

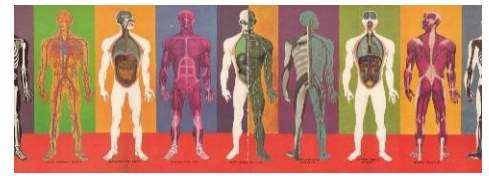


Mrs. Hoffman
PLTW Medical Interventions
Email: Kelly_K_Hoffman@mcpsmd.org
Room: 3052
 2019 – 2020



See Upcoming Assignments, Test/Quiz Review Websites, and Helpful Study Resources at
<http://www.hoffmanmi.com>

Welcome to Medical Interventions (MI)! This class is the third of a four-course series and is an honors level course of the PLTW Biomedical Pathway. This year you will investigate a variety of interventions involved in preventing, diagnosing and treating disease of the fictitious family, The Smiths and The Jones'. You will explore how to prevent and fight infection, how to screen and evaluate the code in our DNA, how to prevent, diagnose and treat cancer, and how to prevail when the organs of the body begin to fail. Through the family scenarios, you will be exposed to the wide range of interventions related to Immunology, Surgery, Genetics, Pharmacology, Medical Devices, and Diagnostics. Each family case scenario will introduce multiple types of interventions and will reinforce concepts learned in the previous two courses, as well as present new content. Interventions may range from simple diagnostic tests to treatment of complex diseases and disorders. These interventions will be showcased across the generations of the family and will provide a look at the past, present and future of biomedical science. Lifestyle choices and preventive measures are emphasized throughout the course as well as the important role scientific thinking and engineering design play in the development of interventions of the future.



UNITS OF STUDY

Unit	Summary
1: How to Fight Infection	Meet the Smiths: Follow college freshman Sue Smith through the diagnosis of a mystery infection, as well as through her treatment and follow-up care.
2: How to Screen What's in Your Genes	Follow James & Judy Smith and Gina & Aaron Smith as they encounter hardships making decisions regarding genetic testing and screening.
3: How to Conquer Cancer	Follow Mike Smith's path and treatment through cancer. You will explore how to diagnose cancer, the risk factors and prevention of cancer, rehabilitation after a disease and the design process for new medications.
4: How to Prevail When Organs Fail	Follow Mrs. Jones as her health declines due to her lack of properly controlling her diabetes. Throughout the unit you will learn about some mystery symptoms and suggest further diagnostic tests.



CLASSROOM EXPECTATIONS

- **Be prepared. Be on time.** Bring your binder, notebook, assignments, and pens/pencils with you to class every day. Do your best to be on time every day. Students who arrive without a pass will be considered tardy.
- **Be respectful.** Show respect to classmates, teachers, guests, and personal and school property.
- **Be responsible.** You are **always** responsible for your own actions. Never play with equipment or fool around in class. Follow ALL safety protocol in the lab at ALL times!
- **Be productive and do your OWN work!!** Cheating and plagiarism will result in an automatic zero. Be involved in class discussions and activities.
- **Clean up your area.** Class will not be dismissed until the room is clean and materials are put away.
- **Ask Questions!** If you don't ask, you'll never know!

REQUIRED:

- **Lab Binder and Notebook:** Students are required to keep and maintain a notebook for this class. The three ring binder should have dividers with the following sections: Units 1 – 4, Study Guides/Quizzes/Tests, Vocab/Diagrams

GRADING POLICY

- Grading scale for this class:
 - **A:** (89.5% - 100%)
 - **B:** (79.5% - 89.4%) **** Late work will be deducted 10% until the deadline ***
 - **C:** (69.5% - 79.4%)
 - **D:** (59.5% - 69.4%) **** Work not turned in by the **deadline date** will be recorded as a **zero** ****
 - **E:** (0% - 59.4%)
- **Less than 50% on assignments:**
 - Work that receives less than 20% on any given assignment will be reduced to a zero. Retakes and/or corrections will be available at the teacher's discretion.
- Types of assessments:
 - Quizzes – every 2 - 3 weeks
 - Lab Investigations – 2 - 3 times a week
 - Homework – 4 - 5 times a week
 - Projects – at least one per quarter
- Weighting of Tasks and Assessments

Labs	40%
Summative Assessments: <i>Tests/Quizzes and Projects</i>	30%
Formative Assessments: <i>Homework, Online Surveys, Models</i>	20%
Career Journals	10%

MAJOR ASSIGNMENTS:

- All assignments will be posted on the class website and updated on a regular basis. All due dates and homework information will be listed on the homepage under “Upcoming Due Dates” as well as in the “Weekly Blog.” All hand outs and rubrics will also be posted as attachments.

ACADEMIC DISHONESTY:

- I have **ZERO** tolerance for cheating, copying, or unapproved collaboration of any kind. It is assumed that you will strictly abide by the Academic Honor Code. Make sure that you cite all references (in APA format), including internet sites, in all submitted work. Any work found to be plagiarized either from a source or copied directly from another student will result in a **ZERO, NO EXCEPTIONS!**



HOMework

- Homework will be related to the curriculum and will be assigned to strengthen skills, reinforce concepts, and/or prepare for a lesson, unit, or activity.
- In this course, Homework will be (A) checked only for completion OR (B) evaluated for learning.
- In accordance to MCPS policy, **no additional assignments for extra credit** will be considered.

LATE WORK AND /OR MISSING WORK:

- Each assignment will have a **due date**. This is the date by which you are expected to submit the assignment. Your grade will drop one letter grade if it is not turned in by the due date.
- The **deadline** is the last day an assignment will be accepted for a grade. Work not turned in by the deadline will be recorded in the grade book as a zero. While students may receive feedback on the task, they generally will not earn credit after the deadline has passed. **The deadline is a week after the unit test.**
- If a student is absent from class, that student is responsible for making up missed work.

