**BIOLOGY 42 – HUMAN BIOLOGY**

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| **Instructor:** | Rosser Panggat, M.D. | **Contact details:** | rpanggat@hartnell.edu |
| **Course Section:** | 5024 | **Term:** | Spring 2012 |
| **Class Hours:** | Mondays 6:00 PM – 8:50 PM | **Room:** | MER 1 |

# Previous Course Syllabus: FALL 2010 A.Wright Ph.D.

**Course Description**

Catalog Description: Topics in life sciences that pertain directly to humans and are important to an understanding of one’s self and one’s world as well as being interesting and relevant to the present day human condition.

This course is designed for non-science majors and deals with the following topics:

* The scientific study of humans
* Understanding the various human body organ systems and functions
* Nutrition
* Human Development and aging
* Human Genetics
* Biotechnology
* Human Evolution

**Course Resources**

**Required Textbook:**

* Ireland, K.A. Visualizing Human Biology (3rd Ed.) Hoboken, N.J: Wiley 2011

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| **Course Evaluation and Grading** | |  |  |  | | --- | --- | --- | | **Grading Scale** | | | | **Letter Grade** | **% Scale** | **Interpretation** | | A | 90-100% | Excellent | | B | 80-89% | Good | | C | 70-79% | Satisfactory | | F | 69 or lower | Failing |  |  |  | | --- | --- | | **Evaluations** | **Points** | | 1st MIDTERM (**03/19/12**) | 100 | | 2nd MIDTERM (**04/30/12**) | 100 | | ASSIGNMENTS (Take home & in-class) and QUIZZES | 200 | | FINALS (**05/21/12**) | 150 | | **Total:** | 550 | |
| **Course Policies** | **Attendance**  Grades and understanding course material are dependent upon consistent study and attendance. Each week of coursework includes time spent in class, completion of all assignments, quizzes and exams.  **Makeup policy**  Refer to the current school catalog and instructor for information on makeup policies.  **Plagiarism**  Plagiarism is the misrepresentation of the thoughts, words, or research of another as one’s own. It is a serious form of academic dishonesty. Acts of plagiarism may result in a downgrade, failing grade, zero, or a recommended grade of F. To avoid plagiarism, do not ‘copy and paste’ into assignments without using quotation marks and citing, in APA format, the source of the material. See the school catalog for its plagiarism policy.  **Drop and add**  Refer to the current school catalog section onacademic standards and policies pertaining to:schedule changes, dropping and/or adding classes. |

