



Course Syllabus

MLAB 2266- MLT Practicum I

Revision Date: 1/10/2017

Catalog Description: Practical, general workplace training supported by an individualized learning plan developed by the employer, college, and student.

Prerequisites: Enrollment in this course and the Medical Laboratory Technology Program requires department head approval and successful completion of or enrollment in all other MLAB courses (exceptions can only be made by MLT Program Director). Student must have completed ALL previous MLAB courses with a grade of “C” or better.

The student must also have completed all health data requirements, immunizations (including updated TB test), HIPAA requirements, as well as any additional requirements specified by the individual clinical sites including but not limited to drug screening and Hepatitis B immunization. The student is responsible for any and all costs associated with these requirements.

Semester Credit Hours: 2

Lecture Hours per Week: 0

Lab Hours per Week: 0

Practicum Hours: 224

Contact Hours per Semester: 224

State Approval Code: 5110040000

Instructional Goals and Purposes: The purpose of this course is to provide clinical experiences in the laboratory sections of Clinical Chemistry, Clinical Microbiology, and Blood Bank in the laboratory setting. This allows students to apply the knowledge and skills obtained in the didactic component of the curriculum to real life experiences in a live laboratory.

The student must demonstrate minimum competency in each area as determined by the established objectives to successfully pass the course.

Learning Outcomes:

1. Demonstrate proficiency in the clinical objectives of each rotation to which assigned by reviewing basic principles and procedures and openly demonstrate organizational and technical skills.
2. Demonstrate initiative by reviewing course materials prior to and during the rotation, asking questions to advance understanding, research areas of weakness, and asking for additional work as needed.
3. Display punctuality and attendance at each day of clinical by a good attendance record and promptly notifying the clinical facility (FIRST) and MLT faculty of any absences or tardies.
4. Demonstrate professional behavior by maintaining a strong positive attitude, exhibiting a proactive attitude in developing the competencies required, developing and using good professional judgment in all matters concerning laboratory safety and interaction with patients, specimens, hospital/clinic staff, faculty, and fellow students.
5. Maintain a safe laboratory environment by adhering to all applicable safety regulation as presented throughout the MLT program which include, but not limited to, appropriate disinfection of work area,

maintaining a neat, uncluttered work area, wearing of appropriate PPE, and reporting observed hazards.

Specific Course Objectives (includes SCANS):

After studying all materials and resources presented in the course, the student will be able to:

