



CLBT 1040 Hematology/Coagulation

COURSE SYLLABUS

Fall Semester 2017

SEMESTER 2018

COURSE INFORMATION

Credit Hours/Minutes: 5/6750 minutes

Class Location: Room #739

Class Meets: MTW 8-11am

CRN: 20276

INSTRUCTOR CONTACT INFORMATION

Instructor Name: Cynthia Williams, MS, MT (AMT) (HHS)

Email Address: Cynthia Williams (cwilliams@southeasterntech.edu)

Vidalia/Office Location: 716 Gillis Building

Office Hours: 7:30-8 am; 3:30-5 pm

Phone: 912-538-3183

Fax Number: 912-538-3106

REQUIRED TEXT

Clinical Hematology, by Turgeon, 5th ed. and Clinical Hematology Atlas by Jacqueline Carr and Rodak 4th ed

REQUIRED SUPPLIES & SOFTWARE

Ink pens, pencil, highlighter, permanent marker, paper, personal lab coat, closed toe shoes, and any other supplies deemed necessary by instructor. Students should not share login credentials with others and should change passwords periodically to maintain security.

COURSE DESCRIPTION

Course introduces the fundamental formation, function, and degradation of blood cells. Topics include: reticuloendothelial system and blood cell formation, complete blood count and differential, other related blood tests, correlation of test results to disease states, coagulation and fibrinolysis, instrumentation for hematology and coagulation, critical values and blood cell dyscrasias, safety and quality control, process improvement, related lab math.

MAJOR COURSE COMPETENCIES

1. Reticuloendothelial system and blood cell formation
2. Complete blood count and differential
3. Other related blood tests
4. Related lab math
5. Correlation of test results to disease states
6. Coagulation and fibrinolysis
7. Instrumentation for hematology and coagulation
8. Critical values and blood cell dyscrasias

9. Safety and quality control

10. Safety and quality control

PREREQUISITE(S)

BIOL 2113, BIOL 2113L, CLBT 1010

COURSE OUTLINE

Learning Outcomes

Reticuloendothelial system and blood cell formation

| Order | Description | Learning Domain | Level of Learning |
|-------|--|-----------------|-------------------|
| 1 | Explain hematopoiesis of WBC, RBC, and platelets including developmental stages from embryo to adulthood. | Cognitive | Comprehension |
| 2 | Describe normal RBC structure and function. | Cognitive | Comprehension |
| 3 | Summarize and identify normal and abnormal Hemoglobin structure and selected hemoglobinopathies. | Cognitive | Comprehension |
| 4 | Describe normal WBC structure and function. | Cognitive | Comprehension |
| 5 | Recognize blood cell maturation characteristics of WBC,RBC and platelets through related bone marrow developmental stages. | Cognitive | Analysis |

Complete blood count and differential

| Order | Description | Learning Domain | Level of Learning |
|-------|--|-----------------|-------------------|
| 1 | Perform selected automated and manual blood counts including WBC, RBC, and platelets. | Cognitive | Synthesis |
| 2 | Calculate indices. | Cognitive | Application |
| 3 | Discuss calculated values for automated cell counts. | Cognitive | Comprehension |
| 4 | Calculate corrected white counts. | Cognitive | Application |
| 5 | Demonstrate slide preparation and perform staining procedure for differentials. | Psychomotor | Guided Response |
| 6 | Perform and evaluate differential cell count and platelet estimate on peripheral blood smears. | Psychomotor | Guided Response |
| 7 | Demonstrate ability to recognize RBC morphology including normal and abnormal RBC findings. | Psychomotor | Guided Response |
| 8 | Demonstrate ability to recognize WBC morphology including normal and abnormal WBC findings. | Psychomotor | Guided Response |
| 9. | Interpret WBC and RBC histograms. | Cognitive | Comprehension |

