NH Department of Education

Bureau of Career Development

Title: Biotechnology

CIP#: 26.1201

Definition: A program that focuses on the application of the biological sciences, biochemistry, and genetics to the preparation of new and enhanced agricultural, environmental, clinical, and industrial products, including the commercial exploitation of microbes, plants, and animals. Includes instruction in bioinformatics, gene identification, phylogenetics and comparative genomics, bioinorganic chemistry, immunoassaying, DNA sequencing, xenotransplantation, genetic engineering, industrial microbiology, drug and biologic development, enzyme-based production processes, patent law, biotechnology management and marketing, applicable regulations, and biotechnology ethics.

Potential pathway focuses beyond Biotechnology:

- Biology
- Chemistry
- Health Sciences
- Engineering
- Veterinary Medicine
- Business
- Education
- Technical Writing

Careers:

Students in Biotechnology and Biomedical Sciences learn and practice skills that prepare them for diverse post-high school education and training opportunities, from apprenticeships and two-year college programs to four-year college and graduate programs. CTE classes in this cluster may introduce you to a variety of interesting careers including but not limited to the following:

- Microbiologist
- Biologist
- Molecular Biologist
- Cell Biologist
- Plant Biologist
- Marine Biologist
- Virologist
- Geneticist
- Biochemist
- Chemist
- Lab Technician
- Medical Technician
- Biomedical Engineer
- Chemical Engineer
- Environmental Engineer

- Forensic Scientist
- Research Associate
- Quality Management
- Quality Control Lab Supervisor
- Quality Assurance Associate
- Application Scientist
- Product Manager
- Scientific Sales & Marketing
- Technical Support
- Regulatory Affairs
- Environmental Health & Safety
- Biomanufacturing Associate
- Clinical Research
- Bioinformatics Associate
- Pharmacist
- Food Scientist
- Conservation Scientist
- Veterinarian
- Physician
- Nurse
- Genetic Nurse Practitioner
- Pathologist
- Educator
- Science Journalist
- Bioethicist
- Patent Lawyer

Note: Each school and school district have different CTE options. Districts may offer CTE Dual Enrollment Credit but not necessarily the same course or from the same institution.

Common Competencies:
Upon completion of their selected pathway program, all NH CTE students will:

- Use correct terminology, vocabulary and appropriate language to communicate effectively in the workplace.
- Select and safely use appropriate tools, supplies, and equipment for a specific task or set of tasks.
- Employ effective time and project management strategies to complete work efficiently and proficiently.
- Apply math concepts, including measurement, operations, and higher mathematics to relevant applications and specific tasks.
- Demonstrate awareness strategies to safely work in a variety of workspaces and locations.

Pathway Competencies:

Upon completion of the Biotechnology pathway, students will achieve competency in five areas.

- **Practice Proper Scientific Conduct**
  - Students will apply ethical standards and practices throughout the scientific process.
- **Understand Core Biology Concepts**
  - Students will identify and explain core biology concepts.
- **Demonstrate the Ability to Work in a Biomedical Workplace**
  - Students will effectively demonstrate proper laboratory practices.
- **Understand and Apply Molecular Biology and Biochemical Techniques**

    - Students will identify and explain core molecular biology concepts including the Central Dogma.
    - Students will use proper methodology while utilizing biochemical techniques based on current industry standards.
- **Understand and Apply Chemical Principles and Analytical Tools**
    - Students will apply observational and analytical skills while employing chemical principles and using current analytical techniques.