



Horry-Georgetown
Technical College

COURSE INSTRUCTIONAL PACKAGE

MLT 102

Medical Laboratory Fundamentals

Effective Term

Fall 2026

Part I: Course Information

Effective Term: Fall 2026

COURSE PREFIX: MLT 102

COURSE TITLE: Medical Laboratory Fundamentals

CONTACT HOURS: 5 hours

CREDIT HOURS: 3 hours

RATIONALE FOR THE COURSE:

This course introduces laboratory medicine, including techniques for routine laboratory procedures, medical terminology, safety, and an overview of each area within the laboratory.

COURSE DESCRIPTION:

This course introduces basic concepts and procedures in medical laboratory technology.

PREREQUISITES/CO-REQUISITES:

Pre-Req ENG 101, MAT 120, CHM 105 or CHM 110, BIO 112 or higher; Co-Req MLT 131, MLT 105, MLT 115.

REQUIRED MATERIALS:

Please visit the [BOOKSTORE](#) online site for most current textbook information.

Enter the semester, course prefix, number and section when prompted and you will be linked to the correct textbook.

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ADDITIONAL REQUIREMENTS:

Additional items will be provided for your lab class.

TECHNICAL REQUIREMENTS:

Access to Desire2Learn (D2L), HGTC's learning management system (LMS) used for course materials.

Access to myHGTC portal for student self-services.

College email access – this is the college's primary official form of communication.

ATTENDANCE VERIFICATION:

The Add/Drop Period is the first 7 days of the semester for **full term** classes. Add/Drop periods are shorter for accelerated format classes. Please refer to the [academic calendar](#) for deadlines for add/drop. You must attend at least one meeting of all your classes during that period. If you do not, you will be dropped from the course(s) and your Financial Aid will be reduced accordingly

STUDENT COURSE EVALUATIONS:

Each semester, students are provided with an opportunity to participate in course evaluation surveys. These evaluations offer crucial feedback to instructors and the College, leading to enhancement of educational quality. By completing these surveys, you play a key role in the ongoing improvement of teaching methods and course content, ensuring future students enjoy a better learning experience. Students are encouraged to complete these surveys as your active participation in this process reflects your dedication to your education and drives positive change.

CLASSROOM ETIQUETTE AND STUDENT RIGHTS AND RESPONSIBILITIES:

As a matter of courtesy to other students and your professor, please turn off cell phones and other communication/entertainment devices before class begins. If you are monitoring an emergency, please notify your professor prior to class and switch cell phone ringers to vibrate.

To ensure a positive College experience, guidelines exist in numerous areas of campus life. The Student Code for The South Carolina Technical College System "The Student Code" (3-2-106.1) applies to all HGTC students. The Student Code sets forth rights and responsibilities of the individual student, identifies behaviors that are not consistent with the values of college communities, and describes the procedures that will be followed to adjudicate cases of alleged misconduct. Students are expected to conduct themselves in a civil manner, that is respectful of the rights of others, and that is compatible with the college's educational mission. Students are expected to comply with all of the college's duly established rules and regulations regarding student behavior while on campus; while participating in off-campus college sponsored activities; and while participating in off-campus clinical, field, internship, or in-service experiences. Students are expected to comply with all course requirements as specified by instructors in

course syllabi and to meet the standards of acceptable classroom behavior set by instructors. For more information, login to your myHGTC account under "Student Rights and Responsibilities" card then select "Student Code of Conduct" or the "Student Catalog and Handbook."

Part II: Student Learning Outcomes

COURSE LEARNING OUTCOMES and ASSESSMENTS*:

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After successful completion of this course, the student will be able to meet the following terminal behavior outcomes:

1. Categorize examples of preanalytical, analytical and post analytical parts of the laboratory testing process.
2. Explain Quality Control and Quality Assurance policies in the laboratory.
3. Explain and demonstrate professionalism when performing phlebotomy.
4. Explain laboratory safety protocols and procedures.
5. Describe manual, semiautomated testing in the laboratory.
6. Explain regulatory bodies: CLIA, OSHA, CMS, DHEC, COLA, CAP, JCAHO.
7. Name the typical departments of a clinical laboratory and briefly describe the functions of each department.
8. Explain the parts of the compound microscope.
9. Demonstrate manual pipetting using volumetric and precision pipettes.

Week 1

Lecture

Materials Covered: Clinical Laboratory Science, 9e.

Chapter 1

1. Compare the characteristics of individual professional certifications. MLT, MT, and MLS.
2. Differentiate the classification of laboratory testing by complexity of the test: waived, moderately complex, highly complex, and provider-performed microscopy based on CLIA '88 regulations.

3. Define the acronyms and explain the purpose of OSHA, CLIA '88, CMS, TJC, HIPAA and CAP.
4. Describe the three testing phases: Pre-Analytical, Analytical and Post-Analytical
5. Name the typical departments of a clinical laboratory and briefly describe the functions of each department.

