HORRY GEORGETOWN TECHNICAL COLLEGE

INSTRUCTIONAL PACKAGE

MLT 205
Advanced Microbiology

Effective Term
Fall 2025/Spring 2026/Summer 2026

INSTRUCTIONAL PACKAGE

Part I: Course Information

Effective Term: Fall 2025/Spring 2026/Summer 2026

COURSE PREFIX: MLT 205 COURSE TITLE: Advanced Microbiology

CONTACT HOURS: 6 hours CREDIT HOURS: 4 hours

RATIONALE FOR THE COURSE:

This course provides a survey of organisms encountered in the clinical microbiology laboratory, including sterilization and disinfection techniques.

COURSE DESCRIPTION:

This course provides a survey of organisms encountered in the clinical microbiology laboratory, including sterilization and disinfection techniques.

PREREQUISITES/CO-REQUISITES:

NOTE: Pre-Req MLT 105, MLT 131, MLT 115 and MLT 102 with a minimum grade of C; Co-req MLT 12 and 210 .

REQUIRED MATERIALS:

Please visit the BOOKSTORE online site for most current textbook information. Use the direct link below to find textbooks.

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

ADDITIONAL REQUIREMENTS:

Lab coats and goggles are required for the lab skills portion.

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.

CLASSROOM ETIQUETTE:

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 for an emergency, please notify your professor prior to class and switch cell phone ringers to vibrate.

Part II: Student Learning Outcomes

COURSE LEARNING OUTCOMES and ASSESSMENTS*:

1. Describe the mechanism of action and rationale of the different classes of antibacterial agents.
2. Identify the role of specimen management in the preanalytical, analytical & post-analytical laboratory process.
3. Explain the process of Laboratory Identification of Significant Isolates
4. Explain the etiology, identification process and treatment of organisms.
5. Explain Quality Control and Quality Assurance policies in the Microbiology department.
6. Demonstrate the process of identification of medically significant bacteria antimicrobial testing.
7. Describe how clinically significant isolates affect the Human Organ Systems.
8. Perform automated instrumentation that will read and analyze biochemical reactions and antibiotic susceptibilities.
9. Demonstrate appropriate operation, maintenance, and troubled shooting for lab instrumentation/ equipment.

Week 1

Lecture

Materials Covered: Bailey & Scott Diagnostic Microbiology
Chapter35
Brucella

For the organisms listed for this chapter, describe the following:

1. Gram stain result
2. Colony morphology
3. Biochemical tests used to identify.
4. Where found as indigenous biota?
5. Pathogenicity
6. Virulence factors

7. Antibiotic sensitivity.

Ch 36

Bordetella pertussis, Bordetella parapertussis

For the organisms listed for this chapter, describe the following:

1. Gram stain result
2. Colony morphology
3. Biochemical tests used to identify.
4. Where found as indigenous biota?
5. Pathogenicity
6. Virulence factors
7. Antibiotic sensitivity.

Lab:

Materials Covered: Lab manual.

1. Explain Microbiology laboratory Safety
2. Perform gram stain procedure
3. Interpret gram stain correctly

Week 2

Lecture

Materials Covered: Bailey & Scott Diagnostic Microbiology

Chapter 39

Neisseria and Moraxella catarrhalis

For the organisms listed for this chapter, describe the following:

1. Gram stain result
2. Colony morphology
3. Biochemical tests used to identify.
4. Where found as indigenous biota?
5. Pathogenicity
6. Virulence factors
7. Antibiotic sensitivity.

Lab:

Materials Covered: Lab manual.

1. Review colony morphology from Week 1 specimens
2. Kirby Bauer set ups
3. E Test Set ups

Week 3

Lecture

Materials Covered: Bailey & Scott Diagnostic Microbiology
Section 13: Anaerobic Bacteriology
Chapter 40 Overview & General lab Considerations

1. State the specific diagnostic purpose and the test principle associated for anaerobic test methodology.
2. Define and differentiate obligate (strict), moderate, facultative, and aerotolerant anaerobes.
3. Describe the collection procedure for various anaerobic specimens.
4. Explain the set up process of anaerobic organisms.

Chapter 41

1. Differentiate the **four forms of botulism** (food poisoning, wound botulism, infant botulism, and botulism resulting from intestinal colonization).

2. Differentiate **normal anaerobic bacteria from pathogenic** bacteria isolated from clinical specimens.
3. For each group of organisms listed, provide the **general characteristics,**
    1. **including Gram stain reactions,**
    2. **colonial morphology,**
    3. **growth requirements (media, oxygen requirement, and temperature),**
    4. **laboratory identification,**
    5. **clinical significance.**
        a) Clostridium perfringens
        b) Cutibacterium acnes
        c) Clostridium) difficile
        d) C. perfringens
        e) C. botulinum
        f) Clostridium tetani
        g) Actinomyces,
        h) Propionibacterium.
        i) Lactobacillus
        j) Prevotella,
        k) B. fragilis
        l) Fusobacterium.

Lab:

Materials Covered: Lab manual.

