MLAB 2160 - Clinical - Clinical/Medical Lab Technician
MLAB 2160.001 Course Syllabus

Description
Hematology/Coagulation/Urinalysis A health-related work-based learning experience that enables the student to apply specialized occupational theory, skills, and concepts.
Prerequisites MLAB 1127, MLAB 1211, MLAB 1415
Credits 1
Lecture Hours 0
Lab Hours 0
Extended Hours 6
Contact Hours 96
State Approval Code 5110040000
Instructor Name Antiquene Nichols
Semester/Year Fall 2024

Meeting Time and Location
MLAB 2160 - Online—students are expected to spend at least 3-4 hours per week** reading, reviewing, and participating in assigned activities for successful completion of this course.

Alternate Operations During Campus Closure
In the event of an emergency or announced campus closure due to a natural disaster or pandemic, it may be necessary for Panola College to move to altered operations. During this time, Panola College may opt to continue delivery of instruction through methods that include, but are not limited to: online learning management system (CANVAS), online conferencing, email messaging, and/or an alternate schedule. It is the responsibility of the student to monitor Panola College's website (www.panola.edu) for instructions about continuing courses remotely, CANVAS for each class for course-specific communication, and Panola College email for important general information.

Student Basic Needs
Unexpected circumstances may arise, but Panola College offers various resources to support students. If you need mental health services or are facing challenges with transportation, affording class materials and supplies, or accessing food regularly—issues that may impact your class performance—please visit panola.edu/resources.

Class Attendance
Regular and punctual attendance of classes and laboratories is required of all students. When a student has been ill or absent from class for approved extracurricular activities, he or she should be allowed, as far as possible, to make up for the missed work. If a student has not actively participated by the census date, they will be dropped by the instructor for non-attendance. This policy applies to courses that are in-person, online, hybrid, and hyflex.

Attendance in online courses is determined by submission of an assignment or participation in an activity. According to federal guidelines, simply logging into a distance learning course without participating in an academic assignment does not constitute attendance. Distance learning is defined as when a majority (more than 50%) of instruction occurs when the instructor and students are in separate physical locations. Students must engage in an academic activity prior to the course census date.

When an instructor feels that a student has been absent to such a degree as to invalidate the learning experience, the instructor may recommend to the Vice President of Instruction that the student be withdrawn from the course. Instructors may seek to withdraw students for non-attendance after they have accumulated the following number of absences:

Fall or spring semesters:

3 or more class meeting times per week - 5 absences

2 class meeting times per week - 3 absences

1 class meeting per week - 2 absences

The student is responsible for seeing that he or she has been officially withdrawn from a class. A student who stops attendance in a class without officially withdrawing from that class will be given a failing grade; consequently, the student must follow official withdrawal procedures in the Admissions/Records Office.

Please note: Health Science and Cosmetology courses may require more stringent attendance policies based on their accreditation agencies. Please see the addendum and/or program handbook for further information concerning attendance.

Pregnant/Parenting Policy

Panola College welcomes pregnant and parenting students as a part of the student body. This institution is committed to providing support and adaptations for a successful educational experience for pregnant and parenting students. Students experiencing a need for accommodations related to pregnancy or parenting will find a Pregnancy and Parenting Accommodations Request form in the Student Handbook or may request the form from the course instructor.

Artificial Intelligence (AI) Course Policy

Broader use of Generative AI permitted within the course.

The use of artificial intelligence (AI) tools, including ChatGPT, is permitted in this course for students who wish to use it. Students must cite AI-generated material that informs their work. Using an AI tool to generate content without proper attribution qualifies as academic dishonesty.

