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BIOH 112.R01: Human Form and Function

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HUMAN FORM and FUNCTION (BIOH 112)

Fall 2020

Professor: Dr. Katie M. Holick

Email: katie.holick@umt.edu

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Office Location: Skaggs 395C, 3rd Floor

Office Hours: TWR 10-11 or by appointment (I am happy to Zoom or chat)

Lectures: Tuesdays and Thursdays 3:40 – 5 PM, online Zoom sessions

Human form and function introduces the basic of anatomy and physiology. BIOH112 students are expected to take a very active role in their learning by completing readings and homework before and after class, and coming to class ready to participate directly with peers and through in-class technology. In this highly structured course as this, there is evidence that every student can achieve if they are motivated to be an active learner.

Moodle: Moodle will have postings from our lectures such as videos, outlines, power point slides, supplemental material that we mention in lecture. We will also post announcements on this site. *It is your responsibility to check it regularly and receive email announcements.*

REQUIRED MATERIALS:

1. Principles of Anatomy and Physiology (15th Edition)
Gerard J. Tortora; Bryan H. Derrickson
(Physical copy, e-text, loose leaf copy)
2. WileyPlus subscription
3. Computer
4. Smartphone

CLASS STRUCTURE: This class will require that you take an active part in the learning process. This may seem that it makes the course more challenging, but it is my goal to make this course more fun and interesting at the same time. The traditional lectures will be pre-recorded and posted for you to view on your time before class. Each Tuesday and Thursday we will meet to discuss lecture material and you must be ready to answer questions.

PEER SUPPORT VIA FORUM: I'll ask that you become a community of scholars to help answer questions about the course logistics and course content. I have set up a "Questions Forum" on Moodle as a tool that will help us do this and will help you find study buddies. I will be checking in occasionally, but it is expected that you will answer each other's questions. I'll be taking notice of students who are engaging here.

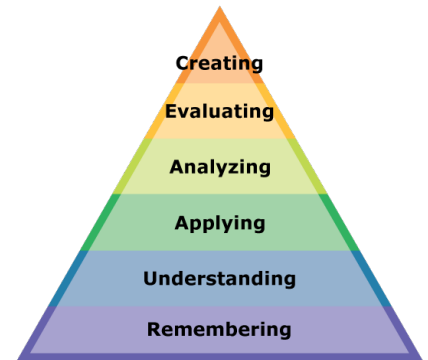
Virtual OFFICE HOURS: Don't feel intimidated if you've never been to a professor's virtual office hours. You can e-mail me or request a zoom to talk about the course, study skills, concerns, your background, your career, advice for future courses to take, etc. Studies have shown that students who make an effort to get to know their professors outside of the classroom setting, such as in office hours or even asking questions after class, are more likely to succeed in college.

COURSE GOALS:

1. **To provide you with the core principles of human anatomy and physiology and a set of useful skills.** You will use the book and class time to gain the content knowledge as a foundation of A and P.

2. **To gain higher level thinking skills that are necessary for scientists.**

To the right you can see the “Amended Bloom’s Taxonomy” pyramid. It was developed as a method of classifying educational goals for student performance evaluation. You should be well –equipped at remembering facts and content with good study habits. We are looking for you to *apply* and *analyze*. You are college students, I KNOW you can memorize! Move beyond this level of thinking. How can we achieve this? We will have in-class questions to practice this immediately and you will have homework problems to practice on your own. We will also explore classic experiments as a way of thinking through the logic of experiments and to see where the foundations of this content come from. While these may be new ways of thinking for you, practice is the most important way to gain these skills.



3. **This course should excite you about basic science and its applications.**

The field of anatomy and physiology is increasingly important in modern day medicine. It is relevant to disease diagnosis, prognosis, and treatment, personalized medicine, forensic science, and a host of other important medical issues. The main objective of this course is for you to develop a clear understanding of the basic principles of human biology.

