

1 **Common Course Outline**
2 **MLTC 180**
3 **Principles of Hematology and Coagulation**
4 **Four Semester Hours**
5

6 **The Community College of Baltimore County**
7

8 **Description**
9

10 **MLTC 180- Four credits - Principles of Hematology and Coagulation**

11 studies the fundamental concepts in hematology and hemostasis, which includes
12 hematopoiesis, anemias, hemoglobinopathies, qualitative leukocyte disorders, leukemias
13 and myeloproliferative disorders. The course also presents hemostasis from normal
14 platelet and clotting physiology to disorders in the clotting mechanism. Students learn to
15 identify normal and abnormal cellular characteristics of peripheral blood smear
16 examinations and associate abnormal morphologic findings with underlying disorders.
17 Laboratories include manual and semi-automated hematological and coagulation tests
18 and morphologic skills with an introduction to automated cell counters and coagulation
19 test systems. 3 lecture hours per week, 3 laboratory hours per week. Prerequisites: BIOL
20 109, BIOL 110, CHEM 107/108, ENGL 101, and MLTC 101.
21

22 **Overall Course Objectives**
23

24 Upon completion of this course, students will be able to:
25

- 26 1. distinguish the cellular elements of the white cell, red cell and platelet series in
27 their immature and mature states;
- 28 2. compare and contrast the anemias with respect to morphologic classification,
29 pathophysiology, and peripheral smear findings;
- 30 3. describe the qualitative changes of white cells in response to disease processes;
- 31 4. describe the clinical features of the chronic leukemias;
- 32 5. categorize the acute leukemias with respect to the French-American-British and
33 World Health Organization classification systems;
- 34 6. explain in detail the four systems of hemostasis;
- 35 7. classify the qualitative platelet disorders with regards to pathophysiology and
36 laboratory diagnosis;
- 37 8. define the role of thrombin in the coagulation and fibrinolytic systems;
- 38 9. classify the therapeutic anticoagulants with regards to mode of action and
39 laboratory testing;
- 40 10. distinguish the circulating inhibitors with regards to their mode of action and
41 laboratory testing;
- 42 11. perform routine clinical hematology tests with competency;
- 43 12. comply with standard operating procedure regarding laboratory safety;
- 44 13. recognize critical values and make specimen integrity decisions;

- 45 14. analyze pre-analytical, analytical and post analytical factors that affect
46 coagulation laboratory results;
47 15. correlate laboratory results with normal health and disease processes; and
48 16. analyze quality control results with respect to hematology and coagulation
49 procedures.
50

51 **Major Topics**

- 52
53 I. Erythrocytes
54 A. Erythropoiesis, Physiology, and Destruction
55 B. Hemoglobin Synthesis and Function
56 C. Morphologic Evaluation of Erythrocytes
57 D. Erythrocyte Abnormalities
58 E. Anemias
59 II. Leukocytes
60 A. Leukopoiesis
61 B. Leukocyte Morphology, Kinetics, and Function
62 C. Leukocyte Abnormalities, Non-malignant
63 D. Leukocyte Abnormalities, Myeloproliferative and Lymphoproliferative
64 E. Leukemias
65 III. Hemostasis
66 A. Coagulation and Fibrinolysis
67 B. Laboratory Evaluation of Coagulation and Fibrinolysis
68 C. Anticoagulant Therapy
69 D. Formation and Function of Thrombocytes
70 E. Platelet Disorders
71

72 **Course Requirements**

73
74 Grading procedures will be determined by the individual faculty member, but, at
75 minimum, will include the following:
76

- 77 4 didactic exams
78 Weekly homework
79 Weekly lab exercises
80 2 lab quizzes
81 Comprehensive final exam
82 Final lab proficiency exam
83

84
85 **Other Course Information**

86
87 This course is a Medical Laboratory Technology program core course.