Chapter 2

1. Evaluate a strategy to mitigate patient risk during an information technology outage and assess potential high priorities in a strategy.
2. Define a laboratory-acquired infection (LAI) and name the top 10 microorganisms causing LAIs.
3. Explain the three required contents of a laboratory Safety Manual.
4. Explain successful implementation of chemical hazards "right-to-know" rules.
5. Summarize the top six safety audit issues and choose resolutions to each of the issues.

Lab:

Materials Covered: Lab manual

- Use Adjustable Micropipettor correctly.

Week 2

Labor Day – College is Closed – NO Lecture

Lab:

Materials Covered: Lab manual

- Use Adjustable Micropipettor correctly.
- Design patterns and create Micro pipetting artwork.

Week 3

Lecture

Materials Covered: Clinical Laboratory Science,9e.

Chapter 4

1. Define the terms numerical aperture and resolution.
2. Identify the parts of the microscope.
3. Describe the proper cleaning of a microscope.
4. Define alignment and describe the process of aligning a microscope.
5. Name the components of a phase-contrast microscope and explain how they differ from the components of a brightfield microscope.

Chapter 5

1. Convert metric units of measurement for weight, length, and volume to English units and English units to metric units.
2. Calculate temperatures from degrees Celsius to degrees Fahrenheit.
3. Convert temperatures from degrees Fahrenheit to degrees Celsius.
4. Describe the various types of and uses for laboratory volumetric glassware, the techniques for their use, and the various types of glass used to manufacture them.
5. Evaluate the advantages and use of micropipettes, volumetric pipettes, and serologic pipettes.
6. Compare various types and uses of laboratory centrifuges.
7. Contrast various forms and grades of water used in the laboratory and their preparation methods.

Lab:

Materials Covered: Lab handouts.

1. Use graduated glass pipette appropriately.
2. Correctly select and use various types of manual pipettes.
3. Describe lab Glassware usage.

Week 4

Materials Covered: Clinical Laboratory Science,9e.

Chapter 3

1. Compare types of laboratory errors.
2. Give at least two examples in each of the phases of testing: preanalytical, analytical, and postanalytical.
3. Describe the process of proficiency testing.
4. Describe Factors included in Quality Assessments
5. Explain functions involved in the various Testing Complexities
6. Understand all vocabulary in this chapter.

Chapter 6

1. Define the terms density and specific gravity.
2. Define the terms molality, molarity, osmolality, and osmolarity.
3. Calculate proportions and ratios.
4. Describe the procedures for making a single dilution and a serial dilution.
5. Calculate the amount of one solution needed to make a solution of a lesser concentration.
6. Explain and apply the rules for rounding off numbers and using significant figures plus conversions and exponents,

Lab:

Materials Covered: Lab Manual

1. Visit and tour local hospital laboratory.
2. Describe what you observed during the tour.

Week 5

Lecture

Materials Covered: Clinical Laboratory Science, 9e.

Chapter 7

Describe the principle of the following Lab Methodologies:

1. Nephelometry
2. Flow Cytometry

3. Immunoassays
4. Enzyme Immunoassay
5. Potentiometry
6. Coulometry

Chapter 8

1. Describe Point of Care Testing (POCT) and its uses in the medical field.
2. Discuss non-instrument-based testing (such as pregnancy and fecal occult blood).
3. Identify advantages and disadvantages to consider when selecting a POCT instrument.
4. Compare the characteristics and functions of LIMS and LIS.
5. Categorize examples of preanalytical, analytical, and postanalytical testing.
6. Differentiate the major benefits of laboratory automation.

Lab:

Materials Covered: Lab handouts.

1. Operate a microscope correctly.
2. Correctly align and clean a microscope.
3. Correctly name the parts of the microscope.
4. Demonstrate the proper technique for venipuncture using fake arms.
5. View 5 blood smears with the microscope.
6. Identify the WBC's seen on the slide.

Week 6

Lecture

Materials Covered: Clinical Laboratory Science, 9e.

Chapter 9

1. Describe the role of a phlebotomist.
2. Describe the equipment used for venous blood collection.
3. Arrange the proper steps in the collection technique for venous blood.

4. Analyze the outcomes if the sequence of steps is incorrect.
5. Identify the color codes of evacuated tubes with the additives contained in the tubes.
6. State examples of types of unacceptable blood specimens and their effects on test results.
7. Describe the preserving and storing of specimens.

Lab:

Materials Covered: Lab handouts.

1. Demonstrate the proper technique for venipuncture on a fellow student.
2. Explain the POCT-glucometer.
3. Perform capillary puncture and glucometer testing.
4. View 5 blood smears with the microscope.
5. Identify the WBC's seen on the slide.

