



PLTW HUMAN BODY SYSTEMS

Kara Koler, BSN, RN

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Course Description: *Human Body Systems is the study of the structures and organs of the body, how these structures and organs are organized, and how they function to maintain homeostasis. It is the anatomy and physiology component of the Project Lead the Way Biomedical curriculum. Additionally, students learn the basics of diagnosing, evaluating and treating a variety of medical conditions.*

Prerequisites: *Principles of Biomedical Sciences*

CTSO: *Students are encouraged to participate in HOSA. Competitive events that relate to a specific topic discussed in class will be highlighted. HOSA Competitive Event Guidelines will serve as a reference for these activities.*

Course Goals and Objectives:

- Explain how the function of a tissue is related to its structure.*
- Relate specific bones and bone markings to specific identity characteristics.*
- Interpret and analyze RFLPs to identify an individual based on these unique differences.*
- To demonstrate knowledge of directional terms in describing the appearance of a patient or the location of a wound.*
- Analyze actions in the body to determine brain region involved.*
- Describe how the movement of ions across the cell membrane of a neuron generates an action potential and propagates electrical signals.*
- Outline what goes on in the human body from an initial stimulus to a response in both voluntary and involuntary actions.*
- Analyze physical symptoms of a patient and relate these symptoms to errors in hormonal levels.*



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Apply knowledge of hormones and bone remodeling to explain calcium balance in the body

Demonstrate how light is processed in the eye in a person with normal vision and a person with myopia or hyperopia.

Outline mechanically and chemically what happens to a bite of food (variety of macromolecules) as it travels down the digestive tract.

Identify how factors such as temperature and pH affect the rate of enzyme-catalyzed reactions.

Suggest appropriate recommendations to improve health based on metabolic needs.

Apply principles of diffusion to explain gas exchange in the lungs.

Describe the connections between urine and blood and the exchange of ions and fluids that occurs across the nephron.

Demonstrate or identify types of movement of various synovial joints.

Interpret muscle function by looking at muscle attachment to bones.

Articulate sequential process of muscle contraction, including specific roles of calcium and ATP.

Analyze how structural dysfunction of blood vessels impacts overall health

Identify major arteries and veins and the body regions supplied by each.

Analyze the role of three energy systems during a specific activity such as running a race.

Relate the action of the nervous system to the function of the skin.

Describe the interaction between antigens and antibodies to determine transplant compatibility.



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Recognize that type of white blood cell called B lymphocytes is responsible for the production of antibodies and has the ability to remember invaders once they have entered the body.

Explain how all of the human body systems work to respond to extreme external environments and complete basic body functions such as movement and communication.

Describe how most body systems are connected and recognize how a disruption in one organ system affects another.

Construct, interpolate and extrapolate a graph.

Design an experiment that contains all of the components with consistent detail and minimal errors.

Support and justify conclusions, thoroughly suggest necessary revisions and further exploration.

Thoroughly and clearly articulate the main points with precise details that have been appropriately designed for the target audience, organized in a logical sequence in written and oral communication.

Discover HOSA competitive events that draw on their knowledge of anatomy and physiology.

**Classroom
Expectations:**

You are expected to conduct yourself in a respectful and productive manner. In addition to all the rules and expectations listed in the student handbook, I expect you to have a positive attitude, treat others with respect, practice self-discipline, and demonstrate responsibility. If these conditions are not met, you can expect one-on-one meetings with me, parent/instructor conferencing, and administrative action, if necessary. Students will receive a grade each term for their professional behavior in class.



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If a student is absent the 1 or 2 days before a scheduled test is given and there is no new material that has been presented during the absence, the student WILL BE expected to take the exam on the day it is scheduled.

Late work- Accepted with consequences:

Project -1 day late -15%, 2 days late -30%, 3+ days late -50%.

Daily grade- Homework is due at the start of class. A deduction of 10% will be taken for each day late to a maximum of -50%.

Students will develop a portfolio of assignments and projects as the semester progresses. THIS IS A REQUIREMENT OF PLTW CERTIFICATION. Portfolios will be checked and graded intermittently. Students will also keep a laboratory manual. Students and parents must sign a Lab Safety contract before they may participate in any laboratory experiments. Students will wear lab coats, safety glasses, long pants and closed toed shoes on lab days.

Concerning the use of cell phones and other electronic devices:

*Devices should be on silent and kept in your purse, backpack, or pocket during class unless otherwise instructed. You may not place it on your desk. **Parents, guardians, and other family members should call the front office in case of emergency.***

If you violate this rule, you can expect the following consequences:

- ***First offense*** – The phone or device will be placed in a phone chart at the front of the room. You may pick it up at the end of class.
- ***Second offense*** – The phone or device will again be placed in a phone chart at the front of the room until the end of class and a parent/guardian will be notified.
- ***Third offense*** – This is defiance and I will notify an administrator.

Numeracy Anchor Assignment

There are a variety of assignments throughout this semester's curriculum that demonstrate the importance of mathematics in a biomedical career. These include Activities 1.2.3 Bone Detectives, 1.2.4 Determining Height from Bones, Activity 2.2.3 It's All in the Reflexes, Activity 3.3.2 Determining Respiratory Capacity, Activity



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3.3.3 Writing Prescriptions, Activity 3.4.1 Spotlight on the Kidneys, Activity 4.1.2 Determining Range of Motion and Activity 4.3.4 Calculating Cardiac Output.

