Spring 2-1-2022

BIOH 371.01: Human Anatomy and Physiology for Health Professions II Laboratory

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BIOH371 Syllabus Spring 2022

Human Anatomy and Physiology for Health Professions II Laboratory

Course Information:

Instructors:

T 10-11:50am	Lori Mitchell – lori.mitchell@umontana.edu
T 2-3:50 pm	Lorraine Adams – lorraine.adams@umontana.edu
W 5-6:50 pm	Shae Gurney – shae.gurney@mso.umt.edu
Th 1-3:50 pm (H)	Katie Christison – katherine.christison@umontana.edu

Office: HS 101
Office hours: *by appointment*

General Course Information:

Human Anatomy and Physiology is a 1-credit laboratory, two-semester sequence course (BIOH 366 and BIOH 371). The laboratory focuses on anatomical structure using prosected cadavers, laboratory specimens, animal organ dissection, models, simple physiological experiments and computer simulations.

Students enrolled in the Honors Laboratory will earn an additional credit (2 credits total). Honors lab students will meet for one additional hour each week. Students enrolled in the honors increment will be required to complete an end of the semester project and take a cumulative laboratory practical exam.

This course predominately serves students majoring in biology, pre-medical, pre-nursing, pre-physical therapy, other pre-health care professions and health and human performance.

The two-semester sequence is divided as follows:

BIOH 366	BIOH 371
Body Plan & Organization	Endocrine System
Homeostasis	Cardiovascular System
Cell Biology Review/Metabolism	Lymphatic System & Immunity
Histology	Respiratory System
Integumentary System	Digestive System
Skeletal System & Articulations	Metabolism
Muscular System	Urinary System
Nervous System	Fluid/Electrolytes & Acid/Base Balance
Special Senses	Reproductive System

Required Prerequisites:

College Chemistry: CHMY 121N (CHEM 151N): Intro to General Chemistry -or-CHMY 141N (CHEM 161N): College Chemistry
College Biology: BIOB 160N (Principles of Biology) -or- BIOH 112 (Introduction to Human Form and Function I)-or- BIOH 113 (Introduction to Human Form and Function II).

Recommended Prerequisites:

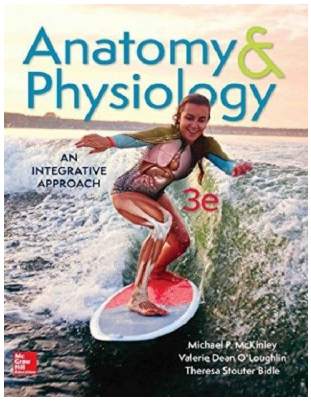
BIOB 260: Cellular and Molecular Biology, BIOB272: Genetics and Evolution

Required Co-Requisite:

BIOH370

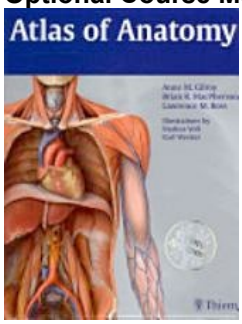
*** To advance to BIOH371 for the Spring semester, you must earn a grade of C- or higher in BIOH366*

Required Course Materials:
1. Anatomy and Physiology, an Integrative Approach, 3rd edition. McKinley, O'Loughlin, Bidle. McGraw Hill, 2018.



2. Nitrile or neoprene gloves (latex gloves are not acceptable) – you are responsible for your own gloves for the course of the semester

Optional Course Materials:



Atlas of Anatomy by Anne M. Gilroy, Brian R. MacPherson, Lawrence M. Ross - Thieme (2008) –ISBN-978-1-60404-062-1 or any related edition.

Class-Specific Technology Requirements:
Students are expected to be familiar with computers and the internet. Students are responsible for their own software and computer equipment maintenance and setup as recommended by the University of Montana. (https://www.umt.edu/umonline/services-and-support/student-support.php)

- Students must be able to use and access their Moodle accounts.
- Students must be able to download and review posted course materials prior to laboratory sessions.
    - Class materials will be in pdf, Microsoft power points, and Microsoft word document formats.
    - The University of Montana maintains several computer labs on campus: http://www.umt.edu/it/support/computerlabs/default.php

Technical Support:

- For questions regarding your NetID or password, UMConnect email account, or for technical computer assistance:
  - Call the IT Central Help Desk at (406) 243-HELP (4357), 8am - 5pm, Monday-Friday
  - Email itcentral@umontana.edu.
- For technical support for UMOnline and Moodle:
  - Call the UMOnline Support Desk, 8am - 5pm, Monday through Friday at (406) 243-4999
  - Email umonline-help@umontana.edu.
- Links to other technical support resources for students can be found at the following link: https://www.umt.edu/it/support/

Course Goals*:*
Upon successful completion of this two-course sequence, you will have conceptual and practical information regarding the anatomy and physiology of the human organism.

