



Course Number and Title: MLT 121 Hematology II

Campus Location:

Georgetown

Effective Date:

2020-51

Prerequisite:

MLT 120, SSC 100 or concurrent

Co-Requisites:

None

Course Credits and Hours:

4.00 credits

3.00 lecture hours/week

3.00 lab hours/week

Course Description:

This course covers routine and special hematology procedures, white blood cells maturation sequences, normal and abnormal morphology, associated diseases, coagulation theory, procedures, and practical applications of laboratory testing.

Required Text(s):

Obtain current textbook information by viewing the [campus bookstore - https://www.dtcc.edu/bookstores](https://www.dtcc.edu/bookstores) online or visit a campus bookstore. Check your course schedule for the course number and section.

Additional Materials:

Lab Coat

Schedule Type:

Classroom Course

Disclaimer:

None

Core Course Performance Objectives (CCPOs):

1. Describe disease morphology and physiology as they relate to hematological diseases and how laboratory tests correlate with these diseases for each of the blood cell lines. (CCC 1, 2, 5; PGC 6).
2. Explain the general process and disorders of hemostasis and thrombosis. (CCC 1, 2, 5; PGC 2, 4, 6)
3. Collect, identify, and describe the types of samples used in hematology, and identify the variables that can adversely affect laboratory results. (CCC 1, 2, 5, 6; PGC 1, 2, 4)
4. Perform testing of analytes using a variety of methods to include both manual and automated methods. (CCC 2, 3, 4, 6; PGC 1, 2, 3, 4)
5. Evaluate laboratory data using statistical systems for quality control after evaluating data. (CCC 2, 5, 6; PGC 1, 2, 3)
6. Describe safety awareness for the hematology laboratory personnel to include bloodborne pathogens and the use of personal protective equipment for the laboratorian and instrumentation. (CCC 2, 5, 6; PGC 5)

See Core Curriculum Competencies and Program Graduate Competencies at the end of the syllabus. CCPOs are linked to every competency they develop.

Measurable Performance Objectives (MPOs):

Upon completion of this course, the student will:

1. Describe disease morphology and physiology as they relate to hematological diseases and how laboratory tests correlate with these diseases for each of the blood cell lines.
 1. Describe the major characteristics of aplastic, hemolytic, Fanconi's, hypochromic, megaloblastic, hemolytic anemias, leukemias, and lymphomas.
 2. Discuss and explain the laboratory findings for anemias, leukemias, and lymphomas.
 3. Describe the morphological features found in anemias and leukemias.
 4. Describe the sequence of events in the coagulation pathway.
 5. Explain the actions and mechanism of anticoagulant therapy and how to monitor the therapy.
 6. Compare and contrast special stains (myeloperoxidase, Sudan Black, and periodic acid-Schiff) in regard to cells identified and diagnostic applications.
 7. Discuss the cellular findings identified in body fluid analysis.
 8. Discuss the cellular abnormalities encountered in body fluids.
 9. Perform a differential smear of abnormal morphology accurately and correctly.
2. Explain the general process and disorders of hemostasis and thrombosis.
 1. Describe the general process of hemostasis and thrombosis.
 2. Describe the physiological and morphological features of platelets during hemostasis and thrombosis.
 3. List and summarize the characteristics of abnormal hemostasis and thrombosis.
 4. Apply laboratory data to case studies, and discuss the implications of these cases to the study of hematology.
 5. Properly identify abnormal hematological cells in peripheral blood and body fluids.
 6. Properly identify hematologic cells in body fluids.
3. Collect, identify and describe the types of samples used in hematology, and identify the variables that can adversely affect laboratory results.
 1. Explain the different specimens used in the hematology laboratory: serum, plasma, whole blood, and bone marrow.
 2. Explain the specimen requirements for analysis of coagulation specimens in regards to time and specimen quantity.
 3. Name the appropriate sites for bone marrow aspiration in adults and children.
 4. Describe how bone marrow specimens are obtained and how the hematology technician prepares the specimen.
 5. Describe how coagulation specimens have special sampling and collection requirements.
4. Perform testing of analytes using a variety of methods to include both manual and automated methods.
 1. Describe the basic theories of cell counting using automation.
 2. List the parameters measured by a hematology analyzer, and describe the methods used to measure the parameters.
 3. Interpret data generated by instrumentation, including the hemogram parameters, red blood cell histograms, platelet histograms, and white cell histograms/scattergrams.
 4. Explain the fundamental concept of flow cell cytometry.
 5. Discuss hematological applications.
 6. Describe the process and output of a laser scatter technology system.
 7. Describe and identify hemoglobins separated by electrophoresis and the associated diseases.
 8. Explain the principles of electromechanical and optical detection systems used in coagulation.
 9. Perform cell counting using manual and automated methods.
 10. Perform a prothrombin time, partial thromboplastin time, dimertest, bleeding time, and fibrinogen.
 11. Correctly identify abnormal hematology slides, and correlate with disease states.
 12. Perform hematology specialty testing to include sickle cell, reticulocyte counts, and special stains.
5. Evaluate laboratory data using statistical systems for quality control after evaluating data.
 1. Explain essential analytical and nonanalytical factors in quality assurance.
 2. Interpret quality control data for shifts, trends, or system malfunctions.
 3. Describe terms that are used in quality assurance and performance improvement.
 4. Describe the role of the medical laboratory technician in providing quality patient care.
 5. Perform quality control for the hematology lab using automated procedures.
 6. Analyze data to determine if testing data is acceptable.
6. Describe safety awareness for the hematology laboratory personnel to include bloodborne pathogens and the use of personal protective equipment and instrumentation.
 1. Identify occupational hazards that exist in the hematology laboratory.
 2. Identify the requirements of the Occupational Exposure to Hazardous Chemicals in Laboratories standard.
 3. List infectious materials included in universal precautions.
 4. Describe preventive maintenance that is performed on instrumentation.
 5. Demonstrate proper use of personal protective equipment in the laboratory.
 6. Demonstrate proper use of standard precautions in the laboratory.

