

## Human Biology (w/Lab) Syllabus

**BIO K115, Four sem. hr. credits**  
**CRN -10212**  
**Lecture sec. T1**  
**CRN -102013**  
**Laboratory sec. T1A**  
**Spring 2013**  
**Three Rivers Community College**  
**Norwich, CT 06360**

**Instructor:** Bill Dopirak  
**phone:** (860)892-5758  
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**Office Location:** C-130

**Office Hours:**  
**M: 11am-noon**  
**T & R 2:00 - 3:00 pm**  
**Or by appointment**

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**Required Text:** Goodennough, J. *et al.* 2012. *Biology of Humans: Concepts, applications, and issues 3<sup>rd</sup> Ed.* Pearson/Prentice Hall. 535p.

### **Catalog Description:**

An introductory presentation of human structure and function. A survey of body systems for students who want to be more knowledgeable about the life processes of their own bodies. Lab procedures do not involve animal dissections. This course is open to students in the Office Administrative Careers - Medical Option Program as well as non-science majors. This course does not meet the pre-admission requirement for the Nursing Program.

### **Primary Objectives:**

In addition to developing an understanding of human life processes, the student will be aided in developing understandings of the normal structures and functions of the human body. The student will also be aided in developing an understanding of the biological sciences as it may relate to other disciplines and the interdependence of all life forms and the natural laws in operation that ensures stability to these life forms. Finally, the student will be encouraged to become more aware and/or more knowledgeable in relation to current biological concerns such as pollution, chemical food additives, and genetic engineering and their physiological effect on the human body.

### **Attendance Policy:**

Students are expected to attend class and laboratory sessions regularly, as in accordance with school attendance policy. If a class or lab is missed due to circumstances beyond your control, please, be sure to notify your instructor and make the necessary arrangements for obtaining the lecture notes. You will be responsible for the material. A five point bonus will be implemented to your final grade if 100% attendance is noted in both lecture and laboratory periods.

**Grade Evaluation:**

There will be three examinations and two laboratory practical's. Although the subject matter does tend to build on itself, there will be three non-cumulative examinations. The third exam will be given during Final Exam week. There will be eleven quizzes. The lowest quiz grade will be dropped. Exam and quiz questions will consist of multiple choice and/or short answers. A ten minute oral presentation may also be required included.

**Grading:**

Final grade will be based on a percentage of the following:

\***Semester grade** = 60% = 50% Exams + 10% quizzes

‡**Laboratory grade** = 40% = 30% lab practicals + 10% lab reports

**Final Grade:**

100.0-99.0= A	79.4-77.5= C+
98.9-93.5= A	77.4-72.5= C
93.4-90.5= A-	72.4-69.5= C-
90.4-87.5= B+	69.4-63.5= D+
87.4-84.5= B	63.4-59.5= D
84.4-79.5= B-	59.4-00.0= F

**College Withdrawal Policy:**

A student who finds it necessary **to** discontinue a course once class has met must provide written notice to the registrar. Withdrawal forms are available at the Registrar's office on both campuses and the office at the Sub-base. Non-punitive "W" grades are assigned to any withdrawal requested before the various unrestricted withdrawal deadlines, **See Registrar for dates.**

**Disabilities Statement:**

If you have a disability that may affect your progress in this course, please meet with a Disability Service Provider (DSP) as soon as possible. Please note that accommodations cannot be provided until you provide written authorization from a DSP.

<b>TRCC Disabilities Service Providers</b> Counseling & Advising Office Room A-119	
<b>Matt Liscum</b> (860) 383-5240	<ul style="list-style-type: none"> <li>• Physical Disabilities</li> <li>• Sensory Disabilities</li> <li>• Medical Disabilities</li> <li>• Mental Health Disabilities</li> </ul>
<b>Chris Scarborough</b> (860) 892-5751	<ul style="list-style-type: none"> <li>• Learning Disabilities</li> <li>• ADD/ADHD</li> <li>• Autism Spectrum</li> </ul>

**BIO K115 Human Biology w/Lab**  
**Tentative Lecture and Laboratory Schedule**  
**Lecture:** M,W (9:30-11:50am) Room A-221  
**Laboratories:** F (9:00-11:00am) Room A-215

(Spring 2013)

