

SYLLABUS
PART I
EDISON COMMUNITY COLLEGE
MLT 235S IMMUNOLOGY AND BLOOD BANK
4 CREDIT HOURS

COURSE DESCRIPTION

Immunology portion: the study of the formation, characteristics and reaction of antigens and antibodies; serological applications of these principles are investigated in theory and application. Blood Bank portion: the study of blood group systems, phenotyping, atypical antibodies and cases of crossmatch incompatibilities; transfusion reaction investigations, the use of blood component therapy, fetal-maternal incompatibilities, and other immunological procedures. Prerequisite: MLT 121S with grade of "B" or better and acceptance into the MLT program. Lab fee.

COURSE GOALS

The student will:

Bloom's level		Program Outcomes
3	1. Define and use the terminology related to the study of immunology and blood bank.	4
2	2. Describe specific and non-specific immune mechanics that protect the host.	4
2	3. Describe the clinical features of congenital abnormalities of the immune system.	4
2	4. List the different immunoglobulin classes and describe the characteristics and functions of each.	4
2	5. State the factors which activate the complement system and outline the steps in its activation.	4
1	6. State the current theories of autoimmunity for each autoimmune disease and list the clinical and diagnostic findings.	4
4	7. Compare and contrast immediate and delayed hypersensitivity in relation to immunological reactions.	4
2	8. Describe the theories and findings in transplant immunology in relation to HLA antigens and immunological tolerance.	4
2	9. Describe the purpose, principle, procedure, interpretation and results for: VDRL, RPR, CRP, ASO, Cold agglutinins, Rheumatoid Factor, Paul Bunnell, Davidson differential, and HCG.	3,4
2	10. Describe the principle for agglutination tests, reverse passive (HEM) agglutination, precipitation, Elek test, radial immunodiffusion, immunoelectrophoresis, rocket electrophoresis, counterelectrophoresis, complement fixation, fluorescent antibody (direct and indirect) and neutralization tests.	3,4
4	11. For each blood group system discussed, outline patterns of inheritance, list frequency of occurrence, methods of detection and determine the significance in transfusion of antigens and antibodies.	3,4
2	12. Explain Zeta potential.	4
2	13. Describe the principle and procedure for compatibility testing, indirect and direct antiglobulin technique, elution, absorption, adsorption, antibody identification panel, and enzyme techniques.	3,4

2	14. Describe the media (saline, albumin, enzymes, LISS, antihuman globulin, complement and lecithins) used to enhance antigen-antibody reactions and explain their effects on the test system.	4
1	15. List the criteria used for donor selection.	4
2	16. Describe the methods used to ensure quality control and quality assurance in the Immunohematology lab.	2
3	17. Discuss the application of the direct antiglobulin test in the detection of HDN, hemolytic anemia, drug induced, autoimmune and transfusion reactions.	4
2	18. Describe the indication, contraindications, and compatibility testing of Rh Immunoglobulin.	4
2	19. Describe the collection, preparation, storage, shipment, and usage of selected blood components.	3
5	20. Outline the procedure for the investigation of a transfusion reaction. List the types of reactions and evaluate most probable causes.	4
2	21. Discuss the etiology of HDN, and methods of quantitation of feto-maternal bleed.	4
5	22. Evaluate the ABO and Rh compatibility and antibody identification for blood that is acceptable for a routine transfusion, massive transfusion and neonatal transfusion.	4
5	23. Apply laboratory data to case studies and discuss the disease correlation.	4
4	24. Perform manual immunology procedures and discuss the significance of abnormal findings.	1,4
1	25. List and describe hazardous exposure risks in these laboratory departments; display safe and accountable behavior.	5
3	26. Demonstrate professionalism in the health care field including ethics, dress codes, and HIPAA.	6,8
3	27. Demonstrate effective interpersonal skills and teamwork in all interactions including colleagues and instructors.	7,8
3	28. Demonstrate effective psychomotor skills to accomplish blood banking and immunology testing.	1-4

CORE VALUES

The Core Values are a set of principles which guide in creating educational programs and environments at Edison. They include communication, ethics, critical thinking, human diversity, inquiry/respect for learning, and interpersonal skills/teamwork. The goals, objectives, and activities in this course will introduce/reinforce these Core Values whenever appropriate.

TOPIC OUTLINE

1. Antigen-Antibody reactions
2. Congenital abnormalities of the immune system
3. Immunoglobulin classes
4. Complement
5. Autoimmunity
6. Immunological testing techniques
7. ABO and Rh blood groups; Compatibility testing
8. Antibody identification; Transfusion reactions
9. HDN and Rhogam
10. Donor collection, preparation, storage and Regional Blood Center Operations