COURSE NAME: PLTW - Principles of Biomedical Science

INTRODUCTION/COURSE DESCRIPTION

This course serves to provide foundational knowledge and skills in fields such as biology, anatomy & physiology, genetics, microbiology, and epidemiology as well as engage students in how this content can be applied to real- world situations, cases, and problems.

Analyze the evidence found at a crime scene and help the medical examiner uncover clues left on a body to solve a mystery. Question, diagnose, and propose treatment and care for patients in a family medical practice. Track down the source of a mysterious outbreak at a local hospital. Access and stabilize a patient during an emergency and prepare for medical surge and mobile medical care. Collaborate with professionals in other fields to innovate and design solutions to local and global medical problems.

Whether seeking a career in medicine or healthcare or simply looking to for the challenge of real-world problems, students in Principles of Biomedical Science will practice how to think creatively and critically to innovate in science and will gain practical experience with experimental design and the design process.

ESSENTIAL LEARNING OUTCOMES (Broken down by grade post/semester)

Students will be able to answer the following:
UNIT 1
1.1 - 1 What are different forms of evidence, how infallible are they, and how are they useful in resolving potential criminal cases?
1.1 - 2 How can varying forms of evidence be evaluated for meaning?
1.1 - 3 How does technology help bring resolution to forensic cases? Or how does technology advance understandings in forensic science?
1.2 - 1 How can the cause, mechanism, and manner of death be established?
1.2 - 2 What information can be collected from an autopsy?
1.2 - 3 How can information collected during an autopsy lead to an understanding of disease and/or cause of death?
1.2 - 4 In what ways are the careful evaluation of evidence and accurate recording of data critical to establishing legitimate testimony?
1.3 - 1 How can individual pieces of evidence, evaluated against the whole, be used to resolve questions?

1.3 - 2 In what ways can scientific writings and presentations be utilized to present evidence and justify conclusions?
1.3 - 3 To what extent can current understandings be reinforced through practice?

UNIT 2
2.1 - 1 How can an individual's health status be assessed and evaluated?
2.1 - 2 What factors make an individual more susceptible to disease?
2.1 - 3 What are strategies for maintaining health?
2.1 - 4 What are effective means of communicating with others in order to reach common goals?
2.1 - 5 What qualities make for an effective medical professional?
2.1 - 6 In what ways, and for what purpose, can patient confidentiality be maintained?
2.2 - 1 How can changes in a genome lead to disease?
2.2 - 2 Why is an understanding of heredity an important factor in human health?
2.2 - 3 In what ways are genetic changes acquired?
2.2 - 4 In what ways can altered biological processes lead to disease?
2.2 - 5 How can the genetic health of an individual be evaluated?

UNIT 3
3.1 - 1 In what ways, and for what purpose, can microorganisms be characterized?
3.1 - 2 What factors affect the growth and death of microorganisms?
3.1 - 3 What are effective strategies for preventing and treating disease?
3.1 - 4 How does an immune system identify and eradicate infection?
3.1 - 5 How can pieces of evidence be evaluated to form conclusions and inform decisions?
3.2 - 1 How can an individual's health status be assessed and evaluated?
3.2 - 2 How is patient case information summarized and communicated efficiently?
3.2 - 3 What professions respond in emergency situations, what are their roles, and how do they work together?
3.2 - 4 What are several career paths in the field of emergency medicine?
3.2 - 5 How do patient vitals and presumptive diagnoses inform the prioritization for treatment options in emergency medical situations?
3.2 - 6 What makes for effective emergency and disaster response protocols?
3.2 - 7 How do medical professionals manage emergencies that involve multiple patients?
3.2 - 8 To respond to emergency situations, what common medical resources and facilities need to be available?
3.3 - 1 What are features of a user-friendly app? In what ways can technology enable a faster response and quicker resolution during

medical emergencies?

UNIT 4
4.1 - 1 How do the engineering and experimental design processes enable innovation?
4.1 - 2 Who innovates, and why?
4.1 - 3 What is the process for innovation and what personal characteristics are required for success?
4.1 - 4 How do innovations impact and advance human health?
4.2 - 1 How does technology function as a vehicle for innovation?
4.2 - 2 In what ways do different types of scientists and engineers collaborate in the biomedical sciences field?
4.2 - 3 What are potential untapped resources that could work to advance the field of biomedical sciences?

SUPPLIES/TEXTBOOK

Curriculum found at My.pltw.org

CLASSROOM EXPECTATIONS

1. Respect yourself and others
2. Maintain high expectations
3. 100% participation and engagement
4. Ask questions and get answers
5. Adhere to the high school student handbook

GRADING SCALE

[Board Policy 505.5R]: Academic marks are recorded as letter grades, denoting the following quality of work:

"A" is the grade of distinction and represents work of superior quality

"B" represents work of excellent quality

"C" represents work of average quality

"D" represents work regarded as passable, according to the minimum requirements of the course in effort and quality

"F" denotes failure to successfully complete the course and no academic credit is received.

All classes that students are enrolled in are figured into the GPA.

All classes (except for AP) will use the same grading scale. The

grading scale is as follows:

A+ = 99-100% ↑	A = 93-98%	A- = 90-92%	
B+ = 87-89%	B = 83-86%	B- = 80-82%	
C+ = 77-79%	C = 73-76%	C- = 70-72%	
D+ = 67-69%	D = 63-66%	D- = 60-62%	F = 59% ↓

*AP courses will be weighted and use the following grading scale:

A = 4.5	A- = 4.17	B+ = 3.83
B = 3.5	B- = 3.17	C+ = 2.83
C = 2.5	C- = 2.17	D+ = 1.83
D = 1.5	D- = 1.17	

GRADING

REMINDER: We use semester grading building wide. What this will look like, is that the semester will be worth 85% and the semester test will be worth 15%. Each department will have the autonomy to split up the 85% how they see fit on weighting of assessments, daily work, labs, etc. **Grading needs to be uniform for the entire department.**

Grade Post Dates

Semester 1: September 24, October 24, November 25, and January 10
Semester 2: February 13, March 26, April 29, and May 30

LATE WORK

Late work will be accepted up until the end of the essential learning outcome summative assessment (end of unit), and then no late work will be accepted for credit. There will be no penalty for late work until the essential learning outcome summative has been completed, indicating the end of the unit.

