SYLLABUS
PART I
EDISON COMMUNITY COLLEGE
MLT 250S HEMATOLOGY and HEMOSTASIS
4 CREDIT HOURS

COURSE DESCRIPTION

Study of the origin, formation and differentiation of blood cells; erythrocyte and leukocyte pathology in relation to disease states such as anemia and leukemia; techniques in counting red blood cells, platelets, reticulocytes; hemoglobin studies and red blood cell indices. Includes the study of the mechanism of hemostasis, vascular integrity and platelet function in relation to disease states; various coagulation procedures and their clinical applications such as prothrombin time, activated partial thromboplastin time, thrombin time, fibrinogen levels, bleeding time and fibrinogen degradation products. Prerequisite: MLT 121S with a "B" or better and acceptance into the MLT program. Lab fee.

COURSE GOALS

The student will:

Bloom's level		Program Outcomes
1,2	1. Define and discuss hematopoiesis including the theory of stem cell development; identify phases and sites of origin for cellular development of active hematopoietic tissue.	4
5	2. Explain the role of organ systems in hematopoiesis; associate physical/hematological findings of splenomegaly, hyperslenism, hepatoslenomegaly, and lymphadenopathy.	4
1	3. Identify distinctive characteristics of erythrocytes and categorize RBCs by size, shape, color, inclusions, and distribution patterns.	4
5	4. Summarize mechanisms by which normal hemoglobin is structured and synthesized including iron transport, protoporphyrin IX (heme) formation, and globulin synthesis and genetic control.	4
4	5. Discuss the principles of tests used to evaluate erythrocyte production, adequacy, and survival and the correlation of results with clinical findings.	1,4
4	6. Define and calculate red blood cell indices with appropriate laboratory data; relate to pathophysiological conditions.	4
1,2	7. Define anemia; compare and contrast anemias using RBC morphology, clinical manifestations, laboratory findings and treatments.	2,4
1,2	8. Identify and describe the morphology and specialized functions of the five types of leukocytes normally found in peripheral blood.	4
1	9. Describe and identify abnormal forms of leukocytes on prepared smears or kodachromes and discuss their roles in response to disease or as causative agents of disease.	1,4
1,5	10. Define leukemia; compare and contrast leukemias using etiology, incidence, clinical signs, and symptoms, FAB classification, and treatments.	4
1,4	11. Define and describe lymphomas, proliferative disorders and storage syndromes; explain expected laboratory findings in each.	4

1,4	12. Describe the general principles of basic and specialized procedures in hematology, state the normal parameters measured, identify abnormal results, and correlate laboratory results with pathophysiological conditions.	1,3,4
1	13. Identify each component of the complete blood count and the relevant method of measurement for each. Describe the basic theories of automated cell counting and sizing.	4
2	14. Interpret results of measured and calculated parameters from automated cell counters, including histograms.	3,4
5	15. Summarize expected laboratory findings that are characteristic of specific hematological diseases.	4
1,5	16. Define hemostasis; explain the interaction of systems involved in maintaining hemostasis.	4
2	17. Compare and contrast the intrinsic, extrinsic and common pathways of coagulation.	4
1	18. List coagulation and platelet factors describing their site of synthesis, stability, Vitamin K dependence, role in hemostasis and presence in plasma, serum, absorbed plasma, and aged serum.	3,4
2	19. Discuss the hemostatic interactions in each of the four stages of coagulation.	4
2	20. Discuss the role of platelets in the hemostatic mechanism and describe the principles of platelet function tests.	1,4
1	21. Describe the pathology and bleeding tendency in congenital and acquired deficiencies of coagulation factors.	4
1,5	22. Name and explain the principles of the laboratory tests used to assess blood coagulation factors and, given appropriate laboratory data, determine appropriate diagnostic testing to order for each coagulation anomaly.	1,4
2	23. Describe the variables in coagulation testing.	4
4	24. Given coagulation mixing study data, select the most probable factor deficiency.	4
1,5	25. Define and discuss DIC and Primary Fibrinolysis and compare laboratory test results in each condition.	3,4
1	26. List and describe hazardous exposure risks in chemistry laboratory; display safe and accountable behavior.	5
3	27. Demonstrate professionalism in the health care field including; ethics, dress codes, and HIPAA.	6,8
3	28. Demonstrate effective interpersonal skills and teamwork in interactions with peers and instructors.	7,8
3	29. Perform a manual WBC differential count, within 90% of instructor's, on normal and abnormal smears.	1,4
	30. Perform manual cell counts, within 90% of instructor's, using Unopette system and hemacytometer.	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. Introduction to Hematology, Cellular Morphology, Hematopoiesis

2. Erythrocytes, Morphology and Inclusions
3. Anemias
4. Hemoglobinopathies
5. Leukocytes: Granulocytes, Monocytes, Lymphocytes, and Plasma Cells
6. Leukemias and Lymphomas
7. Myeloproliferative and Dysplastic Disorders
8. Hematology Procedures; Theory, Principle and Application
9. Introduction to Hemostasis/Coagulation
10. Coagulation pathways and factors
11. Platelets, platelet functions, and platelet disorders
12. DIC and Fibrinolysis
13. Coagulation Procedures; Theory, Principle and Application
14. Correlation of Clinical Test Results to Specific Disease States