



Medical Laboratory Technology

MLAB 1415- Hematology Syllabus

Fall 2011

MLAB 1415 Hematology

Section	37945	37946	37944
Campus	Eastview	Distance	Round Rock
Instructor	Keri Brophy-Martinez	Keri Brophy-Martinez	Joanna Ellis
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Office Hours	Wednesdays and Thursdays Others by appointment 3 :00-5 :00 PM		Wednesdays and Thursdays Others by appointment 1 :00- 3 :30 PM
Lecture	8 :30-9 :30 AM	NA	3 :30- 4 :30 PM
Lecture Room	9227	NA	3121.01
Laboratory	9 :40 AM- 1 :25 PM	NA	4 :45-8 :25 PM
Laboratory Room	9101	NA	3121.00

Length of Course:

11 weeks

Total hours: 128

August 22, 2011 THRU November 6, 2011

Course Web Site- <http://www.austincc.edu/mlt/hem/hem>

Students will access and print out course materials from the course web site. Assessment activities are provided as a means of assisting students in determining their level of competence in given areas as well as to assist in reviewing for examinations. Assignments will be posted to enhance the student's learning experience.

Blackboard On-Line System:

A considerable portion of this course will be conducted via the computer on-line Blackboard learning system. All students will be required to have an email address and to access course materials, learning activities, and exams

on-line. All students are expected to check their email several times a week to stay up to date on announcements and course updates. Students may use their home computers OR may access all materials and take exams at any public computer, including those in Learning Labs and libraries at all ACC campuses.

How to Log Into Blackboard

1. To access Blackboard, go to <http://acconline.austincc.edu/>
2. Enter your ACCeID and ACCeID Password in the provided boxes, and then click on the "Login" button.
3. Access your course(s) by clicking the course title located in the My Courses module.
4. ACC Blackboard support website is <http://irt.austincc.edu/blackboard/>.

Technology Expectations

You must have access to a computer with a live Internet connection, either at home, library, or ACC campus. A 56K modem connection is recommended. A Mozilla Firefox 3.5 browser is preferred, although Internet Explorer 7 and 8, and Safari 4.3.2 can be used. AOL is NOT supported by Blackboard. Cookies, JavaScript, Active Scripting, and Pop-up Windows must be enabled in the browser you use.

Java 1.5 and Adobe Flash Player are required and may be downloaded from <http://irt.austincc.edu/blackboard/sysreq.html>.

Other software that may be needed can be downloaded at <http://irt.austincc.edu/blackboard/software.html>.

Course Description

Hematology is the study of blood cells in normal and abnormal conditions. Students will be instructed in the theory and practical application of hematology procedures, including quality control, quality assurance, safety, manual and/or automated methods as well as blood cell maturation sequences, and normal and abnormal morphology with associated disease.

Prerequisites

Enrollment in this course and the Medical Laboratory Technology Program requires department head approval and successful completion of the admissions process. Students must be accepted into the MLT Program. Special status students must have basic knowledge of hematology.

Course Goals

By the end of this course the student should be able to:

- Demonstrate an understanding of the components of human blood and characteristics, functions, and abnormalities and disease states of each.
- Demonstrate proficiency in the skills necessary to perform blood cell counts, and evaluation of blood elements within stated limits of accuracy.
- Demonstrate compliance with OSHA safety regulations for blood -borne pathogens.
- Determine suitability of hematology specimens and dispose of them in the appropriate biohazard containers.

COURSE OBJECTIVES

When you go to the course website each unit will have a set of objectives. Print these out and use them to study the course materials. Exam questions are created from the course objectives. Each laboratory exercise will have objectives. One helpful way to study is write the objective on an index card and write the information pertaining that objective on the back. The following affective objectives pertain to the classroom and clinical components:

1. Demonstrate professionalism by
 - a. complying with the attendance policy
 - b. complying with the dress code
 - c. submitting assignments by the stated deadline
2. Demonstrate enthusiasm and interest in the profession of phlebotomy by asking questions, participating in class discussions and meeting with professors during office hours as needed.
3. Demonstrate initiative by reviewing objectives and completion of reading assignments prior to class.
4. Demonstrate progression in laboratory skills by effective organization, coordination of multiple tasks and insightful evaluation of results obtained.