1. **Overall (1a-i, ii, iii, iv. 1b-ii, iii, v, vi. 2c-ii, iii, iv. 2d-i, ii, iii. 2e-i, ii, iii. 3d-i, ii.)**
 - a. Demonstrate a working comprehension of the technical and procedural aspects of laboratory test.
 - b. Maintain awareness and comply with regulatory requirements
 - c. Correlate laboratory test to disease processes and understands basic physiology.
 - d. Recognize appropriate test selection and abnormal test results.
 - e. Prioritize test requests to maintain standard patient care and maximal efficiency. Recognize the importance of QC and follows procedures and policies pertaining to it.
2. **Clinical Chemistry (1a-i, ii, iii, iv. 1b-ii, iii, v, vi. 2c-ii, iii, iv. 2d-i, ii, iii. 2e-i, ii, iii.)**
 - a. Give the full names of the enzymes AST, ALT, ALP, GGT, AMY, LIP and discuss the organ(s) and/or system associated with each
 - b. Give the approximate range for a normal fasting blood glucose.
 - c. Given results- identify normal and abnormal GTTs.
 - d. Discusses the uses of the blood Ammonia test.
 - e. Give the American Heart Association recommendations for Cholesterol levels (Total, LDL, HDL, Trig). Discuss the risk categories and values associated with them.
 - f. Discuss the uses of the HgbA1C test.
 - g. Discuss the most common use of BNP.
 - h. List the common tests used for evaluation of the thyroid.
 - i. List the test (and value of the test) that is diagnostic for Gout.
 - j. List the anticoagulant of choice for arterial blood gases.
 - k. QC: define shift and trend and list possible causes of each.
 - l. List the MINIMUM QC requirements for General Chemistry tests according to CLIA.
 - m. Discuss the effect of hemolysis on K+.
 - n. Define delta limit/check and critical value.
 - o. For the cardiac enzymes/markers: CK, CK-MB, CK Index, Troponin, AST, LDH discuss their use in detecting AMI.
 - p. Define Anion Gap and list its uses.
 - q. Correct both technical and analytical problems using scientific principles and processes.
 - r. Identify the components of routine chemistry panels with 100% accuracy.
 - s. Perform a broad range of chemistry and immunochemistry laboratory procedures.
3. **Clinical Microbiology (1a-i, ii, iii, iv. 1b-ii, iii, v, vi. 2c-ii, iii, iv. 2d-i, ii, iii. 2e-i, ii, iii.)**
 - a. Perform and interpret gram stains.
 - b. Describe proper collection technique for blood cultures.
 - c. Describe the contents of the common media: BAP, Mac, Choc.
 - d. Discuss the use of modified Thayer-Martin media.
 - e. Plate the appropriate media with 100% accuracy.
 - f. Explain the procedure, reagents, and reactions (positive and negative) for the biochemical tests: catalase, staph latex, oxidase, indole.
 - g. Differentiate common bacteria (Strep pneumo, Klebsiella pneumo, E. coli, Gardnerella, Staph aureus, Staph epi, Pseudomonas, Proteus) genera using gram stain reactions, media and biochemical tests.
 - h. Measure and calculate zones of inhibition.
 - i. Confirm the most prevalent pathogenic microorganisms using the appropriate Microbiological instrumentation.
 - j. Perform and interpret parasitic testing as performed by facility.
 - k. Define anaerobe (obligate, facultative, microaerophiles)
 - l. Discuss MRSA and alternative antibiotics that can be used.
 - m. Define the organism associated with neonatal septicemia and meningitis.
4. **Blood Bank (1a-i, ii, iii, iv. 1b-ii, iii, v, vi. 2c-ii, iii, iv. 2d-i, ii, iii. 2e-i, ii, iii.)**

- a. Define IAT, DAT, and major crossmatch.
- b. Given the phenotypes of the parents, use a Punnett square to determine possible blood types of offspring.
- c. Define autocontrol and what should be done if the autocontrol is positive.
- d. Discuss ABO discrepancies and how to resolve them.
- e. Describe the characteristics of cold and warm antibodies.
- f. Discuss the D antigen and what it means.
- g. Define weak D and how it is treated (as Rh pos or neg?) in the blood bank.
- h. Describe the weak D testing process.
- i. Demonstrate appropriate labeling and record keeping in accordance with standards.
- j. Investigate positive antibody screen and identify antibodies (or appropriate send-out procedure).
- k. List appropriate ABO compatible units for all different blood types.
- l. Understand and perform correct serum to cell ratios for immunohematology procedures.
- m. Define RhIg- including candidates and when it is used (and why).
- n. Discuss routine cord blood testing.
- o. Discuss proper handling of a patient sample that has a history of an antibody.
- p. Given a panel and results, determine the most likely antibody.
- q. Describe the process emergency blood release including when samples are tested.
- r. Understand and perform proper cell washing procedures.
- s. Correctly select the appropriate product and type for crossmatching procedures.
- t. Perform the crossmatch procedure in accordance with policy and procedure correctly from beginning (blood draw) to end (disposition of units).
- u. Discuss causes of a positive DAT.
- v. Give the requirements for patient sample storage in blood bank.
- w. Discuss compatibility testing for platelets and plasma.
- x. Define autologous unit and give the requirements for transfusion.
- y. Discuss the steps taken when a transfusion reaction is suspected/occurs.
- z. Discuss the various causes of transfusion reaction.
- aa. QC- Explain daily BB requirement, temperature requirements, and visual quality control of donor units.

Course Content:

A general description of lecture/discussion topics included in this course are listed in the Learning Objectives / Specific Course Objectives sections of this syllabus.

