AUSTIN COMMUNITY COLLEGE

MEDICAL LABORATORY TECHNOLOGY

MLAB 2360 — Clinical I

Summer 2003

Instructor: Carolyn A. Ragland, CLS(NCA), MT(ASCP)

Office: Room 5008, RVS

Office Hours: Monday through Thursday
1:10 - 2:30 P.M.
Fridays 9A.M. - 12:30 P.M.
Others by appointment

Length of Course: 5.5 Weeks

Total Number of Hours: (Approximate)
Classroom hours 28
Laboratory 55

Time: Lecture & Lab: Mondays - Thursdays
9:00 A.M. - 1:15 P.M.
Special events Fridays - Time to be Announced
May 27 through July 1, 2003

Classroom: MLT Classroom (Building D 6101)
Riverside Campus
1020 Grove Blvd.
Austin, Texas 78741
Phone: 223-6114 / 223-6152

IBSN # 03MLAB2360
### Summer 2003 Calendar

#### May

<table>
<thead>
<tr>
<th>Sun</th>
<th>Mon</th>
<th>Tue</th>
<th>Wed</th>
<th>Thu</th>
<th>Fri</th>
<th>Sat</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>2</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td>8</td>
<td>9</td>
<td>10</td>
</tr>
<tr>
<td>11</td>
<td>12</td>
<td>13</td>
<td>14</td>
<td>15</td>
<td>16</td>
<td>17</td>
</tr>
<tr>
<td>18</td>
<td>19</td>
<td>20</td>
<td>21</td>
<td>22</td>
<td>23</td>
<td>24</td>
</tr>
<tr>
<td>25</td>
<td>26</td>
<td>27</td>
<td>28</td>
<td>29</td>
<td>30</td>
<td>31</td>
</tr>
</tbody>
</table>

#### June

<table>
<thead>
<tr>
<th>Sun</th>
<th>Mon</th>
<th>Tue</th>
<th>Wed</th>
<th>Thu</th>
<th>Fri</th>
<th>Sat</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>9</td>
<td>10</td>
<td>11</td>
<td>12</td>
<td>13</td>
<td>14</td>
</tr>
<tr>
<td>15</td>
<td>16</td>
<td>17</td>
<td>18</td>
<td>19</td>
<td>20</td>
<td>21</td>
</tr>
<tr>
<td>22</td>
<td>23</td>
<td>24</td>
<td>25</td>
<td>26</td>
<td>27</td>
<td>28</td>
</tr>
<tr>
<td>29</td>
<td>30</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### July

<table>
<thead>
<tr>
<th>Sun</th>
<th>Mon</th>
<th>Tue</th>
<th>Wed</th>
<th>Thu</th>
<th>Fri</th>
<th>Sat</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>7</td>
<td>8</td>
<td>9</td>
<td>10</td>
<td>11</td>
<td>12</td>
</tr>
<tr>
<td>13</td>
<td>14</td>
<td>15</td>
<td>16</td>
<td>17</td>
<td>18</td>
<td>19</td>
</tr>
<tr>
<td>20</td>
<td>21</td>
<td>22</td>
<td>23</td>
<td>24</td>
<td>25</td>
<td>26</td>
</tr>
<tr>
<td>27</td>
<td>28</td>
<td>29</td>
<td>30</td>
<td>31</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### August

<table>
<thead>
<tr>
<th>Sun</th>
<th>Mon</th>
<th>Tue</th>
<th>Wed</th>
<th>Thu</th>
<th>Fri</th>
<th>Sat</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td>8</td>
<td>9</td>
</tr>
<tr>
<td>10</td>
<td>11</td>
<td>12</td>
<td>13</td>
<td>14</td>
<td>15</td>
<td>16</td>
</tr>
<tr>
<td>17</td>
<td>18</td>
<td>19</td>
<td>20</td>
<td>21</td>
<td>22</td>
<td>23</td>
</tr>
<tr>
<td>24</td>
<td>25</td>
<td>26</td>
<td>27</td>
<td>28</td>
<td>29</td>
<td>30</td>
</tr>
<tr>
<td>31</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
MEDICAL LABORATORY TECHNOLOGY
MLAB 2360 - CLINICAL I

I. INTRODUCTION

This course is devised to simulate a hospital clinical stat laboratory where under close supervision, students have the opportunity to individually process actual and contrived clinical specimens and report results under hospital-like conditions. The students will function in the role of medical laboratory technicians in preparation for Clinicals II and III. Students will begin preparing for their clinical rotations by completing the Safe Environment of Care challenge examinations and provide an update of their immunizations and TB skin test.

The lecture component of the course consists of a brief formal introduction to clinical chemistry. A short review of immunology/serology is presented in preparation for the serology clinical rotation. While in department rotations, students are encouraged to review previously covered topic areas and procedures in hematology, coagulation, urinalysis, serology and blood bank. Throughout the semester each student is required to attend a designated clinical site for the purpose of improving their phlebotomy skills.