5. Utilize constructive criticism to correct deficiencies and improve performance.
6. Work cooperatively with professors and fellow students to achieve the goals of each activity assigned.
7. Participate in activities designed to advance the profession of CLS and build professional pride.
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Methods of Presentation

- Lecture and Power Point Presentations
- Blackboard On-line Course System (<http://acconline.austincc.edu/>)
- Laboratory Practice
- Audio-Visual Materials
- Internet Resources
- Computer Programs

SCANS

The U.S. Department of Labor has established the Secretary's Commission on Achieving Necessary Skills (SCANS) to ensure that student's are gaining competencies that are required in the work place. The following competencies will be acquired upon completion of this course.

SCANS COMPETENCY	Clinical Hematology Competencies
Resources	Identify reagents and supplies needed for each lab, organize work so that the reagents, supplies, and equipment are utilized appropriately and work is completed within a reasonable time frame.
Interpersonal	Recognize limitations of expertise during the performance of procedures and communicate with professor when problems arise. Maintain confidentiality of patient samples utilized. Demonstrate respect for fellow students during class and lab time. Utilize the Internet to interact with laboratory science students through the Blackboard communication system and regular email programs.
Information	Apply knowledge gained from lecture, laboratory and the textbook to trouble shoot and problem solve laboratory results obtained during student laboratory. Utilize the Internet and other library resources to acquire information about specific topics as they relate to the field of Clinical Laboratory Science.
Systems	Apply critical thinking skills to clinical laboratory problems encountered, specifically, utilizing clinical laboratory principles and theories and applying these to results obtained.
Technology	Achieve competency in routine clinical laboratory procedures utilizing a variety of reagents, supplies and techniques. Utilize provided procedures to obtain appropriate information for performing and trouble shooting clinical laboratory procedures, and determining clinical significance and normal values. Use computers, the Internet, and the Blackboard system to access course materials and other relevant course information.

Required Materials

- McKenzie, Shirlyn B., *Clinical Laboratory Hematology*, Second Edition, Pearson Education, ISBN 0-13-513732-2 (Available in ACC Bookstore).
- Carr, Jacqueline H., and Bernadette F. Rodak, *Clinical Hematology Atlas*, Third Edition, Elsevier Saunders, ISBN 978-1-4160-5039-1 (Available in EVC Bookstore).
- MLAB 1415 Course Outline/Objectives and Lab Manual (Available on Course Web Site)
- MLAB 1415 Power Point Presentations (Available on Course Web Site)
- Scrubs - appropriately fitting and professional in appearance.
- Gloves - latex or nitrile NOT vinyl
- Pocket calculator
- Digital timer capable of counting seconds
- 4 inch binder with dividers, Dividers should be labeled as objectives, lecture notes, pre-lab assessments, lab exercises and assignments.
- Sharpie permanent marker, fine point, black or blue
- Recommended: Medical Dictionary and General Laboratory Test Interpretation book

Course Requirements, Examinations, and Grading

Time Commitment

According to "Hints on How to Succeed in College Classes"

<http://tinyurl.com/3dqegz> you should budget your time per week for this four hour credit course as follows:

1. Reading assigned text 2 to3 hours
2. Homework assignments 3 to 6 hours
3. Time for review and test preparation 3 hours
4. Total study time per week 9to 13 hours **PER WEEK**

Dress Code

The student will be expected to attend class clean and neatly dressed in scrubs and wear closed-toe shoes. A disposable laboratory coat will be issued to each student and must be worn snapped during all laboratory sessions. Hair that is shoulder length or longer *must* be worn up or securely tied back. Gloves must be worn when handling biological materials.

