MEDICAL INTERVENTIONS
Course Syllabus

Course Number: SCMA-0004
OHLAP Credit: No
OCAS Code: 8708

Course Length: 120 Hours
Career Cluster: Science, Technology, Engineering & Mathematics
Career Pathway: Science & Mathematics
Career Major(s): PLTW Biomedical Science and Medicine

Pre-requisite(s):

Course Description:
In the medical interventions course, students will investigate the variety of interventions involved in the prevention, diagnosis and treatment of disease as they follow the lives of a fictitious family. A “How-To” manual for maintaining overall health and homeostasis in the body, the course will explore how to prevent and fight infection, how to screen and evaluate the code in our DNA, how to prevent, diagnose and treat cancer, and how to prevail when the organs of the body begin to fail. Through these scenarios, students will be exposed to the wide range of interventions related to immunology, Surgery, Genetics, Pharmacology, Medical Devices, and Diagnostics. Each family case scenario will introduce multiple types of interventions and will reinforce concepts learned in the previous two courses, as well as present new content. Interventions may range from simple diagnostic tests to treatment of complex diseases and disorders. These interventions will be showcased across the generations of the family and will provide a look at the past, present, and future of biomedical science. Lifestyle choices and preventative measures are emphasized throughout the course as well as the important role scientific thinking and engineering design play in the development of interventions of the future (PLTW, 2013).

Textbooks:
Project Lead the Way curriculum.

Course Objectives: A. Students will be able to:
1. Explain the diagnostic process used to identify an unknown infection, the use of antibiotics as a treatment, how bacteria develop antibiotic resistance, how hearing impairment is assessed and treated, and how vaccinations are developed and used to prevent infection.
2. Explain how to screen and evaluate the code in their DNA, the value of good prenatal care, and the future of genetic technology.
3. Explain the diagnostic process used to determine the presence of cancerous cells, the risk factors and prevention of cancer, rehabilitation after disease or injury, and the design process for new medications, prosthetic and nanotechnology.
4. Explain protein production, blood sugar regulation, dialysis, organ donation, and transplantation, non-invasive surgery techniques, as well as creation of a bionic human.
5. Demonstrate their understanding of various diagnostic tests used in the field of biomedicine to assist medical professionals in the diagnosis of relevant medical conditions by performing various related procedures (ELISA testing, culture and sensitivity testing, genetic testing, protein gel electrophoresis, protein purification, biofeedback therapy, and DNA, and microarray).
MEDICAL INTERVENTIONS

All PLTW Objectives

Teaching Methods: The class will primarily be taught by the lecture and demonstration method and supported by various media materials to address various learning styles. There will be question and answer sessions over material covered in lecture and media presentations. Supervised lab time is provided for students to complete required projects.

Grading Procedures: 1. Students are graded on theory and lab practice and performance.
2. Each course must be passed with seventy (70%) percent or better. Grading scale: A=90-100%, B=80-89%, C=70-79%, D=60-69%, F=50-59%.

Description of Classroom, Laboratories, and Equipment: Tulsa Technology Center campuses are owned and operated by Tulsa Technology Center School District No. 18. All programs provide students the opportunity to work with professionally certified instructors in modern, well-equipped facilities.

Available Certifications/College Credit: The student may be eligible to take state, national or industry exam after completion of the program. College credit may be issued from Oklahoma State University-Okmulgee or Tulsa Community College. See program counselor for additional information.

College Credit Eligibility: The student must maintain a grade point average of 2.0 or better. The following career major(s) may require a 3.0 GPA or better due to the Articulation Agreements and/or accreditation/certification requirements: Certified Dental Assistant, Emergency Medical Technician (EMT), Licensed Practical Nurse (LPN), Surgical First Assistant (SFA), Surgical Technologist, Surgical Nurse Assistant, Central Sterile Processing Technician.