

Common Course Outline

MLTC 254

Clinical Internship Prep II

7 Credits

The Community College of Baltimore County

Description

Four(4) lecture hours, three (3) laboratory hours a week. (Offered Spring, Saturday only.)

Prerequisites: MLTC 253, Hepatitis B vaccination, and current health insurance.

Designed to prepare students for clinical internships (MLTC 240) in Hematology, Coagulation, Immunology & Blood Bank laboratories. Includes formation and function of blood cells in health and disease states, hemostatic mechanisms of the body, and exposure to phlebotomy techniques, study of the human immune system in health and disease states. Also methods used in transfusion medicine.

Overall Course Objectives

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

1. describe the formation of WBC, RBC and platelet cell lines.
2. explain in detail the functions of all three cell lines.
3. list at least 3 stains used in Hematology and give names and functions of each component of each stain.
4. list changes that occur as normal blood cells mature.
5. describe the structure and function of the hemoglobin molecule.
6. identify various red cell inclusions and abnormal morphologic changes and relate the abnormalities to disease processes.
7. perform manual counts of red cells, white cells, and platelets, and calculate red cell indices.
8. compare and contrast the Coulter electronic cell counting principle and the light scatter cell counting principles as used in automated hematology instruments.
9. categorize various anemias based on morphologic characteristics.
10. identify WBC abnormalities, including acute and chronic leukemias, and relate abnormalities to disease processes.
11. describe in detail the function of the hemostatic system as found in the human body.
12. explain the procedure and usefulness of results of routine coagulation tests such as PT, APTT, TT, fibrinogen, FDP.

13. explain quality control procedures used in a routine Hematology/Coagulation laboratory, especially relating to instrument trouble-shooting.
14. perform a routine venipuncture by practicing with a simulated patient arm and classmate arms.
15. present two journal article reviews both orally and in written form.
16. perform selected laboratory tests as used in clinical laboratories and relate test results to clinical condition of patient. Also identify possible sources of error in the test system.
17. demonstrate internalization of laboratory safety procedures:
 - ❖ always wear appropriate personal protection equipment
 - ❖ dispose properly of sharps, contaminated glassware, gloves, etc.
 - ❖ behave correctly in a laboratory setting, e.g. no horseplay, shoving, eating, drinking.
18. by mastering the content of the course, begin to appreciate the role a laboratory technician plays in the diagnosis and treatment of disease.
19. demonstrate problem-solving skills in laboratory exercises and case history problems.
20. demonstrate inter-personal skill by cooperation with other members of the student laboratory group.
21. demonstrate the ability to read a procedure, plan a course of action, and follow through to a conclusion.
22. describe the function of the human immunological defense system including non-specific immunity, humoral immunity and cell-mediated immunity.
23. explain the principles of selected immunological assays such as latex agglutination, ELISA and complement fixation.
24. perform selected immunological assays and relate the results to disease processes such as syphilis, rheumatoid arthritis & streptococcal infections.
25. describe and interpret quality control procedures used in a routine immunology laboratory.
26. demonstrate thorough understanding of the ABO blood group system by correctly classifying unknown specimens with respect to ABO blood group and Rh type.
27. compare and contrast selected less commonly encountered human blood groups with respect to biochemistry, types of transfusion reaction, genetics, methods of identification.
28. fully explain the “weak D” testing procedure, including instances when this test is required.
29. perform routine crossmatch procedures.
30. identify and resolve antibodies using specimens containing a single unexpected antibody.
31. list possible reasons for ABO forward and reverse grouping discrepancies.

32. list several components such as PRBC, FFP, AHF, & Platelets made from whole blood. Describe preparation, storage, & use of each.
33. describe donor procedures as defined by the AABB.
34. describe and interpret quality control procedures used in a routine Blood Bank.

Major Topics

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| <ol style="list-style-type: none"> 1) Nature of the Immune System <ul style="list-style-type: none"> Innate Immunity Adaptive Immunity Lymphoid System Antigens and MHC Antibody Structure & Function Complement System Precipitation Reactions Agglutination Reactions | <ol style="list-style-type: none"> 2) Labeled Immunoassays <ul style="list-style-type: none"> Hypersensitivity Reactions Autoimmunity Spirochete Diseases Streptococcol Serology Viral Infections HIV Serology <ul style="list-style-type: none"> Blood Donor Selection & Processing Component Preparation & Storage Antiglobulin Testing |
| <ol style="list-style-type: none"> 3) ABO System <ul style="list-style-type: none"> Rh System Other Blood Group Systems Transfusion Therapy Adverse Effects of Transfusion Antibody Detection & Identification Hemolytic Disease of the Newborn Transfusion-Aquired Diseases | <ol style="list-style-type: none"> 4) Hematopoiesis <ul style="list-style-type: none"> Erythrocyte Production and Destruction Hemoglobin and Iron Metabolism Hemoglobinopathies Thalassemias Leukopoiesis Benign Leukocyte Disorders Cytochemistry and Special Stains Myeloproliferative Disorders Myelodysplastic Syndromes Acute and Chronic Leukemias Thrombopoiesis Hemostasis Coagulation Disorders Platelet Abnormalities |

Course Requirements

Students will be expected to submit

- 1 Journal Article Review
- 1 Case Presentation
- 10 Laboratory Exercises

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.