- **A student who knows they will be absent from class on a particular date (due to sports, vacations, academic activities, etc.) is still expected to hand in any work that was assigned to be due for that day. You may hand in work the day before it is due, or the morning of, but any work handed in later than the assigned class time will be counted as late. A PICTURE OF THE COMPLETED WORK SENT IN AN EMAIL WILL COUNT AS ON TIME!!!**

RE-TEACHING AND REASSESSMENT

- Re-teaching occurs when teacher or student determines that the student is not meeting learning goals.
- Reassessment opportunities are identified by the teacher before the original task/assessment and will occur within an instructional unit.
- Teachers will provide reassessment opportunities for at least two (teacher-selected) formative tasks per marking period.
- All students may be reassessed on the selected formative tasks, regardless of original grade on tasks, if they meet the following requirements: completed the original tasks or assessment; completed required assignments, and completed re-teaching/relearning activities as determined by the teacher.
- When tasks are reassessed, they may be reassessments partially, entirely, or in a different format, and the reassessment grade replaces the original grade.

COMMUNICATION

- Student Handbook/Planner
- Progress Reports/Interims/Report Cards
- myMCPS
- Email
- PLTW MI website (hoffmanmi.com)

Please note codes that may appear in the gradebook:

- **X** stands for Exempt. This means the assignment does not count towards the student's grade, and the student does not need to make-up this assignment.
- **Z** stands for a Zero. This is used when an assignment has not been turned in by the Due Date, but can still be turned in, for partial credit, before the Deadline. If the assignment is not turned in by the Deadline, the teacher must convert the grade to a numeric zero (0) immediately after the deadline has passed.
- **o** stands for Zero. This is used when an assignment has not been submitted by the Deadline or less than 25% was received on an assignment.

I hope that you find this class exciting and educational. It will be a lot of hard work but I am here to help each and every one of you succeed and reach your highest potential. I am available outside of class time for extra help but it is best to schedule a meeting in advance. I look forward to a great year!



-Mrs. Hoffman-



DID YOU KNOW?



Medical History:

- Egyptian Imhotep describes the diagnosis and treatment of 200 diseases in 2600 BC
- Diocles wrote the first known anatomy book in 300 BC.
- Anton van Leeuwenhoek discovers blood cells in 1683.
- Claudius Aymand performs the first successful appendectomy in 1763.
- Edward Jenner develops the idea of vaccinations, successfully creating the first vaccine for smallpox in 1796.
- Louis Pasteur identifies germs as the cause of disease in 1857.
- Joseph Lister develops the use of antiseptic surgical methods in 1867.
- Louis Pasteur develops the first vaccine for anthrax and rabies between 1881 and 1882.
- Felix Hoffman develops aspirin in 1899.
- Wilhelm Conrad Roentgen discovers X-rays in 1895.
- Karl Landsteiner introduces the system to classify blood types in A, B, AB and O in 1901.
- In 1913 Dr. Paul Dudley White pioneers the use of the electrocardiograph (ECG).
- In 1921 Edward Mellanby discovers that the lack of Vitamin D in the diet causes rickets. The same year Earle Dickson invents the Band-Aid.
- Sir Alexander Fleming discovers penicillin in 1928.
- Selman A. Waksman discovers the antibiotic streptomycin in 1943.
- Dr. Joseph E. Murray performs the first kidney transplant in 1954.
- In 1967 Dr. Christiaan Barnard performs the first human heart transplant.
- 1975: Robert S. Ledley invents CAT-Scans.
- 1980: Smallpox is eradicated.
- Alec Jeffreys devises a genetic fingerprinting method in 1984.
- In 1985, William J. Kolff invents the artificial kidney dialysis machine.
- In 1996, Dolly the sheep is the first clone.
- The Human Genome Project identifies the human DNA sequence and the 10,000 – 15,000 genes in the genome.
- In 2006, the first vaccine was created to target a cause of cancer.
- 2013: the FDA approved Sovaldi (sofosbuvir), a pill that cures up to 90% of hep C patients when used with another new drug, simeprevir.
- Approved by the FDA in 2014: The bionic eye (Argus II) allows blind people to regain basic functions.
- September 2016, the FDA approved the world's first artificial pancreas for ages 14+ for type I diabetes



Fun Facts:

- The amount of carbon in the human body is enough to fill about 9,000 'lead' pencils.
- 10% of human dry weight comes from bacteria.
- There is more bacteria in your mouth than the human population of the United States and Canada combined.
- The DNA helix measures 80 billionths of an inch wide.
- It takes about 20 seconds for a red blood cell to circulate the entire body.
- It only takes 7 pounds of pressure to rip an ear off (yikes!).
- You burn more calories while sleeping than you do when watching television.
- You can only smell 1/20th as well as a dog.
- The human gut contains 2.2 lbs of bacteria. There are more bacteria growing in & on the body than there are cells.
- Skin can now be artificially grown. One amazing result of this is that the skin from one hand could be grown into enough to cover six football pitches.
- The human hand contains three main nerves, two major arteries and 27 different bones - more of the body is devoted to controlling the hands than any other part of the body.
- In the average lifetime, we spend five years eating and we consume around 7,000 times our own weight in food.
- There are 137 million light sensitive cells in the eye's retina and the fluid that fills the eye changes 15 times a day.
- Your ribs move about 5 million times a year, every time you breathe.
- The human ear can distinguish between hundreds of thousands of different sounds.
- Every day 440 gallons of blood flows through the kidney.

