



## Course Syllabus

### **MLAB 2238 – Advanced Topics in MLT**

**Catalog Description:** This course examines the integration of all areas of the clinical laboratory and correlates laboratory test data with diagnostic applications and pathophysiology using critical thinking skills.

**Lecture hours = 2, Lab hours = 0**

**Prerequisites:** None. To be taken in students *final* semester.

**Semester Credit Hours: 2**

**Lecture Hours per Week: 2**

**Lab Hours per Week: 0**

**Contact Hours per Semester: 80**

**State Approval Code: 5110040000**

**Instructional Goals and Purposes:** The purpose of this course is to serve as a capstone for the MLT learning experience by integrating knowledge previously learned and to prepare the student to enter the workforce as an entry-level MLT.

#### **Learning Outcomes:**

1. Assess the principles of clinical laboratory tests and correlate laboratory test data to the diagnosis and treatment of disease.
2. Prepare the student for certification exam(s).
3. Assist the student with job preparation skills.

#### **Specific Course Objectives (includes SCANS):**

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

- 1. Week #1- Clinical Laboratory Safety (1a-i, ii. 1b-ii, iii, iv, v, vi. 2a-i, iii. 2c-i, ii, iii, iv.)**
  - a. Name the agency that establishes safety standards for the workplace.
  - b. Identify important OSHA mandates.
  - c. Discuss "Right to Know".
  - d. List the components of a blood-borne pathogens plan.
  - e. List the components of a clinical hygiene plan.
  - f. Identify the five types of hazards in the clinical laboratory.
  - g. State the Human Immunodeficiency Virus (HIV) and Hepatitis B (HBV) needle stick risks for lab personnel.
  - h. Describe the Nation Fire Protection Association (NFPA) system of coding chemicals.
    - i. Identify the three major categories of "barrier protection."
    - j. Describe waste disposal requirements.
- 2. Week #2- Comparison Studies (1a-i, ii. 1b-ii, iii, iv, v, vi. 2a-i, iii. 2c-i, ii, iii, iv.)**
  - a. Define comparison study.

- b. List the feasibility factors that must be considered prior to changing methodologies.
  - c. Identify the federal agency that grants approval for use of new test methods.
  - d. Identify the function of precision, accuracy, analytical sensitivity, analytical specificity, and diagnostic validity.
  - e. Identify the contents of the letter to physician prior to implementation of a new method.
  - f. Give the formula (including what the parts stand for) for standard deviation.
- 3. Week #3- Quality Control (1a-i, ii. 1b-ii, iii, iv, v, vi. 2a-i, iii. 2c-i, ii, iii, iv.)**
- a. Define quality control and differentiate between external and internal quality control.
  - b. Define the following: accuracy, coefficient of variation, mean, median, mode, precision, random error, range, shift, trend.
  - c. Be able to calculate the following:
    - i. coefficient of variation
    - ii. mean
    - iii. median
    - iv. standard deviation
  - d. Relate Westgard rules to specific situations.
  - e. Identify, read, and interpret Levy Jennings charts.
- 4. Week #4- Quality Management and Preventative Maintenance (1a-i, ii. 1b-ii, iii, iv, v, vi. 2a-i, iii. 2c-i, ii, iii, iv.)**
- a. Define quality.
  - b. Identify the ultimate agent who evaluates the quality of health care provided by the professional.
  - c. Name the four types of complexity that a process or system may experience.
  - d. Discuss the components of Westgard's quality management.
  - e. Define the term preventative maintenance and discuss why it is important.
  - f. Define corrective maintenance.
  - g. Define the term troubleshooting and describe its relationship to instrument repair.
- 5. Week #5- Accreditation (1a-i, ii. 1b-ii, iii, iv, v, vi. 2a-i, iii. 2c-i, ii, iii, iv.)**
- a. Define accreditation.
  - b. Describe the purpose of accreditation.
  - c. Discuss the role of each of the following organizations: JCAHO, CAP, AABB, NAACLS.
  - d. Discuss the Clinical Laboratory Improvement Amendments of (CLIA '88) and its impact on the clinical laboratory.
- 6. Week #6—EXAM #1 (1a-i, ii. 1b-ii, iii, iv, v, vi. 2a-i, iii. 2c-i, ii, iii, iv.)**
- 7. Week #7/8 Case Studies in Clinical Laboratory Science (1a-i, ii. 1b-ii, iii, iv, v, vi. 2a-i, iii. 2c-i, ii, iii, iv.)**
- a. Assess laboratory test results.
  - b. Correlate laboratory test results and data with diagnosis and treatment of disease.
- 8. Week #9- CLM- Job Prep (1a-i, ii. 1b-ii, iii, iv, v, vi. 2a-i, iii. 2c-i, ii, iii, iv.)**
- a. Define profession, professional, professionalism.
  - b. Identify the function of each organization: ASCLS, AMT, NAACLS.
  - c. Define medical ethics.
  - d. Identify the five ethical principles.
  - e. Discuss the difference between deontological and the teleological ethical theories.
- 9. Week #10- Job Prep Part 2 (1a-i, ii. 1b-ii, iii, iv, v, vi. 2a-i, iii. 2c-i, ii, iii, iv.)**
- a. Define the purpose of the resume.
  - b. Name two resume formats.
  - c. Discuss contents of a cover letter.
  - d. State the vital purposes of a job description.
  - e. List the items that should be included in a job description.
  - f. State the employer's and candidate's purposes regarding the interview.
  - g. Identify ways a candidate might prepare for the interview.
  - h. Identify candidate actions that are considered appropriate during the interview.
    - i. Discuss appropriate dress for an interview.
    - j. Identify subject areas of illegal interview questions.
    - k. Identify components of a candidate thank you letters.

