BIO-691 – Advanced Human Anatomy
Course Syllabus: Summer I 2023: 6/12/23 - 6/30/23

BIO-691: Special Topics in the Life Sciences - Advanced Human Anatomy & Physiology (3 credits)

IN PERSON COURSE W/ REMOTE SYNCHRONOUS ELEMENTS on 6/12 & 6/19

This immersive and intensive course reviews and discusses advanced, integrated concepts in human anatomy and physiology. First, this course reviews the anatomical language necessary for clinical communications. The course discusses the embryonic development, microanatomy (histology), anatomical organization, and physiological function of selected organ systems. Essential anatomical and physiological concepts will be investigated by human cadaver prosections and other experimental approaches within the human anatomy and physiology laboratory. Finally, a capstone project on an instructor-approved anatomical or physiological disorder will be completed in the format of a presentation to the class. Students completing this course will gain a deeper understanding of human anatomy and physiology and identify useful classroom education resources to apply this knowledge in their classrooms as educators.

The majority of the class will take place June 26th-June 30th on ISU's Terre Haute campus. Students will need to complete several lab safety modules online in June before the start of the class as well as some reading. Classes will be split between morning and afternoon sessions with evenings set aside for course prep and other activities starting on Monday, June 26th. ISU will provide parking passes, room, and board starting on Sunday evening (June 25th) with participants departing after the last session on Friday afternoon (June 30th).

INSTRUCTORS

Faculty: **Dr. Michael W. Thompson**

Email: michael.thompson@indstate.edu (Please place **BIO-691** in subject box)

Office: Science Building 287F, Department of Biology, Indiana State University, Terre Haute, IN 47809

Office Hours: Office hours are posted **next to my office door** and/or appointments can be scheduled by contacting me.

Phone: 812-237-2403 (email is the most reliable way to contact me!)

Faculty: **Dr. Charity F. Taboas**

Email: charity.taboas@indstate.edu (Please place **BIO-691** in subject box)

Office: Science Building 287K, Department of Biology, Indiana State University, Terre Haute, IN 47809

Office Hours: Office hours are posted **next to my office door** and/or appointments can be scheduled by contacting me.

Phone: 812-237-2405 (email is the most reliable way to contact me!)

LEARNING OBJECTIVES

1. Use anatomical and clinical language to describe the locations of tissues, organs, structures, and features of the human body.
2. Comprehend the relationship between the biochemistry, histology, gross morphology, and physiology of each organ system.
3. Gain an appreciation of normal anatomical variation through observations of prosections, including those of mammalian organs and human cadavers.
4. Identify and understand anatomical pathologies and pathophysiology associated with injury, disease, stress, and aging.

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ASSESSMENT OF LEARNING OBJECTIVES

Assessments in the form of reading assignments, worksheets, and lab group activities will prepare the student to complete their capstone project describing an anatomical or physiological disorder identified during laboratory sessions.

MEETING TIMES

Meeting Location: Science 292
Before meeting for the first time, the first reading assignment and the **Biosafety (CITI) training and Blood Borne Pathogen training will** need to be completed. Attendance at the following meeting times is mandatory: June 26-30, 08:00 to 12:30 and 13:30-17:00. Please note that we will also be visiting the gross anatomy lab daily, please be sure to dress appropriately! Surgical scrubs are suggested, but not required.

Textbook

No textbook is required! Reading assignments from multiple sources will be utilized. An open-source reference textbook will be utilized for basic reference:

Anatomy and Physiology
Authors: openstax College
Publisher: openstax College (2022)
Freely distributed and posted on Canvas and at:
https://openstaxcollege.org/textbooks/anatomy-and-physiology

- As a **(FREE) reference textbook** this text is adequate, BUT I do have **reservations** and **concerns** using the openstax textbook in my anatomy and physiology courses because of the following:
  - The textbook is **NOT** as well organized and somewhat clunky compared to other publishers' textbooks
  - The textbook does **NOT** have the excellent visuals, images of cadavers and other specimens, and process diagrams found in the required textbooks in my courses!

LAPTOP REQUIRED FOR COURSE: REGULAR USAGE:

For the purposes of this course, it will be assumed that you are in compliance with the mandatory laptop policy of the University. You will be expected to bring your laptop and be ready to use it for every class period. Usage of the laptop must conform to the provisions of this course as laid out in this syllabus as well as the Code of Student Conduct.

- **SUMMARY: Bring your laptop! We will have lots of fun working with online learning resources!**

LABORATORY POLICIES

- **No guests** in the laboratory without the prior permission of Dr. Thompson and Dr. Taboas.
- **No non-educational-use photographs** may be taken in the laboratory.
- **No use of cell phones, beepers, or portable e-mail devices** in the lab.
- **No food or drink** in the laboratory room; leave them outside on the bench in the hallway or in your bag.
- **Follow additional safety precautions** outlined by the lab manual or the instructor.
- **No cadaver** (human) or **animal tissues may be removed** from the laboratory.
- **Put away what you take out.** If you spill something, clean it up.
- **Please clean your work area at the end of each class session.**

- **DISPOSE of all waste properly when laboratory activities are completed.**
- **Professional manners are expected at all times!** Dangerous activities, crude language, obscene language/behavior have no place in our lab, especially when working with the cadavers and other specimens. You will receive a single warning. If you receive a second infraction, you will be dismissed from the laboratory.

