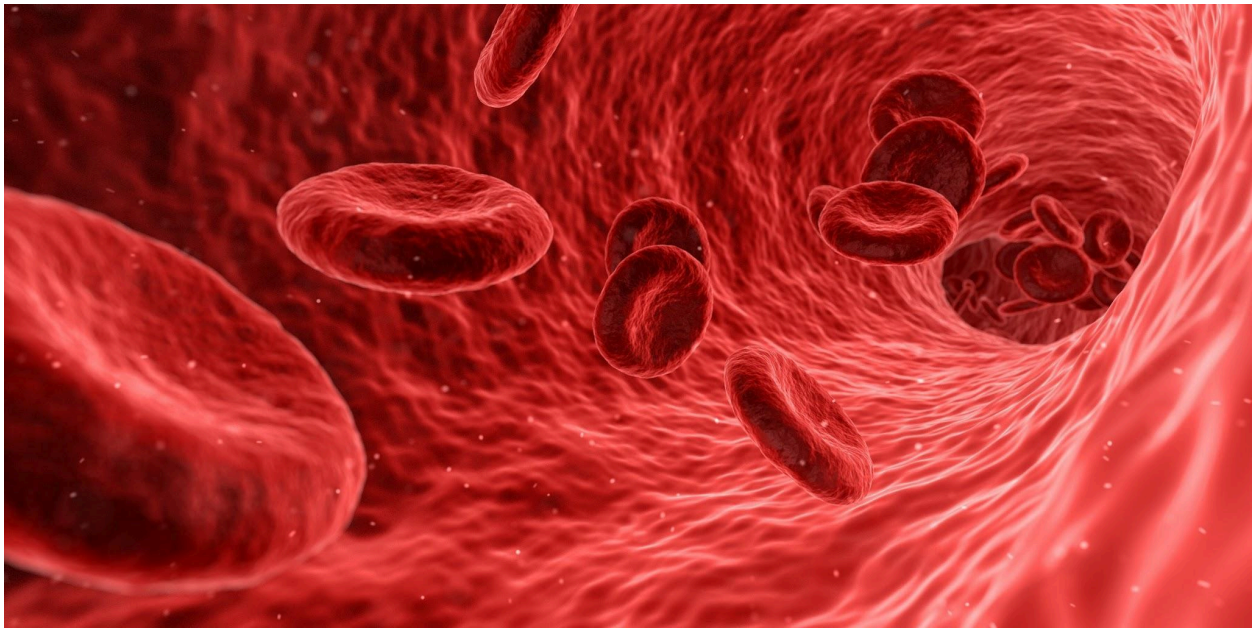

Anatomy & Physiology A & B
Syllabus

INSTRUCTOR INFORMATION

Please go to your course and access the 'Course Home' for detailed instructor information.

CONTACT INFORMATION

Please feel free to contact me if you have any questions regarding your assignments or course content. Course facilitators respond to emails within 24 hours on weekdays and 48 hours on weekends. If you don't receive a response in that time, please reach out again just in case I did not get your message.

COURSE REQUIREMENTS

All learners must have a computer and internet access. Participants in online classes must be comfortable with the basic functions of word-processing software, including GOOGLE DOCS.

This is an online course. In each unit, students will be expected to participate in discussions and proceed through the Blockly Agenda, which may include videos, PowerPoints, virtual labs, research, data gathering and analysis, assignments, quizzes, and tests. Online simulations will be included in this exploration and may require tech support. Learners will be encouraged to show understanding in creative projects.

Our course is A-G approved.

COURSE DESCRIPTION

Students explore the fundamental principles of the human body. Learners explore an introduction to the integumentary, skeletal, muscular, nervous, and endocrine systems. Then, continue their investigation of the human body with the circulatory, respiratory, immune, digestive, excretory, and reproductive systems. These systems are analyzed in terms of injuries and principles of Sports Medicine

REQUIRED TEXTS

All reading materials are available online, but will also be provided as links through the course website. This course uses genuine peer-reviewed research articles, videos, articles, and labs throughout the course. The peer-reviewed articles are of an advanced level and will require some additional work to read. When these are assigned, scaffolds are in place to assist the learner in processing this advanced material. Questions are specific as to where in the article answers can be found.