Other related blood tests

| Order | Description | Learning Domain | Level of Learning |
|-------|--|-----------------|-------------------|
| 1 | Describe selected special hematological stains and their uses as relates to diagnosis of hematological diseases and disorders. | Cognitive | Comprehension |
| 2 | Discuss laboratory tests such as EOS, retics, osmotic fragility, ESR, LE, and sickle cell screening. | Cognitive | Comprehension |
| 3 | Perform laboratory tests such as eosinophil counts, reticulocyte counts, osmotic fragility, ESR, and sickle cell screening. | Psychomotor | Guided Response |
| 4. | Describe collection technique for bone marrow tissue. | Cognitive | Comprehensio |

Related lab math

| Order | Description | Learning Domain | Level of Learning |
|-------|--|-----------------|-------------------|
| 1 | Analyze related QC math calculations such as mean, median, mode, standard deviation, coefficient of variation. | Cognitive | Analysis |
| 2 | Perform related math calculations for manual cell counts. | Cognitive | Synthesis |
| 3 | Perform related math calculations for RBC indices (MCV, MCH, MCHC, and RDW). | Cognitive | Synthesis |
| 4 | Perform corrected WBC counts, WBC and platelet estimates. | Cognitive | Synthesis |
| 5 | Perform calculations using the Rule of 3 (Hgb X 3 = Hct). | Cognitive | Synthesis |
| 6 | Calculate international normalized ratio (INR) | Cognitive | Application |
| 7 | Calculate absolute versus relative counts. | Cognitive | Application |

Correlation of test results to disease states

| Order | Description | Learning Domain | Level of Learning |
|-------|---|-----------------|-------------------|
| 1 | Correlate abnormal findings to selected and congenital abnormalities (e.g., anemias). | Cognitive | Analysis |
| 2 | Correlate abnormal findings to selected and congenital abnormalities (e.g., leukemias). | Cognitive | Analysis |

Coagulation and fibrinolysis

| Order | Description | Learning Domain | Level of Learning |
|-------|--|-----------------|-------------------|
| 1 | Discuss hemostasis as it relates to the process of coagulation and fibrinolysis | Cognitive | Comprehension |
| 2 | Illustrate and explain intrinsic and extrinsic systems as it relates to the process of coagulation and fibrinolysis. | Cognitive | Comprehension |
| 3 | Correlate the stages of coagulation with appropriate testing procedures. | Cognitive | Analysis |
| 4 | Perform selected coagulation procedures. | Psychomotor | Guided Response |
| 5 | Correlate selected hemostasis disorders and related test procedures including PT, APTT, thrombin time/fibrinogen, and fibrin split products. | Cognitive | Analysis |
| 6 | Interpret the function of platelets in relation to coagulation. | Cognitive | Evaluation |

Instrumentation for hematology and coagulation

| Order | Description | Learning Domain | Level of Learning |
|-------|---|-----------------|-------------------|
| 1 | Identify instrumentation used in specific areas of hematology/coagulation. | Cognitive | Knowledge |
| 2 | Describe the operation and maintenance of selected automated cell counters and coagulation analyzers. | Cognitive | Comprehension |

Critical values and blood cell dyscrasias

| Order | Description | Learning Domain | Level of Learning |
|-------|---|-----------------|-------------------|
| 1 | Describe normal/abnormal/critical values. | Cognitive | Comprehension |
| 2 | Identify blood cell dyscrasias. | Cognitive | Knowledge |

Safety and quality control

| Order | Description | Learning Domain | Level of Learning |
|-------|--|-----------------|-------------------|
| 1 | Set up and perform selected quality control and safety procedures for hematology/coagulation. | Psychomotor | Guided Response |
| 2 | Identify possible sources of error in clinical testing. | Cognitive | Comprehension |
| 3 | Comply with PPE, bio-hazard, and blood borne pathogen safety rules while practicing labs in the school laboratory. | Affective | Receiving |

Process improvement

| Order | Description | Learning Domain | Level of Learning |
|-------|--|-----------------|-------------------|
| 1 | Describe the methods used by clinical laboratories to improve performance. | Cognitive | Comprehension |

GENERAL EDUCATION CORE COMPETENCIES

STC has identified the following general education core competencies that graduates will attain:

- A. The ability to utilize standard written English.
- B. The ability to solve practical mathematical problems.
- C. The ability to read, analyze, and interpret information.