Students in all sections of this course will be required to do the following:

1. Daily Journal Entries
2. Section Quizzes (Clinical Chemistry, Clinical Microbiology, Blood Bank)
3. Clinical Course Report
4. Turn in evaluation done by preceptor

Methods of Instruction/Course Format/Delivery:

1. The student will be observed performing the various laboratory functions required by the rotation and graded on them by the assigned preceptor. Performance evaluation forms are included in the Students Practicum Information Packet. This will account for 50% of the course grade.
2. The student is required to keep a daily journal that includes the time of arrival and departure, a brief description of activities performed during each day, as well as any observations in the clinical lab or hospital. The student should include any special situations or critical thinking/problem solving opportunities encountered.
3. The student must complete a series of clinical "quizzes" that will be developed by the program (to ensure uniformity) and administered by the preceptor. This will account for 15% of the grade.

4. A Professionalism and Attendance Evaluation will be completed by the assigned preceptor at the end of the practicum. A copy of this evaluation is included in the Student's Practicum Information Packet. This will account for 10% of the course grade.
5. The student must present a report at the end of the practicum (this accounts for 32 contact hours) in which they will answer questions pertaining to the different areas they worked in during their practicum rotation. Questions are found in the Student's Clinical Practicum Information Packet. This report will be graded by the course instructor and will count as 15% of the final grade.

Major Assignments / Assessments:

The following items will be assigned and assessed during the semester and used to calculate the student's final grade.

Assignments

1. Daily Journal Entries
2. Clinical Course Report

Assessment(s):

1. Clinical Chemistry Section Quiz
2. Clinical Microbiology Section Quiz
3. Blood Bank Section Quiz

Course Grade:

The grading scale for this course is as follows:

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|--|-----|
| • Preceptor's Evaluation----- | 50% |
| • Journal Grade ----- | 10% |
| • Section Quizzes (three) ----- | 15% |
| • Professionalism and Attendance ----- | 10% |
| • Clinical Course Report ----- | 15% |

Texts, Materials, and Supplies:

- Vaughn, Gail. (1999). *Understanding & Evaluating Common Laboratory Tests*. Upper Saddle River, NJ: Prentice Hall.
- *Clinical Rotation Manual*

Required Readings:

- None

Recommended Readings:

- Textbooks from previous MLAB courses as reference
- www.labtestsonline.org
- Medical Dictionary

Other:

- For current texts and materials, use the following link to access bookstore listings: <http://www.panolacollegestore.com>
- For testing services, use the following link: <http://www.panola.edu/elearning/testing.html>
- If any student in this class has special classroom or testing needs because of a physical learning or emotional condition, please contact the ADA Student Coordinator in Support Services located in the Administration Building or go to <http://www.panola.edu/student-success/disability-support-services/> for more information.
- Withdrawing from a course is the student's responsibility. Students who do not attend class and who do not withdraw will receive the grade earned for the course.

- Student Handbook, *The Pathfinder*: <http://www.panola.edu/student-success/documents/pathfinder.pdf>

Additional Course Information:

Laboratory Dress Code

- The student will be expected to attend clinical practicums clean and neatly dressed in required red **scrubs** with MLT patch OR embroidery and closed-toe and heel white or neutral colored shoes. Hair that is shoulder length or longer must be worn up or securely tied back. Student will wear Panola College Student Clinical Identification badge at *all* times while at clinical site. Gloves must be worn when handling biological materials.

Behavioral Conduct

- While a student is representing Panola 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 discipline and may be cause for immediate probation or dismissal from the Program.

Academic Dishonesty

- Under no circumstances shall a student submit work that is not their own. Copying answers for study questions, cheating on exams and/or submitting laboratory results which are not your own are expressly prohibited.