Learning Outcomes:

1. **Understand the basic components and organization of a cell.**
2. **Apply basic chemistry principles to the study of anatomy and physiology.**
3. **Describe the relationship between tissue types and the organ systems they comprise.**
4. **Outline the basic structures and functions of the integumentary, skeletal, muscular, and nervous system.**
5. **Evaluate the role of each organ system in maintaining overall human health and how dysfunctions in these systems can lead to disease.**

Course Assignments:

1. **Class Study Guide Questions:** Each week a set of questions will be posted for each lecture. These questions will be discussed during class meeting time. Each person will be responsible for a question (could be on any day) to earn their 10 points for the week. If you fail to answer a question in any given week, you will not receive your 10 points. Each student will receive one pass to use this semester, so use it wisely. If you are unable to make class for a legitimate reason and you e-mail me before class, it will count as an excused absence. I will not track attendance for this class but if you would like to receive these 10 points you must be present for either the T or R class.
2. **Adaptive Practice Homework:** Each week you will need to complete the WileyPlus Adaptive Practice chapters for the week. The purpose of this is for you to identify your own comprehension of the material before we begin a Chapter. This will give you an understanding of where you need to spend more time and what you already understand. If you are having trouble in a certain area, Adaptive practice will help you see that and allow you to “Study” or “Practice” that topic. **YOU WILL EARN FULL POINTS FOR COMPLETION, MEANING THE SCORE YOU ACHIEVE WILL NOT BE INCORPORATED IN THE GRADEBOOK.** For example, if you score a 20% on the Adaptive Practice you will get a 100% in the grade book because you completed the assignment. Homework

is due by midnight on Monday. I will explore the option of re-opening the adaptive practice assignments for “practice” before the exam.

3. **Weekly Quizzes:** Each week an online quiz will be given for the Chapters covered within that week via the WileyPlus website. These quizzes will be due by midnight Friday of each week.
4. **Prosections** – Four prosections will take place this semester and will act as online labs for this course via WileyPlus. This purpose of these prosections is to give you a greater depth of anatomical understanding and be able to explore and test your knowledge of the human body using some of the amazing software available today. No odd smells or getting your hands dirty, but you will get to see real specimens and isolate individual regions clearly and test your knowledge of human anatomy.
5. **Exams:** Three semester exams and one final exam will be given. Semester exams are given on Thursdays during class time. If you miss a semester exam, this will be graded as a zero. The final examination is cumulative and must be completed to receive a final grade. Failure to take the final exam will result in a failing grade. *All students are expected to take all exams when they are scheduled.* Students are expected to notify the instructor prior to missing an exam. Students are responsible for any changes in dates of scheduled exams, quizzes, or assignments or any other administrative announcement made during lectures.
6. **Extra Credit Writing assignment - Your assignment is to write an opinion piece on any issue in human anatomy and physiology you care about (...may I suggest COVID-19).** Your piece must be 500-750 words. You must have at least 5 CREDIBLE citations and one must be from a primary literature source. You must take a stance on the issue. However, do not rant, but present a well-reasoned argument. Be sure to acknowledge to other side of the issue. If you think other side is wrong, you can also base you piece on dismantling it using your references. Offer solutions and/or compromises in your piece. Your piece must be for a general audience: persons with very limited scientific knowledge. You should use examples and analogies to explain any science concepts. Look for great examples that will bring your argument to life, including personal stories/connections.

<i>Your performance will be evaluated as follows:</i>	%	#	Points/Item	Total Points Awarded
Prosections	10%	4	25	100
In Class questions	14%	14	10	140
Homework (Adaptive Practice)	15%	15	10	150
Quizzes	12%	12	10	120
Semester Exams	30%	3	100	300
Comprehensive Final Exam	19%	1	190	190
Total	100%			1000

Lecture Schedule

This is a tentative schedule. I reserve the right to make changes that I think are in the best interest of all students.