Behavioral Conduct

While a student is representing Austin Community College as a Medical Laboratory Technology student, they will be expected to conduct themselves in such a manner as to reflect favorably on themselves and on the Program. If a student acts in such a manner as to reflect immature judgment or disrespect for others, the student will be called before the MLT Department Chair for determination of their status in the Program. Inappropriate conduct is grounds for activation of the Progressive Discipline Policy (Warning, Conference, Probation, Withdrawal) and may be cause for immediate probation or dismissal from the Program.

Student Evaluation

Measurement, Written

Approximately five (5) examinations will be given in Blackboard over material covering lecture and the accompanying laboratory exercises, and will comprehensively assess the student's knowledge of concepts, principles, techniques and procedures as related to the instructional material. **These exams will be taken in Blackboard and will be timed. Each student is on the honor system to not use unauthorized materials while taking these exams.** Exams will be closed book and timed. You are not permitted to use information from the internet, notes, labs, or textbook. You must complete the exam in one sitting. Each test will have a time limit. Blackboard will not close the exam automatically when the time limit has been reached; therefore, it is your responsibility to monitor the time. A timer *should* be displayed in the exam, but it is recommended that you start a separate timer or record the start time to effectively determine the time remaining. In the event that you do not submit the exam within the time limit, 1 point will be deducted from your raw score for every 5 minutes you went over. For example, if you made a 90 but took 1 1/2 hours for a 1 hour test, then you would receive a grade of 84.

There will be **no routine retests given**. If a student misses one exam, the grade of the final exam will be averaged in the place of the missed exam grade. If any other exams are missed, grades of "0" will be given.

Measurement, Practical

Proficiency in clinical laboratory skills will be measured by performance of required skills within specific tolerance limits of each procedure. Points will be awarded for successful completion of laboratory exercises. ***A pre-lab***

assessment may be given at the beginning of each laboratory session.

Study questions will reinforce theory and announced written and practical exams will be given. In addition, student performance in the laboratory is evaluated using the following criteria:

- Attendance at the laboratory sessions is very important. It ***will not*** be possible to make up a missed laboratory assignment due to specimen, reagent, and/or professor availability.
- Familiarity with procedure.
- Setting up and performing procedure.
- Appropriate specimens are obtained and utilized.
- Proper handling, labeling and disposal of specimens, tubes, etc.
- Proper use of equipment, glassware and pipets.
- Organization and performance of individual tasks.
- Completion of tests within a reasonable amount of time.
- Clean up of work area.
- Care and cleaning of microscopes, which are assigned by number to each student.

Determination of Final Grade

Lecture- 2/3 of final grade

Exams in Blackboard= 50%

Assignments (Quizzes, admission tickets, misc.)=15%

Case Studies = 10%

Final in class= 25%

Laboratory - 1/3 of final grade

Laboratory Exercises = 25%

Study Questions = 35%

Pre-Lab Assessments= 10%

One Practical Exam (Differential) = 30%

Late/Missed Work

- Assignments/labs turned in within the first week will only receive up to 80% of the credit for that assignment.
- Any assignment/lab turned in after the first week will only receive 50% of the credit for that assignment
- Any assignment/lab turned in after two weeks will be given a grade a "0."
- **Laboratory classes will NOT be repeated.** The student will receive a grade of "0" for missed labs. However, the study questions can be turned in for half credit, not to include points missed on the activity.

A passing grade (75% or better) is **required** in both the lecture and laboratory components in order to receive a passing grade for this course.

A = 90-100%

B = 80-89%

C = 75-79%

D = 60-74%

F = 59% and below

Incomplete = To receive an "I", a student must have a **passing average** (75% or better) and have completed at least 80% of the course work.

Withdrawal = Before considering withdrawal, please contact the professor.

Attendance Policy: Lecture and Lab

It is the student's decision to take this class. Therefore, once the student makes this decision, he/she has responsibilities to everyone else in the community of learners. It is this commitment to learning that will enable the student to progress satisfactorily towards completion of course objectives. Additionally, we want to set patterns of professional behavior as seen in the true clinical environment.