10. **Week #11- Licensure Exams (1a-i, ii. 1b-ii, iii, iv, v, vi. 2a-i, iii. 2c-i, ii, iii, iv.)**
  - a. Identify the two agencies that credential/license MLTs.
  - b. Summarize the requirements to take an MLT certification exam.
  - c. Define the process for applying to AMT or ASCP for certification exams.
  - d. List the rules of applying to the testing center (identification, etc.)
  - e. Discuss the requirements to maintain certification.
11. **Week #12- Resumes (1a-i, ii. 1b-ii, iii, iv, v, vi. 2a-i, iii. 2c-i, ii, iii, iv.)**
  - a. Construct a (ONE PAGE) resume using the rules and an appropriate format and content:
  - b. Name, residential address, phone number, email address
  - c. Career objective
  - d. Educational qualifications
  - e. Work experience
  - f. Military experience (if applicable)
  - g. Certification(s)
  - h. Professional memberships, honors, activities
  - i. Volunteer work (if applicable)
  - j. Proficiency in another language.
12. **Week #13—EXAM #2 (1a-i, ii. 1b-ii, iii, iv, v, vi. 2a-i, iii. 2c-i, ii, iii, iv.)**
13. **Week #14- Resume Final Draft (1a-i, ii. 1b-ii, iii, iv, v, vi. 2a-i, iii. 2c-i, ii, iii, iv.)**
14. **Week #15- Mock Certification (1a-i, ii. 1b-ii, iii, iv, v, vi. 2a-i, iii. 2c-i, ii, iii, iv.)**
  - a. Prepare and practice for the MLT certification exam (AMT or ASCP).
  - b. Acquaint student with certification exam format(s).
15. **Week #16- Final Exam (1a-i, ii. 1b-ii, iii, iv, v, vi. 2a-i, iii. 2c-i, ii, iii, iv.)**

#### **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. Assignments pertaining to learning objectives.
2. Mock MLT Examination
3. Two Major Examinations
4. Final Examination

#### **Methods of Instruction/Course Format/Delivery:**

This is an entirely course so it will require outside proactive work by the student. The instructor will provide guidance as needed. The student will be evaluated by assignments, quizzes, cases, and exams as assigned by the instructor outside of the classroom. The student will be required to come to a Panola College testing Center to take all major examinations.

#### **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. Clinical Lab Information Assignments
  - a. Lab Safety
  - b. Comparison Students
  - c. Quality Control
  - d. Quality Management
  - e. Accreditation
  - f. Professionalism and Ethics
  - g. Licensure Exams
2. Resume and Interviewing Assignments
  - a. Interview Questions

- b. Resume
- c. Resume Quiz
- 3. Mock MLT Exam
- 4. Case Studies

**Assessment(s):**

- 1. Exam #1- Proctored
- 2. Exam #2- Take home
- 3. Final Exam- Proctored

**Course Grade:**

The grading scale for this course is as follows:

- Clinical Laboratory Assignments-- 10%
- Resume/Interviewing Assignments-- 10%
- Case Studies-- 15%
- Mock MLT Exam-- 15%
- Major Exams-- 35%
- Final Exams-- 15%

**Texts, Materials, and Supplies:**

- Hudson, Jane. (2004). *Principles of Clinical Laboratory Management: A Study Guide and Workbook*. Upper Saddle River, New Jersey: Pearson Education.  
ISBN 13: 978-0130495389
- Ciulla, Anna and Lehman, Donald. (2010). *SUCCESS! in Clinical Laboratory Science 4<sup>th</sup> Edition*. Upper Saddle River, New Jersey: Prentice Hall.  
ISBN 13: 978-0135126486

**Required Readings:**

- Required Textbooks
- All information given in Canvas.

**Recommended Readings:**

- Any Review book for MLT Licensure Exam.

**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>

## 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.