During the semester, each student will present to the class a short discussion/presentation of a pertinent subject from a computer search. A written summary of the topic is required. Guidelines provided in MLAB 2431 - Immunohematology will be used.

II. PREREQUISITES

Successful completion of the following MLAB courses: Immunology/Serology, Hematology, UA/Body Fluids, and Immunohematology with a minimum grade of “C” or by Program Coordinator approval.

III. GENERAL COURSE OBJECTIVES

Upon successful completion of this course, the student should be able to:

A. Demonstrate skill in collection of blood by venipuncture and finger stick techniques. (Individual specific objectives will be provided.)

B. Inspect and appraise specimen acceptability.

C. Organize and prioritize specimen requisition forms following standard operating procedures.

D. Demonstrate self-confidence, speed and accuracy in the analysis of a variety of normal, abnormal and contrived hospital specimens utilizing the following test procedures that include but are not limited to:

1. Complete blood count
2. Erythrocyte sedimentation rates and sickle cell preparations
3. Platelet and reticulocyte counts
4. Spinal fluid cell counts and differentials
5. Prothrombin time
6. Activated partial thromboplastin time
7. Routine urinalysis
8. Type and Rh
9. Pretransfusion testing
10. Antibody identification
11. Rh Immune globulin work up
12. HDN work ups
13. Blood glucose
14. Blood urea nitrogen
15. Blood and urine electrolytes
16. Infectious mononucleosis test
17. Urine pregnancy tests
18. RPR
19. CRP
20. Streptozyme
21. Rheumatoid arthritis
22. Other tests as available

E. Accurately record and report results according to outlined procedure.
F. Chart routine quality control results and note trends, drifts, and invalid results. Given appropriate data, calculate standard deviation, 95% confidence limits, and coefficient of variation.
G. List normal values for each procedure.
H. Recognize abnormalities and report them to instructor before turning out the report.
I. Relate results to the patient's probable condition.
J. Calculate selected basic and chemistry math problems.
K. Successfully complete practice exams on the review tutorial computer programs assigned by instructor and the Seton Safe Environment of Care / St. Davids safety examinations.
L. Provide documentation of current immunizations and TB test results to the instructor.

IV. SCANS Competencies

Recently the U.S. Department of Labor established the Secretary’s Commission on Achieving Necessary Skills (SCANS) to examine the demands of the workplace and whether the nation’s students are capable of meeting those demands. The Commission determined that today’s jobs generally require competencies in the following areas.

A. Resources: Identifies, organizes, plans, and allocates resources
B. Interpersonal: Works with others
C. Information: Acquires and uses information
D. Systems: Understands complex interrelationships
E. Technology: Works with a variety of technologies
The Texas Higher Education Coordinating Board is now requiring all degree plans in institutions of higher education incorporate these competencies and identify to the student how these competencies are achieved in course objectives. In MLAB 2360, Clinical I, examples of SCANS competencies being incorporated are as follows:

<table>
<thead>
<tr>
<th>COMPETENCY</th>
<th>EXAMPLE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Resources</td>
<td>Efficiently performs procedures in phlebotomy, hematology, immunohematology, urinalysis, coagulation, and serology including obtaining specimens, and preparation of appropriate reagents using only necessary supplies and within a predetermined reasonable amount of time.</td>
</tr>
<tr>
<td>Interpersonal</td>
<td>Demonstrates an understanding of the profession of Medical Laboratory Technology through ethical behavior when dealing with patients, classmates, and other members of the health care team, including maintaining a professional appearance to relieve patient anxiety while maintaining patient confidentiality.</td>
</tr>
<tr>
<td>Information</td>
<td>Evaluates quality control results within preestablished parameters; perform all procedures using approved safety techniques such as Standard / Universal Precautions.</td>
</tr>
<tr>
<td>Systems</td>
<td>Identifies and takes corrective action when quality control results do not fall within preestablished parameters. Brings unexpected patient results to the instructor’s attention. Uses problem-solving skills to troubleshoot equipment or procedures that do not fall within standards.</td>
</tr>
<tr>
<td>Technology</td>
<td>Identifies, evaluates, and operates a variety of basic and advanced laboratory equipment. Uses computer tutorial programs.</td>
</tr>
</tbody>
</table>

V. METHODS OF PRESENTATION

A. Lecture

B. Laboratory demonstrations

C. Laboratory practice

D. Student Reports

E. Case Studies

VI. COURSE REQUIREMENTS, REGULATIONS, AND STUDENT EVALUATION

A. Attendance Policy

Attendance is required at all lecture, laboratory and clinical rotation sessions. Class roll will be taken. Absences must be explained to the instructor on the day of the absence by telephone or personal visit. If an absence is anticipated, the student is to make a scheduling arrangement in advance with the instructor. **Two or more absences may be cause to withdraw a student from the course.**
B. 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:

1. Personal Problems

The MLAB 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 student counseling.