CHEMICAL PRESEVERATION OF SPECIMENS

- The preserving chemicals (mostly formaldehyde) pose a possible health risk. **By enrolling in this course, you accept this risk.** The risk is minimal for healthy individuals, especially with the short-term exposure to which you will be subjected, if proper procedures are followed.
- **Wear gloves** when handling preserved tissues.
- **Wear safety glasses or eye-glasses during dissection**. Do not wear contact lenses. Most lenses are gas-permeable and such lenses can trap fumes, become ruined and may damage eye tissues.
- **Absolutely NO food or drink is allowed in the laboratory**! Please leave these items outside of the laboratory on the table provided.
- You ***must*** **wear closed-toe shoes** (no flip-flops or sandals).
- **Discuss this course with your doctor if you are, or become, pregnant** during the course. You may want to consider taking the course another semester. A developing fetus is susceptible to environmental chemicals.
- ***We recommend that you wear old clothing*** (e.g. a work shirt or lab coat). Fumes will linger on your clothing especially *wool fabric* (it is not advisable to wear wool at all). You may keep an old shirt (to use as a lab coat) in any of the student drawers at you lab bench (label your drawer).

BLOOD BORNE AND BODILY FLUID PATHOGEN WARNING

- In one of the labs, you may be working with your OWN blood to test your blood glucose level. Another lab may require you to work with your own urine for a urinalysis. **By enrolling in this course, you accept this risk!**
- DO NOT ASSIST ANYONE ELSE IN OBTAINING A SPECIMEN WITHOUT BEING PROPERLY GLOVED!
- YOU ARE RESPONSIBLE FOR WORKING IN A SAFE MANNER AT ALL TIMES!
- YOU WILL DISPOSE OF ALL BIOHAZARD MATERIAL IN THE PROPER RED BAGS AND CANISTERS

GRADING

Grading Scale: Following is an approximate grading scale used for this course.

A 93 – 100% A- 90 – 92%
B+ 87 – 89% B 83 – 86% B- 80 – 82%
C+ 77 – 79% C 73 – 76% C- 70 – 72.0%
D+ 67 – 69% D 63 – 66% D- 60 – 62% F Below 60%

	Points	Number	Subtotal	Approx %
Attendance and Participation	10	5	50	17%
Quizzes	5	10	50	17%
Assignments	10	10	100	33%
Project and Presentation	100	1	100	33%
		TOTAL	**300 pts**	**100%**

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Attendance & Participation

- **Attendance and participation are MANDATORY.** Your attendance and participation in activities and discussions is a critical component of this class. Please come prepared and with questions!

Quizzes & Assignments

- Several quizzes and assignments covering the reading, lecture, and lab materials will be completed during each class session.

Group Project and Presentations

You will be working in a small group to present a project about the normal and abnormal physiology of an organ system of your group's choice. Your group may wish to choose the abnormal physiological condition (disease) first. You will then research the normal anatomy and physiology of the organ system affected. Next, you will discuss the changes in that physiology (and anatomy, if applicable) as a result of the disease or pathological condition. You will then need to describe how the organ system attempts to return to normal physiology and/or how a specific intervention/treatment helps the body adapt to the new normal or return to normal.

Examples:

1. Normal anatomy and physiology of the lungs and normal breathing/gas exchange; how asthma affects the anatomy of the lungs and the physiology of breathing/gas exchange; how does the body attempt to reverse the effects of asthma and/or how a specific type of bronchodilator works to enhance airflow/gas exchange.
2. Normal anatomy and physiology of the heart to supply nutrients and oxygen to the body (or heart muscle itself); how does a heart attack affect the heart muscle tissue, heart anatomy and/or physiology of the heart's ability to provide blood to the body; how a specific medication works to help the heart maintain normal physiological parameters.
3. Normal anatomy and physiology of early nervous system development; how does failure of neural tube formation lead to serious birth defect biochemistry; how might folic acid reduce the number of neural tube defects.

These are just a few examples, and you are not limited to these. Choose a topic that may be personal to you and be as detailed as you can, but in a concise manner. At the end of the week, your group will present your topic in a PowerPoint presentation to demonstrate your knowledge and understanding of the anatomy and physiology of your topic. The presentation should be consistent with the ability to teach a peer audience about your topic.

The presentation should not be less than 10 minutes and not more than 15 minutes. A rubric for grading is provided below.

Presentation Section	Expectations	Possible Points	Points Earned
Introduction	• Provides adequate background information • Presents topic	25	
Content	• Discusses normal anatomy and physiology • Discusses deviation from normal physiology (and anatomy, if applicable) • Provides a physiology-based discussion of a return to normal physiology or new set-point • Sufficient depth • Appropriate level	50	
Conclusions	Summarizes key points	15	
References	Minimum of 5 appropriate sources formatted in APA style	10	
	Total:	**100**	

Tentative Course Schedule

Day	Date	Topic
Week of (Specific Date TBD)	**6/12**	Zoom – Overview; Meet the Instructors Initial readings – TBD
Week of (Specific Date TBD)	**6/19**	CITI Modules Zoom – Lab Procedures; Open Session
Monday	**6/26**	Morning lecture and lab: Introduction, Library Resources, Histology Afternoon lecture and lab: Musculoskeletal System
Tuesday	**6/27**	Morning lecture and lab: Endocrine System Afternoon lecture and lab: Nervous and Autonomic Nervous Systems
Wednesday	**6/28**	Morning lecture and lab: Cardiovascular System Afternoon lecture and lab: Respiratory System
Thursday	**6/29**	Morning lecture and lab: Digestive System Afternoon lecture and lab: Urinary System
Friday	**6/30**	Morning lecture and lab: Clinical Applications Afternoon lecture and lab: Presentations

Each session will have an integrated anatomy and physiology lecture followed by laboratory work. The morning and afternoon sessions will be broken up by short breaks between the lectures and labs, with lunch between the morning and afternoon sessions.