Course Objectives:

1) Gain an appreciation for the complementarity of anatomical form with physiological function.
2) Understand how the body systems work to maintain homeostasis.
3) Use critical thinking skills to predict the consequences of homeostatic imbalances on human form and function.

Learning Objectives

1) Demonstrate understanding of chemical and biological principles and knowledge that serve as the foundation for understanding human anatomy and physiology.
2) Understand and analyze cellular processes governing development, growth and normal function of the human body.
3) Understand the processes involved with maintaining homeostasis and anticipate what may occur when homeostatic balance mechanisms are lost.
4) Demonstrate practical knowledge of human gross and microscopic anatomy using human cadavers and prepared histological slides.
5) Identify structures in the body and analyze their relationship with other structures.
6) Describe development, regeneration and normal function of body systems
7) Understand the cellular and physiological mechanisms that drive tissue formation and function.
8) Employ the scientific process for understanding principles of anatomy and physiology.
9) Analyze A&P observations and data and determine the potential physiological consequences.

Teaching Format:
The mode of instruction for this class is in-person only. Each student will attend the 2-hour (3-hour for honors students) weekly lab session for which they registered. 2 2-hour long open labs will be held each week for all students.

To succeed in this class, it is critical that you attend your weekly lab session at the minimum. Open lab attendance is not required but highly recommended, as serves as a valuable time to ask questions and practice and discuss the material with your peers, TAs, and instructors.

This course will not be taught in a hybrid format, and there will be no option for remote learning at all.

Course Information:

Teaching methods: Laboratory and Pre-laboratory exercises. Students are also required to purchase and complete MHE Connect exercises through an online format.

Student Responsibilities:

1) Students are expected to complete the required reading, pre-laboratory assignments, and watch lab materials prior to class meeting times.
2) Students are expected to log on to the course Moodle site regularly to download course materials and read updated course announcements.
3) Students are expected to monitor their email and online platforms for important course announcements.
4) Regular attendance in lectures and laboratory is strongly recommended for successful completion of the course.
5) If absence from lecture or laboratory is necessary due to illness, it is your responsibility to obtain notes from another student.
6) Students are expected to be respectful to each other, the cadavers and teaching staff. Students who fail to do so will be disciplined as described in the student conduct code.

Course Policies

Laboratory Instructors follow academic policies as stated in the 2021-2022 UM Catalog. Students are responsible for being familiar with these policies. http://www.umt.edu/catalog/

These policies include but are not limited to:

- Student Conduct (http://life.umt.edu/vpsa/student_conduct.php)
- Class attendance
- Credit/No Credit Grading
- Registrar deadlines
- Incomplete Grading Policy
- Audit: not permitted in this course

Plagiarism

- Plagiarism is the representing of another's work as one's own. It is a particularly intolerable offense in the academic community and is strictly forbidden. Students who plagiarize may fail the course and may be remanded to Academic Court for possible suspension or expulsion. (See Student Conduct Code)
- Students must always be very careful to acknowledge any kind of borrowing that is included in their work. This means not only borrowed wording but also ideas. Acknowledgment of whatever is not one's own original work is the proper and honest use of sources. Failure to acknowledge whatever is not one's own original work is plagiarism.

Students with disabilities

The University of Montana assures equal access to instruction through collaboration between students with disabilities, instructors, and the Office for Disability Equity (ODE). If you anticipate or experience barriers based on disability, please contact the ODE at (406) 243-2243, ode@umontana.edu, or visit www.umt.edu/disability for more information. Retroactive accommodation requests will not be honored, so please, do not delay. As your instructor, I will work with you and the ODE to implement an effective accommodation, and you are welcome to contact me privately if you wish. If you would like to request reasonable accommodations, you are advised to provide your ODE verification letter to your instructor in the first week of class so appropriate arrangements can be made. If you decide after the semester begins to disclose your disability and request accommodations, you should provide documentation, if

possible, at least 10 days before the upcoming assessment so I may prepare appropriately. It is the responsibility of students to make sure they understand the types of modifications available to them before assessments.