METHODS OF INSTRUCTION

This is an online course, and while there is flexibility in how and when you do assignments, it is best to log in and complete work each day according to the posted pacing schedule. It is highly recommended that learners follow the pacing schedule posted, but work may be submitted late for full credit. If you are struggling to complete your work or you need some assistance with an alternate schedule or workload, please contact me as soon as possible. I am more than happy to help support your success in the class!

LEARNER EXPECTATIONS

The learner is expected to participate in the course via e-mail, discussion boards (or other communication) with the facilitator, by reading the assigned readings, submitting assignments, and completing and submitting original work.

Learners are expected to check their course and email account every day and complete work on time as assigned with designated dates and time.

GRADING

Each assignment is given a specific number of points. Some assignments will be graded based on completion and others will be assessed on understanding. The number of points earned by the student is determined and a percentage is calculated. The raw score is recorded in the grade book.

NON-HARASSMENT

Learners are expected to treat fellow students, and their facilitators, with respect. No form of a "hostile environment" or "harassment" will be tolerated by any learner or facilitator.
For more information on good netiquette, please review THIS RESOURCE

HONESTY AND PLAGIARISM

Plagiarism of any sort is prohibited.

According to the Merriam-Webster online dictionary, to "plagiarize" means:

- **to steal and pass off (the ideas or words of another) as one's own**
- **to use (another's production) without crediting the source**
- **to commit literary theft**
- **to present as new and original an idea or product derived from an existing source (this even includes yourself sometimes!)**

Please review THIS RESOURCE for more information on plagiarism.
Any plagiarized work will be given a zero and referred to your EF/COACH/GUIDE for review.

PRIVACY POLICY

All work submitted is the property of the author and is not available to anyone not in the class. If work is to be submitted or viewed outside of this website, I will obtain permission from the author. FERPA Info

Course Goals:

- **Develop a foundational understanding of human anatomy and the major body systems.**
- **Explore the relationship between athletic activity and the body's physiological responses.**
- **Analyze mechanisms of sports injuries and the healing process for various tissues.**

- **Gain insight into careers in sports medicine and related fields.**
- **Cultivate critical thinking and research skills through project-based learning.**
- **Foster awareness of healthy practices and injury prevention strategies in sports**

Anatomy & Physiology A	
Unit 1:	**Introduction to Human Anatomy & Physiology**
NGSS Standard Alignment	HS-LS1-2, HS-LS1-3, HS-LS1-4, HS-LS1-7, HS-LS4-1
Learning Objectives:	**Block 1 – Anatomical Orientation** • Use appropriate anatomical terminology to describe locations, planes, and movements of the human body. • Identify key bony markings and explain their importance in anatomical orientation. • Apply anatomical language to describe joint actions and axes of movement. • Reflect on the concept of suffering and how it relates to personal growth and awareness (Mindfulness: "Suffering"). **Block 2 – Comparative Circulatory Structures** • Compare structural features of circulatory systems in vertebrate and invertebrate animals. • Identify evolutionary trends in circulatory system design. • Develop a model or diagram to represent key differences in circulatory anatomy. • Reflect on the idea of poverty from a physical, mental, or societal lens (Mindfulness: "Poor"). **Block 3 – Circulatory Functions Across Species**