Wk	Date	Topics/Chapter	Assignments
1	R Aug 20	Course Policies 1.1 Anatomy and Physiology Defined 1.2 Levels of Structural Organization and Body Systems 1.3 Characteristics of the Living Human Organism 1.4 Homeostasis 1.5 Basic Anatomical Terminology	Lecture 1 Lecture and Study Guide Questions (Not due, we will go over them together) Due Friday Midnight Homework 1: Adaptive Practice Chapter 1 Quiz 1: "Getting to Know You" Assignment
2	T Aug 25 R Aug 27 (last day to drop on cyberbear without instructor consent)	2.1 How Matter is Organized 2.2 Chemical Bonds 2.3 Chemical Reactions 2.4 Inorganic Compounds and Solutions 2.5 Overview of Organic Compounds 2.6 Carbohydrates 2.7 Lipids 2.8 Proteins 2.9 Nucleic Acids 2.10 ATP	Due Monday Midnight Homework 2: Adaptive Practice Chapter 2 Before Class Tuesday Chapter 2 Study Guide Questions Before Class Thursday Chapter 2 Study Guide Questions Due Friday Midnight Quiz 2: Chapter 2
3	T Sept 1 R Sep 3	3.1 Parts of the Cell 3.2 Plasma Membrane Transport Across the Plasma Membrane 3.3 Cytoplasm 3.4 Nucleus 3.5 Protein Synthesis 3.6 Cell Division 3.8 Cell Diversity 3.9 Aging and Cells	Due Monday Midnight Homework 3: Adaptive Practice Chapter 3 Before Class Tuesday Chapter 3 Study Guide Questions Before Class Thursday Chapter 3 Study Guide Questions Due Friday Midnight Quiz 3: Chapter 3
4	T Sept 8 R Sept 10	4.1 Types of Tissues 4.2 Cell Junctions 4.3 Comparison Between Epithelial and Connective Tissues 4.4 Epithelial Tissue 4.5 Connective Tissue 4.6 Membranes	Due Monday Midnight Homework 4 : Adaptive Practice Chapter 4 Before Class Tuesday Chapter 4 Study Guide Questions Before Class Thursday Chapter 4 Study Guide Questions

		4.7 Muscular Tissue 4.8 Nervous Tissue 4.9 Excitable Tissue 4.10 Tissue Repair 4.11 Aging and Tissue	Due Friday Midnight Quiz 4: Chapter 4
5	T Sept 15 (last day to drop individual classes with a refund). R Sept 17	5.1 Structure of Skin 5.2 Accessory Structures of Skin 5.3 Types of Skin 5.4 Functions of Skin 5.5 Maintaining Homeostasis 5.6 Development of Integumentary System 5.7 Aging and the Integumentary System	Due Monday Midnight Homework 5 : Adaptive Practice Chapter 5 Before Class Tuesday Chapter 5 Study Guide Questions No Quiz! Exam 1 (Chapter 1-5)
6	T Sept 22 R Sept 24	6.1 Functions of the Bone and Skeletal System 6.2 Structure of Bone 6.3 Histology of Bone Tissue 6.4 Blood and Nerve Supply of Bone 6.5 Bone Formation 6.6 Fracture and Repair of Bone 6.7 Bone's Role in Calcium Homeostasis 6.8 Exercise and Bone Tissue 6.9 Aging and Bone Tissue	Due Monday Midnight Homework 6 : Adaptive Practice Chapter 6 Before Class Tuesday Chapter 6 Study Guide Questions Before Class Thursday Chapter 6 Study Guide Questions Due Friday Midnight Quiz 5: Chapter 6
7	T Sept 29 R Oct 1	7.1 Divisions of the Skeletal System 7.2 Types of Bones 7.3 Bone Surface Markings 7.4 Skull: an Overview 7.5 Cranial Bones 7.6 Facial Bones 7.7 Special Features of the Skull 7.8 Hyoid Bone 7.9 Vertebral Column 7.10 Vertebral Regions 7.11 Thorax	Due Monday Midnight Homework 7 : Adaptive Practice Chapter 7 Before Class Tuesday Chapter 7 Study Guide Questions Before Class Thursday Chapter 7 Study Guide Questions Due Friday Midnight Quiz 6: Chapter 7 Prosection 1 Real Anatomy: Practical Exam for Skeleton Due Friday
8	T Sept 29 R Oct 1	8.1 Shoulder Girdle 8.2 Upper Limb 8.3 Pelvic Girdle 8.4 False and True Pelves 8.5 Comparison of Female and Male Pelves 8.6 Lower Limb	Due Monday Midnight Homework 8: Adaptive Practice Chapter 8 Before Class Tuesday Chapter 8 Study Guide Questions Before Class Thursday Chapter 8 Study Guide Questions