1. Interpret Kirby Bauer Disk Diffusion
2. Interpret E Tests
3. Interpret Anaerobic specimens from Week 2

Week 4

Lecture

Materials Covered: Bailey & Scott Diagnostic Microbiology

Section 14. Mycobacteria and Other Bacteria With Unusual Growth Requirements

Chapter 42

1. Compare the general characteristics of mycobacteria:
    a. including Gram stain reactions,
    b. colonial morphology,
    c. growth requirements (media, oxygen requirement, and temperature),
    d. laboratory identification,
    e. clinical significance.
2. Discuss the clinical disease caused by Mycobacterium tuberculosis.
3. Describe the use of the tuberculin skin test and the interpretation of the results.
4. Differentiate Mycobacterium tuberculosis clinical infections based on the signs and symptoms of the following:
    a. primary infection,
    b. latent infection,
    c. disseminated infection,
    d. reactivation.
5. List the clinical specimens acceptable for recovery of mycobacteria and describe the limitations of recovery from each type of specimen.

Lab:

Materials Covered: Lab manual.

1. Review preliminary identification from Week 3 medical microbiology specimens.
2. AFB Staining
3. AFB slide reviews

Week 5

Part IV. Parasitology

Chapter 46

1. Determine **specimen acceptability for parasite identification**, including collection method, collection time/receipt time, number or quantity of specimen, and presence of interfering and contaminating substances.
2. **Select appropriate preservatives for** parasite specimens and explain the chemical principle and rationale for the preservative, including polyvinyl alcohol (PVA), universal fixative, formalin, and sodium acetate acetic acid formalin (SAF).
3. Select the **appropriate method of detection and identification of parasites** based on the type of specimen.
4. Discuss the **effectiveness of antibody serology,** antigen detection, molecular methods, and the traditional processing of ova and parasites (O&Ps) for the diagnosis of various parasite infections.
5. Discuss the **source, physical features, clinical presentation, treatment of the following.**

a) Entamoeba coli Cysts
   i. Entamoeba coli Trophozoites
   ii. Entamoeba histolytica Cysts
   iii. Entamoeba histolytica Trophozoites
   iv. Entamoeba hartmanni
b) Giardia lamblia Cysts
   a. Giardia lamblia Trophozoites
c) Leishmania donovani
d) Trichomonas vaginalis
e) Trypanosoma cruzi
f) Plasmodium
   a. P. falciparum
   b. P. vivax
g) Tapeworms- Eucestoda
h) Echinococcus granulosus
i) Echinococcus granulosis Eggs
   a. Echinococcus hydatid Cyst
j) Enterobius vermicularis
   a. Enterobius vermicularis Eggs
k) Taenia pisiformis Immature Proglottids
   a. Taenia pisiformis Gravid
   b. Taenia saginata Mature Proglottids
   c. Taenia saginata Eggs
   d. T. solium
l) Trichinella spiralis Female
   a. Trichinella spiralis Male and Female
   b. Trichinella spiralis Encysted Larvae
   c. Trichinella spiralis Encysted Larvae
m) Toxoplasma gondii
n) Trichinella
o) Histoplasma capsulatum
p) Babesia
q) Naegleria fowleri
r) Wuchereria bancrofti.
s) Brugia malayi.
t) Loa loa.
u) Onchocerca volvulus.

Lab:
Materials Covered: Lab manual.

1. Parasite assignment given
2. Examine Parasite slides
3. Research assigned parasite for presentation

Week 6

Lecture
Materials Covered: Bailey & Scott Diagnostic Microbiology
Part V. Mycology

1. Define the terms mycology; saprophytic; dermatophyte; and polymorphic, dimorphic, and thermally dimorphic fungi.
2. Define and differentiate superficial, cutaneous, subcutaneous, and systemic mycoses, including the tissues involved.
3. List the media used for optimal recovery of fungi, including their incubation requirements.
4. List the common antibacterial agents used in fungal media.

Lab:
Materials Covered: Lab manual.

1. Parasite Presentations- 5-10 minutes

Week 7

Lecture
Materials Covered: Bailey & Scott Diagnostic Microbiology
Chapter 67
For the Bloodstream system:

1. Identify and describe some of the medical consequences that occur when this system is infected by microorganisms.
2. Name the normal biota found in this system
3. Describe the most common organism causing infections.
4. Describe the pathogenesis, risk factors, and complications associated with this system.
5. Outline guidelines for collection of specimens from this system.

Lab:
Materials Covered: Lab manual.

1. Micro scan introduction & set up
2. Renok practice
3. Blood Culture specimen set up discussion and slide reviews.

Week 8

Lecture

Materials Covered: Bailey & Scott Diagnostic Microbiology
Chapter 68
For the Lower Respiratory System:

1. Identify and describe some of the medical consequences that occur when this system is infected by microorganisms.
2. Name the normal biota found in this system
3. Describe the most common organism causing infections.
4. Describe the pathogenesis, risk factors, and complications associated with this system.
5. Outline guidelines for collection of specimens from this system.