Instructional Goals and Purposes

The purpose of this course is to provide clinical experiences in the laboratory sections of Hematology, Urinalysis, and Coagulation 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. **Hematology (1a-i, ii, iii, iv, v. 1b-iii, iv, v. 2a-i. 2c-i, ii, iii.)**
    a. Perform a manual differential within 5% of an experienced technologist, specifically with cell populations -Lymphocytes & Neutrophils.
    b. Discuss neutrophilic left shift.
    c. Discuss the presence of reactive (atypical) lymphocytes.
    d. Define when and why WBC counts are corrected.
    e. Describe the appearance (be able to identify on a slide) and function of each of the different WBCs- neutrophils, bands, lymphocytes, monocytes, eosinophils, basophils.
    f. Define and identify the following RBC morphologies: poikilocytosis, anisocytosis, hypochromia, polychromasia, spherocytosis,
    g. Differentiate between a normal and an abnormal slide differential – 100% accuracy.
    h. Define the following anemias: acute and chronic blood loss, hemolytic, sickle cell, megaloblastic, pernicious.
    i. Give the confirmatory test for Sickle Cell Anemia.
    j. Identify the (approximate) normal range for the each of the different WBCs.
    k. List the best tests to assist in the diagnosis of iron deficiency anemia.
    l. Re-test abnormal and/or suspicious laboratory result findings
    m. Identify and name cellular inclusions: dohle bodies, basophilic stippling, malarial parasites, howell-jolly bodies.
    n. Define thrombocytopenia.
    o. Discuss NRBCs and when they are seen on a peripheral blood smear.
    p. Define the "rule of three" as it pertains to hgb and hct.
    q. Calculate MCV, MCH, and MCHC using the appropriate formula.
    r. Discuss the findings on the blood slide that correlate with abnormal MCV, MCH, RDW, and MPV.
    s. List the MINIMUM requirement (CLIA) for automated hematology QC.
    t. Interpret Levy-Jennings QC chart and interpret statistics necessary.
2. **Coagulation (1a-i, ii, iii, iv, v. 1b-iii, iv, v. 2a-i. 2c-i, ii, iii.)**
    a. Re-test abnormal and/or suspicious laboratory result findings
    b. Interpret Levy-Jennings QC chart and interpret statistics necessary.
    c. Define INR and discuss its use.
    d. Discuss specimen requirements for coagulation testing.
    e. List the test used to monitor heparin therapy.
    f. List the test used to monitor Coumadin therapy.
    g. Give the (approximate) normal range for PT and PTT.
    h. Give the MINIMUM requirements for Coag QC according to CLIA.
    i. Define D-Dimer and explain its usefulness.
    j. List the reagents used each: PT, PTT.
    k. Define the pathway of coagulation measured by PT and by PTT.
3. **Urinalysis (1a-i, ii, iii, iv, v. 1b-ii, iii, iv, v. 2a-i. 2c-i, ii, iii, iv. 2d-i,ii,iii)**
    a. Investigate both analytical and technical problems pertaining to urinalysis and the specimen process.
    b. Maintain and troubleshoot Clinical Urinalysis instrumentation.
    c. Discuss the different types of urine specimens and the use of each.
    d. Describe causes of hazy, cloudy, or discolored (not yellow) urine.
    e. Define Ketone bodies.
    f. Discuss the correlation of dipstick testing with microscopic urine examination.
    g. Discuss the presence of nitrite in the urine.
    h. Discuss storage requirement of urines for future testing.
    i. Give the "normal" values for each dipstick test.
    j. Define glycosuria and its cause.

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 Quiz
3. Clinical Course Report
4. 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. The preceptor will complete the performance evaluation provided by the program. This evaluation will be sent to the course instructor for grading. The student will then view and sign the evaluation (the student will be able to write comments on the evaluation if desired). A blank copy of the performance evaluation form is included in the Students Practicum Manual, allowing to the student to be aware of what he/she is being graded on prior to and during their clinical rotation. This evaluation 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. This journal must be signed off on daily by the site preceptor (verification of hours).
3. The student must complete the clinical quiz for the chemistry section. This quiz is developed by the program (to ensure uniformity) and administered by the preceptor. This will account for 15% of the student's final grade.
4. An evaluation of professionalism is included on the student's evaluation (which is completed by the preceptor). The student's professionalism rating (on a scale of 1-10) will account for 10% of the overall 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 Manual. This report will be graded by the course instructor and will count as 15% of the final grade

Major Assignments/Assessments

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

Course Grade

The grading scale for this course is as follows:

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

Texts Materials, and Supplies

Mosby's Diagnostic and Laboratory Test Reference	Pagana	Mosby/Elsevier	9780323675192
Quick Review Cards for Medical Laboratory Science 3rd Ed.	Polansky & Lerret	FA Davis	9780803675698
Medical Laboratory Science Review, 5th Ed.	Harr	FA Davis	9780803668270

Addendum

- **Review your Laboratory Practicum Manual:**
  - Things you are required to complete
  - Your grading scale
- **Review your Trajecsys website {www.trajecsys.com} for:**
  - How to Clock-in and Clock-out
  - How to register
  - How to navigate the student menu

- ***All Proctored Exams will require Proof of Identification***

Other

- Courses conducted via video conferencing may be recorded and shared for instructional purposes by the instructor.
- For current texts and materials, use the following link to access bookstore listings: https://www.panolacollegestore.com.
- For testing services, use the following link: https://www.panola.edu/student-services/studentsupport/academic-testing-center.
- 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 Charles C. Matthews Student Center or go to https://www.panola.edu/studentservices/student-support/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: https://www.panola.edu/ (located on at the bottom under student)

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 timeline 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 databases 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.