

## **PLTW-Human Body Systems: 2017-2018 Course Syllabus**

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*Prerequisites:* -Successful completion of a biology course  
-Successful completion or concurrent enrollment in a chemistry course  
-Successful completion of PLTW- Principles of Biomedical Sciences (PBS) course

*Office Hours:* Tu & Th after school

This course allows students to examine the interactions of body systems as they explore identity, communication, power, movement, protection, and homeostasis. Students design experiments, investigate the structures and functions of the human body, and use data acquisition software to monitor body functions such as muscle movement, reflex and voluntary action, and respiration. Exploring science in action, students build organs and tissues on a skeletal mannequin, work through interesting real world cases and often play the role of biomedical professionals to solve medical mysteries.

### **Sequence of Topics**

The Human Body Systems (HBS) course is divided into six units designed to introduce students to the way in which body systems work together to maintain homeostasis and good health. The following is a description of each unit in the HBS course.

#### **Unit One – Identity**

Unit one engages students in a discussion of what it means to be human. Students investigate the body systems and functions that all humans have in common, and then look at differences in tissues, such as bone and muscle, and in molecules, such as DNA, to pinpoint unique identity. Students play the role of forensic anthropologists as they unlock the clues of identity found in bone and use restriction analysis and gel electrophoresis to analyze differences in DNA. Students begin to study histology and build upon their knowledge of human tissue.

#### **Unit Two – Communication**

In unit two, students investigate modes of communication within the human body as well as the ways humans communicate with the outside world. Students create a model of the human brain and design a brain map that pinpoints specific areas of function. Students investigate the roles of electrical and chemical signals in communication and response in the human body. They explore the ways in which hormones and the endocrine system control body function in order to solve a medical mystery. Students compare response time to reflex and voluntary actions using data acquisition software, and design experiments to test factors that can impact this response. By investigating the anatomy and physiology of the human eye, students learn how the body receives and interprets stimuli from the outside world.

#### **Unit Three – Power**

In this unit, students investigate the human body systems that work to obtain, distribute, or process the body's primary resources for energy and power—food, oxygen, and water. Students make a working model of the digestive system and design experiments to test the optimal conditions for chemical digestion. Students use probes and data acquisition software to monitor their own lung function and oxygen intake. Students investigate the anatomy and physiology of the urinary system and do a simulated urinalysis to identify health conditions and diagnosis disease.

#### **Unit Four – Movement**

In unit four, students investigate the movement of the human body as well as of substances within the body. Students dissect a joint to visualize the connection between skeletal muscle and bone. By building muscle groups on a skeletal model, students learn how a muscle's structure is directly related to its function and to the actions it can produce. Students design experiments to test the requirements for muscle contraction and create models to show relaxation and contraction of the sarcomere. A study of blood flow illustrates the roles smooth and cardiac muscles play in the transport of substances around the body. At the end of the unit, students combine information about power and movement to describe how the body fuels and responds to exercise. Playing the role of biomedical professionals in a combined medical practice that caters to athletes, the students design a comprehensive training plan for an athlete. The plan includes all aspects of training, from diet and exercise to hydration and injury prevention.

#### **Unit Five – Protection**

In this unit, students explore ways in which the human body protects itself from injury and disease. Before students investigate specific defense mechanisms and the immune system, they explore the protective functions of skin, bone and the feeling of pain. Antigen-antibody interactions are introduced as well as the structure of the lymphatic and immune system. Students analyze data from a fictional illness and relate antibody response to the action of specific white blood cells. Students design a game or a children's book that illustrates the many ways in which body structures function in protection.

#### **Unit Six – Homeostasis**

This final unit focuses on the connection between all of the human body systems and examines how these systems work together to maintain health and homeostasis. Students explore how the body deals with extreme external environments as well as how the body reacts to and defends against injury and illness. Students begin to discuss and design medical interventions; the activities in this lesson are an engagement for the subsequent course, Medical Interventions.

#### **Supplies**

The following supplies are required for this course:

- agenda/planner
- blue or black ballpoint pens
- composition notebook
- three-ring binder with pockets
- pencils

#### **Classroom Expectations**

Students are expected to be seated and ready to work before the bell rings to begin class.

Students are strongly encouraged to be in class every day. The interactive nature of a science class makes it difficult to make up after an absence.

Students who are late for class must present a legitimate pass. Students without a legitimate pass should expect a consequence.

Students are responsible for making up any work missed during an excused absence. Work missed during an unexcused absence cannot be made up.

Students will only be given 3 passes to leave the room (except Hr 7-no passes). All personal business, including using the restroom and going to lockers should be taken care of prior to class.

For safety reasons, students are not permitted to chew gum, eat or drink in science classrooms. Plastic water bottles are permitted.