Literacy Anchor Assignment

Technical reading and writing are part of each day's activity in PLTW. Students log into the online curriculum and complete their own self-paced research utilizing the resources provided. Each activity also includes reflection and conclusion questions related to the knowledge obtained that day. Students will also complete a career journal throughout the semester highlighting careers that are related to that day's lesson.

Grading Policy:

Major assessments will count 70 percent of your term grade. A variety of assessments will be used including tests, individual and group projects and reflection writing.

Homework and classwork will account for 30 percent of your term grade. Grades will be updated weekly in PowerSchools. Each grading period will consist of nine weeks.

The semester final exam / final project will count as 20% of the student's final grade.

Grading scale: A 90-100

B 80-89

C 70-79

D 65-69

F 0-64

Make-up Work Policy:

*Make-up tests will **only** be given to a student who has an **excused absence**. **The student must make arrangements with the teacher to take a make-up test. Tests may be taken during Patriot Path with prior arrangement from each teacher.** A student only has two chances (the next two Patriot Paths after the absence) to make up a test. If a student does not take their make-up test by the second Patriot Path, they will take their make-up test **in class** the following day. All scheduled make-up tests will be administered in the designated classroom on the Patriot Path session roster.*



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Homework/Classwork: Students who are absent for excused reasons will be permitted to make up missed work. If you are absent, remember your work for that day is on the current agenda or in Schoology. It is the student's responsibility to get their work assignments the day upon return to school and complete the assignments according to a time frame determined by the teacher within two weeks of the date of the last absence. Grades of zero will be assigned for assignments missed because of unexcused absences.

***Text and Other
Required Reading:***

No required text. Our class is a national online curriculum.

Classroom Resources:

Human Anatomy and Physiology, Tenth Edition, by Elaine Marieb and Katja Hoehn

Surviving the Extremes: What Happens to the Body and Mind at the Limits of Human Endurance by Kenneth Kamler, M.D. ISBN 978-0-14-303451-3

***Materials and
Supplies Needed:***

3 ring binder – minimum 1” (Student purchased or provided by the teacher)

Laptops

Concerning laptop utilization:

- 1. Student laptops should not be hard-wired to the network or have print capabilities.*
 - 2. Use of discs, flash drives, jump drives, or other USB devices will not be allowed on Madison City computers.*
 - 3. Neither the teacher, nor the school is responsible for broken, stolen, or lost laptops.*
 - 4. Laptops and other electronic devices will be used at the individual discretion of the teacher.*
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Turnitin Notice

The majority of writing assignments in this course will be submitted to Turnitin via the Schoology learning platform. Turnitin generates a report on the originality of student writing by comparing it with a database of periodicals, books, online content, student papers, and other published work. This program will help students discern when they are using sources fairly, citing properly, and paraphrasing effectively - skills essential to all academic work.

Students will have the opportunity to review their Turnitin originality report and will have the opportunity to make revisions before submitting their work for grading. Once their work is submitted, teachers have the opportunity to view the student/s originality report and grade accordingly.

Accommodations

Requests for accommodations for this course or any school event are welcomed from students and parents.

CRI Stackable Credential

Lifeguarding CRI available through ALSDE grant to qualifying students.

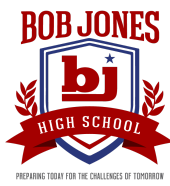


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18 – WEEK PLAN (Always Subject to Change!)	
Week 1	Introduction /Unit 1 Identity Activity 1.1.1 – 1.1.2
Week 2	Activities 1.2.1 – 1.2.3 Weekend Homework 1.2.4
Week 3	Activities 1.3.1-1.3.3
Week 4	Activities 1.3.3 Begin Unit 2 Communication Activities 2.1.1 – 2.1.3
Week 5	Activities 2.2.1 – 2.2.3
Week 6	Activities 2.2.4 – 2.2.5
Week 7	Activities 2.3.1-2.3.2
Week 8	Begin Unit 3 Power Activities 2.4.1 – 2.4.4
Week 9	Activities 3.2.2- 3.2.4
Week 10	Activities 3.2.5 – 3.2.6
Week 11	Activities 3.3.1 – 3.3.4
Week 12	Activities 3.4.1-3.4.5
Week 13	Begin Unit 4 Movement Activity 4.1.1 – 4.2.2 Activities 4.2.3 – 4.2.6
Week 14	Activities 4.3.1 – 4.3.5 Activities 4.3.4 – 4.4.3
Week 15	Activity 4.4.4 Begin Unit 5 Protection Activities 5.1.1 – 5.1.2
Week 16	Activity 5.1.3
Week 17	Activities 5.2.1 – 5.2.3 Activities 5.3.1 – 5.3.3
Week 18	Unit 6 Homeostasis Activity 6.1.2 - 6.1.4
Week 19	Make-Up (because we are never on schedule!) Maniken / Room Cleaning
Week 20	Review and Finals Week PLTW End of Course Assessment



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****This is a tentative plan and may change at the discretion of the teacher.***

Please sign below to acknowledge that you have received, read, and understand the syllabus.

Student name: (Please print) _____

Student signature: _____

Parent/guardian name: (Please print) _____

Parent/guardian signature: _____

Parent/guardian, please provide two ways for me to contact you (email address, phone numbers):

Parent/guardian Email:

Parent/Guardian Phone number:

Parents, what is the best way for me to contact you?

___ phone call

___ text messaging

___ email

If your child is absent, will they have access to the internet so they may keep up with their classroom work? ___yes ___no