

**SEWARD COUNTY COMMUNITY COLLEGE  
COURSE SYLLABUS**

**I. TITLE OF COURSE:** MT2206- Hematology & Coagulation

**II. COURSE DESCRIPTION: 6 credit hours  
3 credit hours of lecture and 3 credit hours of lab per week.**

This course presents the theory behind hematologic principles including the formation of blood cells, identification of normal and abnormal cells as they correlate to disease. Also included is the study of coagulation, the clotting and fibrinolytic mechanisms of the blood. Students will learn the theory and skills required to perform medical laboratory testing in hematology and Coagulation.

For each unit of credit, a minimum of three hours per week with one of the hours for class and two hours for studying/preparation outside of class is expected.

Pre-requisite: Admission to the MLT Program.

**III. PROGRAM AND/OR DEPARTMENT MISSION STATEMENT:**

The Seward County Community College Medical Laboratory Technician program provides a curriculum that produces competent, career entry-level medical laboratory technicians.

**IV. TEXTBOOK AND MATERIALS:**

Cisela, Betty. Hematology in Practice, 3rd Ed. ISBN 978-0-8036-2561-7. Philadelphia: F.A. Davis, 2019.

Carr, J.H., & Rodak, B.F. Clinical Hematology Atlas 5th Ed., ISBN 9780323322492. Philadelphia: W.B. Saunders, 2009.

**V. SCCC OUTCOMES**

Students who successfully complete this course will demonstrate the ability to do the following SCCC Outcomes.

I: Read with comprehension, be critical of what they read, and apply knowledge gained to real life

II: Communicate ideas clearly and proficiently in writing, appropriately adjusting content and arrangement for varying audiences, purposes, and situations.

III: Communicate their ideas clearly and proficiently in speaking, appropriately adjusting content and arrangement for varying audiences, purposes, and situations.

IV: Demonstrate mathematical skills using a variety of techniques and technologies.

V: Demonstrate the ability to think critically by gathering facts, generating insights, analyzing data, and evaluating information

VI: Exhibit skills in information and technological literacy

IX: Exhibit workplace skills that include respect for others, teamwork competence, attendance/punctuality, decision making, conflict resolution, truthfulness/honesty, positive attitude, judgment, and responsibility

## VI. COURSE OUTCOMES:

1. Relate the proper specimen collection and handling, type of quality control used, reference ranges, principle of analysis currently available, and sources of analytical errors for each of the analytes discussed or approached in the course.
2. Perform all procedures with regard to prescribed safety protocol and confidentiality.
3. Correlate abnormal results with the most likely disease process by determining the clinical significance of the findings.
4. Discuss hematopoiesis and hemostasis processes.
5. Perform routine (automate or manual) hematological procedures, including the manual differential and morphology, and paraphrase the principles for each, as well as selected "special" hematology analyses.
6. Perform and evaluate routine coagulation analyses by automated or semi-automated methods, with competency (as judged with the use of control materials).
7. Interpret and evaluate results for each analysis discussed in lecture, applying theory to predict possible disease states.
8. Explain the major hemostatic characteristics and causes of the following coagulation disorders: Fibrinogen Deficiency, Hemophilias A and B, von Willebrand's Disease, disseminated intravascular coagulation/fibrinolysis, and hypercoagulable states.
9. Assess the major hematological characteristics and causes of erythrocyte disorders, myeloproliferative disorders, leukemias, and platelet disorders.

## VII. COURSE OUTLINE:

### Lecture

1. Introduction to hematology and Basic Laboratory Practices
2. Introduction to Hematology
3. The Microscope
4. Standard Precautions
5. Basic Concepts of Quality Assurance Plans in the Hematology laboratory
6. From Hematopoiesis to the Complete Blood count
7. Hematopoiesis: The Origin of Cell Development
8. The Spleen
9. The Bone Marrow
10. M:E Ratio
11. The Role of Stem Cells and Cytokines
12. Erythropoietin
13. The Role of the MLT in the Bone Marrow Procedure
14. The Complete Blood Count
15. Morphological Classifications of the Anemias
16. RBC Indices
17. Critical Values
18. The Reticulocyte Count
19. RBC Terminology, Production, Maturation, Function, and Morphology
20. RBC Membrane Development and Function
21. Hemoglobin Structure and Function
22. Red Cell Disorders (Anemias, Thalassemias, Hemoglobinopathies)
23. White Blood Cells (Leukopoiesis, Structure, Maturation, Function)
24. White Cell Disorders (Leukemias, Myeloproliferative Disorders, Myelodysplastic Syndromes)
25. Hemostasis and Coagulation
26. Platelet Structure and Function

### Laboratory Procedures

1. Microhematocrit
2. Erythrocyte Sedimentation Rate
3. Calculation of RBC indices
4. Manual Reticulocyte Count
5. Slide Preparation
6. Peripheral Blood Smear
7. Manual Differential
8. Unopette (Manual RBC, WBC, Platelet Count)
9. Sickle Cell Procedure
10. CSF/Body Fluid Cell Count
11. Basic Coagulation Procedures
  - a. PTT, aPTT
  - b. D-Dimer
12. Laboratory Automation
13. Flow Cytometry

#### **VIII. INSTRUCTIONAL METHODS:**

Lecture, Discussion, Demonstration, Case Studies, Self Studies, Student Laboratory Time, Clinical Laboratory Time

#### **IX. INSTRUCTIONAL AND RESOURCE MATERIALS:**

Handouts, computer tutorials, Internet resources, supplies used in hospitals, selected reference readings from texts and journals, case studies.

#### **X. METHODS OF ASSESSMENT:**

SCCC Outcome #1 will be assessed and measured by class participation and writing assignments indicating comprehension of the material read.

SCCC Outcome #2 will be assessed and measured by written laboratory reports.

SCCC Outcome #3 will be assessed and measured by verbal communication with clinical instructors and of laboratory reports.

SCCC Outcome #4 will be assessed and measured by the student's ability to correctly perform clinical laboratory calculations.

SCCC Outcome #5 will be assessed and measured by the student's ability to correctly perform hematology and coagulation procedures, determine validity of results and resolve discrepancies as encountered. Students will also be assessed on their ability to follow prescribed procedures for troubleshooting and problem solving.

SCCC Outcome #6 will be assessed and measured by the student's ability to properly and efficiently operate automated equipment and the microscope.

SCCC Outcome #9 will be assessed and measure by the completion of the Student Attitude Assessment tools by didactic and clinical instructors.

#### **XI. ADA STATEMENT:**

Under the Americans with Disabilities Act, Seward County Community College will make reasonable accommodations for students with documented disabilities. If you need support or

assistance because of a disability, you may be eligible for academic accommodations. Students should identify themselves to the Dean of Students at 620-417-1106 or going to the Student Success Center in the Hobbie Academic building, room 149 A.

Syllabus Reviewed: 3/24/2021