	• Compare the functional roles of circulatory systems across species (e.g., open vs. closed systems, number of heart chambers). • Analyze how structure supports function in different evolutionary contexts. • Use evidence to support claims about evolutionary relationships in circulatory systems. • Reflect on the power of thoughts in shaping emotion and behavior (Mindfulness: "Thought"). **Block 4 – Respiratory System Structures** • Identify and describe the anatomy of the human respiratory system. • Explain how oxygen travels from external air into the bloodstream. • Understand the integration between the respiratory and circulatory systems. • Reflect on the concept of escape and its role in coping or avoidance behaviors (Mindfulness: "Escape"). **Block 5 – Respiratory Lab** • Conduct a lab-based investigation measuring respiratory rate or lung volume. • Interpret data to explore the effects of exercise or environment on respiratory function. • Explain how homeostasis is maintained in respiratory responses. • Reflect on personal definitions and sources of power (Mindfulness: "Power"). **Block 6 – Cardiovascular Health Project** • Design a personalized or theoretical exercise program to promote cardiovascular health. • Apply knowledge of circulatory and respiratory

	anatomy to support physical wellness. • Create a presentation or portfolio that communicates the science behind the program. • Reflect on the courage required to face challenges and make healthy changes (Mindfulness: "Brave").
Block 1	**Anatomical Terminology**
Anatomical Terminology, Planes, Motion, and Axes	Lab
Bony Markings	Lab
Mindfulness Discussion: "Suffering"	Discussion
Block 2	**The Heart & The Circulatory System**
Animal Circulatory Comparison - Structures	Lab
Mindfulness Discussion: "Poor"	Discussion
Block 3	**The Heart and Circulatory System**
Circulatory Comparison 2 - Circulatory Functions	Lab
Mindfulness Discussion: "Thought"	Discussion
Block 4	**The Lungs and the Respiratory System**
Respiratory System Structures	Lab
Mindfulness Discussion: "Escape"	Discussion
Block 5	**The Lungs and the Respiratory System**
Respiratory Lab 2	Lab
Mindfulness Discussion: "Power"	Discussion
Block 6	**The Effects of Sports & Exercise on the Cardiovascular System**

Designing an Exercise Program for Cardiovascular Health Project	Performance Task
Mindfulness Discussion: "Brave"	Discussion
Unit 2:	**The Digestive System**
NGSS Standard Alignment	HS-LS1-2, HS-LS1-3, HS-LS1-6, HS-LS1-7, HS-LS4-1
Learning Objectives:	**Block 7 – Digestion and Excretion Overview** • Describe the structure and function of the digestive and excretory systems. • Identify the major organs involved in the breakdown and absorption of nutrients. • Explain the relationship between digestion, nutrient absorption, and waste elimination. • Reflect on how stress responses (distress vs. eustress) affect the body and learning (Mindfulness: "Distress"). **Block 8 – Digestion in a Bag Lab** • Simulate the mechanical and chemical processes of digestion using a hands-on model. • Describe the role of enzymes in breaking down macromolecules. • Analyze how experimental models help us understand biological processes. • Reflect on how individuals cope with and adapt to changes (Mindfulness: "Change"). **Block 9 – Comparative Digestive Anatomy and Evolution** • Compare and contrast digestive system structures across various animals (herbivores, carnivores, omnivores). • Relate structural differences to functional adaptations and dietary needs.

	• Use evidence from anatomy to support claims about common ancestry and evolutionary divergence. • Discuss the role of mindset and thought patterns in emotional regulation (Mindfulness: "Right Thoughts"). **Block 10 – Digestive Performance in Athletes** • Analyze how the digestive system supports athletic performance through energy conversion. • Explore the timing, composition, and digestion of meals in relation to peak performance. • Connect biochemical processes (e.g., carbohydrate metabolism, hydration, electrolyte balance) to physical outcomes. • Reflect on personal strategies for overcoming difficulties and setbacks (Mindfulness: "Difficulties").
Block 7	**Digestion and Excretion**
Human Body – Digestion and Excretion	Lab
Mindfulness Discussion: "Distress"	Discussion
Block 8	**Digestion in a Bag**
Digestion in a Bag Lab	Lab
Mindfulness Discussion: "Change"	Discussion
Block 9	**Digestion Comparison**
Animal Digestive Comparison - Structures	Lab
Digestive Functions & Evolutionary Comparison	Lab
Mindfulness Discussion: "right	Discussion