STUDENT REQUIREMENTS

Students are required to wear name badge. Students must wear closed toe shoes, gloves, and lab coat while in the lab. Students are expected to complete all tests, assignments, and Laboratory Reports by the due dates. A ten point penalty will be assessed for each day an assignment or Laboratory Report is late. Students are required to pass all laboratory skills in three attempts. A student may not progress until skills are mastered. Students are responsible for policies, procedures, and requirements (drug screen, background check, immunizations, Fit test, CPR...) included in the STC E-Catalog/CLT handbook. Students are required to read the chapter prior to class. Test will be timed- one hour per test. Points will be deducted for spelling due to Medical Liability in the work place. Laboratory results are legal documents.

No cell phones allowed. If you are caught using the cell phone, you will be asked to leave class and receive an "early departure" for the class. (Note: Three (3) tardies or early departures equal one (1) absence for the course involved.) If you are 30 minutes late to class, you will receive an absence for the day.

ATTENDANCE GUIDELINES

Class attendance is a very important aspect of a student's success. Being absent from class prevents students from receiving the full benefit of a course and interrupts the learning process. Southeastern Technical College considers both tardiness and leaving early as types of absenteeism. Responsibility for class attendance rests with the student. Regular and punctual attendance at all scheduled classes is required for student success. Students will be expected to complete all work required by the instructor as described in the individual course syllabus.

Instructors have the right to give unannounced quizzes/assignments. Students who miss an unannounced quiz or assignment will receive a grade of 0. Students who stop attending class, but do not formally withdraw, may receive a grade of "F" (Failing 0-59) and face financial aid repercussions in upcoming semesters.

Instructors are responsible for determining whether missed work may be made up and the content and dates for makeup work is at the discretion of the instructor.

Attendance is counted from the first scheduled class meeting of each semester. To receive credit for a course a student must attend at least 90% of the scheduled instructional time. All work missed due to tardiness or

absences must be made up at the convenience of the instructor. Any student attending less than the required scheduled instructional time (90%) may be dropped from the course as stated below in the Withdrawal Procedure.

Tardy means arriving after the scheduled time for instruction to begin. Early departure means leaving before the end of the scheduled time. Three (3) tardies or early departures equal one (1) absence for the course.

For this class, which meets 3 days a week for 9 weeks, the maximum number of days a student may miss is 3 days during the semester.

ADDITIONAL ATTENDANCE PROVISIONS

Health Sciences

Requirements for instructional hours within Health Science programs reflect the rules of respective licensure boards and/or accrediting agencies. Therefore, these programs have stringent attendance policies. Each program's attendance policy is published in the program's handbook and/or syllabus which specify the number of allowable absences. All provisions for required make-up work in the classroom or clinical experiences are at the discretion of the instructor.

Attendance is counted from the first scheduled class meeting of each semester. To receive credit for a course a student must attend at least 90% of the scheduled instructional time. Time and/or work missed due to tardiness or absences must be made up at the convenience of the instructor. Any student attending less than the required scheduled instructional time (90%) may be dropped from the course as stated below in the Withdrawal Procedure.

Tardy means arriving after the scheduled time for instruction to begin. Early departure means leaving before the end of the scheduled time. Three (3) tardies or early departures equal one (1) absence for the course. If you are 30 minutes late to class, you are considered absent for the day.

For this class, which meets 3 days a week for 15 weeks, the maximum number of days a student may miss is 5 days during the semester.

SPECIAL NEEDS

Students with disabilities who believe that they may need accommodations in this class based on the impact of a disability are encouraged to contact Helen Thomas, 912-538-3126, hthomas@southeasterntech.edu, to coordinate reasonable accommodations.