Students are expected to abide by all laboratory safety rules. Failure to do so will result in removal from the lab. Student will not be permitted to make up the lab.

Electronic devices, including cell phones, MP3 players, etc. may not be used during class. Per Riverside policy, electronics will be confiscated if they are seen. If seen during a test, an automatic failing grade is given with no chance of retakes.

During tests, all items (except writing utensils) must be put up in the front of the room.

### **Grading Policy**

Students will be given several opportunities to demonstrate their mastery of the content in this course. Each semester is divided into two 9-week grading periods. A student's semester grade in the course is determined by examining the evidence of their growth toward meeting each standard.

Students will complete two types of assignments: Preparation and Performance.

Students will be assigned preparation activities on a regular basis which are designed to move students towards achievement of the course standards. It is important to complete preparation activities because the feedback will help the student progress toward mastery. Preparation work and activities are an expected component of the course. **Preparation activities cannot be revised or redone.**

Performance assignments are how students demonstrate their level of mastery of the course standards. Performance assignments will require students to apply the skills they have gained from completing the preparation activities. These performance activities could be tests, quizzes, essays, projects, or some other demonstration of understanding. The final grade will be the comprehensive pattern of student achievement of all the submitted performance work. Performance tasks may address multiple standards at a time. Students may re-attempt (review-revise-redo) a performance activity on a case-by-case basis after meeting with their teacher outside of class.

All students will be taking the course final assessments at the end of semesters 1 and 2.

Students that have demonstrated proficiency (letter grade of 'B' or higher) in a course and have met the following criteria will be exempt from the final assessment for the course.

The criteria for students to exempt from the Course Final Assessment are:

1. Must demonstrate proficiency (Letter grade of 'B' or higher)
2. Have 95% attendance or higher in the course (No more than 4 excused absences)
3. No unexcused absences
4. Off the Unfinished Business List (fees and fines)

Grade Entered into IC	Meaning of Grade
Advanced (AD)	<ul style="list-style-type: none"> <li>The student exhibits exceptional mastery of the course objective.</li> <li>Means that you have a deep and rich understanding of complex concepts.</li> <li>Exceeding grade level expectations.</li> </ul>
Proficient (PR)	<ul style="list-style-type: none"> <li>The student provides evidence of mastery of the course objective.</li> <li>Means that you have a solid conceptual understanding of the content.</li> <li>Meeting grade level expectations.</li> </ul>
Basic (BA)	<ul style="list-style-type: none"> <li>The student provides evidence of a beginning understanding of the course objective.</li> <li>Means that you have an understanding of parts of the concept, but you still demonstrate errors in thinking.</li> <li>Just below grade level expectations.</li> </ul>
Minimal (MI)	<ul style="list-style-type: none"> <li>The student attempts the task but provides no evidence of mastery of the objective.</li> <li>Means that you are still learning and make some major errors.</li> <li>Far below grade level expectations.</li> </ul>
No Evidence (O)	<ul style="list-style-type: none"> <li>There was no attempt or plagiarized.</li> <li>Means that you were absent &amp; didn't make up, refused to complete the assessment, or copied off someone else.</li> </ul>

These ratings will be converted to a numeric value and translated into the traditional A, B, C, D, U grades for progress reports.

Standard Level	GPA Point Scale	% Represented in IC	Traditional Letter Grade
AD (Advanced)	4	100 (90-100)	A
PR (Proficient)	3	85 (70-89)	80-89=B 70-79=C
BA (Basic)	2	65 (51-69)	D
MI (Minimal)	1	50 (1-50)	U
O (No evidence)	0	0	U

Students may retake evidence and replace the original grade by completing the following steps:


1. Make corrections to the original evidence.
2. Make an appointment with Ms. Davis to review corrected evidence. Then, we will schedule the replacement evidence.  
**\*\*Appointments are limited! Don't wait until the last minute!\*\***
3. The deadline for all retakes and resubmits is one week prior to the close of grades for the quarter.

In addition to your academic grade, you will also receive a citizenship grade for this class. This grade is determined by your behavior in four areas: responsibility, respect, work ethic, and safety.

## RUHS Citizenship Rubric

**“Try your hardest, do your best and give your all.”**

To earn a RESPECT CITIZENSHIP grade you must meet 3 or more criteria in one number band.

