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### BIOH 424.80: Human Form and Function Teaching Assistant II - Honors

Heather D. Labbe

*University of Montana - Missoula*, [heather.labbe@umontana.edu](mailto:heather.labbe@umontana.edu)

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## BIOH 424: Human Form and Function Teaching Assistant II

### Course Syllabus and Policies

**Instructor:** Heather Labbe

**Office:** ISB 103A      **Phone:** 243-5436

**Email:** [heather.labbe@mso.umt.edu](mailto:heather.labbe@mso.umt.edu)

**Office Hours:** Tuesdays 9-11am (or by appointment)

This course is a practicum that provides the participant the ability to expand their anatomical and physiological knowledge base, professional growth, and public speaking skills. The participant will integrate anatomical knowledge and a strong understanding of physiological principles and put that knowledge base into practical use by providing lab based instruction to current BIOH 113 students.

This course will provide participants with the skills needed to establish and maintain an effective rapport with individual students/small student groups and to design instruction around adult learning principles. This course is open to students who received an 'A' or 'B' in BIOH 112 and 113, or those who have one year of upper division anatomical and physiological coursework with a cadaver lab. Consent of the instructor is also required.

### Participants are required to:

- Teach at least 8 (1.5 hour) cadaver prosection tutorials a semester, each with a different focus topic relating to current lecture discussion material.
  - Generally, I use the "Doodle" appointment scheduling webpage to schedule your participation on the tutorial dates. You will receive an email asking you to respond to the Doodle poll and indicate your availability. You must do so prior to the poll deadline.
  - This semester's dates and times are as follows:
    - Thursdays 1:30– 3 PM
    - Fridays 2:30 – 4 PM
    - Sundays 7:00 - 8:30 PM
    - Mondays 9:00 – 10:30 AM
- Prosection 1: Overview of Organ Systems- Focus on Terminology and Identification  
February 12th, 13th, 15th, and 18th (Wed at 10:30am due to President's Day Holiday)
  - 
  - Prosection 2: Focus on Blood and the Cardiovascular System  
March 12th, 13th, 15th, and 16th
  - 
  - Prosection 3: Focus on the Respiratory and Digestive Systems  
April 9th, 10th, 12th, and 13th
  - 
  - Prosection 4: Focus on the Urinary and Reproductive Systems  
May 7th, 8th, 10th, and 11th
- Meet for two hours with the course instructor and the other teaching assistants prior to each set of scheduled tutorials to familiarize oneself with the material and topics to be emphasized.
  - This semester, the course meeting time will be **Wednesdays from 10am to noon** on the Wednesdays prior to the prosection visits. If you are unable to attend at least one hour of these meetings, you must contact the instructor in order to arrange for an alternative prep time.

- Maintain open communication with the course instructor regarding student issues that may make themselves evident during lab tutorial sessions.
- Proctor exams for the BIOH 113 course (3 per semester including the final examination)
  - Exam dates this semester are: **February 26<sup>th</sup>, April 9<sup>th</sup>, and May 13<sup>th</sup>**
- Provide assistance with grading, organizing teaching/exam materials, designing instructional rotations.
- Monitor the Moodle course website for important announcements.

## Learning Goals:

(Adapted from the Human Anatomy and Physiological Society)

Upon completion of this course, a student will be able to:

1. Understand the complex principles associated with the Human Anatomy and Physiology and assist in teaching these concepts to students enrolled in BIOH113.
  - Demonstrate a vocabulary of appropriate terminology to effectively communicate information related to anatomy and physiology.
  - Demonstrate practical knowledge of human gross and microscopic anatomy.
  - Identify anatomical structures and explain the physiological functions of body systems.
  - Describe development, regeneration, normal function of body systems
  - Use anatomical knowledge to predict physiological consequences, and use knowledge of function to predict the features of anatomical structures.
  - Demonstrate understanding of chemical and biological principles and knowledge that serve as the foundation for understanding of human anatomy & physiology
  - Describe energy-transfer processes in human body & predict consequences of interrupted or pathologic energy transfer
  - Describe cellular processes governing development, growth, & normal function of the human body
2. Use a multi-modal instructional approach to help students enrolled in BIOH113 to better understand the complexity of the material.
  - Demonstrate laboratory procedures used to examine anatomical structures and evaluate physiological functions of each organ system.
  - Demonstrate the ability to present material effectively to small groups of adult learners.
  - Communicate clearly and in a way that reflects knowledge and understanding of the human body and demonstrates the ability to adapt information to different audiences and applications.
3. Understand and discuss the methodology and activities scientists use to gather, validate and interpret data related to natural processes as it applies to human anatomy and physiology.
  - Summarize and evaluate the experimental design and methodology of peer-reviewed research articles that relate to human anatomy and physiology.
  - Interpret graphs of anatomical and physiological data.
4. Detect patterns, draw conclusions, develop conjectures and hypotheses regarding normal human physiology and help students anticipate the pathophysiology that could result when homeostasis is disrupted.
  - Recognize and explain the interrelationships within and between anatomical and physiological systems of the human body.
  - Recognize and explain the principle of homeostasis and the use of feedback loops to control physiological systems in the human body.
5. Understand and discuss how scientific laws and theories are verified by quantitative measurement, scientific observation, and logical/critical reasoning as they pertain to advances in medical understanding.
  - Employ the scientific process for understanding principles of anatomy & physiology
  - Evaluate scientific value of new A&P observations & data
  - Synthesize ideas to make a connection between knowledge of anatomy and physiology and real-world situations, including healthy lifestyle decisions and homeostatic imbalances.

**All BIOH 424 students will demonstrate competence in the topics listed below in order to assist with teaching BIOH 113 students.**

### **HAPS Modules Learning Outcomes for BIOH 113:**

#### **Module A: Body Plan and Organization**

Students who have completed this section of the course should understand the scope of studies in anatomy and physiology and be able to use and understand descriptive anatomical and directional terminology.

Topics:

- Anatomical position
- Body planes & sections
- Body cavities & regions
- Directional terms
- Basic terminology
- Levels of organization
- Survey of body systems

#### **Module B: Homeostasis**

Students who have completed this section of the course should be able to explain the basic concept of homeostasis and how homeostatic mechanisms apply to body systems.

Topics:

- General types of homeostatic mechanisms
- Examples of homeostatic mechanisms
- Application of homeostatic mechanisms
- Predictions related to homeostatic imbalance, including disease states & disorders

#### **Module J: Endocrine System**

Students who have completed this section of the course should be able to identify and describe the major gross and microscopic anatomical components of the endocrine system and explain the functional roles of their respective hormones in communication, control, and integration.

Topics:

- General functions of the endocrine system
- Chemical classification of hormones & mechanism of hormone actions at receptors
- Control of hormone secretion
- Control by the hypothalamus & pituitary gland
- Identity, source, secretory control, & functional roles of the major hormones produced by the body
- Local hormones (paracrines & autocrines) & growth factors
- Hormonal response to stress
- Application of homeostatic mechanisms
- Predictions related to homeostatic imbalance, including disease states & disorders

#### **Module K: Cardiovascular System**

Students who have completed this section of the course should be able to identify and describe the major gross and microscopic anatomical components of the cardiovascular system and explain their functional roles in transport and hemodynamics.

Topics:

- General functions of the cardiovascular system
- Composition of blood plasma
- Identity, microscopic anatomy, numbers, formation, & functional roles of the formed elements of the blood
- Hemostasis, including coagulation of the blood
- ABO & Rh blood grouping
- Gross & microscopic anatomy of the heart, including the conduction system
- Physiology of cardiac muscle contraction
- Blood flow through the heart
- Conduction system of the heart & the electrocardiogram

- Cardiac cycle
- Regulation of cardiac output, stroke volume & heart rate
- Anatomy & functional roles of the different types of blood vessels
- Pattern of blood circulation throughout the body, including systemic, pulmonary, coronary, hepatic portal, & fetal circulations
- Blood pressure & its functional interrelationships with cardiac output, peripheral resistance, & hemodynamics
- Application of homeostatic mechanisms
- Predictions related to homeostatic imbalance, including disease states & disorders

### **Module M: Respiratory System**

Students who have completed this section of the course should be able to identify and describe the major gross and microscopic anatomical components of the respiratory system and explain their functional roles in breathing/ventilation and in the processes of external and internal respiration.