Cultural Leave Policy:
UM has a Cultural and Ceremonial Leave Policy: "Cultural or ceremonial leave allows excused absences for cultural, religious, and ceremonial purposes to meet the student's customs and traditions or to participate in related activities. To receive an authorized absence for a cultural, religious or ceremonial event the student or their advisor (proxy) must submit a formal written request to the instructor. This must include a brief description (with inclusive dates) of the cultural event or ceremony and the importance of the student's attendance or participation. Authorization for the absence is subject to approval by the instructor. Appeals may be made to the Chair, Dean or Provost. The excused absence or leave may not exceed five academic calendar days (not including weekends or holidays). Students remain responsible for completion or make-up of assignments as defined in the syllabus, at the discretion of the instructor."

Evaluation Methods:
Your course grade will be determined by your performance in the lab, according to the following evaluation methods:

Lab Assessment	**# of points toward grade**
Lab Practical Exams (2x100pts)	200
Lab Quizzes (10x10pts, drop 2 lowest)	80
Homework Assignments (8x10 pts)	80
Case Studies (2x20 pts)	40
Lab Total	**400**

Grading System:
Final Grades will be based upon a total of 400 points.

Grades will be calculated based upon the following system; grades will be rounded. (i.e. if a student earns 83.44%, their grade will round to 83% or a B-; if a student earns 83.45% their grade will be rounded to 84% or a B):

Grade	**Percent of Total Points**
A	94-100%
A-	90-93%
B+	87-89%
B	84-86%
B-	80-83%
C+	77-79%

C	74-76%
C-	70-73%
D+	67-69%
D	64-66%
D-	60-63%
F	59% and Below

Quizzes:

Quizzes will be administered at the start of each class and will cover the material from the previous class. These will be in-person, closed book. Quizzes will be monitored for plagiarism and any misconduct will result in a 0 on the assignment and will be disciplined as described in the student conduct code.

Students with 1.5x or 2x DSS accommodations will be given extra time to complete their quiz. Your lab instructor will contact you regarding the additional time.

Make-Up Assignments

If you must miss a lab due to illness and cannot take the quiz or exam, you may attend another lab time provided that you notify your instructor by 8:00AM on the day of your regular lab. You must then communicate with the instructor teaching the alternate lab that you wish to attend and bring a note from a doctor or Curry Health Center excusing your absence. Please know that if you attend a different lab time, you will take that section's quiz or exam, which may differ from the one given in your regular lab that week.

Honors Lab (section 80)

The honors lab section will cover laboratory topics in more depth than the regular lab sections. Honors lab students are expected to be self-driven and to take advantage of additional learning resources such as the honors specific open labs and additional honors lab only learning opportunities. The distribution of laboratory points will be the similar for honors lab students as in the other laboratory sections and the same policies will be practiced. The students enrolled in the honors lab section will take a cumulative final practical exam and complete an end of the semester project instead of the case studies.

Laboratory Human Anatomy and Physiology Society (HAPS) Learning Objectives and Required Pre-lab Exercises.

Students are expected to review the pertinent readings and complete Anatomy Revealed (AR) activities prior to their lab meeting to prepare for the labs.

Laboratory Practical Exams

Laboratory Instructors will discuss the breadth and scope of Laboratory Practical Examinations.
Two practical examinations each worth 100 points will be administered during the semester as a question Moodle quiz. These exams will contain structures to be identified and students must demonstrate an understanding of the relationships between form and function. The format will be further described in the laboratory; some lab and lecture material may overlap.

*Please note that students enrolled in the Honors laboratory section will have a cumulative second practical laboratory exam.

In-person practical exams will be composed of 50 questions and have a 1hr 15 minute time limit. Students are expected to attend their lab section's practical unless otherwise approved by their lab instructor. They will be given during the following dates:

- Practical 1: 2/28-3/4
- Practical 2: 5/2-5/6*

Make-up Assignments:

NO "make-up" opportunities on missed assignments are available.