<b>Topic</b>	<b>Week</b>	<b>Chapter</b>
		<b>1 &amp; 2</b>
Biological organization Chemical organization of life	<b>(1)</b>	<b>LAB- Scientific Method</b>
		<b>2 &amp; 3</b>
Chemistry and life (cont.) <b>Quiz 1:</b> Cellular organization	<b>(2)</b>	<b>LAB- Use of the microscope</b>
		<b>3</b>
Tissues <b>Quiz 2:</b> Skin, and organ systems	<b>(3)</b>	<b>LAB- Cellular biology</b>
		<b>4</b>
Musculoskeletal system <b>Quiz 3: Review for Exam I</b>	<b>(4)</b>	<b>LAB- Tissues</b>
		<b>5</b>
<b>EXAM 1</b> Musculoskeletal system (cont.)	<b>(5)</b>	<b>LAB- Skeletal anatomy</b>
		<b>6</b>
<b>Quiz 4:</b> Blood Cardiovascular system	<b>(6)</b>	<b>LAB PRACTICAL</b>
		<b>11 &amp;12</b>
<b>Quiz 5:</b> Cardio system (cont.) Lymphatic system	<b>(7)</b>	<b>LAB- Muscular anatomy</b>
		<b>13</b>
<b>Quiz 6:</b> Immunity Respiratory system	<b>(8)</b>	<b>LAB- Cardiology</b>
		<b>14</b>
<b>Quiz 7:</b> Nervous system	<b>(9)</b>	<b>LAB- Special senses</b>
		<b>8 &amp; 9</b>
<b>Quiz 8:</b> Nervous system (cont.) Review for exam II	<b>(10)</b>	<b>LAB- Respiratory</b>
		<b>10</b>
<b>EXAM II</b> Endocrine system	<b>(11)</b>	<b>LAB- Nutrient in food</b>
		<b>15</b>
<b>Quiz 9:</b> Digestive System Cellular Respiration	<b>(12)</b>	<b>Lab- Urogenital system</b>
		<b>16 &amp; 17</b>
<b>Quiz 10:</b> <b>Urinary system</b>	<b>(13)</b>	<b>OPEN LAB</b>
		<b>16 &amp; 17</b>
<b>Quiz 11:</b> Reproductive system	<b>(14)</b>	<b>LAB PRACTICAL</b>
<b>Quiz 12:</b> Review for Final Exam	<b>(15)</b>	<b>FINAL EXAM</b>

# Human Biology

## BIO K115

### Topical Outline

- I** Biological organization
  - a)** characteristics of life
  - b)** organizational schemes of life
  - c)** scientific method
  
- II** Chemical organization of life
  - a)** structure of matter
  - b)** atoms, molecules, and bonding of the elements
  - c)** organic versus inorganic compounds
  - d)** groups of bioorganic molecules of humans
  - e)** energy and metabolism
  
- III** Cellular organization
  - a)** the cell theory
  - b)** organelles and cellular structure
  - c)** mitosis and meiosis
  - d)** plasma membranes and chemical transport through them
  - e)** cellular respiration
  
- IV** Human structural organization
  - a)** tissues
  - b)** organs
  - c)** systems and homeostasis
  - d)** body cavities and membranes
  
- V** Coordinating mechanisms of the human body
  - a)** nervous system
  - b)** sensory system
  - c)** endocrine system
  
- VI** Human support and locomotion
  - a)** skeletal system
  - b)** muscular system
  
- VII** Human life support mechanisms
  - a)** digestive system
  - b)** cardiovascular system
  - c)** immune system
  - d)** respiratory system
  - e)** excretory system
  
- VII** Human reproduction and development
  - a)** meiosis and gametogenesis
  - b)** male and female reproductive systems
  - c)** human development

## **XI** Human genetics

- a) chromosomal inheritance
- b) molecular genetics
- e) gene inheritance
- d) genetic disorders

### **Specific Objectives of the Course:**

Upon completion of this course, the student should be able to correctly answer questions about or discuss ideas and issues associated with the following objectives.

#### **A) Describe biological organization:**

- 1. Be able to discuss characteristics of life and relate human characteristics to them.
- 2. Describe the basic organizational schemes of living organisms.
- 3. Describe the scientific method of inquiry.