Important announcements are made at the beginning of class and may not be repeated. Regular and punctual attendance is required at all lecture and lab sessions. Due to the nature of our courses, each class serves as a building block of knowledge for the next class session. Class role will be taken during each class period. Each student is responsible for all assignments, materials, examinations etc. when absent from class. As a courtesy, notify your professor of your absence as you would in a professional setting. All missed lab exercises must be completed to verify completion of the objectives. Make-up exercises or alternative learning experiences will be planned according to the limits set by the professor. However, the amount of credit awarded for the exercise, will be no greater than 80%. Once a student has incurred 2 absences, for whatever reason, the progressive discipline policy will be initiated.

- Two (2) absences- verbal conference with professor that will define what policy is not being met, as well as set up an action plan with a follow up conference date
- Four (4) absences- conference report with professor stating what actions will be necessary to avoid probation
- Five (5) absences- probation
- Withdrawal- terms of probation were not met

Withdrawal is based on absences equal to or greater than 25% of the material.

Academic Dishonesty

Under no circumstances shall a student submit work that is not their own. Collusion, copying answers for study questions, cheating on exams and/or submitting laboratory results which are not your own are expressly prohibited. Collusion is defined as the unauthorized collaboration with another person in preparing written work for fulfillment of course requirements.

Faculty members who suspect a student of cheating shall follow the "Academic dishonesty process" published in the Austin Community College Student Handbook <http://www.austincc.edu/handbook/> . Depending upon the severity of the offense either an academic penalty or dismissal from the program will occur.

Academic dishonesty such as, but not limited to, the following may result in IMMEDIATE dismissal from the MLT program and withdrawal from all MLT courses. If the withdrawal date has passed the student will be given a "D" for each course.

1. Submitting homework assignments copied from others. Both the student and the student that the materials were borrowed from will receive a "0" for the assignment and may be subject to the Academic Dishonesty Process and dismissal from the program.
2. Falsifying laboratory results.
3. Printing our examinations.

Student Assistance Policy

It is the sincere desire of the program faculty to aid each student in developing his/her professional potential. Academic, clinical, and those personal problems that interfere with the student's development are of concern to the faculty. The program faculty has adopted the following policy:

Personal Problems

The MLT student should feel free to make an appointment to discuss problems of a personal nature with a faculty member of his/her choice. In addition, the Health Science counselors are available for the student for additional counseling, if necessary.

Academic Problems

Problems encountered in the MLT lecture and/or laboratory sections should be brought to the attention of the course instructor. The instructor will work with the student to resolve the problem. If the student feels he/she cannot reach an agreement with the instructor, the student with the instructor should present the situation to the Program Director. All discussions with the faculty will remain confidential.

Promotion, Failure, and/or Dismissal from the Department

1. A minimum grade of "C" (75%) is required in *both the lecture and laboratory components* of all Medical Laboratory Technology courses. Failure to meet the minimum passing score in each area will result in a grade of "D" for the course.

2. A student who withdraws from this course will be withdrawn from all co-requisite MLT courses.
3. Failing this course will result in the student being withdrawn from the MLT program and all corequisite MLT courses. The student will have an Exit Interview and be offered one additional admission. All MLT course work must be repeated.
4. A student who withdraws from the program or fails to achieve the minimum course grade for progression may be re-admitted one time only to the MLT Program upon the recommendation of the MLT Program Admissions Committee and according to the criteria outlined in the *MLT Student Handbook*.
5. Any student may ultimately be withdrawn from the program for excessive absences, consistently failing to meet assignments, disruptive conduct, or for displaying conduct detrimental to the ethics of Medical Laboratory Technology.
6. A minimum grade of "C" (75%) is required in all Medical Laboratory Technology courses. Failure to meet the minimum passing score will result in termination from the program. Students must submit a written letter requesting readmission to the program. Re-admitted students are conditionally accepted and may be required to audit or repeat previous course work as determined by the Admissions Committee. Please refer to the *MLT Student Handbook* for specific policies.
7. The MLT program follows the college's general policies for student complaints as set forth in the ACC Student Handbook. A copy of the student handbook is available at each campus's administrative offices, or may be downloaded from the ACC website at:
<http://www.austincc.edu/handbook/gen3.php>.
8. The MLT faculty and staff understand that learning in group situations can be beneficial. However, each student is expected to demonstrate their own competency by doing their own work. ***Any student caught cheating on examinations, during lab practicals, copying written work of another or sharing lab results will be subject to the ACC Academic Discipline Policy which includes possible withdrawal from the program.***
9. Acts prohibited by the college for which discipline may be administered include scholastic dishonesty, including but not limited to cheating on an exam or quiz, plagiarizing, and unauthorized

