Course Number: BIO 106
Course Title: HUMAN ANATOMY
Credits: 4

Hours: 3 lecture/2 lab

Co- or Pre-requisite: MAT 037 (or MAT 037A and 037B)

Catalog description:
Introduction to the human body with emphasis of terminology and body organization from the cellular level to organ systems. Topics include histology and skeletal, muscular, nervous, integumentary, digestive, respiratory, urinary, reproductive, circulatory, and endocrine systems. (Designed for programs requiring a one-semester human anatomy course; does not satisfy requirements in biology or health programs.)

Required texts/other materials:
Hole’s Essentials of Human Anatomy & Physiology, 13th edition (with Connect access)
Shier, Butler, and Lewis

Revision date: 8/2017
Course coordinator: Professor Ellen Genovesi,
Phone - (609) 570-3363
Email - genoveea@mccc.edu
**Course Competencies/Goals:**

_The student will be able to:_

1. Identify, describe, and distinguish different body organizations (e.g. organ systems, organs, tissues, cells, and body cavities).
2. Integrate anatomy at the cellular, histological and gross levels.
3. Analyze structures and functions of the organ systems of the human body.
4. Examine chemical, metabolic, and regulatory processes as related to anatomy and physiology.
5. Utilize simulated cadaver dissections or anatomical models to investigate anatomical structures.

**Course-specific General Education Knowledge Goals and Core Skills.**

**General Education Knowledge Goals**

Goal 1. Communication. Students will communicate effectively in both speech and writing.

Goal 3. Science. Students will use the scientific method of inquiry, through the acquisition of scientific knowledge.

Goal 4. Technology. Students will use computer systems or other appropriate forms of technology to achieve educational and personal goals.

**MCCC Core Skills**

Goal A. Written and Oral Communication in English. Students will communicate effectively in speech and writing, and demonstrate proficiency in reading.

Goal B. Critical Thinking and Problem-solving. Students will use critical thinking and problem solving skills in analyzing information.

Goal E. Computer Literacy. Students will use computers to access, analyze or present information, solve problems, and communicate with others.

Goal F. Collaboration and Cooperation. Students will develop the interpersonal skills required for effective performance in group situations.

**Unit I: Levels of Organization & Integument**

**Learning Objectives: The student will be able to...**

1. Explain how anatomy and physiology are related. 
   (Course Competencies/Goals 1; Gen Ed Goal 1, 3 & 4; MCC Core Skills A, B, E, &F.)
2. Identify and describe the levels of organization in the human body and the major characteristics and requirements of life and how they pertain to metabolism and homeostasis. 
   (Course Competencies/Goals 1 & 4; Gen Ed Goal 1, 3 & 4; MCC Core Skills A, B, E, & F)
3. Identify the major body cavities including their subdivisions & membranes and the major organ systems including their components and functions. 
   (Course Competencies/Goals 1 & 5; Gen Ed Goal 1, 3 & 4; MCC Core Skills A, B, & E)
4. Use anatomical positional terms to describe relative positions, body sections, and body regions. 
   (Course Competencies/Goals 1 & 5; Gen Ed Goal 3 & 4; MCC Core Skills A, B, & E)
5. Describe the locations, functions, structure and distinguishing characteristics of the four major tissue types: epithelial, connective, muscle, and nervous. 
   (Course Competencies/Goals 1, 2, & 5; Gen Ed Goal 1, 3 & 4; MCC Core Skills A, B, E, & F)
6. Describe the functions, structures, and organization of the integument of the skin as it pertains to regions, layers, and cell types. (Course Competencies/Goals 2 & 5; Gen Ed Goal 1, 3 & 4; MCC Core Skills A, B, & E)
7. Describe the anatomy and physiology of the accessory structures of the skin. (Course Competencies/Goals 2, 3, & 5; Gen Ed Goal 1, 3 & 4; MCC Core Skills A, B, & E)
8. Summarize the factors that contribute to skin color, processes involved in wound healing and prevention of skin cancer, and how the skin helps regulate body temperature. (Course Competencies/Goals 4 & 5; Gen Ed Goal 1, 3 & 4; MCC Core Skills A, B, E, & F)

Unit II: Support and Movement

Learning Objectives: The student will be able to...