2. 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 department head. All discussions with the faculty will remain confidential.

C. Dress Code

Students should review the Dress Code policy included in the MLT Student Handbook. Items to review include the following:

1. The student will be expected to attend class / rotations clean and neatly dressed. Although, scrubs are generally considered acceptable attire in a laboratory setting, check first with the clinical instructor.
2. A white laboratory coat must be worn buttoned during all laboratory sessions.
3. Footwear appropriate for a laboratory setting will be required.
4. Hair that is shoulder length or longer must be worn up or securely tied back.
5. Finger nails must be of appropriate length (see Student Handbook). Nails and hands are to be kept clean. Artificial nails and nail jewelry are not to be worn. Chipped nail polish is not permitted. Gloving is to be observed per Standard / Universal precautions guidelines.
6. Loose or dangling jewelry will not be permitted.
7. Strong smelling perfumes or after-shave lotion are inappropriate in a laboratory.

D. Cell Phone / Pager Policy

Out of respect for classmates and faculty, students are required to turn all cell phones, and pagers to the “off” or “silent” mode while classes / labs are in session, or while attending a rotation. If a student is expecting “an urgent” call / message, they should inform the instructor prior to class session.
E. Phlebotomy Experience

Each MLT student is required to perform a minimum of fifty-two (52) hours of blood collection during the semester. If possible, the phlebotomy time should include collections from babies and pediatric patients involving capillary puncture experience as well as regular venipuncture techniques.

The phlebotomy rotation is graded as “Pass / Fail”. Students must achieve a minimum rating of at least “average” in all areas on the clinical evaluation and successfully complete all of the clinical objectives. Students must complete and provide documentation for the minimum of 52 clinical hours reflecting successful venipunctures, finger sticks, and heelsticks.

A schedule indicating the clinical site and time will be provided in advance to each student to allow him/her to make arrangements in their personal schedule.

Students who have successfully completed a phlebotomy program or who have had extensive phlebotomy experience will be exempted.

F. Summer Clinical Experience

**Log sheet write-ups are required for all clinical rotations or laboratory tours!**

Each student will spend one-day rotation at the Central Texas Regional Blood Center, a one-day rotation at a doctor's office laboratory, and one or more days in rotation at sites selected by the course instructor. The exact time of these rotations will be announced. The purposes of these rotations are to give the student first-hand experience in donor processing, expose them to laboratory testing performed in doctors' offices, and provide the student an opportunity to view medical laboratory professionals in career settings outside the typical hospital setting. Students are expected to be appropriately dressed for a clinical rotation.

In addition, the serology clinical rotation will be performed during this semester in the MLT laboratory. This is two (8 hour) days done on consecutive days. The first day involves an intense review session followed by lab practice of standard serology tests. The second day will be for finishing up serology tests and taking the rotation exam. The instructor will discuss when this rotation will be scheduled as well as how this rotation is evaluated.

In addition, it may be possible to schedule an additional clinical rotation during the summer semester or between semesters. Scheduling of these clinical rotations are subject to the student's schedule flexibility, clinical site availability, and the instructional staff's assessment of the student's readiness. Credit earned for the clinical rotation will be applied to the appropriate clinical course.

D. Student Evaluation

1. Measurement, Written
   a. Examinations
      1) Selected written examinations will be given at the ACC Testing Center.
2) A copy of the ACC Testing Center Guidelines is available in the MLT classroom as well as in the Testing Center. Students are encouraged to be familiar with these guidelines as well as the Testing Center's hours.

3) **Students are expected to take all tests at the assigned time or be given a grade of “0”. No make-up or extension of exam dates will be allowed.**

4) A post-rotation test will be given at the end of each departmental rotation. Students can be best prepared for the post-rotation tests by:

   a) Answering the rotation's study questions ahead of time.
   b) Reviewing previous course and lab notes related to the material.
   c) Reading through the MLAB 2360 lab procedures / product inserts.

b. Study Questions and Case Studies

Throughout the semester each student may be given sets of study questions and/or case studies to reinforce material covered in previous MLT courses. **Students are expected to turn in completed assignments at the assigned time or be given a grade of “0”**.

2. Measurement, Practical

Each student's progress will be reviewed and evaluated informally throughout the rotation and formally at the end of the rotation (see attached copy of evaluation form).