thoughts"	
Block 10	**Digestion and Sports Performance**
Fueling Performance: A Digestive System Deep Dive for Athletes	Performance Task
Mindfulness Discussion: "Difficulties"	Discussion
Unit 3:	**Sports Injuries and Tissue Healing**
NGSS Standard Alignment	HS-LS1-2, HS-LS1-3, HS-LS1-4, HS-LS4-1, HS-LS4-2
Learning Objectives:	**Block 11 – Introduction to the Integumentary System** • Describe the structure and function of the integumentary system. • Identify the layers of the skin and their physiological roles. • Explain how the integumentary system contributes to homeostasis and protection. • Reflect on the psychological impact of procrastination and time management (Mindfulness: "Procrastination"). **Block 12 – Soft Tissue Injuries & Healing** • Define types of sports-related skin and soft tissue injuries (abrasions, lacerations, contusions, etc.). • Describe the three stages of soft tissue healing: inflammation, proliferation, and remodeling. • Analyze how biological processes support recovery after injury. • Explore the effects of time perception on emotional and academic well-being (Mindfulness: "Time"). **Block 13 – Inside the Injury: Sports Medicine Case Study**

	• Analyze a real or fictionalized sports injury to identify type, severity, and appropriate response. • Evaluate the sequence and timing of biological healing processes in context. • Apply critical thinking and clinical reasoning to recommend treatment options. • Reflect on the impact of anger on health, relationships, and performance (Mindfulness: "Anger"). **Block 14 – Comparative Anatomy Dissection Lab** • Conduct a virtual dissection of a pig, frog, starfish, or earthworm. • Identify and compare the structure and function of the integumentary system in different species. • Explain how anatomical similarities and differences support evolutionary theory. • Consider how worry affects focus and decision-making in academic or medical contexts (Mindfulness: "Worry"). **Block 15 – Culminating Project & Analysis** • Synthesize key concepts from the semester into a final media presentation. • Communicate complex scientific ideas in an accessible and engaging format. • Evaluate personal growth and understanding through a reflective unit analysis. • Develop strategies to manage anxiety and increase confidence during presentations (Mindfulness: "Anxiety").
Block 11	**Introduction to the Integumentary System**
Introduction to the Integumentary System	Activity

Mindfulness Discussion: "Procrastination"	Discussion
Block 12	**Mechanism of Sports Injuries**
Mechanisms of Sports Injuries Involving Skin and Soft Tissue	Activity
Stages of Soft Tissue Healing	Activity
Mindfulness Discussion: "Time"	Discussion
Block 13	**Stages of Soft Tissue Healing**
Inside the Injury: A Sports Medicine Case Study	Activity
Mindfulness Discussion: "Anger"	Discussion
Block 14	**Final Dissection**
Final Lab: Virtual Dissection of a Pig, Frog, Starfish, or Earthworm	Lab
Mindfulness Discussion: "Worry"	Discussion
Block 15	**Semester Analysis**
Semester 1 unit analysis	Performance Task
Culminating Project - Media Marketing Presentation	Performance Task
Mindfulness Discussion: "Anxiety"	Discussion

Anatomy & Physiology B	
Unit 6:	**Analysis of the Trunk**
NGSS Standard Alignment	HS-LS1-2, HS-LS1-3, HS-LS1-4, HS-LS1-5, HS-LS1-6, HS-LS4-1
Learning Objectives:	**Block 1 – Axial Skeleton and Trunk Muscles**

