

**Common Course Outline**  
**HSTO 101**  
**Laboratory Operations and Instrumentation**  
**2 Credits**

**Community College of Baltimore County**

**Description**

**HSTO 101 – Laboratory Operations and Instrumentation** provides an overview of laboratory operations and instrumentation in a histology laboratory. This includes workflow, regulations and procedures, quality control, biological, chemical and infectious hazards, storage and disposal of chemicals, acids and bases. Instrumentation used in the histology laboratory is covered, as well as the maintenance, troubleshooting and quality control of equipment.

**2 Credits**

**Prerequisites:** MLTC 101; Admission to the Histotechnology Program

**Overall Course Objectives**

Upon completion of this course students will be able to:

1. describe the histology workflow from the collection of a specimen to diagnosis;
2. describe possible chemical, mechanical, and biological hazards in the histology laboratory;
3. identify biological or infectious hazards including: tuberculosis exposure, cryogenic sprays, Human Immunodeficiency Virus (HIV), Hepatitis C virus, Hepatitis B Virus (HBV), and Creutzfeldt-Jakob disease;
4. describe the storage of substances that are potentially corrosive, carcinogenic, flammable, or explosive;
5. explain the specific guidelines for the disposal of hazardous chemicals;
6. explain the importance of keeping acids and bases separate;
7. state the optimal temperatures for laboratory equipment;
8. state the different types of microscopes and identify their use;
9. outline the maintenance and troubleshooting for a microscope;
10. describe the different types and function of tissue processors;
11. explain the function of an embedding station;
12. identify the maintenance and troubleshooting of an embedder;
13. compare and contrast the different types and usage of microtomes;
14. compare and contrast the different types of tissue stainers;
15. identify the maintenance and troubleshooting of a tissue stainer;
16. describe ancillary equipment used in a histology lab;
17. interpret quality control measures used in histology testing; and
18. define laboratory safety including universal standard precautions.

## **Major Topics**

- I. Laboratory workflow
- II. Hazards
  - A. Chemical
  - B. Mechanical
  - C. Biological
- III. Quality control
  - A. Detection
  - B. Prevention
  - C. Data correlation
- IV. Biological and infectious hazards
- V. Chemical storage
- VI. Chemical disposal
- VII. Acids and bases
- VIII. Optimal temperatures
- IX. Microscopes
  - A. Maintenance
  - B. Troubleshooting
- X. Processor
- XI. Embedding
  - A. Stations
  - B. Maintenance
  - C. Troubleshooting
- XII. Stainer
- XIII. Ancillary equipment

## **Course Requirements**

Grading procedures will be determined by the individual faculty member but will include the following:

### **Grading/exams**

- Weekly quizzes and assignments
- A minimum of three (3) exams
- A cumulative final examination

Written Assignments: Students are required to use appropriate academic resources.

### **Other Course Information**

This course is a Histology program core course.

This course is part of a program sequence, which requires admission to the program.

This course is offered in the Spring only.