collaboration with another in preparing outside work. Academic work submitted by students shall be the result of their thought, research or self-expression. Academic work is defined as, but not limited to, tests, quizzes, whether taken electronically or on paper, projects, either individual or group; classroom presentations, and homework. Please refer to the current *Austin Community College Student Handbook*.

10. Each student is strongly encouraged to participate in class. In any classroom situation that includes discussion and critical thinking, there are bound to be many differing viewpoints. These differences enhance the learning experience and create an atmosphere where students and instructors alike will be encouraged to think and learn. On sensitive and volatile topics, students may sometimes disagree not only with each other but also with the instructor. It is expected that faculty and students will respect the views of others when expressed in classroom discussions.

Students with Disabilities

Each ACC campus offers support services for students with documented physical or psychological disabilities. Students with disabilities must request reasonable accommodations through the Office for Students with Disabilities on the campus where they expect to take the majority of their classes. Students are encouraged to do this three weeks before the start of the semester.

[\(http://www.austincc.edu/support/osd/\)](http://www.austincc.edu/support/osd/)

Special Laboratory Requirements

1. It is the responsibility of the student to come prepared for each laboratory session by reading the procedure prior to the laboratory session.
2. A pre-lab assessment may be given at the beginning of each lab exercise to ensure readiness to perform the procedure.
3. Each student is responsible for their own work. If you are having difficulty with a particular procedure **do not bother students around you**. Any questions you have about the procedure, reagents or supplies should be directed to the instructor.
4. **Talking is strongly discouraged during the laboratory exercises.**
5. Each student is responsible for cleaning up their work area. This will be closely monitored by the instructor.

6. The use of electronic devices during lecture and laboratory is prohibited. This includes the use of cell phones and MP3 players.

LABORATORY SAFETY REGULATIONS

Standard Precautions

Since medical history and examination cannot reliably identify the infectivity of all patients' blood and body fluids, universal precautions should be followed for all patients. The concept of universal precautions was first introduced in 1987 by the Centers for Disease Control (CDC) to decrease the occupational risks of blood-borne diseases such as AIDS and hepatitis B to healthcare workers. The application of universal precautions is continually evolving; all body fluids may soon be handled with the same precautions as blood. This further application is already occurring in some labs, and is known as Body Substance Isolation. Precautions specific for clinical laboratories:

Use barrier protection routinely to prevent skin and mucous membrane contamination with blood or other body fluids.

1. Wear gloves:
 - a. When cuts, scratches, or other breaks in skin are present.
 - b. When performing any type of blood collection.
 - c. Whenever blood and body fluid specimens are handled.
 - d. Anytime it appears that contamination of the hands may occur.
 - e. Change gloves after each patient contact or when visibly contaminated with blood.
2. Wear a mask, eye glasses or goggles, or face shield during procedures that are likely to generate droplets of blood or other body fluids to prevent exposure of the mucous membranes of the mouth, nose, and eyes.
3. Wear a fluid-resistant gown, apron, or other covering when there is a potential for splashing or spraying of blood or body fluids onto the body.
4. Wash hands or other skin surfaces thoroughly and immediately if contaminated with blood or other body fluids.
5. Wash hands immediately after gloves have been removed even when no external contamination has occurred. Organisms on the hands multiply rapidly in the warm moist environment within the glove. Liquid hand sanitizers are an acceptable alternative to hand washing.