		8.7 Development of Skeletal System	Due Friday Midnight Quiz 7: Chapter 8
9	T Oct 6 R Oct 8	10.1 Overview of Muscular Tissue 10.2 Structure of Skeletal Muscle 10.3 Contraction and Relaxation of Skeletal Muscle 10.4 Muscle Metabolism 10.5 Control of Muscle Tension 10.6 Types of Skeletal Muscle Tissue 10.7 Exercise and Skeletal Muscle Tissue 10.8 Cardiac Muscle Tissue 10.9 Smooth Muscle Tissue 10.10 Regeneration of Muscle Tissue 10.11 Development of Muscle 10.12 Aging and Muscular Tissue	Due Monday Midnight Homework 10 : Adaptive Practice Chapter 10 Before Class Tuesday Chapter 10 Study Guide Questions Before Class Thursday Chapter 10 Study Guide Questions Due Friday Midnight Quiz 8: Chapter 10 Prosection 2: Powerphys: Contractions
10	T Oct 13 R Oct 15	11.1 How Skeletal Muscles Produce Movements 11.2 How Skeletal Muscles are named 11.3 Overview of Principal Skeletal Muscles 11.4 Muscles of the Head that Produce Facial Expressions 11.5 Muscles of the Head that Move the Eyeballs 11.6 Muscles of the Head that Move the Mandible 11.7 Muscles of the Head that Move the Tongue 11.8 Muscles of the Anterior Neck 11.9 Muscles of the Neck that Move the Head 11.10 Muscles of the Abdomen 11.11 Muscles of the Thorax 11.12 Muscles of the Pelvic Floor 11.13 Muscles of the Perineum 11.14 Muscles of the Thorax that move the pectoral girdle 11.15 Muscles of the Thorax and	Due Monday Midnight Homework 11 : Adaptive Practice Chapter Before Class Tuesday Chapter 11 Study Guide Questions Before Class Thursday Chapter 11 Study Guide Questions Due Friday Midnight Quiz 9: Chapter 11 Prosection 3: Real Anatomy: Practical Exam for Muscles

		<p>Shoulder that Mover the Humerus</p> <p>11.16 Muscles of the arm that move the radius and ulna</p> <p>11.17 Muscles of the forearm that move the wrist, hand, thumb, and digits,</p> <p>11.18 Muscles of the palm that move the digits-intrinsic muscles of the hand</p> <p>11.19 Muscles of the neck and back that move the vertebral column</p> <p>11.20 muscles of the gluteal region that move the femur</p> <p>11.21 Muscles of the thigh that move the femur, tibia and fibula</p> <p>11.22 Muscles of the leg that move the foot and toes</p> <p>11.23 Intrinsic muscles of the foot that move the toes</p>	
11	T Oct 20	Review lecture for Chapters 10 and 11	
	R Oct 22		<p>NO QUIZ</p> <p>Exam 2 (Chapters 6,7,8,10,11)</p>
12	T Oct 27	<p>12.1 Overview of the Nervous System</p> <p>12.2 Histology of the Nervous System</p> <p>12.3 Electrical Signals in Neurons</p> <p>12.4 Resting Membrane Potential</p> <p>12.5 Graded Potentials</p> <p>12.6 Action Potentials</p> <p>12.7 Signal Transmission at Synapses</p> <p>12.8 Neurotransmitters</p> <p>12.9 Neural Circuits</p> <p>12.10 Regeneration and Repair of Nervous Tissue</p>	<p>Due Monday Midnight</p> <p>Homework 12 : Adaptive Practice Chapter 12</p> <p>Before Class Tuesday</p> <p>Chapter 12 Study Guide Questions</p> <p>Before Class Thursday</p> <p>Chapter 12 Study Guide Questions</p>
	R Oct 29		<p>Due Friday Midnight</p> <p>Quiz 10: Chapter 12</p> <p>Prosection 4: PowerPhys: Action Potentials</p>