	• Identify and describe the major bones of the axial skeleton. • Explain the functions of the axial skeleton in posture, protection, and movement. • Identify the primary muscles of the trunk and their functional roles. • Reflect on the concept of "freedom" in physical, emotional, and societal contexts (Mindfulness: "Freedom"). **Block 2 – Human Skull & Concussion Case Study** • Label and describe key bony landmarks of the human skull. • Analyze the effects of traumatic brain injury in a sports-related case study. • Understand the long-term symptoms and implications of post-concussion syndrome. • Reflect on how external circumstances affect personal response and agency (Mindfulness: "Circumstances"). **Block 3 – Brain Protection and Concussion Education** • Evaluate concussion risks using a CDC quiz and current scientific research. • Analyze real-world sports concussion impacts through *League of Denial*. • Identify strategies to reduce concussion risk in athletic settings. • Reflect on how impressions—mental, emotional, or social—shape behavior (Mindfulness: "Impressions"). **Block 4 – Nervous System Lab and Spinal Injury Case** • Compare nervous system structures across

	species through dissection or virtual lab. • Describe the anatomy and function of the cervical spinal cord. • Analyze how spinal cord injuries affect motor function, sensation, and recovery. • Reflect on the sensory role of the ears in balance and perception (Mindfulness: "Ears"). **Block 5 – Public Service Announcement & Grief** • Design and deliver a public service announcement (PSA) about preventing or managing trunk or nervous system injuries in sports. • Apply anatomical knowledge to communicate effectively with a public audience. • Reflect on personal and societal experiences of grief and healing (Mindfulness: "Grief").
Block 1	**Anatomy & Common Injuries of the Abdomen & Thorax**
Mindfulness Discussion: "Freedom"	Discussion
The Axial Skeleton – Structure and Function	Lab
Muscles of the Trunk	Lab
Block 2	**Anatomy & Common Injuries of the Head & Face**
Mindfulness Discussion: "Circumstances"	Discussion
Human Skull Lab	Lab
Post-Concussion Syndrome Case Study: 17-Year-Old Male Athlete	Activity

Block 3	**Anatomy of the Brain and Brain Injuries**
Mindfulness Discussion: "Impressions"	Discussion
CDC Concussion Quiz	Activity
League of Denial Questions	Activity
Protecting the Brain From Concussion	Activity
Concussion Concluding Questions	Discussion
Block 4	**Spine and the Nervous System**
Mindfulness Discussion "Ears"	Discussion
Nervous System Comparison Lab	Lab
Case Study: Cervical Spinal Cord Injuries in Soccer Players	Activity
Block 5	**Trunk and Head Culminating Project**
Sports Injuries of the Trunk Public Service Announcement	Performance Task
Mindfulness Discussion "Grief"	Discussion
Unit 7:	**Analysis of the Trunk**
NGSS Standard Alignment	HS-LS1-2, HS-LS1-3, HS-LS1-4
Learning Objectives:	**Block 6 – Appendicular Skeleton Lab** • Identify bones of the appendicular skeleton, including limb girdles and extremities. • Describe the functional roles of appendicular bones in movement and support. • Develop spatial awareness of joint connections and articulations. • Reflect on the meaning of “good” in the context of physical health and personal integrity

	(Mindfulness: "Good"). **Block 7 – Pelvis and Lower Limb Lab** ● Label key anatomical features of the pelvis, femur, tibia, fibula, and foot. ● Describe how lower limb structure supports weight-bearing and mobility. ● Analyze pelvic differences based on biological sex and function (e.g., childbirth, athletic performance). ● Reflect on how opinions influence self-perception and communication (Mindfulness: "Opinions"). **Block 8 – ACL Tear Lab** ● Investigate the structure and function of the ACL and surrounding ligaments. ● Understand common mechanisms of ACL injury and surgical interventions. ● Explore healing and rehabilitation processes at the tissue and systems level. ● Reflect on the nature of judgments—internal and external—and their effects (Mindfulness: "Judgements"). **Block 9 – Lower Limb Injury Case File & Recovery Plan** ● Analyze a case study of a lower limb injury, identifying the injury site and mechanism. ● Design a recovery plan that includes phases of healing, therapy goals, and long-term care. ● Apply anatomical and physiological knowledge to real-world clinical situations. ● Reflect on the role of examples (role models, cases, behaviors) in shaping understanding (Mindfulness: "Examples").