SCANS CRITERIA

- 1) **Foundation skills are defined in three areas: basic skills, thinking skills, and personal qualities.**
 - a) **Basic Skills:** A worker must read, write, perform arithmetic and mathematical operations, listen, and speak effectively. These skills include:
 - i) Reading: locate, understand, and interpret written information in prose and in documents such as manuals, graphs, and schedules.
 - ii) Writing: communicate thoughts, ideas, information, and messages in writing, and create documents such as letters, directions, manuals, reports, graphs, and flow charts.
 - iii) Arithmetic and Mathematical Operations: perform basic computations and approach practical problems by choosing appropriately from a variety of mathematical techniques.
 - iv) Listening: receive, attend to, interpret, and respond to verbal messages and other cues.
 - v) Speaking: Organize ideas and communicate orally.
 - b) **Thinking Skills:** A worker must think creatively, make decisions, solve problems, visualize, know how to learn, and reason effectively. These skills include:
 - i) Creative Thinking: generate new ideas.
 - ii) Decision Making: specify goals and constraints, generate alternatives, consider risks, and evaluate and choose the best alternative.
 - iii) Problem Solving: recognize problems and devise and implement plan of action.
 - iv) Visualize ("Seeing Things in the Mind's Eye"): organize and process symbols, pictures, graphs, objects, and other information.
 - v) Knowing How to Learn: use efficient learning techniques to acquire and apply new knowledge and skills.
 - vi) Reasoning: discover a rule or principle underlying the relationship between two or more objects and apply it when solving a problem.
 - c) **Personal Qualities:** A worker must display responsibility, self-esteem, sociability, self-management, integrity, and honesty.
 - i) Responsibility: exert a high level of effort and persevere toward goal attainment.
 - ii) Self-Esteem: believe in one's own self-worth and maintain a positive view of oneself.
 - iii) Sociability: demonstrate understanding, friendliness, adaptability, empathy, and politeness in group settings.
 - iv) Self-Management: assess oneself accurately, set personal goals, monitor progress, and exhibit self-control.
 - v) Integrity and Honesty: choose ethical courses of action.
- 2) **Workplace competencies are defined in five areas: resources, interpersonal skills, information, systems, and technology.**
 - a) **Resources:** A worker must identify, organize, plan, and allocate resources effectively.
 - i) Time: select goal-relevant activities, rank them, allocate time, and prepare and follow schedules.
 - ii) Money: Use or prepare budgets, make forecasts, keep records, and make adjustments to meet objectives.
 - iii) Material and Facilities: Acquire, store, allocate, and use materials or space efficiently.
Examples: construct a decision time line chart; use computer software to plan a project; prepare a budget; conduct a cost/benefits analysis; design an RFP process; write a job description; develop a staffing plan.
 - b) **Interpersonal Skills:** A worker must work with others effectively.
 - i) Participate as a Member of a Team: contribute to group effort.
 - ii) Teach Others New Skills.
 - iii) Serve Clients/Customers: work to satisfy customer's expectations.

- iv) **Exercise Leadership:** communicate ideas to justify position, persuade and convince others, responsibly challenge existing procedures and policies.
- v) **Negotiate:** work toward agreements involving exchange of resources, resolve divergent interests.
- vi) **Work with Diversity:** work well with men and women from diverse backgrounds.

Examples: collaborate with a group member to solve a problem; work through a group conflict situation, train a colleague; deal with a dissatisfied customer in person; select and use appropriate leadership styles; use effective delegation techniques; conduct an individual or team negotiation; demonstrate an understanding of how people from different cultural backgrounds might behave in various situations.

c) **Information:** A worker must be able to acquire and use information.

- i) **Acquire and Evaluate Information.**
- ii) **Organize and Maintain Information.**
- iii) **Interpret and Communicate Information.**
- iv) **Use Computers to Process Information.**

Examples: research and collect data from various sources; develop a form to collect data; develop an inventory record-keeping system; produce a report using graphics; make an oral presentation using various media; use on-line computer data bases to research a report; use a computer spreadsheet to develop a budget.

d) **Systems:** A worker must understand complex interrelationships.

- i) **Understand Systems:** know how social, organizational, and technological systems work and operate effectively with them.
- ii) **Monitor and Correct Performance:** distinguish trends, predict impacts on system operations, diagnose deviations in systems' performance and correct malfunctions.
- iii) **Improve or Design Systems:** suggest modifications to existing systems and develop new or alternative systems to improve performance.

Examples: draw and interpret an organizational chart; develop a monitoring process; choose a situation needing improvement, break it down, examine it, propose an improvement, and implement it.

e) **Technology:** A worker must be able to work with a variety of technologies.

- i) **Select Technology:** choose procedures, tools or equipment including computers and related technologies.
- ii) **Apply Technologies to Task:** understand overall intent and proper procedures for setup and operation of equipment.
- iii) **Maintain and Troubleshoot Equipment:** Prevent, identify, or solve problems with equipment, including computers and other technologies.

Examples: read equipment descriptions and technical specifications to select equipment to meet needs; set up and assemble appropriate equipment from instructions; read and follow directions for troubleshooting and repairing equipment.