**Course Outline**

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| **Date** | **Chapters** | **Topics** |
| **01/23/12** | **CHAPTER 1-2**   * Introductory Concepts * Scientific Methods * Characteristics of living things | * Nine Characteristics of life * Homeostasis * Feedback Loop * Hierarchy of Organization of Life * Human Taxonomy * Scientific Method * Characteristics of primates * Nuture vs. Nurture * Four categories of consumers * Organs systems and Functions |
| **01/30/12** | **CHAPTER 3-5**   * Chemistry of Life * Cells * Tissues | * Four most common chemicals in living organisms * Electrolytes and Homeostasis * Three common chemical bonds * Six properties of water critical to life * Acid and Base * Four main categories of organic compounds and roles * ATP * Cell Theory and three basic parts * Types of Passive/Active transport through the membrane * Cell signaling mechanisms * Four tissue types in humans * Three types of muscle tissue * Anatomical positions |
| **02/06/12** | **CHAPTER 6-7**   * Skeleto-Muscular System * Nervous System | * Functions of the skeleto-muscular system * Two main divisions of the skeletal system and components * Types of joints * Neuromuscular junction (NMJ) * All or nothing basis of muscle contraction * Aerobic and Anaerobic pathway * Two components of the nervous system * Two components of the PNS * Sympathetic vs. Parasympathetic (Fight or Flight) nervous system * Common neurotransmitters (Ach, NE, and Epinephrine) * Three Coverings of the brain (Meninges) * Four parts of the human brain and functions of each * Reflex arc * Twelve Cranial Nerves and function |
| **02/13/12** | **CHAPTER 7-8**   * Continuation of Nervous System * Special Senses | * Three special senses (Photoreceptors, mechanoreceptors and chemoreceptors) * Visual accommodation * Common visual impairments (nearsightedness, farsightedness and astigmatism) * Rods vs. Cones |
| **02/20/12** | **NO CLASS** |  |
| **02/27/12** | **CHAPTER 9-10**   * Immunity and Lymphatic System * Infectious Diseases and Epidemiology | * Innate defense (1st and 2nd) vs. Specific defense * Three stages of General Adaptation Syndrome (GAS) * Functions and Organs of the lymphatic system * Cell mediated immunity vs. antibody mediated immunity * Active vs. Passive immunity * Action of autoimmune disease * Epidemic vs. Pandemic * Classification of bacteria (Shape, Staining and Genetics) * Five bacterial pathogens * AIDS * Three categories of pathogens other than viruses and bacteria |
| **03/05/12** | **CHAPTER 11-12**   * Cancer * Cardiovascular System | * Characteristics of aggressive/malignant/cancerous cells * Stages of growth of a aggressive/malignant/cancerous tumor * Four major categories of factors that cause cancer * Two most prevalent forms of environmental carcinogens (Chemical and Radiation) * ABCD’s of Melanoma * Four traditional ways for a definitive diagnosis of cancer * Basic structure of the heart and blood flow through it (Chambers, valves and vessels) * Common cardiovascular disorders and life threatening consequences * Role of blood in homeostasis * Formed elements in blood and specific functions * Blood Type and Blood typing |
| **03/12/12** | **CHAPTER 12 and REVIEW**   * Continuation of Cardiovascular System * Review of Chapters 1-12 |  |
| **03/19/12** | **1st MIDTERMS**  **CHAPTERS 1-12**  **100 points** |  |
| **03/26/12** | **CHPATER 13-14**   * Respiratory System * Nutrition | * Structures of the Respiratory System and general function (URT and LRT) * Exhalation vs. Inhalation * External vs. Internal Respiration * Triggers used by the body to set breathing/respiratory rate * Role of hemoglobin in respiration and carbon dioxide in maintaining blood ph * URTI vs. LRTI * COPD (Emphysema vs. Chronic Bronchitis) * Three classes of macronutrients * Micronutrients * My Pyramid * Anabolic vs. Catabolic * Nutritional disorders (Anorexia nervosa, Bulimia nervosa, and Obesity) * BMI * Three common types of bacteria in food poisoning * Marasmus vs. Kwashiorkor |
| **04/02/12** | **SPRING RECESS** |  |
| **04/09/12** | **CHAPTER 15-16**   * Digestive System * Urinary System | * Five basic functions of the digestive system * Organs of the digestive system and functions of each * Four layers of the digestive tract * Stages of deglutition * Phases of Digestion * Mechanical vs. Chemical digestion * Functions of the urinary system * Organs of the urinary system and functions of each * Male vs. Female urinary tract * Three types of incontinence * Common abnormal constituents of urine |
| **04/16/12** | **CHAPTER 17-18**   * Endocrine System * Reproductive System | * Function and organs of the endocrine system * Two main classes of hormones * Common steroid hormones and effects * Common nonsteroid hormones * Key components of the endocrine system * Hormones of the pituitary gland, primary action and associated disorder * Certain effects of aging on different organ system * Main purpose of the reproductive system and additional roles * Genotype vs. Phenotype * Mitosis vs. Meiosis * Spermatogenesis vs. Oogenesis * Four phases of human sexual response * Ovarian cycle vs. Uterine cycle * Female Athlete Triad * Different types of birth control * Main categories of STD’s, prevention and management |
| **04/23/12** | **CHAPTER 19-20**   * Pregnancy * Genetics * Review of Chapters 13-20 | * Three distinct phases of fertilization and implantation (prenatal) * Three basic kinds of cellular division and development in growing human * Various methods of medically assisted conception * HCG * Functions of the placenta * Fetal circulation vs. Neonatal circulation * Prenatal analysis, amniocentesis and chorionic villus sampling * Hormonal control and stages of labor * Seven traits Mendel used to study genetics * Mendel’s Law of Segregation vs. Law of Independent assortment * Interaction of Dominant and Recessive alleles * Transcription vs. Translation * Family Pedigree, sex-linked traits and genetic counseling * Common genetic disorders, their symptoms and predominant carriers |
| **04/30/12** | **2nd MIDTERMS**  **CHAPTERS 13-20**  **100 points** |  |
| **05/07/12** | * Biotechnology * Evolution * Review of Chapters 1-20 | * Four biotechnologies used in modern research * Gene Therapy * Goals of the Human Genome Project * Darwin’s Theory of Evolution (Four general statements) * Hardy-Weinberg’s five criteria that would allow a population’s gene pool to remain unchanging * Fitness determined by natural selection * Bottleneck effect and gene flow * Habitat, niche, ecosystem, population and biomes * Major biomes * Photosynthesis and Respiration * Effects of Humans on the biosphere |
| **05/14/12** | * Review of Chapters 1-20 |  |
| **05/21/12** | **FINALS**  **CHAPTERS 1-20**  **150 points** |  |