

Ohio CTE

# **Health Science Career Field (2021): Principles and Practices of Biomedical Technology (072110)**

**Bioscience Research and Development: Learners will demonstrate the skills and knowledge of interpreting laboratory requests, using protective clothing and hazardous material containment, specimen collection procedures, a variety of laboratory testing and techniques and maintenance of laboratory equipment and supplies.** 5

**Outcome 5.1 Handling, Preparation, Storage and Disposal: Follow standard operating protocols for handling, preparing, storing and disposing of specimens, supplies and equipment.** 5.1

- 1 Use standard operating procedures for the safe use of instruments, equipment and gas cylinders. 5.1.1
- 2 Locate and use safety data sheets to prepare and interpret labels for chemicals, supplies, and to identify hazards associated with handling and storing chemical materials. 5.1.2
- 3 Neutralize acids, bases, or caustic solutions for handling and disposal. 5.1.3
- 4 Recognize clean room integrity using Standard Operating Procedures (SOPs). 5.1.4
- 5 Sample, monitor and record the environmental conditions of the facility (e.g. air quality, humidity, temperature, microbial contaminations). 5.1.5
- 6 Adjust, calibrate, maintain and perform systems diagnostics on laboratory equipment per standard operating procedure (SOP) and equipment specifications. 5.1.6
- 7 Maintain equipment logs and determine when to perform, implement, or schedule preventive maintenance and/or systems updates. 5.1.7
- 8 Verify expiration dates and lot numbers. 5.1.8
- 9 Implement a chemical inventory system that includes all pertinent information regarding stability, hazards and sensitivity per standard operating procedure (SOP). 5.1.9
- 10 Maintain an inventory system for manufactured products per standard operating procedure (SOP). 5.1.10
- 11 Maintain separate in-processing, quarantine and release areas. 5.1.11
- 12 Monitor and maintain animal behavior, welfare and husbandry per standard operating procedure (SOP). 5.1.12

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**Outcome 5.8 Biotechnology Research and Experiments: Conduct a problem-based study, applying scientific methodology and using descriptive statistics to communicate and support predictions and conclusions. 5.8**

- 1 Identify research problems and structure a statistical experiment, simulation, or study related to the problem. 5.8.1
- 2 Design a research plan, including the significance of the problem, purpose, variables, hypotheses, objectives, methods of study and a list of materials. 5.8.2
- 3 Distinguish between dependent, independent and control variables in an experiment. 5.8.3
- 4 Establish and implement procedures for systematic collection, organization and use of data. 5.8.4
- 7 Document results of the experiment in a laboratory notebook, adhering to professional protocol. 5.8.7
- 10 Create, interpret and use tabular and graphical displays and describe the data. 5.8.10
- 11 Draw conclusions and propose next steps based on observations and data analyses, recognizing that experimental results must be open to the scrutiny of others. 5.8.11
- 12 Prepare and present findings using scientific reports. 5.8.12