

MIDDLESEX COUNTY COLLEGE  
EDISON, NEW JERSEY

Course Title: **Human Biology, Biomedical Issues and Society** Catalog # **Bio 106**

Class Hours: 3 Laboratory Hours: 2 Credit Hours: 4

Department Chair: \_\_\_\_\_ Division Dean: \_\_\_\_\_ Date: 2007-2008

Prerequisite(s) Appropriate score on the College's Placement Test or MAT 013 and one year high school laboratory science or a 3 credit college level science course, with a grade of "C" or better.

**Textbooks for Course:**

<u>Author</u>	<u>Title</u>	<u>Publisher</u>	<u>Copyright</u>
Sylvia Mader	Human Biology, 10th edition	McGraw Hill	2008
Bogner, Barbara Morgan, Doris Przygoda, Marge	The Human Biology Laboratory Workbook 5 <sup>th</sup> edition	M.C.C. Press	2004

**Catalog Description:**

An introduction to the functioning of the human body; a survey of the body's systems in health and disease. There will be discussions and written assignments concerning human biological issues from both historical and current perspectives. Laboratory exercise (without dissection), audiovisual materials, computer simulations and current readings are included. Recommended for non-science majors. Helps to fulfill General Education requirements.

**Course Goals:**

This course is designed at one level to provide the students with a fundamental knowledge of the anatomy and underlying physiology of selected human body systems. At another level it is the intent of the course to develop scientific literacy in students through critical evaluation of articles and other media concerning current biological issues, to discuss these issues in a meaningful way and to express their viewpoints in writing. The grade in this course will be determined by a combination of lab quizzes, lecture exams, class discussion evaluation, a research paper and other written assignments.

**Course Objectives:**

The student will

1. Study the structural features and functioning of *selected* systems in the human body.
2. Be able to define and understand key scientific terms.
3. Apply the scientific method in a series of laboratory exercises designed to provide "hands on" experience. Observational skills, data collection, data analysis and appropriate presentation of data will be emphasized.
4. Use appropriate computer software for the purposes of performing simulation exercises, collecting and analyzing data and reporting results of laboratory investigations.
5. Develop skills in using basic laboratory instrumentation and the metric system.
6. Read and analyze current scientific articles in order to better understand the normal and abnormal functioning of human body systems.
7. Examine current biological, medical and ecological topics as they have affected society and medicine.
8. Examine controversial and ethical issues from various viewpoints: racial, cultural and religious.
9. Become familiar with the impact of biology on society and of society on biology.
10. Deliver an oral classroom presentation.
11. Keep a journal containing chapter and lecture summaries, answers to questions, film analysis, ethical and other discussions and personal comments.

### **COURSE OUTLINE:**

- I. Introduction
  - A. What is Biology?
  - B. Role of Biology in Society and Life
  - C. Characteristics of Human Beings
  - D. Scientific Method and Critical Thinking Skills
  - E. Human Issues: Biology, Medicine and Social Responsibility  
Film and Discussion: Tuskegee Experiment ("The Deadly Deception").
- II. Body Organization
  - A. Four major types of Body Tissues and their sub-division
  - B. Functions of the Body Tissues
  - C. Human Issues: Organs & Tissue Transplants, Cloning, Stem Cell Research

- III. Integument
  - A. Film, “SKIN DEEP”
  - B. Skin Structure
  - C. Function of the Skin
  - D. Human Issues: Skin Cancer, Photo-aging & Chronological Aging Effects on the skin. Transdermal Patches, Suntan Parlors, Care and Protection of the skin, Immunity functions of skin
  
- IV. Cardiovascular System
  - A. Film, “TWO HEARTS BEATING as ONE”.
  - B. Structure of the Human Circulatory System: Heart, Blood Vessels, Blood, Lymphatics
  - C. Function of the Human Circulatory System: Blood Pressure, Heart Rate, Blood Function, ECG, Conduction System of the Heart
  - D. Human/ Issues: Hypertension, Blood Transfusions, Stroke, Heart Attacks, Heart Transplants, Artificial Heart, Drugs in the Treatment of Heart Disease, Effects of Drug Addiction on Cardiovascular Function, Artherosclerosis, Open Heart Surgery.
  