The student will be advised of his/her progress and suggestions will be given to correct deficiencies. Student laboratory performance is evaluated according to the following criteria:

a. Tasks are performed in order of priority utilizing appropriate specimens.

b. Reported values fall within limits specified by the laboratory procedure manual:

   1) Hematology, urine & body fluid specimens — student values are compared to hospital laboratory values / results are reviewed by the instructor.
   2) Chemistry specimens — students analyze control specimens along with unknowns.
   3) Blood bank and Serology — all results are reviewed by the instructor.

c. Tests are reported in proper format.

d. Critical values are recognized and reported to the instructor prior to reporting.

e. Tests are completed within the specified time frame.

f. Quality control charts / logs are maintained.

g. Appropriate storage or disposal of clinical specimens and materials.

h. Cleanliness and organization of work station.

i. Returning (or disposing) reagents/reagent kits to their proper storage place.

j. Results of oral or written laboratory quizzes.

k. Laboratory safety regulations are maintained at all times.
3. **Student Reports**

Each student will review an article from a recent professional journal / computer search project as assigned by instructor. The subject material of the article must be pertinent to topics covered in the course. The student will provide a brief written abstract or summary of the topic for the instructor. The student will present his/her topic in a 10-15 minute discussion / presentation to the class on a scheduled date and time.

**VII. DETERMINATION OF FINAL GRADE**

A. Final grade is calculated as follows:

1. 60% exams and post-tests
2. 30% laboratory / clinical evaluations including write ups and log sheets.
3. 10% abstract/oral presentation

B. Grade Scale

A = 90 -100%
B = 80 - 89%
C = 75 - 79%
D = 60 - 74%
F = 59% or below

I = Incomplete — To receive an “I” (incomplete) a student must have a passing grade (75% or better) and have completed 80% of the course work. MLAB 1704 must be completed before clinical assignments of MLAB 2504 Clinical Practicum I can be made.

W = Withdrawal — Health Sciences students who wish to withdraw from an MLT course must obtain an ACC Course Withdrawal form from the MLT department head. **It is the student's responsibility to carry out the withdrawal procedure to completion.** The last day to withdraw will be posted in the lobby of the Health Sciences campus each semester.

**VIII. PROMOTION, FAILURE AND/OR DISMISSAL FROM THE PROGRAM**

A. A minimum grade of “C” (75%) is required in each segment (lecture and clinical lab). Failure to meet the minimum passing score may result in termination from the Program.

B. Any student may be withdrawn from the Program for excessive absences (see Attendance Policy), consistently failing to meet class assignments, disruptive conduct, or for displaying conduct detrimental to the ethics of Medical Laboratory Technology.

C. 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 will be subject to disciplinary action including possible withdrawal from the Program.**

D. The student may utilize the “Student Grievance Procedure of Austin Community College” in the disposition of a grievance or complaint without fear of recrimination or retaliation.
IX. SPECIAL LABORATORY REQUIREMENTS

A. It is the responsibility of the student to prepare for each lecture/laboratory session. Each student is responsible for his/her own work & for the cleaning up of their work station.

B. The instructor reserves the right to give an unannounced quiz at any time.

C. Safety Regulations

Blood, urine, and other biological specimens possibly containing pathogenic organisms will be used in this course; therefore, in accordance with Universal Precautions, the following precautions must be observed:

1. Gloves must be worn at all times while working with blood and/or body fluids.
2. Eating, drinking or smoking will not be permitted in the laboratory. AVOID PUTTING OBJECTS IN YOUR MOUTH.
3. Wash your hands before leaving the laboratory for any reason.
4. Disinfect work area (counter top, serofuge, etc.) thoroughly after each laboratory session.
5. Cover spills with paper towels, soak thoroughly with disinfectant and wait 15 minutes before cleaning it up.
6. All accidents are to be reported immediately to the laboratory supervisor/instructor.

D. Required materials

1. White laboratory coat
2. Felt-tip marking pen
3. Name tag
4. Timer (optional but strongly recommended)
5. MLAB 2360 Lecture / Lab Guide

X. MATERIALS OF INSTRUCTION

A. References (Note — The series of letters and numbers following some of the references are the “call numbers” assigned to those texts in the ACC Riverside campus library. Those texts without call numbers are either a course textbook you should have or are in the instructor's personal library.)


C. Tutoring computer programs, selected films/video tapes, appropriate 35mm slides and tapes, and overhead transparencies

XI. PROGRAM REFERENCE

STATEMENT OF UNDERSTANDING

I have read the MLAB 2360 - Clinical I syllabus and understand and agree to the policies, procedures and requirements within.