13	T Nov 3	GO VOTE!!!! (no class)	<p>Due Monday Midnight Homework 13 : Adaptive Practice Chapter 13</p> <p>Before Class Tuesday Prepare to VOTE!</p> <p>Before Class Thursday Chapter 13 Study Guide Questions</p>
	R Nov 5	13.1 Spinal Cord Anatomy 13.2 Spinal Nerves 13.3 Cervical Plexus 13.4 Brachial Plexus 13.5 Lumbar Plexus 13.6 Sacral and Coccygeal Plexuses 13.7 Spinal Cord Physiology	<p>Due Friday Midnight Quiz 11: Chapter 13</p>
14	T Nov 10	14.1 Brain Organization, Protection, and Blood Supply 14.2 Cerebrospinal Fluid 14.3 The Brainstem and Reticular Formation 14.4 The Cerebellum 14.5 The Diencephalon 14.6 The Cerebrum 14.7 The Functional Organization of the Cerebral Cortex	<p>Due Monday Midnight Homework 14 : Adaptive Practice Chapter 14</p> <p>Before Class Tuesday Chapter 14 Study Guide Questions</p>
	R Nov 12	14.8 Cranial Nerves 14.9 Cranial Nerve I 14.10 Optic Nerve 14.11 Oculomotor Nerve 14.12 Trigeminal Nerve 14.13 Facial Nerve 14.14 Vestibulocochlear Nerve 14.15 Glossopharyngeal Nerve 14.16 Vagus Nerve 14.17 Accessory Nerve 14.18 Hypoglossal Nerve 14.19 Development of the nervous system 14.20 Aging and the nervous system	<p>Before Class Thursday Chapter 14 Study Guide Questions</p> <p>Due Friday Midnight Quiz 12: Chapter 12</p>
15	T Nov 17		<p>Due Monday Midnight Homework 15 : Adaptive Practice Review</p> <p>Exam 3</p>
	Nov 19-25th	Final (TBA)	

ACADEMIC INTEGRITY: Academic dishonesty is taken very seriously in this course. All students must practice academic honesty. Academic misconduct is subject to an academic penalty by the course instructor and/or a disciplinary sanction by the University. All students need to be familiar with the [Student Conduct Code](#).

ACCOMMODATIONS FOR STUDENTS WITH DISABILITIES: The University of Montana assures equal access to instruction through collaboration between students with disabilities, instructors, and Disability Services for Students. If you have a disability that adversely affects your academic performance, and you have not already registered with Disability Services, please contact Disability Services in Lommasson Center 154 or 406.243.2243. I will work with you and Disability Services to provide an appropriate modification.

THE PRINCIPLES OF OUR EQUITABLE COMMUNITY: The University of Montana values leadership, engagement, **diversity**, and sustainability, because our institution is committed to respect, welcome, encourage, and celebrate the differences among us.

As members of the University of Montana community, we aspire to:

- Respect the dignity and rights of all persons.
- Practice honesty, trustworthiness, and academic integrity.
- Promote justice, learning, individual success, and service.
- Act as good stewards of institutional resources.
- Respect the natural environment.

Prosections:

Week 7: Real Anatomy: Practical Exam for Skeleton

Week 9: Powerphys: Contractions

Week 10: Real Anatomy: Practical Exam for Muscles

Week 12: PowerPhys: Action Potentials