Week 7

Lecture

Materials Covered: Clinical Laboratory Science, 9e.

1. Discuss the following points for Hematology, Coagulation, Chemistry, Immunohematology, Immunology, and Urines & Body Fluids.
 - a. Describe adequate specimens used for testing.
 - b. List test procedures performed in these departments.
 - c. Describe diseases diagnosed in these departments.

Lab

Lab Comprehensive Evaluation

Week 7.5

Final Exam

****Students – please refer to the Instructor's Course Information sheet for specific information on assessments and due dates.***

Part III: Grading and Assessment

EVALUATION OF REQUIRED COURSE MEASURES/ARTIFACTS*:

Students' performance will be assessed, and the weight associated with the various measures/artifacts are listed below.

EVALUATION*

Chapter Tests	50%
Lab Assignments	20%
Lab Comprehensive Evaluation	50%
Lab skills competencies	25%
Weekly Affective Skills	25%
Homework Assignments	5%
In class quizzes	5%
Final Exam	<u>20%</u>
	100%

****Students, for the specific number and type of evaluations, please refer to the Instructor's Course Information Sheet.***

GRADING SYSTEM:

Please note the College adheres to a 10-point grading scale A = 100 – 90, B = 89–80, C = 79 – 70, D = 69 – 60, F = 59 and below.

Grades earned in courses impact academic progression and financial aid status. Before withdrawing from a course, be sure to talk with your instructor and financial aid counselor about the implications of that course of action. Ds, Fs, Ws, and Is also negatively impact academic progression and financial aid status.

Part IV: Attendance

Horry-Georgetown Technical College maintains a general attendance policy requiring students to be present for a minimum of 80 percent (80%) of their classes to receive credit for any course. Due to the varied nature of courses taught at the college, some faculty may require up to 90 percent (90%) attendance. Pursuant to 34 Code of Federal Regulations 228.22 – Return to Title IV Funds, once a

student has missed over 20% of the course or has missed two (2) consecutive weeks, the faculty is obligated to withdraw the student, and a student may not be permitted to reenroll. **Instructors define absentee limits for their class at the beginning of each term; please refer to the Instructor Course Information Sheet.**

Part V: Student Resources



THE STUDENT SUCCESS AND TUTORING CENTER (SSTC):

The SSTC offers all students the following **free** resources:

1. Academic tutors for most subject areas, Writing Center support, and Academic Coaching for college success skills.
2. Online tutoring and academic support resources.
3. Professional and interpersonal communication coaching.

Visit the [Student Success & Tutoring Center](#) website for more information. To schedule tutoring or coaching, contact the SSTC at sstc@hgtc.edu or self-schedule in the Penji iOS/Android app or at www.penjiapp.com. Email sstc@hgtc.edu or call SSTC Conway, 349-7872; SSTC Grand Strand, 477-2113; and SSTC Georgetown, 520-1455, or go to the SSTC [Online Resource Center](#) to access on-demand resources.

STUDENT INFORMATION CENTER – TECH Central:



TECH Central offers all students the following **free** resources:

1. Getting around HGTC: General information and guidance for enrollment, financial aid, registration, and payment plan support!
2. In-person and remote assistance are available for Desire2Learn, Student Portal, Degree Works, and Office 365.
3. Chat with our staff on TECH Talk, our live chat service. TECH Talk can be accessed on the student portal and on TECH Central's website, or by texting questions to (843) 375-8552. Visit the [Tech Central website](#) for more information. Live Chat and Center locations are posted on the website. You may also call (843) 349-5199.

HGTC LIBRARY:

Each campus location has a library where HGTC students, facul



check out materials with their HGTC ID. All three HGTC campus libraries have librarians and staff who can aid with research, computers to support academic research and related school-work, and individual/group study rooms. Printing is available as well at each location. Visit the [Library](#) website for more information or call (843) 349-5268.

STUDENT TESTING:

Testing in HGTC courses may occur during regularly scheduled class time or online, with or without proctoring. Tests may be delivered in the following formats:

- Digitally through D2L
- In writing on paper
- Through a publisher platform (note: some publisher platforms carry an associated fee)

Tests may include time limits and may require proctoring depending on the course.

When proctoring is required and is not provided by the course instructor in the classroom, students may complete their test face-to-face at an [HGTC Testing Center](#) or another approved testing site, or online using HGTC's online proctoring provider. For more information about available proctoring options, visit the [Online Testing](#) section of the HGTC Testing Center webpage.

Students testing at an HGTC Testing Center should note the following:

- **Appointments must be scheduled at least 24 hours in advance.**
- **A physical, government-issued photo ID is required to test.**

The **Instructor Information Sheet** will have more details on test requirements for your course.