___________________________________________   ___________________
Name                                                         Date
**Tentative Schedule 2003**

<table>
<thead>
<tr>
<th>Date</th>
<th>Subject</th>
<th>Assignment/Homework</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tues. May 27</td>
<td>Course Syllabus / Intro to Clinical Chemistry</td>
<td>2360 Syllabus &amp; Lecture Guide</td>
</tr>
<tr>
<td>Wed. May 28</td>
<td>Intro to Clinical Chemistry</td>
<td>Lecture Guide cont. , begin work on chemistry study questions</td>
</tr>
<tr>
<td>Thurs. May 29</td>
<td>Intro to Clinical Chemistry cont. , MLT Lab Preparation</td>
<td>finish Chemistry Study Questions. Use Internet, RVS -LRS, or other sources to select article / topic</td>
</tr>
<tr>
<td>Fri. May 30</td>
<td>CTRBC tour - 9:00 am 5600 N. Lamar 78756</td>
<td>Meet in lobby of CTRBC @ 8:50 AM log sheet write-up required</td>
</tr>
</tbody>
</table>

**TESTING CENTER EXAM**

<table>
<thead>
<tr>
<th>Date</th>
<th>Subject</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mon June 2</td>
<td>Lab Rotation 1 - BB</td>
</tr>
<tr>
<td>Tues June 3</td>
<td>Lab Rotation 1 - BB</td>
</tr>
<tr>
<td>Wed. June 4</td>
<td>Lab Rotation 1 - BB</td>
</tr>
<tr>
<td>Thurs. June 5</td>
<td>Lab Rotation 1 - BB</td>
</tr>
<tr>
<td>Fri. June 6</td>
<td>Dr. McHorse office tour 1301 W 38 th St. # 402 78705 - 1000 459-6503 Meet in office # 402 waiting room by 8:20 AM Log sheet write-up required.</td>
</tr>
<tr>
<td>Mon. June 9</td>
<td>Lab Rotation 2 - Hemo</td>
</tr>
<tr>
<td>Tues. June 10</td>
<td>Lab Rotation 2 - Hemo</td>
</tr>
<tr>
<td>Wed. June 11</td>
<td>Lab Rotation 2 - Hemo</td>
</tr>
<tr>
<td>Thurs. June 12</td>
<td>Lab Rotation 2 - Hemo</td>
</tr>
<tr>
<td>Fri June 13</td>
<td>TBA - Biotechnology tours Biocrest/Stratagene &amp; Centron 1834 State Highway 71 W. Cedar Creek, 78612-3412 Bruce Jerpseth 800.424.5444 Cenetron Diagnostics -same address. 888.834.6632 x 1024 -Matthew Gaulden, Laboratory Supervisor Meet in lobby area by 9:20 AM Log sheet write-up required.</td>
</tr>
<tr>
<td>Mon. June 16</td>
<td>Lab Rotation 3 - UA/Coag</td>
</tr>
<tr>
<td>Tues. June 17</td>
<td>Lab Rotation 3 - UA/Coag</td>
</tr>
<tr>
<td>Wed. June 18</td>
<td>Lab Rotation 3 - UA/Coag</td>
</tr>
<tr>
<td>Thurs. June 19</td>
<td>Lab Rotation 3 - UA/Coag</td>
</tr>
<tr>
<td>Fri June 20</td>
<td>TBA- Put final touches on your report. Begin serology study questions in preparation for review &amp; rotation</td>
</tr>
<tr>
<td>Mon. June 23</td>
<td>Student Oral Reports</td>
</tr>
<tr>
<td>Tues. June 24</td>
<td>Serology Rotation</td>
</tr>
<tr>
<td>Wed. June 25</td>
<td>Serology Rotation</td>
</tr>
<tr>
<td>Thurs. June 26</td>
<td>Serology Rotation?</td>
</tr>
<tr>
<td>Fri. June 27</td>
<td>TBA</td>
</tr>
<tr>
<td>Mon. June 30</td>
<td>TBA</td>
</tr>
<tr>
<td>Tues. July 1</td>
<td>TBA</td>
</tr>
</tbody>
</table>

Have a safe 4 th of July
Memo

To: ACC MLT Health Sciences Students & Faculty

From: Carolyn A. Ragland, MLT Program Coordinator

Subject: Seton Safe Environment of Care

Date: open

WHAT: As of October 1, 1997, all Seton Healthcare Employees and persons working in Seton Healthcare Network facilities are required to have successfully completed the Safe Environment of Care Challenge Exam (EOC Challenge Exam). This includes ACC students and faculty who visit and/or perform clinical work in their facility. We have been given permission to adapt this exam into a self-instructional model which has been put onto the World Wide Web by paramedic instructor, J. Nile Barnes.

WHERE: The exam is available at http://www2.austin.cc.tx.us/hltsci/eoc The address is case sensitive. Any forms capable browser (ie. Netscape®, Internet Explorer®) should be able to provide this series of web pages. You can work through this exam using your home computer, from the MLT student use computers located in the lab, or from any ACC Computer Lab during “OPEN USE” time. If you choose to use the Computer Lab, I recommend the Nursing Computer Lab located in Building D. Contact Michelle for an appropriate time.

HOW: The exam is 98 questions long and is mostly multiple choice. The exam requires you to self-remediate any questions missed. That is, you cannot move on through the exam until you correctly answer each question in order. There are nine (9) short answer questions throughout the test. You will need a piece of scratch paper and pen/pencil to write down the answers when the question appears, and be prepared to type/transfer these answers in the designated place at the end of the test. In many cases the most appropriate answer to these questions (because you are a visiting student) is to check with the person in charge of that department or unit.