#### **B) Describe the chemical organization of living organisms:**

- 1. Distinguish between matter and energy.
- 2. Discuss the organizational aspect of matter.
- 3. Distinguish between organic and inorganic compounds.
- 4. Describe and identify the four major groups of bioorganic compounds making up humans.
- 5. Describe and identify the major groups of inorganic compounds making up humans.
- 6. Define metabolism.

#### **C) Describe cellular structure and function:**

- 1. Discuss the importance of cells.
- 2. List and describe the major structural aspects of cells
- 3. Describe and list the major organelles of cells.
- 4. Describe mitosis.
- 5. Describe the plasma membrane structure.
- 6. Discuss methods of nutrient and chemical transport into and out of cells.
- 7. Briefly describe cellular respiration.

#### **D) Describe basic human structural organization:**

- 1. Describe the functions, structure, classification, and identification of tissues.
- 2. Define organs and using skin as an example, describe its basic structure.
- 3. Relate cell, tissue, organ, organ system, and homeostasis to human organization.
- 4. Describe body cavities and their lining membranes.

## **Specific Objectives (cont.)**

### **E) Discuss mechanisms for coordinating the human body by describing:**

- 1.** The human nervous system by:
  - a.** Describe neurons, impulses, and synapses.
  - b.** Describe the organization of the central nervous system.
  - c.** Describe the organization of the peripheral nervous system.
  - d.** Describe sense receptors with a focus on the ear and the eye.
  
- 2.** The human endocrine system by:
  - a.** Define hormones and describe their basic method of action and control.
  - b.** Describe the major endocrine glands and the hormones produced by them.

### **F) Describe the support and locomotion mechanisms of the human body by describing the skeletal and muscular system:**

- 1.** Describe functions of overall bone structure.
- 2.** Identify the bones of the human skeleton.
- 3.** Classify joints and joint movement.
- 4.** Describe functions of and overall structure of a muscle.
- 5.** Describe the basic mechanics of muscle contraction.
- 6.** Be able to identify the major muscles of the muscular system.

### **G) Describe the major life-support mechanisms of the body by discussing the following:**

- 1.** Describe the process of digestion:
  - a.** Discuss the basic anatomy of the G-I tract.
  - b.** Describe the digestion and absorption of food.
- 2.** Describe the cardiovascular system:
  - a.** Discuss the functional and structural organization of the circulatory pathway.
  - b.** Describe the structure of the heart and discuss how its beat is maintained.
  - c.** Describe the circulation of blood through the body.
  - d.** Describe the structure and function of blood.
- 3.** Describe the basic mechanics of immunity.
- 4.** Describe the makeup of the respiratory system:
  - a.** Describe the airway.
  - b.** Describe the mechanics of breathing.
  - c.** Describe the exchange of oxygen and carbon dioxide gases
- 5.** Describe the organization of body fluids and their maintenance:
  - a.** Organize the body into fluid compartments and discuss their mechanics of balance.
  - b.** Describe the urinary system.
  - c.** Describe the process of urine formation.

**Specific Objectives (cont.)**

- H)** Describe the process of human reproduction and development:
1. Describe meiosis and gamete formation.
  2. Describe the structure and function of the male and female reproductive systems.
  3. Discuss the basic process of human development.
- I)** Describe human genetics:
1. Discuss the significance of chromosomes in heredity.
  2. Describe chromosomal inheritance.
  3. Describe the structure of DNA and its relation to heredity.
  4. Briefly describe the process of protein synthesis.
  5. Describe the mechanics of gene inheritance and relate genetic disorders to it.

**Academic and Classroom Misconduct:**

The instructor has the primary responsibility for control over classroom behavior and maintenance of academic integrity, and can order the temporary removal or exclusion from the classroom, and/or laboratory, of any student engaged in conduct illative of the general rules and regulation of the institution. Extended or permanent exclusion from classroom, and/or laboratory, or further disciplinary action can be effected only through appropriate college procedure. Plagiarism, cheating, or any form of academic dishonesty is prohibited. Students guilty of academic dishonesty directly or indirectly will receive a zero for an exercise or exam and may receive an F for the course in addition to other possible disciplinary sanctions that maybe imposed trough the regular institutional procedures. Any student that believes he or she has been erroneously accused may appeal the case through the appropriate institutional procedures if their grade was affected.