Topics:

- General functions of the respiratory system
- Gross & microscopic anatomy of the respiratory tract & related organs
- Mechanisms of pulmonary ventilation
- Pulmonary air volumes & capacities
- Mechanisms of gas exchange in lungs & tissues
- Mechanisms of gas transport in the blood
- Control of pulmonary ventilation
- Application of homeostatic mechanisms
- Predictions related to homeostatic imbalance, including disease states & disorders

### **Module N: Digestive System and Metabolism**

Students who have completed this section of the course should be able to identify and describe the major gross and microscopic anatomical components of the digestive system and explain their functional roles in digestion, absorption, excretion and elimination. In addition, students should be able to explain the functional relationship among cellular, tissue and organ level metabolism, the role nutrition plays in metabolism, and the mechanisms by which metabolic rate is regulated in the body.

Topics:

- General functions of the digestive system
- Gross & microscopic anatomy of the alimentary canal
- Gross & microscopic anatomy of the accessory glands & organs
- Peritoneum & mesenteries
- Motility in the alimentary canal
- Mechanical & chemical processes of digestion
- Processes of absorption
- Hormonal & neural regulation of digestive processes
- Application of homeostatic mechanisms
- Predictions related to homeostatic imbalance, including disease states & disorders
- Nutrition
- Introduction to metabolism
- Cellular respiration & the catabolism & anabolism of carbohydrates, lipids, & proteins
- Metabolic roles of body organs
- Energy balance & thermoregulation
- Application of homeostatic mechanisms

### **Module P: Urinary System, Fluid, Electrolyte and pH balance**

Students who have completed this section of the course should be able to identify and describe the major gross and microscopic anatomical components of the urinary system and explain their functional roles. In addition, students should be able to identify and describe the physiology of the homeostatic mechanisms that control fluid/electrolyte and acid/base balance.

Topics:

- General functions of the urinary system
- Gross & microscopic anatomy of the urinary tract
- Functional processes of urine formation, including filtration, reabsorption, secretion, & excretion
- Factors regulating & altering urine volume & composition, including the renin-angiotensin system and the roles of aldosterone & antidiuretic hormone
- Endocrine activities of the kidneys, such as vitamin D activation & secretion of erythropoietin
- Regulation of water intake & output
- Description of the major fluid compartments, including intracellular, extracellular, intravascular, & interstitial
- Volume & chemical composition of major compartment fluids
- Movements between the major fluid compartments, causal forces, volumes, & electrolyte balance
- Buffer systems & their roles in acid/base balance
- Role of the respiratory system in acid/base balance
- Role of the urinary system in acid/base balance

### **Module R: Reproductive Systems**

Students who have completed this section of the course should be able to identify and describe the major gross and microscopic anatomical components of the reproductive system and explain their functional roles in reproduction and inheritance.

Topics:

- General functions of the male & female reproductive systems
- Gross & microscopic anatomy of the male & female reproductive systems
- Gametogenesis
- Specific roles of the female reproductive organs
- Specific roles of the male reproductive organs
- Regulation of reproductive functions

### **Grading:**

Students will be required to successfully complete an online assessment on the course online resource prior to each of the four scheduled BIOH 113 lab visits. (10 points each)

- Online assessments must be completed with at least a 90% score in order for the student to be approved to teach the lab visit.

Students will be required to develop a teaching presentation for each of their chosen lab rotations throughout the semester. (15 points each)

- Students in the same rotation teaching cohort will be required to post their proposed teaching presentations to a common discussion forum on the course online resource.
- Students will be expected to collaborate with others in their teaching cohort to develop a teaching presentation that will be consistent for that rotation across all of the available lab visits.

Each teaching presentation will be presented to the course instructor prior to the lab visits.

- Presentations will be evaluated for accuracy and clarity by the course instructor on the course meeting scheduled prior to each BIOH 113 cadaver lab visit series. (20 points each)

Students will submit potential exam/quiz questions for the BIOH 113 students to the course online resource prior to each of the exams, and serve as proctors for each exam. (10 points each)

If teaching and proctoring commitments are not honored, students will lose points that will affect the course grade.

- Failure to notify the course instructor of any absences prior to scheduled prosection tutorials and/or exam dates will result in a drop of one letter grade for each occurrence.