6. Handle laboratory instruments, especially needles and scalpel blades, with extreme caution.
7. Place used needles, disposable syringes, skin lancets, scalpel blades, and other sharp items into a puncture-resistant biohazard container for disposal. The container should be located as close as possible to the work area. Phlebotomists should carry puncture-resistant containers with them on their phlebotomy tray.
8. Needles should not be recapped, purposely bent, cut, broken, removed from disposable syringes, or otherwise manipulated by hand. If recapping is unavoidable (blood gas syringes, etc.), do it with one hand and use great caution.
9. Place large-bore reusable needles (bone marrow, biopsy needles, etc.) and other reusable sharp objects into a puncture-resistant container for transport to the reprocessing area.
10. Use mouth pieces, resuscitation bags, or other ventilation devices during emergency resuscitation procedures.
11. Exudative lesions or weeping dermatitis should be covered with an occlusive dressing to prevent contamination.
12. All specimens of blood and body fluids should be put in well-constructed containers with secure lids to prevent leaking during transport. Care should be taken when collecting each specimen to avoid contaminating the outside of the container and the laboratory form accompanying the specimen.
13. Use biological safety hoods (Class 1 or 2) for procedures that have a high potential for generating droplets (e.g., blending, sonicating, and vortexing).
14. Fill evacuation tubes, vials, and bottles by using their internal vacuum only. If a syringe is used, the fluid should be transferred to an evacuation tube by puncturing the diaphragm of the rubber stopper and allowing the correct amount of fluid to flow slowly into the tube along the wall. The tube should not be hand held when puncturing the top. Never force fluid into an evacuation tube by exerting pressure on the syringe plunger.
15. Use mechanical pipettes for manipulating *all* liquids (including body fluids, chemicals, or reagents) in the laboratory.
16. Decontaminate all laboratory work areas with an appropriate chemical germicide after a spill of blood or other body fluids and when work activities are completed. Laboratory counter tops should be disinfected at least once per shift.

17. Rinse off all body fluids from reusable contaminated equipment prior to reprocessing according to your institution policies.
18. Clean and decontaminate scientific equipment that has been contaminated with blood or other body fluids before being repaired in the laboratory or transported to the manufacturer. Always follow manufacture's recommendations.
19. Pregnant laboratory workers are not thought to be at greater risk of infection than others in the laboratory. However, if an infection does develop during pregnancy or the mother is a carrier prior to the pregnancy, the infant is at risk of infection by perinatal transmission. Therefore, pregnant laboratory workers should be especially aware of universal precautions.
20. Microscopes will be assigned. They must be cleaned and properly stored or points will be deducted from lab grade.

General Comments

Most exercises will take 2 or 3 laboratory periods to complete (i.e., gathering data from previous inoculation). It will be necessary, therefore, to bring each laboratory exercise to every laboratory period.

Each person will be responsible for his own work (no sharing results) and for cleaning up his own work area.

Open laboratory hours will be posted.

Supplemental Training Software

<http://www.medtraining.org/corporate/default.aspx>

You are already entered as a user for this software. If you have forgotten your log-in and/or password information, contact your professor.

Hematology (MLAB 1415)
Statement of Understanding

Please write your first name and last initials on EACH LINE which confirms that you have read and understand the MLAB 1415 Course Syllabus including:

Initial here



- _____ Course Goals
- _____ Course Requirements and Regulations
- _____ Dress Code
- _____ Evaluation Criteria for Lecture and Lab
- _____ Time penalty on Blackboard exams
- _____ Late/Missed work policy
- _____ Attendance Requirements
- _____ Requirements for Promotion, Failure and Dismissal from the Program
- _____ Policies, procedures and requirements for clinical practice, with special emphasis to those referring to safety

I agree to abide by all of the policies, procedures and requirements stated within.

Signature

Date

Printed Name