

Course Name: Biomedical Innovations – PLTW Year 4

Duration: 1 Semester Full Year

Grade Level: 9th 10th 11th 12th (check all that apply)

Are there any prerequisites for the course?

Year 3 Biomed or have previously taken an AP level science course

WHAT this course is about:

This course is designed around long-term independent student research projects and advanced topics in scientific research including statistical data analysis, reading primary scientific literature, and understanding scientific study design.

WHY take this course:

This unique course gives you the opportunity to complete an independent or small group research project over the span of several months that will be presented at a local science and engineering fair where you may earn a chance to participate at an international science and engineering fair. These research projects can focus on any science related topic you are interested in and give you the chance to learn about, and potentially make an impact in, a field that you are passionate about. Having completed a project such as this from start to finish is an invaluable experience for students interested in pursuing the sciences in college. Most high school science courses teach you about what has already been discovered. This is a chance for you to take on the part of the researcher making the discoveries!

WHAT you'll learn:

- A thorough understanding of the scientific method and how real-world scientific studies are designed and completed
- Statistical data analysis methods
- Molecular lab techniques such as PCR and quantitative real-time PCR
- Dissection skills
- How to read scientific journals
- Designing and presenting research posters
- Public speaking skills

WHAT you'll do:

Once you have learned the details of carrying out independent research, you will spend several months working on your project. This will include background research, coming up with a research question and hypothesis, designing an experiment, communicating with experts in your topic area regarding your work, carrying out your experiment and ultimately presenting your findings at the Eastern Washington Regional Science and Engineering Fair – with the option of also participating in

the Washington State Science and Engineering Fair. Students who place high enough will earn a free trip to the International Science and Engineering Fair.

Once research projects are completed, you will spend the rest of the year working on in-class activities around a variety of topics including molecular biology, infectious diseases, and anatomy and physiology.

WHERE this could take you:

Completion of an independent scientific research project is a great experience for any student interested in pursuing the sciences in college. Undergraduate research opportunities continue to become more and more available to college students and this class can prepare you to make the most of these opportunities.

OPTIONAL Course Outline (“scope and sequence”, sequence chart, etc.)

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