

PLTW Medical Interventions and Biomedical Innovations Syllabus

*Hinzman/McCormick
2018-19 Course Syllabus*

STA Main Line: 816-986-3410

Teacher Voicemails: Ms. Hinzman 816-986-3433/Dr. McCormick 816-986-1499 ext. 7336

FAX: 816-986-3435

E-mail: peggy.hinzman@lsr7.net kevin.mccormick@lsr7.net

Office Hours: 7:15 – 7:40 a.m. or 2:00 – 2:50 p.m., and by appointment

COURSE DESCRIPTION: *This course provides students with a modern view of the medical technologies in current use as well as in development. The major topics covered are infection, genetics, cancer, proteins, disease and cures . This class includes extensive discussions, laboratory work, projects, and presentations. This course is designed to promote students preparation into the medical and medically related fields involving at least a four year college degree.*

INSTRUCTIONAL PHILOSOPHY: *This course is based on an inquiry driven scientific process. Laboratory activities are designed to teach major scientific concepts and scientific ways of thinking. Students are challenged to think logically, apply theory and prerequisite course knowledge to solve medical problems. Entry level laboratory and aseptic techniques are performed.*

ESSENTIAL STANDARDS:

HS-LS1-1. Construct an explanation based on evidence for how the structure of DNA determines the structure of proteins which carry out the essential functions of life through systems of specialized cells.

HS-LS1-2. Develop and use a model to illustrate the hierarchical organization of interacting systems that provide specific functions within multicellular organisms.

HS-LS3-1. Ask questions to clarify relationships about the role of DNA and chromosomes in coding the instructions for characteristic traits passed from parents to offspring.

HS-LS3-2. Make and defend a claim based on evidence that inheritable genetic variations may result from: (1) new genetic combinations through meiosis, (2) viable errors occurring during replication, and/or (3) mutations caused by environmental factors.

HS-LS1-4. Use a model to illustrate the role of cellular division (in cancer) and differentiation in producing and maintaining complex disease processes.

HS-ETS1-2. Design a solution to a complex real-world problem by breaking it down into smaller, more manageable problems that can be solved through engineering.

HS-ETS1-3. Evaluate a solution to a complex real-world problem based on prioritized criteria and trade-offs that account for a range of constraints, including cost, safety, reliability, and aesthetics, as well as possible social, cultural, and environmental impacts.

HS-LS1-3. Plan and conduct an investigation to provide evidence that feedback mechanisms maintain homeostasis.

MAJOR ASSIGNMENTS/PROJECTS:

- 1. Maintain a Properly Documented Laboratory Notebook*
- 2. Write an Epidemiology Case Report*
- 3. Perform a Genetic Case Presentation*
- 4. Set up and conduct a Hearing Clinic*
- 5. Analyze your own DNA for the Presence of SNP's*
- 6. Write a Physical Therapy and Occupational Therapy patient plan*
- 7. Clone and Isolate a Protein*
- 8. Perform a Laparoscopic Simulation*
- 9. Perform an Autopsy on a newborn pig*
- 10. Design a medical innovation*

11. Test water quality and analyze recombinant DNA
12. Design innovations for the delivery of Emergency Medicine

ASSESSMENT PLAN: Daily formative discussions will be used to identify whether students are attaining the essential learning targets. After each sub topic the student will complete conclusion questions, after each topic the student completes a quiz. Summative assessments are given after units and projects. A comprehensive final is given at the end of the semester along with a National Standardized End of Course Exam in MI. In BI students use their prerequisite knowledge to solve a series of problems and projects. Daily assessments, self assessment, quizzes and tests are completed during and after the completion of Problems.

COLLEGE CREDIT OPPORTUNITIES: Offered to students completing MI and earning an EOC score of 6 or higher with a course grade of B or higher, and for BI students earning a course grade of B or higher is 3 college credit hours each from Missouri University of Science & Technology/Bio 1983: Introduction to Biomedical Problems and Bio 1993: Introduction to Biological Innovation respectively. The cost of the credit is \$250 per 3 hours and your instructor will provide you with the application at the end of the school year.

GRADING POLICY: Grades will be figured using the Summit Technology Academy approved grading scale. Grades are cumulative throughout the semester. The grade will be based on the following distribution: Tests 27%, Quizzes 18%, Lab Notebook 18%, EOC 13.5%, Final 10%, Projects 13.5%
The following standardized grading scale is used for STA:

A = 95 -100	C = 73 - 76
A- = 90 - 94	C- = 70 - 72
B+ = 87 - 89	D+ = 67 - 69
B = 83 - 86	D = 63 - 66
B- = 80 - 82	D- = 60 - 62
C+ = 77 - 79	F = 59 & below (No Credit)

TUTORING/EXTRA HELP PLAN: STA utilizes a pyramid of interventions in order to ensure students successfully meet the course requirements. Tutoring or extra help can be obtained by contacting the STA teacher through e-mail, or a student management system (Canvas). The teacher and the student will agree on the arrangements.

ATTENDANCE POLICY: Regular attendance reflects dependability. The experience gained by students in the laboratory may not be duplicated in the event of absence. **Summit Technology Academy's policy may differ from that of the home school and will be in effect for the period of attendance at STA. Please reference the on-line student handbook for the most current policy at <http://sta.lsr7.org>.** Absences must be reported by parents or guardians to STA by calling 986-3413. Shelly Harmon is the attendance secretary at STA.

A student shall be allowed no more than nine (9) absences, excused or unexcused, per semester in any one class. A letter serves as notification of the number and type of absences by the student in each class. On the tenth (10) absence, in any one class, the student will not earn credit for that class. Students will have the opportunity to work with their administrator or teacher to make up missed time prior to the end of the semester. A waiver to maintain full credit must be submitted by the end of the semester. This waiver form includes documentation of illness, funeral, or family emergency from a medical doctor, dentist, minister, or other official source. The waiver should be turned into the attendance office.

ELECTRONIC GRADEBOOK/PARENT CONNECT WEBSITE: Grades are updated on a weekly basis. The Parent Connect website address is <http://pc.leesummit.k12.mo.us>.

ACADEMIC LETTERING: Any student who has maintained a 4.0 GPA for both semesters of the STA course will receive an academic letter.

ADDENDUM TO COURSE SYLLABUS

TARDY POLICY: *Tardies will be issued according to the student handbook. Students are on time if they are seated in the classroom at the time of the bell.*

DRIVING PRIVILEGES: *Driving to STA is a privilege and can be revoked at any time. Students are allowed to drive to STA as long as their sending school allows them to drive and a permit is on file. Driving permits may be revoked if a student is frequently tardy or late to school.*

ELECTRONICS POLICY: *No electronics or headphones are allowed in the classroom unless being used in the educational process as directed by the instructor. Electronics should be placed in backpacks or purses and out of sight. Students are encouraged to interact and help one another when appropriate.*

MATERIALS NEEDED: *A lab notebook will be supplied to you. Access to home internet is required. A flash drive, 1.5 to 2 inch 3 ring binder, graph paper, fine point felt tip sharpie marker, and a black ink pen.*

ASSIGNMENT FORMAT: *All assignments will be APA format. Assignments need to be typed in Word and handed in, in Canvas.*

TECHNOLOGY: *Students are required to utilize technology for various assignments.*

LATE WORK: *No late work is accepted.*