- V. Endocrine System
  - A. Film, “HORMONES”
  - B. Structure of the Endocrine System
  - C. Hormones - Their source & actions
  - D. Human Issues: Anabolic Steroids, Diabetes, “FIGHT or FLIGHT” mechanisms
  
- VI. Immunity
  - A. Film THE FIGHTING EDGE”
  - B. Structure of the Immune System: Lymph Organs, B and T Cells, Antibodies
  - C. Function of the Immune System: Mechanisms of Immunity, Active and Passive Immunity
  - D. Human Issues: AIDS, Stem Cell Research, Antibiotic Crisis and Bacterial Resistance, SCIDS, Immunizations, Autoimmune Diseases, Aging, , Allergies, Arthritis and Autoimmune Diseases
  - E. Cancer, Oncogenes, Initiation and Promotion, Causes
  
- VII. Nervous System
  - A. Film: Nerves at Work
  - B. Structure of the Human Nervous System: Brain, Spinal Cord, Neuron, Sense Organs
  - C. Functions of the Human Nervous System: Reflexes Vision, Hearing, Brain Functions
  - D. Human Issues: Effects of Marijuana, Effects of Neurotransmitters on the body and on behavior Learning and Memory, The Effects of Drugs and Alcohol on the Brain, Pain, Brain Waves and EEG,
  
- VIII. Respiratory System

- A. Structure of the Human Respiratory System: Nasal Passages, Pharynx, Larynx, Trachea, Bronchi, Bronchioles, Alveoli, Lungs
  - B. Function of the Human Respiratory System: Gas Exchange at Tissues, Ventilation, Control of Respiration
  - C. Colds and Flu, Pneumonia, Air Pollution, Smoking and Cancer, Emphysema, Exercise Physiology
- IX. Suggested Biomedical Issues for Discussion
- Should Animal Experimentation be permitted? Film: "ANIMAL RIGHTS PEOPLE"
  - Cloning, Stem Cell Research
  - The Right to Die
  - Bacterial Resistance to Antibiotics
  - Drugs, Alcohol and the Brain, Film: "THE ADDICTED BRAIN"
  - The Tuskegee Experiment: (Film, "THE DEADLY DECEPTION")
  - The Ebola Virus: "THE PLAGUE MONKEYS" film (see Doris Morgan for the film)
  - Marijuana Legalization
  - AIDS
  - Bio-terrorism
  - Skin and Sun Tanning
  - Organ Transplants

**Bio. 106 Lab Schedule:**

<b><u>Lab</u></b>	<b><u>Topic/Lab Exercise in Lab Manual</u></b>	
1.	Introduction & Lab Safety; Scientific Method	Ex. 1
2.	Cells, Tissues, Organs, Systems, Cavities, Planes	Ex. 2
3.	Metric Measurement	Ex. 3
4.	Nervous System Anatomy & Phys: Reflexes	Ex. 5 & 6
5.	Circ. & Resp. Anatomy; Cardiovasc. Physio.	Ex. 9 & 10
6.	The Senses	Ex. 7
7.	<b><u>Lab Practical 1</u></b>	
8.	Bacteria I	Ex. 12
9.	Bacteria II; Baby Lab	Ex. 12 & 15
10.	Blood Typing/ AIDS	Ex. 11
11.	Bones, Muscles, & Joints	Ex. 8 & 9
12.	Nutrition: Reading Food Labels	Ex. 13
13.	Open	
14.	BMR	Ex. 13
15.	<b><u>Lab Practical II</u></b>	

**NOTE: All labs must be attended in full in order to receive course credit.**

