, ovulation, spermatogenesis, trimester, tubal ligation, vasectomy)
Biology and Society: Rise of the Supertwins
Unifying Concepts of Animal Reproduction
Human Reproduction
Reproductive Health
Reproductive Technologies

*******Week 14: THANKSGIVING HOLIDAY, FALL BREAK November 19 – 23*******

Week 15: 27 November – 29 November

Chapter 26 continued

***** **Final Exam – Thursday, December 6, 2007 8:00 am in 303 Shoemaker Hall** *****