Assessment Review/Grade Disputes

Graded quizzes and practicals will be available for students to review on the Monday after the assessment was taken and will remain accessible for 1 week after grades are released. *Any disputes regarding test items or examination grades must be communicated by email when appropriate within 1 week after the exam has been returned to the class or as announced on Moodle. Under no circumstances will examination grades be reconsidered after this window.* If a dispute should arise regarding the answer to a lecture or laboratory examination or other assessment item, the judgment of the faculty member will be final. Due to grading deadlines, an announcement regarding the grade dispute window will be announced in the lab and in lecture with regard to the second lab practical.

Details on what must be included in a dispute is posted to Moodle.

Correspondence

An official UM student email address must be used for all correspondence.

Undergraduate Peer Leaders:

Each laboratory section will have at least two undergraduate peer leaders to assist with instruction. Peer advisors are not permitted to bring students to the lab outside of normal laboratory hours. They are not available for private tutoring.

Students interested in becoming a peer leader for future BIOH366 and BIOH371 courses may apply for a limited number of peer advisor positions in the Spring (the deadline is typically March 15). To be eligible to become a lab peer advisor, students must earn a grade of B or higher in BIOH366 and BIOH371 and must fill out an application. Promising candidates will be invited for an interview. Peer leaders are undergraduate students who enroll in BIOH480/BIOH481 for assisting in laboratory instruction and BIOH463/BIOH465 for assisting in lecture instruction. Lab and lecture peer leaders also participate in the cadaver dissection course. Interested candidates are encouraged to talk withyour laboratory instructor and their current peer advisors.

Access to the Laboratory Outside of Regularly Scheduled Class Hours

Access to the laboratory is only available during scheduled 'Open Labs.' Open labs will be determined at the discretion of the instructor team.

Laboratory Specimen and Cadaver Information and Policies.

Much of your education in anatomy will result from a selfless donation of thoughtful individuals who voluntarily chose to donate their body to the Montana Body Donation Program that supports WWAMI education programs. *WWAMI (Washington, Wyoming, Alaska, Montana and Idaho) is a cooperative regional medical education program of the University of Washington School of Medicine that provides*

places for twenty Montana students per year in its entering medical student class. These twenty students take their first year of medical school at Montana State University and complete their studies at the University of Washington in Seattle and at community clinical training sites throughout the Northwest.

Respect for the Cadavers:

These donated cadavers are gifts and must be treated with the dignity and respect they deserve. It is inappropriate to make disrespectful comments within and outside of the laboratory. You will observe professional conduct while in the lab and outside the lab. Naming of the cadavers, unnecessary horseplay, posing of the cadavers, etc WILL NOT BE TOLERATED. These cadavers are the result of gifts from fellow Montanans and their families who believed strongly in the benefit of health science education. http://www.montana.edu/wwwwami/bodydonate.html

Rules for Cadaver Use in the Anatomy and Physiology Labs:

1) The cadavers used in this lab were obtained from the Montana Body Donation Program at Montana State University. Cadavers are donated to MSU according to state regulations. Persons donating their body receive no financial compensation; this is truly their ultimate gift. Hence it is imperative that proper respect be paid to the cadaver at all times.
2) Only students enrolled BIOH 371, BIOH 113 and teaching staff are allowed into the cadaver lab at any time. No minor children or other family members are to be brought to the open lab times. If you see someone in the lab who you believe is unauthorized, notify laboratory personnel and/or ask him/her to leave the lab.
3) Body parts, tissue, etc. must not be removed from the lab.
4) No cameras, camera phones or electronics with photo or video capability are allowed in the lab. Photography is prohibited.
5) Please be careful, the cadaver dissections will be used and material reviewed in other lab sections by other students. Keep the dissections moist and well covered when not working on that portion of the cadaver. Keep doors to lab closed and locked to keep security intact; students should police the lab.