The submission form is at the END of the test. The last item on this form is statement regarding completion of the exam. This item must be checked! After submitting the form you should see a form thanking you. Print a copy of this form for your own records.

Notes: Precede through this exam carefully. The program can lock-up if you rush it. If all goes well, the system will send me a copy of the verification form through the e-mail system. You must check with me that I have received this document. Good luck,
<table>
<thead>
<tr>
<th>Date</th>
<th>Clinical Site</th>
<th>Dept.</th>
<th>Time-In</th>
<th>Time-Out</th>
<th>Emp. Init.</th>
<th>List all observations and type and quantity of procedures actually performed</th>
</tr>
</thead>
</table>

Medical Laboratory Technology

Clinical Rotation Record

Student: _____________________________________________
Rotation: ____________________________________________
<table>
<thead>
<tr>
<th>Date</th>
<th>Site</th>
<th>Clinical Site</th>
<th>Time-In</th>
<th>Time-Out</th>
<th>Emp. Init.</th>
<th>List all observations and type and quantity of procedures actually performed</th>
</tr>
</thead>
</table>

Medical Laboratory Technology

Clinical Rotation Record

Student: ____________________________

Rotation: ____________________________
<table>
<thead>
<tr>
<th>Date</th>
<th>Clinical Site</th>
<th>Dept.</th>
<th>Time-In</th>
<th>Time-Out</th>
<th>Emp. Init.</th>
<th>Notes</th>
</tr>
</thead>
</table>

List all observations and type and quantity of procedures actually performed.

Medical Laboratory Technology

Clinical Rotation Record

Student: _______________________________________
Rotation: ______________________________________
<table>
<thead>
<tr>
<th>Date</th>
<th>Clinical</th>
<th>Dept.</th>
<th>Time-In</th>
<th>Time-Out</th>
<th>Emp. Init.</th>
</tr>
</thead>
</table>

List all observations and type and quantity of procedures actually performed.

**Medical Laboratory Technology**

**Clinical Rotation Record**

Student: ___________________________________________
Rotation: ___________________________________________
I. Introduction to Clinical Chemistry

<table>
<thead>
<tr>
<th>INSTRUCTIONAL OBJECTIVES</th>
<th>COURSE OUTLINE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Upon completion of this section, the student should be able to:</td>
<td>A. Safety</td>
</tr>
<tr>
<td>1. Describe OSHA and its role in the regulation of laboratory safety.</td>
<td>1. General Safety</td>
</tr>
<tr>
<td>2. Demonstrate an understanding as to how professional conduct and appearance can affect laboratory safety.</td>
<td>a. Professional conduct and appearance</td>
</tr>
<tr>
<td>3. Recall safety related information presented in MLAB 1201.</td>
<td>b. Hand washing</td>
</tr>
<tr>
<td>4. Identify federal and non-federal agencies interested in laboratory safety.</td>
<td>c. Eye safety</td>
</tr>
<tr>
<td>5. Demonstrate awareness of the laboratory fire escape plan by describing the plan verbally or in written form.</td>
<td>d. Laboratory cleanliness</td>
</tr>
<tr>
<td>6. Share with others, knowledge in the use of laboratory fire safety equipment</td>
<td>2. Fire Safety</td>
</tr>
<tr>
<td>7. Describe the precautions required of laboratory personnel when dealing with flammable hazards, corrosive chemicals, toxic fumes, potential carcinogens, and radioactive materials associated with laboratory equipment, reagents, solvents, and gases.</td>
<td>a. Fire exit plan</td>
</tr>
<tr>
<td>8. Share with others, an increased awareness of the potential infectiousness of clinical specimens.</td>
<td>b. Fire safety awareness</td>
</tr>
<tr>
<td>9. Describe the “Right-to-Know” act.</td>
<td>c. Fire safety equipment</td>
</tr>
<tr>
<td>10. Describe the precautions necessary when dealing with broken laboratory glassware, corrosive chemicals and toxic fumes.</td>
<td>3. Infection</td>
</tr>
<tr>
<td>11. Show increased awareness of the hazards associated with the chemistry department by demonstrating proper care and handling of chemistry equipment, glassware, and reagents.</td>
<td>a. Precautions/prevention</td>
</tr>
<tr>
<td>12. Laboratory fire safety concerns</td>
<td>b. Isolation specimens</td>
</tr>
<tr>
<td>3. Infection</td>
<td>4. Corrosive chemicals</td>
</tr>
<tr>
<td>4. Share with others, an increased awareness of the potential infectiousness of clinical specimens.</td>
<td>a. Caustic or corrosive</td>
</tr>
<tr>
<td>5. Toxic Fumes</td>
<td>b. Storage</td>
</tr>
<tr>
<td></td>
<td>b. Precautions</td>
</tr>
</tbody>
</table>
12. Identify and describe the use and dangers of frequently encountered laboratory carcinogens.