1. Describe the functions of the bone and classify them according to shape including contrasting the macroscopic and microscopic structure of long bones. (Course Competencies/Goals 1, 2, 3 & 5; Gen Ed. Goals 1, 3, & 4; MCCC Core Skills A, B, E.)
2. Distinguish between intramembranous and endochondral ossification and explain how bones grow and develop. (Course Competencies/Goals-2, 4 & 5; Gen Ed. Goals 3, & 4; MCCC Core Skills A, B, & E.)
3. Identify and locate bones and their major features. (Course Competencies/Goals 1, 3, & 5; Gen Ed. Goals 1, 3, & 4; MCCC Core Skills A, B, E, & F.)
4. Distinguish between components of the axial and appendicular skeleton. (Course Competencies/Goals 1, 3, & 5; Gen Ed. Goals 1, 3, & 4; MCCC Core Skills A, B, E, & F.)
5. Classify joints according to the degree of movement and type of tissues binding the bones together, and explain how skeletal muscle produce movement. (Course Competencies/Goals-1, 3 & 5; Gen Ed. Goals 1, 3, & 4; MCCC Core Skills A, B, E, & F.)
6. Identify the organization and microanatomy of skeletal muscle and describe the components of the sarcomere. (Course Competencies/Goals 2 & 5; Gen Ed. Goals 1, 3, & 4; MCCC Core Skills A, B, & E.)
7. Describe the neuromuscular junction and explain how muscular contraction moves body parts and helps maintain posture and muscle tone. (Course Competencies/Goal 3; Gen Ed. Goals 1, 3, & 4; MCCC Core Skill A, B, E, & F.)
8. Compare the contraction mechanism and histology of skeletal, smooth, and cardiac muscle fibers. (Course Competencies/Goals 2 & 5; Gen Ed. Goals 3 & 4; MCCC Core Skill E.)
9. Identify major skeletal muscles of the human body and describe their origin, action, and insertions. (Course Competencies/Goals 3 & 5; Gen Ed. Goals 1, 3, & 4; MCCC Core Skills A, B, & E.)

Unit III: Integration, Coordination, and Transportation

Learning Objectives: The student will be able to...

1. Describe the functions and organs of the central and peripheral nervous system, including the brain, spinal cord, cranial, and peripheral nerves and their interrelationship. (Course Competencies/Goals-1, 2, 3, & 5; Gen Ed. Goals 1, 3, & 4; MCCC Core Skills A, B, & E, F.)
2. Compare the structure and function of neurons and neuroglia cells. (Course Competencies/Goals 1, 2 & 5; Gen Ed. Goals 1, 3, & 4; MCCC Core Skills A, B, & E.)
3. Describe the synapse and the sequence of events in synaptic transmission including the function of neurotransmitters. (Course competencies/Goals-2 & 4; Gen Ed. Goals 3 & 4; MCCC Core Skills B & E.)
4. Identify the important components, major functions, and characteristics of blood. (Course Competencies/Goals 1, 2, & 5; Gen Ed. Goals 1, 3, & 4; MCCC Core Skills A , B, & E.)
5. Summarize the control of red blood cell production. (Course Competencies/Goals 2 & 4; Gen Ed. Goals 3 & 4; MCCC Core Skills B & E.)
6. Explain the mechanisms involved in hemostasis. (Course Competencies/Goals 4; Gen Ed. Goals 3 & 4; MCCC Core Skills B & E.)
7. Analyze the relationship between blood type and Rh status in blood transfusions. (Course Competencies/Goals 4; Gen Ed. Goals 1, 3 & 4; MCCC Core Skills A, B, E, & F.)
8. Describe the structure and function of the components of the cardiovascular system including the major parts of the heart. (Course Competencies/Goals 1, 3, 5; Gen Ed. Goals 1, 3, & 4; MCCC Core Skills A, B, & E.)
9. Describe the cardiac cycle and cardiac conduction system (Course Competencies/Goals 3 & 4; Gen Ed. Goals 1, 3, & 4; MCCC Core Skills B & E.)
10. Explain how blood pressure is produced and controlled (Course Competencies/Goals 3 & 4; Gen Ed. Goals 1, 3, & 4; MCCC Core Skills A, B, E, & F)
11. Identify, locate, and describe the structure of blood vessels, including the major arteries and veins. (Course Competencies/Goals 3 & 5; Gen Ed. Goals 1, 3, & 4; MCCC Core Skills A, B, E, & F.)