Laboratory Safety in the Anatomy and Physiology Labs

1) In case of an emergency, dial extension 4000 to report serious injuries. Phones are located throughout the Health Sciences Building. The Health Sciences main office is in room 104.
2) First Aid supplies are available in the supply room for HS 101 (the anatomy lab), HS 104 (the main office) and HS 403.
3) You are required to wear disposable gloves (nitrile or neoprene, latex gloves are not acceptable) at all times while working with the cadaver prosections. Cadavers are embalmed with a fluid containing propylene glycol, ethyl alcohol, phenol and formaldehyde. Physical contact of your skin and clothing should be avoided.
4) Wear old clothes and a long-sleeved lab coat while working with the cadaver. Lab coats should not be worn outside the lab.
5) No open-toes shoes or sandals are allowed in the lab. Wear shoes that cover your entire foot.
6) Contact lens wearers should be aware that chemical fumes can pass into gas permeable and soft lenses. These fumes irritate the cornea. Protective glasses (prescription or safety glasses) are recommended to protect against chemical splashes. Know the location of the eyewash station before you begin.
7) If you are pregnant, or believe you may be pregnant, you may NOT participate in the laboratories until you provide Dr. Minns with written documentation from your obstetrician that verifies an understanding of the chemicals to which you and your fetus are being exposed while in the presence of the cadavers.

8) No foods, drinks, gum or the application of makeup are allowed in the lab.
9) Respirators can be purchased for use in the lab, if desired.
10) Wash hands prior to leaving the lab.

COVID-19 Safety Protocols

This lab will follow the university's mask mandate. Please ensure that you are always wearing a mask while in the lab.

Important Dates (this may be amended during the semester)

Laboratory Specific Dates and Learning Outcomes

	Topic	Learning Outcomes
Lab 1 **1/24 – 1/28**	Endocrine System	HAPS Mod J.: 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.
Lab 2 **1/31 – 2/4**	Blood Physiology demo: Blood typing, formed element identification, homeostatic imbalances of the blood	HAPS Mod K: 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.
Lab 3 **2/7 – 2/11**	Heart Anatomy	
Lab 4 **2/14 – 2/18**	Heart Physiology/Blood Pressure Physiology demo: ECG's, interpreting rhythm strips, physiology of circulation	
Lab 5 **2/21 – 2/25**	Blood Vessels of the Head, Neck and Upper Extremity	
Lab Practical 1 **2/28 – 3/4**		Covers labs 1 – 5
Lab 6 **3/7 – 3/11**	Lymphatics and the Immune System	HAPS Mod L: 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 lymphatic system and explain their functional roles in fluid dynamics and immunity
Lab 7 **3/14 – 3/18**	Anatomy of the Respiratory System	HAPS Mod M: 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.
3/21 – 3/25	**Spring Break**	No labs!
Lab 8	Physiology of the Respiratory System	HAPS Mod M cont.
Lab 9 **4/4-4/8**	Digestive System	HAPS Mod N: 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.

		HAPS Mod O: Students who have completed this section of the course 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.
Lab 10 **4/11 – 4/15**	Blood Vessels of the Abdomen and Lower Extremity	HAPS Mod K: 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.
Lab 11 **4/18 – 4/22**	Urinary System Physiology demo: Urinalysis testing and interpretation	HAPS Mod P: 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. HAPS Mod Q: Students who have completed this section of the course should be able to identify and describe the physiology of the homeostatic mechanisms that control fluid/electrolyte and acid/base balance.
Lab 12 **4/25 – 4/29**	Reproductive System – Male and Female	HAPS Mod R: 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.
Lab Practical 2 **5/2 – 5/6**		Covers lab 6 - 12

Quiz Dates:

Students should not rely on instructors or peer leaders to inform them of every quiz deadline. Students are responsible for keeping track of these deadlines and turning in assignments on time. If quizzes, case studies, or practicals are not taken by the assigned deadlines, students will receive a 0 on the assignment.

Lab Quiz Dates:

Lab Quiz	***Quiz Dates***
1: Endocrine System	1/31-2/4
2: Blood Physiology	2/7-2/11
3: Heart Anatomy	2/14-2/18
4: Heart Physiology	2/21-2/25
5*	NO QUIZ
Practical 1	**2/28 – 3/4**
6: Lymphatics and Immune	3/14-3/18

7: Respiratory Anatomy	3/28-4/1
8: Respiratory Physiology	4/4-4/8
9: Digestive System	4/11-4/15
10: Blood Vessels-Abdomen and Lower Extr.	4/18-4/22
11: Urinary System	4/25-4/29
12*	NO QUIZ
Practical 2	**5/2-5/6**

***Lab 5 and Lab 12 will not have quizzes. They will only be tested on Practical 1 and Practical 2 respectively.**