Biotechnology Research and Development

Career Goal (O*NET Code): Biological Technician (19-4021), Medical Scientist (19-1042), Biostatistician (15-2041), Biochemist (19-1021).

Cluster Overview: The Health Science cluster focuses on careers in planning, managing, and providing therapeutic services, diagnostic services, health informatics, support services, and biotechnology research and development.

SUGGESTED COURSEWORK

High School

9th

Core Courses:
English I
Algebra I
Biology
World Geography
Languages other than English I
Health/PE or Equivalent

Career-Related Electives:
Introduction to Health Science Technology AND Medical Terminology

10th

Core Courses:
English II
Geometry
Chemistry
World History
Languages other than English II
Technology Applications

Career-Related Electives:
Health Science Technology I***

11th

Core Courses:
English III
Algebra II
Physics
United States History
Communication Applications
PE or Equivalent

Career-Related Electives:
Health Science Technology II* or Anatomy and Physiology of Human Systems or Precalculus or Languages other than English III

12th

Core Courses:
English IV
AP Statistics
Scientific Research and Design
Government/Economics
Fine Arts

Career-Related Electives:
Health Science Technology III* or Pathophysiology or Medical Microbiology or Introduction to Biotechnology or Independent Study or Calculus or Research and Technical Writing or Languages other than English IV

On-the-Job Training

Assay Analyst

NOTE: These experiences may be started and/or completed as part of the high school experience.

Certificates

OSHA CareerSafe

NOTE: Students may earn all or part of these certificates as part of the high school experience.

Postsecondary

Associate's Degrees

15 hours General Education Core including Anatomy & Physiology (BIOL 2X01/2X02)

Cluster Foundation

Medical Terminology I (HITT 1X05 **OR** MDCA 1X13 **OR** SRGT 1X01) **OR** Essentials of Medical Terminology (HPRS 1X06)
Essentials of Medical Law & Ethics (HPRS 1X05) **OR** Legal & Ethical Aspects of Health Information (HITT 1X53) **OR** Medical Law & Ethics (MDCA 1X05)
Introduction to Health Professions (HPRS 1X01) **OR** Basic Health Profession Skills (HPRS 1X04)
Pathophysiology (HPRS 2X01) **OR** Human Disease/Pathophysiology (MDCA 1X02)
Pharmacology (HPRS 2X00 **OR** HITT 1X49)
Wellness (HPRS 1X02)

POS Specific Courses

Introduction to Biotech (BITC 1X11/1X12) OR Fundamentals of Biological Science (BITC 1X00) OR Introduction to Biotechnology (BIOL 1X14/BIOL 1X15)
Biotech Lab Instrumentation (BITC 2X11)
Cell Culture Technologies (BITC 2X31)
Human Genomics (BITC 2X59)
Bioinformatics (BITC 2X50)
Special Studies and Bioethical Issues (BITC 1X50)
Biotech Lab, Methods & Techniques (BITC 1X02)
Molecular Biological Techniques (BITC 2X41)
Proteomics (BITC 2X55)
Medical Biotechnology (BITC 1X45)

Career Options:
Biological Science Technician
Chemical Technician
Research Assistant
Forensic Science Technician
Environmental Technician

Certificates, Licenses & Credentials
None at the Associates Degree level

Bachelor's Degrees

Biology
Biomedical Engineering
Biotechnology
Chemistry
Forensic Science
Statistics

Career Options:
Biomedical Engineer
Biotechnologist
Research Associate
Forensic Scientist
Clinical Research Coordinator
Environmental Technologist

Graduate Degrees

Epidemiology
Biological Science
Independent Research
Forensic Science

Career Options:
Epidemiologist
Medical Scientist
Biostatistician
Biochemist
Forensic Scientist
Research Scientist

EXTENDED LEARNING EXPERIENCES

Curricular Experiences:
Health Occupations Students of America (HOSA)
STARS Research Program
NASA Research Program

Career Learning Experiences:
Career Preparation (Paid/Unpaid)
Job Shadowing
Internship

Extracurricular Experiences:
Academic Decathlon
UIL
National Youth Leadership Forum on Medicine
Science Club
Science Camps

Service Learning Experiences:
Community Service Volunteer

Professional Associations:
Biotechnology Industry Organization
American Society for Microbiology
American Chemical Society
American Statistical Association
National Environmental Health Association
Texas Environmental Health Association
Association for Professionals in Infection Control and Epidemiology
American Academy of Forensic Science
National Academy of Sciences

*** May substitute for the required credit for Physical Education**
**** Satisfies the required credit for Technology Applications**
***** May substitute for the required credit for Health Education**

Students should take Advanced Placement (AP), International Baccalaureate (IB), dual credit, Advanced Technical Credit (ATC), or locally articulated courses, if possible.

This plan of study serves as a guide, along with other career planning materials, for pursuing a career path and is based on the most recent information as of 2007. All plans should meet high school graduation requirements as well as college entrance requirements. Students may select other elective courses for personal enrichment purposes.