Honors PLTW: Medical Interventions (MI)

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Office Hours: Tuesday & Thursday (by appointment) 2:15 - 3:15 pm

Fall 18' - Summer 19'
A/B day Schedule

COURSE DESCRIPTION: In PLTW Medical Interventions (MI), students will follow the life of a fictitious family as they investigate how to prevent, diagnose, and treat disease. Students explore how to detect and fight infection; screen and evaluate the code in human DNA; evaluate cancer treatment options; and prevail when the organs of the body begin to fail. Through real-world cases, students are exposed to a range of interventions related to immunology, surgery, genetics, pharmacology, medical devices, and diagnostics.

PREREQUISITES/COREQUISITES: PLTW Principle of Biomedical Science(PBS) & Human Body Systems (HBS) is recommended.

OBJECTIVES: As a result of this course, you will be able to:

- Understand relationships between the human body and pathology
- Identify way to fight various infections
- Recognize features of genes and how they relate to diseases
- Explain way to conquer cancer
- Differentiate organ failure and appropriate treatments

REQUIRED TEXTS AND RESOURCES:

- PLTW Online Book
- Any other resource will be provided throughout the course

MATERIALS:

- 1 ½ in. binder, 3 subject notebook - college ruled, 2 pocket folder, pencils, pens, college-ruled paper, colored pencils and/or markers, glue stick, ruler, index cards (3 x 5), and headphones for chromebooks.
- **Wish List**: Bring 2 of the following: Square box tissues, Hand Sanitizer, Lysol wipes, or Disinfectant spray

ATTENDANCE: Students are expected to attend all class sessions on time and stay until the bell rings. More than 10 days of unexcused absences will result in failure of the course. More than 45 minutes of class is missed it will result in an absent. Regular attendance is necessary for success in school.

COMMUNICATION: The best way to communicate with me is through my CMS email located on first page. I will respond to emails within 48 hours, except during the weekend and vacations. The subject must contain the following: Class name, A/B day, section number, and topic of email (i.e. HBS 4B Activity 3.1 Questions). I am available for one on one during the office hours listed on the first page.

Google Voice - (980) 263-9697 **(In case of emergency or immediate assistance)**

Remind: Announcements and Reminders will be released to keep students and parents up to date.

- **If you have a smartphone, get push notifications via Remind app**
    - rmd.at/8h223g
- **If you don't have a smartphone or prefer to get text notifications**
    - Text the message @8h223g to the number 81010.
    - If you're having trouble with 81010, try texting @8h223g to (314) 720-3550.

CELL PHONES, COMPUTERS, AND OTHER ELECTRONIC DEVICES: Cell phones are not to be utilized during class time. Computer should only be utilized for educational purposes following the curriculum or any teacher instructions. **Please do not deviate to other websites as your computer are being monitored by your instructor, HAHS, and CMS.** No other electronic devices are to be used, except upon teacher request.

FOOD AND DRINK: No food or drinks are allowed in the classroom, except water bottles.

ACCOMMODATIONS: If you have any documented disabilities, please speak with me in private. I will honor the HAHS policy for accommodating individuals with disabilities.

COURSE REQUIREMENTS

Deadlines for all assignments are listed in the course calendar at the end of this syllabus.

Quizzes: **100 points**
You are responsible for knowing the vocabulary and science topics from each chapter in the textbook**.**

Chapter Tests: **100 points**
The test involves multiple choice, fill-in-the-blank, matching, short answers, and essay questions.

1 ½ In. Binder Interactive Notebook **100 points**
This binder is to be kept in the room on the bookshelves in designated area. Notebook checks will occur frequently to verify completion of in classwork and homework.

Career: Life as a … **100 points**
Students will maintain a career portion in their composition books as they explore the vast array of careers in the biomedical sciences. Student will also create job posting and make presentations about various careers.

Anatomy in the News: **100 points**
Submissions of Anatomy in the News are due every month based on covered content. Find a current newspaper, magazine, or internet article on some aspect of ANATOMY (no articles later than 2013). Write a three paragraph summary of the news article that includes the following information: Who, What, Where, When, Why it is related to ANATOMY. Cite the source: Title of Article, author, date, and URL or Title of Article, author, date, and newspaper or magazine.