7. Carcinogens
   a. Benzidine
   b. O-toluidine
   c. Naphthylamines
   d. Dimethylaminoazobenzene
   e. Chloroform
   f. Carbon tetrachloride

13. List and describe the regulation, handling, storage, and disposal of the radioactive material used in the laboratory.

8. Radioactivity
   a. Federal regulations
   b. Gamma ray
   c. Beta ray

14. Relate how professional appearance and attitude should aid in relieving patient anxiety.

15. Defend the importance of maintaining patient confidentiality.

16. Describe the proper steps in collecting blood by venipuncture or by skin puncture procedures.

17. Describe the more frequently encountered adverse patient reactions, precautions, and remedies for the reactions.

18. Evaluate specimens that require special collection procedures.

19. List at least five (5) reasons for rejection of chemistry specimens.

20. List and describe three (3) types of serum separating devices.

21. Review the steps required to set up and operate a QC program, as outlined in MLAB 1201.

22. Gather and organize data to be used in a quality control program.

23. Define and apply terms used in reference to QC in the chemistry laboratory, such as:
   a. accuracy

C. Quality Control
   1. Introduction
b. precision
c. standard
d. control
e. mean, median, and mode
f. standard deviation
g. coefficient of variation
h. 95% confidence limit
i. systemic shift
j. systematic trend
k. random error

2. Establishment of a QC System
   a. Classification of errors

24. Demonstrate methods of charting and grafting QC data.

   1) Levey-Jennings
   2) Yoden plot

3. Data interpretation and evaluation
   a. Calculation of SD
   b. Use of SD
   c. Corrective methods

26. Identify and select the most acceptable pipet for a particular need.

27. Discuss, demonstrate, and practice proper cleaning of pipets and other laboratory glassware.


29. Identify and select the most appropriate laboratory glassware for a specific use.

30. Convert volumes using metric system values.

31. Compare the sensitivity, readability, and capacity of different lab balances.

32. Describe/demonstrate how to weigh material on triple beam, torsion, and analytical balances.

D. Measurement of Volume
   1. Pipet classification
   2. Design
   3. Drainage characteristics
   4. Types

E. Measurement of mass

5. Cleaning

6. Laboratory glassware and pipet demonstration

7. Volume conversions
33. Describe/demonstrate how to quantitatively transfer a chemical.

F. Transfer and dilution of chemicals

34. Describe/demonstrate how to properly label reagent bottles.

G. Procedures

35. Given appropriate information, draw and label a reference curve.

36. Determine concentration of an analyte by using a reference curve or by calculation.

1. Determination of concentration by using a standard reference curve

2. Determination of concentration by calculation.

H. Introduction to Clinical Chemistry

37. From the clinical chemists' point of view, define:
   Beer's Law
   standard
   control
   reagent
   unknown
   blanks
   linearity
   hyper/hyponatremia
   hyper/hypokalemia
   hyper/hypochloremia

38. Briefly describe the principles of photometry and coulometric chloridometry.

39. Given appropriate information, determine the electrolyte status of a patient.

40. State the range of normal values and units used to report electrolyte results.

41. For the chemistry procedures covered in lecture/lab, state the basic principle, range of normal values, and units used to report results.
II. Introduction to Serology Clinical Rotation

Upon completion of this section, the student should be able to:

42. Describe six (6) items that should be evaluated when preparing to do a serological test.

43. Obtain, evaluate and efficiently process specimens for immunologic analysis to result in accurate results with minimum exposure to potentially biohazardous materials.

44. Properly utilize, interpret, and record quality controls.

45. Carefully interpret and record results for each serology procedure as provided.

46. Evaluate each serology procedure discussed/performed according to the criteria identified through objective number 42.

47. Discuss lecture, lab, and textbook information required to adequately answer study questions in preparation for the rotation final.

A. Serology rotation schedule
   1. Basic immunology
   2. Basic serologic reactions
   3. Principles and clinical significance
   4. Perform serology tests
   5. Study questions
   6. Rotation final exam

B. Serology assignments
   1. Review lecture notes and relevant textbook chapters.
   2. Review all serology lab exercises/product inserts.