SPECIFIC ABSENCES

Provisions for Instructional Time missed because of documented absences due to jury duty, military duty, court duty, or required job training will be made at the discretion of the instructor.

PREGNANCY

Southeastern Technical College does not discriminate on the basis of pregnancy. However, we can offer accommodations to students who are pregnant that need special consideration to successfully complete the course. If you think you will need accommodations due to pregnancy, please advise me and make appropriate arrangements with Helen Thomas, 912-538-3126, hthomas@southeasterntech.edu.

WITHDRAWAL PROCEDURE

Students wishing to officially withdraw from a course(s) or all courses after the drop/add period and prior to the 65% portion of the semester (date will be posted on the school calendar) must speak with a Career Counselor in Student Affairs and complete a Student Withdrawal Form. A grade of "W" is assigned when the student completes the withdrawal form from the course.

Students who are dropped from courses due to attendance (see your course syllabus for attendance policy)

after drop/add until the 65% point of the semester will receive a "W" for the course. Abandoning a course(s) instead of following official withdrawal procedures may result in a grade of 'F' being assigned.

After the 65% portion of the semester, the student will receive a grade for the course. (Please note: A zero will be given for all missed assignments.)

There is no refund for partial reduction of hours. Withdrawals may affect students' eligibility for financial aid for the current semester and in the future, so a student must also speak with a representative of the Financial Aid Office to determine any financial penalties that may be assessed due to the withdrawal. All grades, including grades of 'W', will count in attempted hour calculations for the purpose of Financial Aid.

Remember - Informing your instructor that you will not return to his/her course does not satisfy the approved withdrawal procedure outlined above.

MAKEUP GUIDELINES (TESTS, QUIZZES, HOMEWORK, PROJECTS, ETC...)

Exams or labs missed for any reason will be made up at the discretion of the instructor. Exams will be made up the first day back in class. Labs are made up at the instructor's discretion. A maximum of one exam can be made up. If more than one exam is missed the student will only be allowed to make up the first exam missed and a grade of "0" will be awarded for any other missed exams including the final. If you are 30 minutes late for class, you are considered absent and missed the test. Remember, the first test can be made up and the second will be a zero this includes the final.

Extenuating circumstances are determined at the instructor's discretion. Unless otherwise scheduled with the instructor, it is expected that the test will be taken the next day, scheduled outside of regular class time.

Failure to follow this procedure will result in a grade of zero.

ACADEMIC DISHONESTY POLICY

The STC Academic Dishonesty Policy states All forms of academic dishonesty, including but not limited to cheating on tests, plagiarism, collusion, and falsification of information, will call for discipline. The policy can also be found in the STC Catalog and Student Handbook.

PROCEDURE FOR ACADEMIC MISCONDUCT

The procedure for dealing with academic misconduct and dishonesty is as follows:

1. First Offense

Student will be assigned a grade of "0" for the test or assignment. Instructor keeps a record in course/program files and notes as first offense. The instructor will notify the student's program advisor, academic dean, and the Registrar at the student's home campus. The Registrar will input the incident into Banner for tracking purposes.

2. Second Offense

Student is given a grade of "WF" for the course in which offense occurs. The instructor will notify the student's program advisor, academic dean, and the Registrar at the student's home campus indicating a "WF" has been issued as a result of second offense. The Registrar will input the incident into Banner for tracking purposes.

3. Third Offense

Student is given a grade of "WF" for the course in which the offense occurs. The instructor will notify the student's program advisor, academic dean, and the Registrar at the student's home campus indicating a "WF" has been issued as a result of a third offense. The Vice President for Student Affairs, or designee, will notify the student of suspension from college for a specified period of time. The Registrar will input the incident into Banner for tracking purposes.