DISABILITY SERVICES:

HGTC is committed to providing an accessible environment for students with disabilities. Students seeking accommodations are encouraged to visit HGTC's [Accessibility and Disability Service webpage](#) for detailed information.

It is the student's responsibility to self-identify as needing accommodations and to provide appropriate documentation. Once documentation is submitted, the student will participate in an interactive process with Accessibility and Disability Services staff to determine reasonable accommodations. Students may begin the accommodations process at any time; however, accommodations are **not retroactive** and will only be applied from the point at which they are approved. Students must contact the office **each semester** to renew their accommodations.

For assistance, please contact the Accessibility and Disability Services team at disabilityservices@hgtc.edu or 843-796-8818 (call or text).

COUNSELING SERVICES:

HGTC Counseling Services strives to optimize student success through managing personal and academic concerns that may interfere with achieving educational goals. Staff are available to every student for assistance and guidance on personal matters, academic concerns and other areas of concern. HGTC offers free in-person and telehealth counseling services to students. For more information about counseling services, please reach out to counseling@hgtc.edu or visit the website the [Counseling Services webpage](#).

STATEMENT OF EQUAL OPPORTUNITY/NON-DISCRIMINATION STATEMENT:

Our sincere commitment to both effective business management and equitable treatment of our employees requires that we present this Policy Statement as an embodiment of that commitment to the fullest.

Discrimination is conduct that includes unjust or prejudicial treatment based upon an individual's age, race, color, sex, religion, national origin, disability, and genetic information or any other protected classes deemed unlawful under State or Federal law that excludes an individual from participation in, denies the individual the benefits of, treats the individual differently, or otherwise adversely affects a term or condition of a person's working or learning environment. This includes failing to provide reasonable accommodation, consistent with state and federal law, to persons with disabilities.

All inquiries regarding the federal laws as they relate to discrimination on the basis of sex may be directed to Jen Riddei, Title IX Coordinator, Horry-Georgetown

Technical College, Building 1100C, Room 107B, 2050 HWY 501 E, PO Box 261966, 843-349-5218, Jenifer.Riddei@hgtc.edu.

Student and prospective student inquiries concerning the federal laws and their application to the College or any student decision may be directed to Dr. Melissa Batten, Vice President, Student Affairs, and Section 504 & Title II Coordinator, Horry-Georgetown Technical College, Building 1100C, Room 107A, 2050 HWY 501 E, PO Box 261966-6066, 843-349-5228, Melissa.Batten@hgtc.edu.

Employee and applicant inquiries concerning the federal laws and their application to the College may be directed to Jacquelyne Synder, Vice President, Human Resources and Employee Relations and the College's Affirmative Action/Equal Opportunity Officer, Horry-Georgetown Technical College, Building 200C, Room 205B, 2050 HWY 501 E, PO Box 261966, Conway, SC 29528-6066, 843-349-5212, Jacquelyne.Snyder@hgtc.edu.

TITLE IX REQUIREMENTS:

Title IX of the Education Amendments of 1972 protects students, employees, applicants for admission and employment, and other persons from all forms of sex discrimination.

HGTC prohibits the offenses of sexual harassment, domestic violence, dating violence, sexual assault, and stalking and will provide students, faculty, and staff with necessary information regarding prevention, policies, procedures, and resources.

Any student, or other member of the college community, who believes that they have been a victim of sexual harassment, domestic violence, dating violence, sexual assault, or stalking may file a report with the college's Title IX Coordinator or campus law enforcement*.

*Faculty and Staff are required to report these incidents to the Title IX Coordinator when involving students. The only HGTC employees exempt from mandatory reporting are licensed mental health professionals (only as part of their job description such as counseling services).

All inquiries regarding the federal laws as they relate to discrimination on the basis of sex may be directed to Jen Riddei, Title IX Coordinator, Horry-Georgetown Technical College, Building 1100C, Room 107B, 2050 HWY 501 E, PO Box 261966, 843-349-5218, Jenifer.Riddei@hgtc.edu.

PREGNANCY ACCOMMODATIONS

Under Title IX, colleges must not exclude a pregnant student from participating in any part of an educational program. Horry-Georgetown Technical College is committed to ensuring that pregnant students receive reasonable accommodations to ensure access to our educational programs.

Students should advise the Title IX Coordinator of a potential need for accommodations as soon as they know they are pregnant. It is extremely important that communication between student, instructors, and the Title IX Coordinator begin as soon as possible. Each situation is unique and will be addressed individually.

Title IX accommodations DO NOT apply to Financial Aid. Financial Aid regulations do not give the College any discretion in terms of Financial Aid eligibility.

Certain educational programs may have strict certification requirements or requirements mandated by outside regulatory agencies. Therefore, in some programs, the application of Title IX accommodations may be limited.

To request pregnancy accommodations, please complete the *Pregnancy Intake Form* that can be found [here](#).