When a student is absent from school (whether the absence is excused or unexcused) he/she will be required to make up all work that was missed during the absence. Students shall receive full credit earned for school work made up due to absences and are expected to do so in a timely manner in order to not fall behind. Similar to the late work policy, students will have until the essential learning outcome summative (end of unit) to turn in the work with no grade penalty.

RETAKE POLICY

Students are expected to aim to perform well the first time on assessments. There are times when mastery hasn't been demonstrated due to a variety of reasons. Students choosing to retake must complete the process within one week (5 school days) of receiving back the graded assessment.

If a student wishes to retake, the student must initiate communication with the teacher, complete a retake form (*a form will be created for the building*), and schedule a time to do so. This can be completed during a study hall, a time arranged with the teacher, or before/after school with a teacher of that subject area. In order to qualify for a retake, all necessary work must be turned in prior to the original assessment (i.e. homework, study guides).

Students can retake an individual assessment only one time and are allowed four (4) retakes during the semester per class. Those students enrolled in DMACC and/or AP classes will follow the course syllabus. There will not be retakes allowed on semester exams for any class.

Note: There are some projects/assignments/assessments that may not qualify for a retake. This will be at the teacher's discretion.

W.I.N.

The purpose of W.I.N. is to provide students with an opportunity for reteaching of specific concepts/skills, retaking assessments, and providing supplemental materials for the essential learning standard(s). Teachers will request students as needed, but students may also elect to go to a specific teacher during this time. Sign-up for W.I.N. takes place every day Tuesday through Friday from the beginning of 2nd period until 9:15 a.m.

ACADEMIC INTEGRITY

All student learning is based on the understanding that everyone is thoughtfully engaged in academic tasks and respectful of the work of others. Academic integrity applies to all aspects of teaching and learning. Class assignments and assessments are tools to help students learn; grades show to what degree students achieve learning goals. Therefore, all assignments and assessments for which students receive grades should result from the student's own effort and understanding.

Behaviors that violate Bondurant-Farrar's standards for academic integrity include but are not limited to:

- **Plagiarizing work:** Whether the source material is from another student, the web or any other medium, students will not appropriate source material and pass it off as their own.
- **Sharing work or unauthorized collaboration**: Students will not aid or assist other students in any way on individually assigned tasks.
- **Cheating**: All traditional forms of cheating are also unacceptable. This includes behaviors such as capturing images of tests, communicating during exams, etc.
- **Falsifying Information**: Students will not change a grade assigned by a teacher electronically or in the teacher's grade book.

First offense:

- Student will be asked to complete an alternative assignment/assessment potentially under adult supervision
- Appropriate disciplinary actions will be assigned, including but not limited to detention, in-school suspension, parent communication/meeting, or other additional measures

Second offense:

- Student will receive no credit for the assignment/assessment
- Appropriate and potentially more serious disciplinary actions will be assigned, including but not limited to detention, in-school suspension, parent communication/meeting, or other additional measures

ELECTRONIC DEVICE POLICY

Electronic devices such as cell phones, smart watches, headphones, and earbuds, not provided by the school, can cause disruption to the school environment and interfere with student learning. All electronic devices must be concealed during instructional time unless authorized by the classroom teacher for instructional purposes. Students are expected to refrain from using their devices for non-academic purposes. Misuse of devices include but are not limited to taking photos/video in the locker room or restroom, using a device to cheat, using a device to incite violence, using a device to bully, harass, threaten, or intimidate another person including a student or staff member, to disseminate inappropriate photos/videos or other restricted materia, etc.

Bondurant-Farrar High School assumes **NO RESPONSIBILITY** for the loss or theft of any electronic devices nor is it obligated to investigate any loss or theft. If you are concerned about loss or theft, leave the device at home.

Violation of this rule can result in the following, including but not limited to: loss of school privileges, detention, in-school suspension, out-of-school suspension, application of the Good Conduct Rule penalties, or in severe cases, taken before the Board for purposes of expulsion. Depending on the severity of the misuse, local law enforcement may also be contacted.

1st Offense: Verbal warning and request to conceal device

2nd Offense: Minor referral, student places phone on teacher's desk and student will retrieve it at the end of class.

3rd Offense: Major referral (Insubordination), student will be asked to retrieve at the end of the day from the office.

4th Offense: Major referral (Insubordination), parent/guardian will be asked to pick up at the end of day from the office.

Consequences for additional offenses will be determined by building administration.

ADDITIONAL INFO

*A retake form must be completed and turned in order to be able to retake an assessment.

**All retake tasks must be completed and turned in 24 hours prior to the retake in order to allow adequate time to process and provide feedback

Inquiry based tasks (typically labs and projects) have HARD deadlines. Once the teacher has instructed on the concept it is no longer inquiry. Have these tasks done on time or they will be zeros. It is unlikely retake opportunities will be given on these tasks.

In this course, we will occasionally delve into subjects that might be deemed challenging and sensitive, encompassing topics like mortality, diseases, and disorders. I am committed to offering trigger warnings to foster a secure and all-encompassing atmosphere. Should any activity ever elicit discomfort, please don't hesitate to reach out to me promptly, and we will collaborate to reach a satisfactory solution.