Block 6	**Anatomy & Common Injuries of the Foot, Ankle, and Lower Leg**
Mindfulness Discussion "good"	Discussion
Appendicular Skeleton Lab	Lab
Block 7	**Anatomy & Common Injuries of the Thigh & Hip**
Mindfulness Discussion "opinions"	Discussion
Pelvis and Lower Limb Lab	Lab
Block 8	**Anatomy & Common Injuries of the Knee**
Mindfulness Discussion "Judgements"	Discussion
ACL Tear Lab	Lab
Block 9	**Lower Limb Project**
Mindfulness Discussion "Examples"	Discussion
Lower Limb Injury Case File & Recovery Plan	Performance Task
Unit 8:	**Analysis of the Upper Limb**
NGSS Standard Alignment	HS-LS1-2, HS-LS1-3, HS-LS1-4
Learning Objectives:	**Block 10 – Rotator Cuff Tear & Youth Pitching Injuries** • Describe the anatomy and function of the rotator cuff muscles and tendons. • Analyze causes and consequences of repetitive use injuries like “Little League Elbow.” • Apply anatomical knowledge to injury prevention strategies in youth athletes. • Reflect on how difficulty contributes to growth

	and resilience (Mindfulness: "Difficult"). **Block 11 – Shoulder and Arm Muscular Anatomy** ● Identify major muscles of the shoulder and arm, including origins, insertions, and actions. ● Explain the role of upper limb muscles in functional and athletic movements. ● Explore how muscular imbalances can lead to injury. ● Reflect on the impact of personal actions on outcomes and health (Mindfulness: "Actions"). **Block 12 – Jackson's Wrist Injury Case Study** ● Analyze a case study involving a traumatic wrist injury. ● Identify the structures involved and stages of the recovery process. ● Interpret diagnostic and treatment plans for musculoskeletal injuries. ● Reflect on how control (or loss of control) affects physical and emotional health (Mindfulness: "Control"). **Block 13 – Upper Limb Injury Recovery Plan & Review** ● Design a comprehensive injury recovery plan based on a case file or clinical scenario. ● Apply rehabilitation principles and timeline planning. ● Review cumulative content from Unit 8 in preparation for final analysis. ● Reflect on what it means to act independently or as part of a group (Mindfulness: "The Herd"). **Block 14 & Block 15 – Sports Analysis & Training**

	Plan • Analyze sport-specific movements to identify injury risk factors. • Design a personalized or team-based training plan that integrates anatomy, conditioning, and injury prevention. • Apply biomechanical and anatomical knowledge to support performance and safety. • Reflect on the importance of personal truth and self-awareness in decision-making (Mindfulness: "Truth").
Block 10	**Anatomy & Common Injuries of the Shoulder**
Mindfulness Discussion: "Difficult"	Discussion
Rotator Cuff Tear Lab	Lab
“Little League Elbow” and Youth Pitching Injuries	Activity
Block 11	**Anatomy & Common Injuries of the Elbow, and Upper Arm**
Mindfulness Discussion: "Actions"	Discussion
Muscular System – Shoulder and Arm	Lab
Block 12	**Anatomy of the Forearm, Wrist, & Hand**
Mindfulness Discussion: "Control"	Discussion
Case Study – Jackson’s Wrist Wipeout	Activity
Block 13	**Upper Limb Culminating Project**
Upper Limb Injury Recovery Plan Project	Performance Task
Cumulative Project Review	Discussion

Block 14	**Culminating Project**
Mindfulness Discussion: "The Herd"	Activity
Sports Analysis and Training Plan	Performance Task
Block 15	**Culminating Project**
Mindfulness Discussion: "Truth"	Discussion
Sports Analysis and Training Plan	Performance Task