Unit IV: Absorption and Respiration

Learning Objectives: The student will be able to...
1. Describe the structures and function of the digestive system including the histology of the stomach and small intestine. (Course Competencies/Goals 1-5; Gen Ed. Goals 1, 3, & 4; MCCC Core Skills A, B, & E.)
2. Describe and evaluate the components of an adequate diet including major sources of carbohydrates, lipids, and proteins, vitamins, major minerals and trace elements. (Course Competencies/Goals-4; Gen Ed. Goals 1, 3, & 4; MCCC Core Skills A, B, E, &F.)
3. Identify the general structure and functions of organs in the respiratory system. (Course Competencies/Goals 1-5; Gen Ed. Goals 1, 3, & 4; MCCC Core Skills A, B, E, & F.)
4. Compare external and internal respiration in terms of their functions, processes, and interdependency in the body. (Course Competencies/Goals 4; Gen Ed. Goals 1, 3 & 4; MCCC Core Skills A, B, E, & F.)
5. Explain the mechanisms of inspiration and expiration and define each of the respiratory volumes and capacities. (Course Competencies/Goals 4 & 5; Gen Ed. Goals 1, 3 &4; MCCC Core Skills B & E.)
6. Describe the structure and function of the respiratory membrane, including the importance of the exchange of gases between the air and blood. (Course Competencies/Goals-2-4; Gen Ed. Goals 1, 3 & 4; MCCC Core Skills A, B, E, & F.)

Unit V: Excretion and Human Reproduction

Learning Objectives: The student will be able to...
1. Describe the structures and function of the urinary system including the components of the nephron. (Course Competencies/Goals1-5; Gen Ed. Goals 1, 3, & 4; MCCC Core Skills A, B, & E.)
2. Describe the formation, composition, and elimination of urine, including the micturation reflex, and the analyze factors that affect the regulation of urine concentration and volume. (Course Competencies/Goals-4; Gen Ed. Goals 1, 3, & 4; MCCC Core Skills A, B, E, &F.)
3. Identify the structures and function of the male and female reproductive system. (Course Competencies/Goals1-5; Gen Ed. Goals 1, 3, & 4; MCCC Core Skills A, B, E, & F.)
4. Describe the process of spermatogenesis and the structure of sperm, and analyze factors that impact the production and pathway of sperm and semen. (Course Competencies/Goals1-5; Gen Ed. Goals 1, 3, & 4; MCCC Core Skills A, B, E, & F.)
5. Describe the process of oogenesis and major events in the female reproductive cycle. (Course Competencies/Goals 4; Gen Ed. Goals 1, 3 & 4; MCCC Core Skills A, B, & E.)

**Evaluation of student learning:**
Questions on exams are taken from lecture, reading assignments, handouts, or other material presented. It is the student's responsibility to be present at all exams. There are NO MAKEUP EXAMS. If you miss a lecture exam for any reason the final exam will be counted twice. If you miss a second lecture exam you will receive a zero for that exam. Students will complete a Connect LearnSmart Assignment for each chapter of study. Additional lecture assignments such as discussion boards or essays may be added as per instructor discretion.

The laboratory grade is based on lab practical exams and weekly APR module assignments. The laboratory grade is approximately 35% of the final grade for the course.

*The instructor reserves the right to change the grading procedure as needed*

**Grading:**

<table>
<thead>
<tr>
<th>Grade</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>93-100%</td>
</tr>
<tr>
<td>B+</td>
<td>87-89%</td>
</tr>
<tr>
<td>C+</td>
<td>77-79%</td>
</tr>
<tr>
<td>D</td>
<td>60-69%</td>
</tr>
<tr>
<td>A-</td>
<td>90-92</td>
</tr>
<tr>
<td>B</td>
<td>83-86</td>
</tr>
<tr>
<td>C</td>
<td>70-76</td>
</tr>
<tr>
<td>F</td>
<td>&lt;60%</td>
</tr>
<tr>
<td>B-</td>
<td>80-82</td>
</tr>
</tbody>
</table>

Examination questions may be objective (multiple-choice), T/F, matching, fill-in-the-blank, and/or short answer essay. The final exam is cumulative and will be given during the final exam period. In order to pass the class you must take the final exam.