Pathology: **100 points**
Submissions of pathology in relation to the body system being studied are due monthly. Each submission should contain a graphic of some aspect of the disease as well as an outline description of the specific characteristics, causes, signs & symptoms, diagnosis, and treatment for the disease. Submission can range from one page fact sheet, 10 slides minimum powerpoint, 5 minute video submission, brochure, skit, or etc. All sources should be cited in the correct format for print and internet.

Total **600 points**

GRADING: To determine your final grade in the course, I will calculate your percentage by dividing your total earned points by the total points possible. These will be converted to letter grades as follows:

90-100% = A 80-89% = B 70-79% = C 60-69% = D < 60% = F

Grading Policy
Semester 1 40%
Semester 2 40 %
Final exam 20%

Semester 1:

Quarter 1 40% **Formal: 70 %** tests, quizzes, projects **Informal: 30%** daily assignments
Quarter 2 40% **Formal: 70 %** **Informal: 30%**
Midterm 20%

Semester 2:

Quarter 3 50% **Formal:** 70% **Informal: 30%**
Quarter 4 50% **Formal:** 70 % **Informal: 30%**

Final Exam: 20 % of course grade. Exam is a written by Project Lead the Way

ASSIGNMENT SUBMISSION: The majority of assignments will be submitted through schoology. Access code will be given to students in class.

FAILURE IS NOT AN OPTION POLICY:

- If a student scores below 79 on a test, he or she must be given the option to retake a test with a qualifier.
- Students who retest will receive the **average (mean)** of the 1st (original score) and the 2nd (retest score). The original score shall never go below a **50 (F). This will give the student the opportunity to make improvements.**

LATE WORK :

1. Homework and other assignments will be accepted, even if turned in after the designated date.
2. Students will receive an initial score of zero (0) for an assignment or assessment on which he or she made no attempt or which is missing.
3. Credit for late work shall be awarded according to the following guideline:

a. If the student was present in class on the due date, the work will be penalize 20 points.

b. If the student was not present in class on the due date because of an excused absence, full credit will be given for the completed work.

c. If the student was present in class on the due date because of an unexcused absence, the work will be penalized 20 points.

MAKE UP WORK:

A Student who misses homework assignments or other assignments or due dates because of absences, whether excused or unexcused, will be allowed to make up the work. Arrangements for completing the work should be made within five (5) school days of the date of the student's return to school and include a schedule for completion of the work. Students must initiate the contact with the teacher.

PLAGIARISM/ACADEMIC OFFENSES:

It is your job to convince me that you are not cheating, Ways to convince me:

1. Keep your eyes on your own paper/computer.
2. Keep your answer to yourself.

PLAGIARISM AND CHEATING WILL NOT BE TOLERATED!

COURSE CALENDAR			
These dates are subject to change at the discretion of the instructor.			
UNIT	**Lesson**	**Agenda/Topic**	**Assignment Due Dates - TBD**
UNIT 1 : HOW TO FIGHT INFECTION			
1	1.1	● The Mystery Infection (7 days - September)	❒ Activity 1.1.1 Medical Intervention Inventory (1 day) ❒ Family Bulletin 1 ❒ Activity 1.1.2 Investigating an Outbreak (2 days) ❒ Activity 1.1.3 Using DNA to Identify Pathogens (1 day) ❒ Activity 1.1.5 ELISA (3 days) ❒ Activity 1.1.6 The Final Diagnosis (1 day)
	1.2	● Antibiotic Treatment (5 days - October)	❒ Activity 1.2.1 Antibiotic Therapy (2 days) ❒ Project 1.2.3 Attack of the Superbugs (2 days) ❒ Activity 1.2.4 When Antibiotics Fail (1 day)
	1.3	● The Aftermath: Hearing Loss (5 days- October)	❒ Activity 1.3.1 Good Vibrations (2 days) ❒ Activity 1.3.2 Can Your Hear Me Now (3 days) ❒ Activity 1.3.3 Cochlear Implant Debate (2 days)
	1.4	● Vaccination (4 days - November)	❒ Activity 1.4.1 Disease Prevention through Vaccination (1 day) ❒ Activity 1.4.2 Vaccine Development (2 days) ❒ Activity 1.4.3 Life of an Epidemiologist (1 day)
UNIT 2: HOW TO SCREEN WHAT IS IN YOUR GENES			
2	2.1	● Genetic Testing & Screening (8 days - November)	❒ Family Bulletin 2 ❒ Activity 2.1.1 Chronicles of a Genetic Counselor (3 days) ❒ Activity 2.1.2 Copying Our Genes (2 days) ❒ Activity 2.1.3 Test Your Own Genes (3 days) ❒ Activity 2.1.3 Test Your Own Genes. (2 days)
	2.2	● Our Genetic Future (4 days - December)	❒ Activity 2.2.1 Gene Therapy (2 days) ❒ Activity 2.2.2 Reproductive Technology (2 days)