	Be <u>R</u> esponsible	Be <u>R</u> espect <u>U</u>	<u>H</u> onorAcademics	Be <u>S</u> afe
<b>4</b>	<b>Always</b> <ul style="list-style-type: none"> <li>on time to class</li> <li>phones, electronics are off and unseen</li> <li>food and drinks are not present during class (except water)</li> </ul>	<b>Always</b> <ul style="list-style-type: none"> <li>respectful of staff, students and school property</li> <li>uses appropriate language</li> <li>demonstrates appropriate school behavior</li> </ul>	<b>Always</b> <ul style="list-style-type: none"> <li>prepared for class</li> <li>participates</li> <li>on task</li> <li>works to potential</li> <li>demonstrates academic integrity</li> </ul>	<b>Always</b> <ul style="list-style-type: none"> <li>follows school and classroom rules</li> <li>follows staff directives</li> <li>secures personal belongings</li> <li>follows dress code</li> </ul>
<b>3</b>	<b>Consistently</b> <ul style="list-style-type: none"> <li>on time to class</li> <li>phones, electronics are off and unseen</li> <li>food and drinks are not present during class (except water)</li> </ul>	<b>Consistently</b> <ul style="list-style-type: none"> <li>respectful of staff, students and school property</li> <li>uses appropriate language</li> <li>demonstrates appropriate school behavior</li> </ul>	<b>Consistently</b> <ul style="list-style-type: none"> <li>prepared for class</li> <li>participates</li> <li>on task</li> <li>works to potential</li> <li>demonstrates academic integrity</li> </ul>	<b>Consistently</b> <ul style="list-style-type: none"> <li>follows school and classroom rules</li> <li>follows staff directives</li> <li>secures personal belongings</li> <li>follows dress code</li> </ul>
<b>2</b>	<b>Occasionally</b> <ul style="list-style-type: none"> <li>on time to class</li> <li>phones, electronics are off and unseen</li> <li>food and drinks are not present during class (except water)</li> </ul>	<b>Occasionally</b> <ul style="list-style-type: none"> <li>respectful of staff, students and school property</li> <li>uses appropriate language</li> <li>demonstrates appropriate school behavior</li> </ul>	<b>Occasionally</b> <ul style="list-style-type: none"> <li>prepared for class</li> <li>participates</li> <li>on task</li> <li>works to potential</li> <li>demonstrates academic integrity</li> </ul>	<b>Occasionally</b> <ul style="list-style-type: none"> <li>follows school and classroom rules</li> <li>follows staff directives</li> <li>secures personal belongings</li> <li>follows dress code</li> </ul>
<b>1</b>	<b>Rarely</b> <ul style="list-style-type: none"> <li>on time to class</li> <li>phones, electronics are off and unseen</li> <li>food and drinks are not present during class (except water)</li> </ul>	<b>Rarely</b> <ul style="list-style-type: none"> <li>respectful of staff, students and school property</li> <li>uses appropriate language</li> <li>demonstrates appropriate school behavior</li> </ul>	<b>Rarely</b> <ul style="list-style-type: none"> <li>prepared for class</li> <li>participates</li> <li>on task</li> <li>works to potential</li> <li>demonstrates academic integrity</li> </ul>	<b>Rarely</b> <ul style="list-style-type: none"> <li>follows school and classroom rules</li> <li>follows staff directives</li> <li>secures personal belongings</li> <li>follows dress code</li> </ul>

### School-Wide Initiatives

In this class, we will be doing a few things consistently to support your overall academic development. Two things that will be implemented regularly are:

- Close-Reading with Annotation
- Writing use Claim, Evidence, and Reasoning model

### Discipline Policy

Students are expected to follow the school and class rules at all times. Chronic or serious infractions will result in referral to an administrator and a parent contact. Minor infractions will result in:

1. A verbal warning
2. A time-out to recollect yourself and/or seat change
3. A 15 minute conference to be served after school.
4. A parent contact
5. A 45 minute detention to be served after school.

### Cell Phone Policy

- 1ST OFFENSE: VERBAL WARNING  
 2ND OFFENSE: PHONE TAKEN FOR CLASS PERIOD  
 3RD OFFENSE: PHONE TAKEN FOR THE DAY  
 4TH OFFENSE: PHONE GIVEN TO ADMINISTRATOR

## **What to Do if You've Been Absent**

### **YOU ARE RESPONSIBLE FOR FINDING OUT WHAT YOU MISSED WHEN ABSENT!!!**

1. Copy down the notes from the days you were absent from a reliable student. This should be taken care of either before or after class, not during class.
2. Check the website to see what assignments you missed. You will have three days from the day you return to get these completed.
3. Turn in any assignments that were due while you were absent.
4. Check the "Out Box" to see what papers were returned while you were gone.
5. Check the file folders for any handouts that were given in your absence.
6. Since ample notice is given of upcoming tests, you will be expected to take any test you missed on the day you return unless the absence has been extended.
7. Come during student support to see Ms. Davis if you have any questions or need clarification on an assignment.

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***I have read the syllabus carefully and understand the policies in Ms. Davis' HBS Course. I will abide by the policies and procedures put forth in this syllabus.***