STATEMENT OF NON-DISCRIMINATION

The Technical College System of Georgia and its constituent Technical Colleges do not discriminate on the basis of race, color, creed, national or ethnic origin, sex, religion, disability, age, political affiliation or belief, genetic information, disabled veteran, veteran of the Vietnam Era, spouse of military member or citizenship status (except in those special circumstances permitted or mandated by law). This school is in compliance with Title VI of the Civil Rights Act of 1964, which prohibits discrimination on the basis of race, color, or national origin; with the provisions of Title IX of the Educational Amendments of 1972, which prohibits discrimination on the basis of gender; with the provisions of Section 504 of the Rehabilitation Act of 1973, which prohibits discrimination on the basis of handicap; and with the American with Disabilities Act (ADA).

The following individuals have been designated to handle inquiries regarding the nondiscrimination policies:

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|---|--|
| ADA/Section 504 - Equity- Title IX (Students) - OCR Compliance Officer | Title VI - Title IX (Employees) - EEOC Officer |
| Helen Thomas, Special Needs Specialist Vidalia Campus 3001 East 1 st Street, Vidalia Office 108 Phone: 912-538-3126 hthomas@southeasterntech.edu | Lanie Jonas, Director of Human Resources Vidalia Campus 3001 East 1st Street, Vidalia Office 138B Phone: 912-538-3230 Email: Lanie Jonas ljonas@southeasterntech.ed |

GRIEVANCE PROCEDURES

Grievance procedures can be found in the Catalog and Handbook located on STC's website.

ACCESS TO TECHNOLOGY

Students can now access Blackboard, Remote Lab Access, Student Email, Library Databases (Galileo), and BannerWeb via the mySTC portal or by clicking the Current Students link on the [STC website](#).

TCSG GUARANTEE/WARRANTY STATEMENT

The Technical College System of Georgia guarantees employers that graduates of State Technical Colleges shall possess skills and knowledge as prescribed by State Curriculum Standards. Should any graduate employee within two years of graduation be deemed lacking in said skills, that student shall be retrained in any State Technical College at no charge for instructional costs to either the student or the employer.

GRADING POLICY

| Assessment/Assignment | Percentage |
|--------------------------|------------|
| Chapter tests | 60% |
| Lab reports | 5% |
| Laboratory Final Exam | 10% |
| Comprehensive Final Test | 25% |

GRADING SCALE

| Letter Grade | Range |
|--------------|--------|
| A | 90-100 |
| B | 80-89 |
| C | 70-79 |
| D | 60-69 |
| F | 0-59 |

| WEEK | CHAPTER | CLBT 1040 HEMATOLOGY/ COAGULATION FALL SEMESTER 2017 LESSON PLAN LESSON PLAN IS SUBJECT TO CHANGE AT THE DISCRETION OF THE INSTRUCTOR. CONTENT | ASSIGNMENTS & TESTS DUE | COMP AREA |
|----------------------------------|---------|--|--|---|
| 1 AUG. 13- 16 | 4 | 4-Hematopoiesis- bone marrow and blood | Review syllabus Articles on Stem cell-assignment Atlas 1-4 Lab 1Safety Cell lineage handout CBC normal values | Course 1,2,3,7,8,9, 10 Core A,B,C |
| 2 AUG. 20- 23 | 5 | 5-Normal RBC lifecycle and physiology | Lab 2 retic count-QC Lab 3 MCV calculations Articles on Stem cell-discussion | Course 1 Core A,C |
| 3 AUG. 27- 30 | 14 | 14-WBC granulocytic and monocytic series | Test 4,5 Atlas 5-9 Draw granulocytic lineage View Proficiency survey slides | Course 1,2,3,6,7,8, 9,10 Core A,B,C |
| 4 Sept. 3= Holiday! 4-6 | 16 | 16-Lymphocytes and plasma cells | Sed rate Lab 4 Draw blood- make slides and run on Cell Dyn Lab 5 eo count/ Absolute value Lab 6 WBC diff count/platelet count & est. Lab 7 HGB & HCT/rule of 3 Lab 8 sickle cell, Correct for NRBC View Proficiency survey slides CBC/ Diff staining WBC, plt. est. and indices | Course 1,4,7 Core A,B,C |
| 5 Sept. 10- 13 | 26 | 26-Manuel procedures; Buffy coat procedure, Sickle cell procedure, how to make malaria slides and video | Bone marrow slides & Plasma cells, malaria slides Micro Hct lab, calculate Hgb Student to student diffs HO: reason for test Chp 26 | Course 1,2,3,4,6,7, 8,9,10 Core A,B,C |
| 6 Sept. 17- 20 | 6 | 6-RBC inclusions | Test 14,16,26 Malaria video Atlas10-12 Lab 9 draw RBC abnormal forms/inclusions Hand out- RBC inclusion& variations | Course 1,3,4,7,9 Core A,B,C |

