



# Medical Interventions

## COURSE INSTRUCTORS

Instructor	Email	Phone number
James Wright	<a href="mailto:jwright@ucityschools.org">jwright@ucityschools.org</a>	(314) 384-9655

## COURSE DESCRIPTION

The Principles of Biomedical Science (PBS) course provides an introduction to biomedical science through exciting hands-on projects and problems. Students investigate concepts of biology and medicine as they explore health conditions including heart disease, diabetes, sickle-cell disease, hypercholesterolemia, and infectious diseases. They will determine the factors that led to the death of a fictional woman as they sequentially piece together evidence found in her medical history and her autopsy report. Students will investigate lifestyle choices and medical treatments that might have prolonged the woman's life and demonstrate how the development of disease is related to changes in human body systems. The activities and projects in PBS introduce students to human physiology, basic biology, medicine, and research processes and allow students to design experiments to solve problems. Key biological concepts, including maintenance of homeostasis in the body, metabolism, inheritance of traits, and defense against disease are embedded in the curriculum. This course is designed to provide an overview of all the courses in the biomedical science program and lay the scientific foundation for subsequent courses.

## COURSE MODULES

### UNIT ONE: Medical Investigation

In Unit 1 students engage in forensic science and medical examination investigations to explore biological and forensic science careers and gain experience in experimental design and data analysis. Through the investigation of a mysterious death, students learn about:

- Biomolecules and their role in determining identity
- Human anatomy and physiology
- Interconnectedness of systems

Students practice synthesizing multiple forms of data to draw conclusions and have opportunities to develop professional communication skills.

### UNIT TWO: Clinical Care

Students assume the role of different medical professionals working through the schedule of patients in a family care clinic. Over the course of the unit, students:

- Explore medical careers
- Practice professional communication

- Gain experience collecting, recording, and interpreting physiological data
- Learn how to perform routine medical tests and evaluate results

While “meeting” with patients, the interconnectedness between body systems is reinforced, and students explore the various causations and inheritance of disease. Students are exposed to cutting-edge technologies that are revolutionizing health care and will evaluate their impact.

### **UNIT THREE: Outbreaks and Emergencies**

Working as public health officials and then as emergency responders, students are presented a series of events they must address while exploring careers in epidemiology, public health, microbiology, and emergency medicine. Students have opportunities to develop their professional communication and presentation skills. Key skills highlighted include data analysis, medical decision-making, patient diagnosis, identification of agents of disease, first aid, triage, and strategies involved in disaster preparedness and response.

### **UNIT FOUR: Innovation Inc.**

Welcome to PLTW Innovation, Inc., an incubator for innovation where some of the best minds in science and engineering endeavor to solve some of the world’s most pressing biomedical challenges. Students tour PLTW Innovation, Inc. labs and engage in experiences designed to build their engineering and experimental design process skills and to create solutions to current and emerging issues both on and off this earth. Students will build their computer science skills by using computer-aided design (CAD) and geographic information system (GIS) and unite these skills with their science and engineering experiences to innovate the future of medicine. This unit demonstrates that solutions to biomedical science problems rely on collaboration between professions.

### **STUDENT EXPECTATIONS**

1. Students are expected to check Canvas and email at least daily.
2. Students are expected to attend course sessions.
3. Students are expected to reach out to instructors when they have questions.

### **TECHNOLOGY**

1. Students are expected to have working Chromebooks.
2. All communication will come through email and Google Classroom.
3. my.pltw.org

### **LATE POLICY & MAKE-UP WORK**

Students are expected to submit all work on time and meet all provided deadlines. If you are struggling to meet this expectation, please reach out to the course instructor in a timely manner.

### **ACADEMIC INTEGRITY**

It is essential for students to complete their own work at all times. Cheating means using the work of another person as their own, copying information or answers from another student, plagiarizing, allowing another student to copy work, excessive collaboration on an assignment meant to be done individually, or sharing test/quiz questions/answers with students who have not yet taken the test/quiz. If a student is caught violating these guidelines, he/she will receive disciplinary action according to school policy.