MIDTERM REVIEW - January			
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UNIT 3 - HOW TO CONQUER CANCER			
3	3.1	● Detecting Cancer (8 days - January)	❒ Activity 3.1.1 Who Is Affected by Cancer? (1 day) ❒ Family Bulletin 3 ❒ Activity 3.1.2 Diagnostic Imaging (1 day) ❒ Activity 3.1.3 When Cells Lose Control (1 day) ❒ Activity 3.1.4 DNA Microarray (3 days) ❒ Activity 3.1.5 Unlocking the Secrets in Our Genes (2 days)
	3.2	● Reducing your Risk (8 days - February)	❒ Activity 3.2.1 Am I at Risk? (2 days) ❒ Project 3.2.2 Skin Cancer Prevention (3 days) ❒ Activity 3.2.3 Breast Cancer Screening (1 day) ❒ Activity 3.2.4 Virology (1 day) ❒ Activity 3.2.5 Routine Screenings (1 days)
	3.3	● Treating Cancer (6 days - February)	❒ Project 3.3.1 Diary of a Cancer Patient (1 day) ❒ Project 3.3.2 Biofeedback Therapy with EKG (2 days) ❒ Project 3.3.3 Design of a Prosthetic Arm (1 day) ❒ Project 3.3.4 Physical and Occupational Therapy Careers (3 days)
	3.4	● Building a Better Cancer Treatment (8 days - March)	❒ Activity 3.4.1 Precision Medicine (2 days) ❒ Activity 3.4.2 Nanofuture (1 day) ❒ Activity 3.4.2 Nanofuture (2 days) ❒ Problem 3.4.4 Tiny Treatment (3 days)
UNIT 4: HOW TO PREVAIL WHEN ORGANS FAIL			
4	4.1	● Manufacturing Human Proteins (10 days - March/April)	❒ Activity 4.1.1 All about Insulin (1 day) ❒ Activity 4.1.2 Protein Factories (2 days) ❒ Activity 4.1.2 Protein Factories (3 days) ❒ Activity 4.1.4 Protein Electrophoresis (2 days) ❒ Activity 4.1.5 Careers in Biomanufacturing (2 days)

	4.2	● Organ Failure (2 days - April)	❒ Activity 4.2.1 Medical Detectives (2 days)
	4.3	● Transplant (8 days - May)	❒ Activity 4.3.1 Who Should Receive the Organ? (1 day) ❒ Activity 4.3.2 Finding a Match (1 day) ❒ Activity 4.3.3 Kidney Donation (2 days) ❒ Activity 4.3.4 You Be the Surgeon (2 days) ❒ Activity 4.3.5 Transplant Team (1 day) ❒ Activity 4.3.6 Are All Transplants the Same? (1 day)
	4.4	● Building a Better Body (5 days - May)	❒ Activity 4.4.1 Replacement Parts (1 day) ❒ Problem 4.4.2 Bionic Human (3 days) ❒ Activity 4.4.3 Putting It All Together (1 day)
FINAL REVIEW - JUNE			
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