

**Common Course Outline**  
**BIOL 146**  
**Medical Laboratory Techniques II: Immunology & Blood Bank**  
**3 Credits**

**The Community College of Baltimore County**

**Description**

**Medical Laboratory Techniques II: Immunology & Blood Bank**

Provides preparation for clinical internships (MLTC 240, 241) in Immunology and Blood Bank laboratories; includes study of the human immune system in health and in disease and methods used in transfusion practice. 4 credit hours: 2 lecture hours and 3 laboratory hours per week.

Prerequisite: BIOL 110, CHEM 107, 108, MATH 135, MLTC 101, Hepatitis B vaccination and health insurance. (Offered Spring, day only)

**Overall Course Objectives**

Upon completion of this course, students will be able to:

1. describe the function of the human immunological defense system including non-specific immunity, humoral immunity and cell-mediated immunity.
2. explain the principles of selected immunological assays such as latex agglutination, ELISA and complement fixation.
3. perform selected immunological assays and relate the results to disease processes such as syphilis, rheumatoid arthritis & streptococcal infections.
4. describe and interpret quality control procedures used in a routine immunology laboratory.
5. demonstrate thorough understanding of the ABO blood group system by correctly classifying unknown specimens with respect to ABO blood group and Rh type.
6. compare and contrast selected less commonly encountered human blood groups with respect to biochemistry, types of transfusion reaction, genetics, methods of identification.
7. fully explain the “weak D” testing procedure, including instances when this test is required.
8. perform routine crossmatch procedures.
9. identify and resolve antibodies using specimens containing a single unexpected antibody.
10. list possible reasons for ABO forward and reverse grouping discrepancies.
11. list several components such as PRBC, FFP, AHF, & Platelets made from whole blood. Describe preparation, storage, & use of each.
12. describe donor procedures as defined by the AABB.

13. describe and interpret quality control procedures used in a routine Blood Bank.
14. participate in a tour of a functioning Blood Bank laboratory to observe instrumentation and procedures currently in use.
15. demonstrate internalization of laboratory safety procedures:
  - ❖ always wear appropriate personal protective equipment.
  - ❖ dispose properly of sharps, contaminated glassware, gloves, etc.
  - ❖ behave correctly in a laboratory setting, e.g., no horseplay, shoving, etc.
16. by mastering the content of each MLT course, begin to appreciate the role a laboratory technician plays in the diagnosis and treatment of disease.
17. demonstrate problem-solving skills in laboratory exercises and case history problems.
18. demonstrate inter-personal skills by cooperating with other members of a student laboratory group.
19. demonstrate the ability to read a procedure, plan a course of action, and follow through to a conclusion.

### **Major Topics**

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| <ol style="list-style-type: none"> <li>1) Nature of the Immune System           <ul style="list-style-type: none"> <li>Innate Immunity</li> <li>Adaptive Immunity</li> <li>Lymphoid System</li> <li>Antigens and MHC</li> <li>Antibody Structure &amp; Function</li> <li>Complement System</li> <li>Precipitation Reactions</li> <li>Agglutination Reactions</li> </ul> </li> </ol>                 | <ol style="list-style-type: none"> <li>2) Labeled Immunoassays           <ul style="list-style-type: none"> <li>Hypersensitivity Reactions</li> <li>Autoimmunity</li> <li>Spirochete Diseases</li> <li>Streptococcol Serology</li> <li>Viral Infections</li> <li>HIV Serology               <ul style="list-style-type: none"> <li>Blood Donor Selection &amp; Processing</li> <li>Component Preparation &amp; Storage</li> <li>Antiglobulin Testing</li> </ul> </li> </ul> </li> </ol> |
| <ol style="list-style-type: none"> <li>3) ABO System           <ul style="list-style-type: none"> <li>Rh System</li> <li>Other Blood Group Systems</li> <li>Transfusion Therapy</li> <li>Adverse Effects of Transfusion</li> <li>Antibody Detection &amp; Identification</li> </ul> </li> </ol> <p style="margin-left: 20px;">Hemolytic Disease of the Newborn<br/>Transfusion-Aquired Diseases</p> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |

## **Course Requirements**

Students will be expected to submit

1 Journal Article Review

1 Case Presentation

There will be 3 unit examinations, competency testing and a comprehensive final examination.

## **Other Course Information**

Prior to beginning student labs, students will present proof of current health insurance, and a Hepatitis B vaccine certificate or waiver.