**Accommodations**
Mercer County Community College is in compliance with both the ADA and section 504 of the Rehabilitation Act. If you have, or believe you have, a differing ability that is protected under the law please see Arlene Stinson in LB 216 {570-3525 {stinsona@mccc.edu} for information regarding support services.

**Academic Integrity Statement:**
Cheating of any kind is not tolerated. Cheating includes copying papers or website information, presenting another person's work as one's own in any way, looking at notes during a unit test or unit lab test, or obtaining information about an exam, quiz, or any other information that other students do not have and the instructor does not intend them to have, or communication with another student during a unit test or unit lab test. Discussion responses should be written in your own words. All violations of academic integrity will be reported to the Academic Integrity Committee. For additional information: Refer to the MCCC Student Handbook.

**BIO106 SCHEDULE OF LECTURE TOPIC AND LAB WORK**

<table>
<thead>
<tr>
<th>Week</th>
<th>Lecture Topic</th>
<th>LearnSmart Modules (Connect)</th>
<th>Laboratory Topic</th>
<th>APR Lab Assignment</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Chapter 1 - Introduction, terminology, organization,</td>
<td>LS Chapter 1</td>
<td>Unit One - Body Orientation</td>
<td>APR Module 1</td>
</tr>
<tr>
<td>Week</td>
<td>Chapter Title</td>
<td>Lecture Name</td>
<td>Chapter</td>
<td>Unit</td>
</tr>
<tr>
<td>-----------</td>
<td>-------------------------------</td>
<td>--------------</td>
<td>---------</td>
<td>------</td>
</tr>
<tr>
<td>II</td>
<td>Chapter 5 – Histology</td>
<td></td>
<td>LS 5</td>
<td>1</td>
</tr>
<tr>
<td>III</td>
<td>Chapter 6 – Integumentary</td>
<td></td>
<td>LS 6</td>
<td>1</td>
</tr>
<tr>
<td>IV</td>
<td>Lecture Exam I</td>
<td>Lecture Exam</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Chapter 7 – Skeletal System</td>
<td></td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>V</td>
<td>Chapter 7 – Skeletal System</td>
<td></td>
<td>LS 7</td>
<td>1</td>
</tr>
<tr>
<td>VI</td>
<td>Chapter 8 – Muscular System</td>
<td></td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>VII</td>
<td>Chapter 8 – Muscular System</td>
<td>Lecture Exam</td>
<td>LS 8</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Chapter 7 – Skeletal System</td>
<td></td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>VIII</td>
<td>Chapter 9 – Nervous System</td>
<td></td>
<td>LS 9</td>
<td>2</td>
</tr>
<tr>
<td>IX</td>
<td>Chapter 12 - Blood</td>
<td></td>
<td>LS 12</td>
<td>2</td>
</tr>
<tr>
<td>X</td>
<td>Chapter 13 – Cardiovascular</td>
<td>LAB PRACTICAL</td>
<td>LS 13</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>System</td>
<td>II</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>XI</td>
<td>Chapter 13 – Cardiovascular</td>
<td>Lecture Exam</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>System (cont)</td>
<td></td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>XII</td>
<td>Chapter 15</td>
<td></td>
<td>LS 15</td>
<td>3</td>
</tr>
<tr>
<td>XIII</td>
<td>Chapter 19</td>
<td></td>
<td>LS 19</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Respiratory System</td>
<td></td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>Week XIV</td>
<td>Lecture Exam 4</td>
<td>Review for Lab Practical III</td>
<td></td>
<td></td>
</tr>
<tr>
<td>----------</td>
<td>----------------</td>
<td>----------------------------</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Chapter 17 Urinary System</td>
<td>LS Chapter 17</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Week XV</td>
<td>Chapter 19 – Reproductive System</td>
<td>LS Chapter 19</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>LAB PRACTICAL III</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Final Exam Week</td>
<td>Lecture Exam 5 Reproductive System &amp; Cumulative Final</td>
<td>NO LAB</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>