Evaluation Criteria/Policies:

Students must demonstrate proficiency on all CCPOs at a minimal 75 percent level to successfully complete the course. The grade will be determined using the Delaware Tech grading system:

92	-	100	=	A
83	-	91	=	B
75	-	82	=	C
0	-	74	=	F

Students should refer to the [Student Handbook - https://www.dtcc.edu/handbook](https://www.dtcc.edu/handbook) for information on the Academic Standing Policy, the Academic Integrity Policy, Student Rights and Responsibilities, and other policies relevant to their academic progress.

Final Course Grade:

Calculated using the following weighted average

Evaluation Measure	Percentage of final grade
Summative: Case Studies (30) (equally weighted)	6.5%
Summative: Tests – (5-6) (equally weighted)	52%
Formative: Assignments – (equally weighted)	6.5%
Summative: Lab exercises (equally weighted)	17.5%
Summative: Practical (15-20) (equally weighted)	17.5%
TOTAL	100%

Core Curriculum Competencies (CCCs are the competencies every graduate will develop):

1. Apply clear and effective communication skills.
2. Use critical thinking to solve problems.
3. Collaborate to achieve a common goal.
4. Demonstrate professional and ethical conduct.
5. Use information literacy for effective vocational and/or academic research.
6. Apply quantitative reasoning and/or scientific inquiry to solve practical problems.

Program Graduate Competencies (PGCs are the competencies every graduate will develop specific to his or her major):**AHTAASMLT**

1. Collect, process, and analyze biological specimens and other related substances.
2. Recognize factors that affect procedures and results, and take appropriate actions within predetermined limits when corrections are indicated.
3. Perform and monitor quality control within predetermined limits.
4. Apply basic scientific principles for application in medical laboratory procedures and methodologies.
5. Employ safety principles according to health and environmental regulations.
6. Correlate laboratory results with common disease processes and treatments for diagnosis.
7. Demonstrate professional conduct and interpersonal communication skills with patients, laboratory personnel, other healthcare personnel, and the public.

Disabilities Support Statement:

The College is committed to providing reasonable accommodations for students with disabilities. Students are encouraged to schedule an appointment with the campus Disabilities Support Counselor to request an accommodation needed due to a disability. A listing of campus Disabilities Support Counselors and contact information can be found at the [disabilities services - https://www.dtcc.edu/disabilitysupport](https://www.dtcc.edu/disabilitysupport) web page or visit the campus Advising Center.