

**Medical Interventions**

**Instructor:** Mrs. Marty Warren

**Instructor Contact Information:** warrenm@jenningsk12.org

**Instructor Availability:** Mondays and Wednesdays 3:00 pm to 3:30 pm or by appointment

**Room #: S118**

**Textbook:** Project Lead the Way Human Body Systems Online Site and Materials Distributed by Instructor

**COURSE DESCRIPTON**:

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, or digital model and 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 (15%)**

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 (20%)**

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 (15%)**

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 (20%)**

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 (15%)**

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 (15%)**

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.

**REQUIRED MATERIALS:**

Notebook and a dedicated folder for this class

5 binder dividers

Pencils/Pens/Hi-lighters

Other supplies as needed per activities/laboratory exercises

**METHODS OF INSTRUCTION:**

Lecture/Discussion

Multimedia/Audiovisual (PowerPoint, DVD, Videos)

Individual reading and work

Demonstration/Return Demonstration

Classroom/Group interactive activities

Role play/Simulation

Student presentation

Laboratory work

**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

**EVALUATION:**

|  |  |  |
| --- | --- | --- |
| **Course Work** | **Percentage** | **Types of Assignments** |
| Major | 70% | **Assessments:** Unit exams, Quizzes, Final |
| Daily | 30% | **Daily work:** Unit activities, Lab note book/ lab, Conclusion questions, Career Journal, Participation |

**Grading Policy: A = 90-100; B = 80-89; C = 70-79; D = 60-69; F = 0-59**

**ATTENDANCE:**

* **TARDY** – A tardy is failure by a student to be in the classroom when the session has started. After missing the first ten minutes of class, the student will be counted absent.
* **MAKE-UP WORK DUE TO ABSENCE** - ***This is the student’s responsibility!***
  + **Pre-arranged –** Student needs to meet with the teacher prior to the absence to obtain and or complete work they will miss.
  + **After an absence –** Student needs to check with teacher about missing work.
  + **Late assignments**/**Late lab assignments**– You can expect a letter deduction for each day a missing assignment has not been turned in. Missing work **will not** be accepted for grading after the end of each quarter.

**WHAT TO DO IF YOU HAVE 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 Google Classroom and the assigned PLTW Unit for the missed class 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. See Ms. Warren if you have any questions or need clarification on missed assignments.

**RETAKE POLICY:**

* Retakes will be allowed for ONLY failed assessments.
* Retakes will be allowed ONCE per failed assessment.
* The highest points possible on a retaken assessment will be 75%, or a “C”.
* NO retakes on daily work will be allowed.
* Retakes on assessments must be completed within the quarter they were originally administered.

**CLASSROOM RULES & EXPECTATIONS:**

1. Be respectful, responsible, and safe to fellow students, staff, and substitute staff.
2. Be on time and come prepared to learn.
3. Ask for help when needed and maximize your learning time.
4. Class participation is an expectation.
5. Cell phones may not be used during class, unless directed by the teacher for specific educational purposes.
6. Please do not eat in class unless specifically allowed to do so by the instructor. Water in PLASTIC containers is allowed. All other types of drinks will be allowed at the discretion of the instructor.

**LABORATORY RULES & EXPECTATIONS:**

**SAFETY IS IMPORTANT! WE ALL MUST FOLLOW THE FOLLOWING RULES IN ORDER TO HAVE A SAFE AND PRODUCTIVE LABORATORY EXPERIENCE!**

**STUDENTS ARE EXPECTED TO PUT ON SAFETY ATTIRE *BEFORE* STARTING THE LABORATORY EXPERIMENT/INVESTIGATION**

1. Closed-toed shoes are required by everyone in the laboratory. No slides, shower shoes, slippers, etc. Please wear the proper shoes on “LAB DAYS.”
2. Long hair/braids must be tied back.
3. Lab aprons/coats must be worn during lab to protect your clothing and yourself from any spills, splashes, and so forth.
4. Long sleeves should be rolled up to prevent accidents.
5. Safety glasses/goggles should be worn during the ***ENTIRE*** time you are in the lab. There may be a time when you may need a break from your goggles/glasses. The instructor will guide you to a designated area where you may “take a break” from your safety glasses/goggles.
6. Gloves are to be worn during specific labs as required by the instructor.
7. Please ***DO NOT EAT*** or ***DRINK*** in the lab! If you break this rule, you will be assigned an “F” for each section of the lab exercise!
8. ***NO GUM, MINTS***, or ***HARD CANDY*** in your mouth while in the lab. If you break this rule, you will be assigned an “F” for each section of the lab exercise!
9. All pre-lab assignments ***MUST*** be completed ***PRIOR*** to the laboratory exercise. Failure to do so will forfeit participation in the lab and student will be assigned a grade of ***ZERO*** for ***all*** sections of that lab.
10. All pre-lab setup ***MUST*** be completed at least one day before the laboratory exercise. Failure to do so will forfeit participation in the lab and student will be assigned a grade of ***ZERO*** for ***all*** sections of that lab.
11. All lab assignments must be turned in on time. Late assignments **WILL NOT BE ACCEPTED!**
12. Be respectful, responsible, and safe to fellow students, staff, and substitute staff.
13. Be on time and come prepared to learn.
14. Ask for help when needed and maximize your learning time.
15. Laboratory experiment participation is an expectation.
16. Cell phones may not be used during lab, unless directed by the teacher for specific educational purposes.
17. All purses, bags, and other notebooks will be kept in the classroom under lock and key, **OR** they may be stowed behind the teacher’s lab bench in the lab on lab days.