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|--------------------|----------|---|--|---|
| | | | malaria slides and video View Proficiency survey slides | |
| 7 Sept. 24-27 | 7,15 | 15-Nonmalignant Disorders of grans and monos 7-Classification of Anemias | Lab 10 count diffs w/ morphology Pelger Huet/SS Howell jolly Promyelocyte slides, compare student to student results Review SS procedure Manuel RBC & WBC hemocytometer | Course 1,2,4,6,7,8,9,10 Core A,B,C |
| 8 Oct. 1-4 | 8,9,10 | 8-Acute and chronic blood loss anemias 9-Aplastic anemias 10-Hypochromic anemia and iron metabolism MID TERM | Test 6,15,7 Atlas 14-20 | Course 1,2,3,4,6,7,10 Core A,B,C |
| 9 Oct. 8-11 | 11 | 11-Megaloblastic anemias 12-Hemolytic anemias 13-Hemoglobinopathies | Leukemia slides Morphology book p. 18-117 Power point: Immature grans and Bone marrow Morphology of human blood cells pg 18-37 | Course 1,2,4,7 Core A,B,C |
| 10 Oct. 15-18 | 12,13 | Leukemia videos series 6 Morphology of human blood cells pg 18-37 | Leukemia power point | Course 1,2,4,7,8,9,10 Core A,B,C |
| 11 Oct. 22-25 | 17,18,19 | 17-Nonmalignant Lymph disorders 18-Leukemias and Lymphomas 19-Acute Leukemias | Test 8-13 Lab: slides: ALL,CLL.AML,CML CMML,AMML Count 10 abnormal slides | Course 1,2,3,4,6,7,10 Core A,B,C |
| 12 Oct.29-Nov.1 | 23 | 23-Hemostasis and Thrombosis | PT,PTT,FSP, D-Dimer pg. 472-484 | Course 1,3,4,5,6,7,8,9,10 Core A,B,C |
| 13 Nov. 5-8 | 24 | 24-Disorders of hemostasis and Thrombosis | Case studies | Course 1,3,4,5,6,7,8,9,10 Core A,B,C |
| 14 Nov. 12-15 | Review | Histograms Review QC, SD, CV... Pre-analytical, analytical, and post analytical | TEST 17,18,19,23,24 Review Polanski cards, study stack, Clinical Lab review, Handouts and Atlas TCSG standards due | Course 1-10 Core A,B,C |

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|--------------------------------------|--------|--------|--|---------------------------------|
| | | | Review Histogram and Coulter operation | |
| 15 Nov.19-20 Holiday 21-22! | Review | Review | MOCK final | Course 1-10 Core A,B,C |
| 16 Nov. 26-29 | Review | Final | Review | Course 1-10 Core A,B,C |
| 17 Dec. 3-5 | Final | Final | Lab Final and Comprehensive Final | Course 1-10 Core A,B,C |

Competency Areas:

1. Reticuloendothelial system and blood cell formation
2. Complete blood count and differential
3. Other related blood tests
4. Correlation of test results to disease states
5. Coagulation and fibrinolysis
6. Instrumentation for hematology and coagulation
7. Critical values and blood cell dyscrasias
8. Safety and quality control
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10. Related lab math

General Core Educational Competencies

- a) The ability to utilize standard written English.
- b) The ability to solve practical mathematical problems.
- c) The ability to read, analyze, and interpret information.