C. Review of immunology
   1. Types of immunity
   2. The immune response
      a. Cellular immunity
      b. Humoral immunity
   3. Antigens
   4. Antibodies
   5. Complement

D. Review of serology
   1. Principles of serological testing
   2. Serological reactions
      a. Precipitation
      b. Agglutination
   3. Serological tests
      a. Syphilis
      b. C-Reactive protein (CRP)
      c. Strep tests
      d. Cold & Febrile agglutinins
      e. Rheumatoid arthritis (RA)
      f. Infectious mononucleosis
      g. Pregnancy
      h. Haptoglobin
      i. Immunodiffusion
# Austin Community College
## Medical Laboratory Technology
### Course Evaluation

**Course Number**_________________________  **Semester/Year**_________________________  **Instructor**_________________________

**Textbooks and Related Handouts**
(Or Laboratory Manual)

<table>
<thead>
<tr>
<th></th>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Agree</th>
<th>Strongly Agree</th>
<th>Not Applicable</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>The handouts were helpful adjuncts to the text and lectures.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>2.</td>
<td>The textbook(s) was readable and understandable.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>3.</td>
<td>The textbook(s) was relevant and supplementary to the lectures.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>4.</td>
<td>The value of the textbook(s) throughout the course justified its cost.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>5.</td>
<td>The textbook(s) required for purchase was adequate for the course.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>

**Lecture Component**

<table>
<thead>
<tr>
<th></th>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Agree</th>
<th>Strongly Agree</th>
<th>Not Applicable</th>
</tr>
</thead>
<tbody>
<tr>
<td>6.</td>
<td>The objectives have been clearly stated.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>7.</td>
<td>There was very good agreement between the course objectives and the assignments.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>8.</td>
<td>The subject matter correlated with the stated objectives.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>9.</td>
<td>There was adequate dialogue between the students and the instructor</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>10.</td>
<td>A variety of examples were provided to illustrate principles and techniques.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>11.</td>
<td>The time was adequate for the material presented.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>12.</td>
<td>The instructor set realistic standards.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>13.</td>
<td>The class presentations were organized.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>14.</td>
<td>The class presentations allowed for student questioning and discussion.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>15.</td>
<td>The classroom provided a good atmosphere for learning.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>
16. The lectures held my interest and attention. 1 2 3 4 NA
17. There was continuity maintained between lectures. 1 2 3 4 NA
18. The course credit reflected the amount of time spent in assignments, reading, studying, etc. 1 2 3 4 NA

Laboratory Component

19. The objectives have been clearly stated. 1 2 3 4 NA
20. The subject matter correlated with the stated objectives. 1 2 3 4 NA
21. There was adequate dialogue between the students and the instructor. 1 2 3 4 NA
22. A variety of examples were provided to illustrate principles and techniques. 1 2 3 4 NA
23. The time was adequate for the material presented. 1 2 3 4 NA
24. The instructor set realistic standards. 1 2 3 4 NA
25. The laboratory discussions were helpful in understanding the laboratory experiences. 1 2 3 4 NA
26. The laboratory was structured to allow for appropriate guidance and help to the student by the instructor. 1 2 3 4 NA
27. The laboratory was structured to give enough time to do the amount of work assigned. 1 2 3 4 NA
28. Time is provided for the student to do additional work outside scheduled laboratory hours. 1 2 3 4 NA
29. The instructions for the laboratory assignments were correlated. 1 2 3 4 NA
30. The classroom presentations and laboratory assignments were correlated. 1 2 3 4 NA
### Examinations

<p>| | | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>31. The number of examinations given was adequate.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>NA</td>
</tr>
<tr>
<td>32. The examinations were relevant to the stated objectives.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>NA</td>
</tr>
<tr>
<td>33. The examination questions were clear.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>NA</td>
</tr>
<tr>
<td>34. The examinations were graded fairly.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>NA</td>
</tr>
</tbody>
</table>

### General

1. How can the instructor improve the course?

2. What did you like best about this course?

3. What did you like least about this course?

4. Comments

   __________________________________________________________________________

   __________________________________________________________________________
Presentation Evaluation

<table>
<thead>
<tr>
<th>Name of Presenter</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name of Article</td>
<td></td>
</tr>
</tbody>
</table>

Please circle the number that you feel best describes your reaction to the article and its presentation.

<table>
<thead>
<tr>
<th>#1 Strongly Disagree</th>
<th>#5 Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

1. The presenter was prepared.
2. The presenter spoke clearly and distinctly.
3. The information was presented in an organized manner.
4. The subject matter of this article adds to the course.
5. The subject matter of the article provides information that is appropriate or relevant for MLT students.
6. Instructional aids (blackboard, overheads, etc.) were effective.

7. I would rate the overall presentation as:

Other Comments
### Presentation Evaluation

<table>
<thead>
<tr>
<th>Name of Presenter</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name of Article</td>
<td></td>
</tr>
</tbody>
</table>

*Please circle the number that you feel best describes your reaction to the article and its presentation.*

<table>
<thead>
<tr>
<th></th>
<th>#1 Strongly Disagree</th>
<th></th>
<th>#5 Strongly Agree</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1. The presenter was prepared.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>2. The presenter spoke clearly and distinctly.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>3. The information was presented in an organized manner.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>4. The subject matter of this article adds to the course.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>5. The subject matter of the article provides information that is appropriate or relevant for MLT students.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>6. Instructional aids (blackboard, overheads, etc.) were effective.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>

7. I would rate the overall presentation as:

**Other Comments**