

To complete the Program of Study, students must earn four credits in the Program of Study and one of the credits must be an Advanced Level course.

Entry Level Courses	Advanced Courses
Principles of Applied Technology	Robotics II
Introduction to Unmanned Aerial Vehicle (UAV) Flight	Practicum of STEM
Robotics I	

## Biomedical Science

### *Public Service or STEM Endorsement*



The Biomedical Science program of study focuses on the study of biology and medicine in order to introduce students to the knowledge and skill necessary to be successful in the healthcare field, such as researching and diagnosing diseases, pre-existing conditions, or other determinants of health. Students may also practice patient care and communication.

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HIGH SCHOOL/INDUSTRY CERTIFICATION	CERTIFICATE/LICENSE*	ASSOCIATE'S DEGREE	BACHELOR'S DEGREE	MASTER'S/DOCTORAL PROFESSIONAL DEGREE	OCCUPATIONS	MEDIAN WAGE	ANNUAL OPENINGS	% GROWTH
Medical Laboratory Assistant	Medical and Clinical Laboratory Technologists	Histologic Technician	Molecular Biology	Genetic Counseling	Medical and Laboratory Technicians	\$37,981	1,159	28%
Medical Laboratory Technician			Biomedical Engineers	Medical Scientist	Biological Technicians	\$42,931	452	17%
		Clinical Laboratory Science/ Medical Technology/ Technologist	Clinical Laboratory Science/ Medical Technology/ Technologist	Epidemiology	Forensic Science Technicians	\$48,152	171	35%
					Chemical Technicians	\$49,733	672	10%
					Medical and Clinical Laboratory Technologists	\$58,760	1,166	25%
Additional industry based certification information is available from the TEA CTE website.					<b>WORK BASED LEARNING AND EXPANDED LEARNING OPPORTUNITIES</b>			
For more information on postsecondary options for this program of study, visit <a href="http://TXCTE.org">TXCTE.org</a> .					<b>Exploration Activities:</b> Health Occupations Students of America (HOSA) <b>Work Based Learning Activities:</b> Lab internship or shadow a healthcare or medical professional			

### Courses in this Program of Study

**PRINCIPLES OF BIOMEDICAL SCIENCE**

Course # 07226004

**Recommended Grade Placement 9**

**1 CREDIT**

Students explore concepts of Biology and Medicine to determine factors that led to the death of a fictional person. During the investigation, the students will examine autopsy reports, investigate medical history, and explore medical treatments that might have prolonged the person's life. Students would be introduced to human physiology, basic biology, medicine, and research processes which will allow them to design their own experiments to solve problems. *This course does not count as a science credit.*

**HUMAN BODY SYSTEMS**

Course # 07226300

**Recommended Grade Placement 10-11**

**1 CREDIT**

Students examine the interactions of human body systems as they explore identity, power, movement, protection and homeostasis. Exploring science in action, students build organs and tissues on a skeletal Manikin; use data acquisition software to monitor body functions such as muscle movement, reflex and voluntary action, and respiration; and take on the roles of biomedical professionals to solve real-world medical cases. *This course does not count as a science credit.*

**MEDICAL INTERVENTIONS**

Course # 07226320

**Recommended Grade Placement: 11-12**

**1 CREDIT**

Students follow the life of a fictitious family as they investigate how to prevent, diagnose, and treat disease. Students explore how to detect and fight infection; screen and evaluate the code in human DNA; evaluate cancer treatment options; and prevail when the organs of the body begin to fail. Through real-world cases, students are exposed to a range of interventions related to immunology, surgery, genetics, pharmacology, medical devices and diagnostics. *This course does not count as a science credit.*

**BIOMEDICAL INNOVATION**

Course # 07226310

**Recommended Grade Placement: 12**

**1 CREDIT**

Students build on the knowledge and skills gained from the previous courses to design innovative solutions for the most pressing health challenges of the 21st century. Students apply their knowledge and skills to answer questions or solve problems in the biomedical sciences. *This course does not count as a science credit.*

**MEDICAL MICROBIOLOGY** (approved by the State Board of Education for 4<sup>th</sup> science credit)

Course # 07226410

**Prerequisite: Biology and Chemistry, Chemistry may be concurrent**

**Recommended Grade Placement 11 - 12**

**1 CREDIT**

In this course, students conduct laboratory investigations and fieldwork, use scientific methods during investigations, and make informed decisions using critical thinking and problem solving. Students will study the relationships of microorganisms to wellness and disease. They develop knowledge and skills related to disease prevention by learning the chain of infection, asepsis, and standard precautions. Pathogenic and nonpathogenic organisms will be identified to assist in the understanding of specific diseases, causative agents, and treatment options. Should be taken with Pathophysiology.

**PATHOPHYSIOLOGY** (approved by the State Board of Education for 4<sup>th</sup> science credit)

Course # 07226400

**Prerequisite: Biology and Chemistry**

**Recommended Grade Placement 11 - 12**

**1 CREDIT**

In this course, students conduct laboratory investigations and fieldwork, use scientific methods during investigations, and make informed decisions using critical thinking and problem solving. Students study disease processes and how humans are affected. Emphasis is placed on prevention and treatment of diseases. Students will differentiate between normal and abnormal physiology. Should be taken with Medical Microbiology.

**PRACTICUM OF STEM**

Course # 07228920

**Prerequisite: Algebra I and Geometry**

**Recommended Prerequisite: Two credits in STEM Pathway**

**Recommended Grade Placement 11-12**

**2 CREDITS**

This course is designed to give students supervised practical application of previously studied knowledge and skills. Practicum experiences can occur in a variety of locations appropriate to the nature and level of experience. A student may repeat this course once for credit provided that the student is experiencing different aspects of the industry and demonstrating proficiency in additional and more advanced knowledge and skills.

**Recommended Sequence of Courses (Prerequisites noted in course descriptions)**

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<b>Entry Level Courses</b>	<b>Advanced Courses</b>
<b>Principles of Biomedical Science</b>	<b>Medical Microbiology</b>
<b>Human Body Systems</b>	<b>Pathophysiology</b>
	<b>Medical Interventions</b>
	<b>Biomedical Innovations</b>
	<b>Practicum of STEM</b>



**Cybersecurity**

***Business & Industry or STEM Endorsement***

The Cybersecurity program of study includes the occupations and educational opportunities related to planning, implementing, upgrading, or monitoring security measures for the protection of computer networks and information. This program of study may also include exploration into responding to computer security breaches and virus and administering network security measures.

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