Chapter 69
For the Upper Respiratory System:

1. Identify and describe some of the medical consequences that occur when this system is infected by microorganisms.
2. Name the normal biota found in this system
3. Describe the most common organism causing infections.
4. Describe the pathogenesis, risk factors, and complications associated with this system.
5. Outline guidelines for collection of specimens from this system.

Lab:

Materials Covered: Lab manual.

1. Microscan interpretations – biochemical &susceptibility tests.
2. Respiratory specimens
3. Q scores

Week 9

Lecture

Materials Covered: Bailey & Scott Diagnostic Microbiology
Chapter 70
For the Central Nervous System:

1. Identify and describe some of the medical consequences that occur when this system is infected by microorganisms.
2. Name the normal biota found in this system
3. Describe the most common organism causing infections.
4. Describe the pathogenesis, risk factors, and complications associated with this system.
5. Outline guidelines for collection of specimens from this system.

Chapter 71
For the Eyes, Ears, and Sinuses

1. Identify and describe some of the medical consequences that occur when this system is infected by microorganisms.
2. Name the normal biota found in this system
3. Describe the most common organism causing infections.
4. Describe the pathogenesis, risk factors, and complications associated with this system.
5. Outline guidelines for collection of specimens from this system.

Lab:
Materials Covered: Lab manual.

1. Microscan interpretations –&susceptibility tests.
2. CSF- Cryptococcus/ India Ink

Week 10

Lecture
Materials Covered: Bailey & Scott Diagnostic Microbiology
Chapter 72
For the Urinary System:

1. Identify and describe some of the medical consequences that occur when this system is infected by microorganisms.
2. Name the normal biota found in this system
3. Describe the most common organism causing infections.
4. Describe the pathogenesis, risk factors, and complications associated with this system.
5. Outline guidelines for collection of specimens from this system.

Chapter 73
For the Genital Tract:

1. Identify and describe some of the medical consequences that occur when this system is infected by microorganisms.
2. Name the normal biota found in this system
3. Describe the most common organism causing infections.
4. Describe the pathogenesis, risk factors, and complications associated with this system.
5. Outline guidelines for collection of specimens from this system.

Lab:
Materials Covered: Lab manual.

1. Set up medical specimens
2. Urine specimens

Week 11

Lecture
Materials Covered: Bailey & Scott Diagnostic Microbiology
Chapter 74
For the Gastrointestinal Tract (GI):

1. Identify and describe some of the medical consequences that occur when this system is infected by microorganisms.
2. Name the normal biota found in this system
3. Describe the most common organism causing infections.
4. Describe the pathogenesis, risk factors, and complications associated with this system.
5. Outline guidelines for collection of specimens from this system.

Lab:
Materials Covered: Lab manual.

1. Urine Culture Identification
2. GI specimen discussion
3. Stool WBC specimen

Week 12

Lecture
Materials Covered: Bailey & Scott Diagnostic Microbiology
Chapter 75
For the Integumentary and soft tissues:

1. Identify and describe some of the medical consequences that occur when this system is infected by microorganisms.
2. Name the normal biota found in this system
3. Describe the most common organism causing infections.
4. Describe the pathogenesis, risk factors, and complications associated with this system.
5. Outline guidelines for collection of specimens from this system.

Chapter 76
For Normally Sterile Body Fluids, Bone and Bone Marrow, and Solid Tissues:

1. Identify and describe some of the medical consequences that occur when this system is infected by microorganisms.
2. Name the normal biota found in this system
3. Describe the most common organism causing infections.
4. Describe the pathogenesis, risk factors, and complications associated with this system.
5. Outline guidelines for collection of specimens from this system.

Lab:
Materials Covered: Lab manual.

1. Lab Comprehensive Competency Practice
2. Wounds specimens

Week 13

Lecture
Materials Covered: Bailey & Scott Diagnostic Microbiology
Chapter 78

1. Explain the requirements for antimicrobial susceptibility tests (ASTs).
2. Compare the maintenance of reference-quality control stocks in bacteriology, mycology, mycobacteriology, virology, and parasitology.
3. Outline a QA program for the microbiology laboratory to include all phases of infectious disease diagnosis and differentiate between external and in-house QA audit programs.
4. Describe daily monitoring activities by microbiologists and supervisors that result in providing quality care to the patient population.

Chapter 79

1. Define and give examples of select agents.
2. Give a brief description of the Laboratory Response Network
3. Name the government agencies responsible for the investigation and management of a bioterrorism event.
4. Given microbiologic characteristics, identify the most likely suspect agent of terror.

Lab:
Materials Covered: Lab manual.
Good Friday – No lab class

Week 14

Lecture
Materials Covered: Bailey & Scott Diagnostic Microbiology
Final Exam Review

Lab:
Lab Comprehensive Competency

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		20%
		100%

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

GRADING SYSTEM:

State the College's or departmental grading system as delineated in the Catalog. 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. You must have your Dean's approval if changes in the scale are made.

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, WFs and Is also negatively impact academic progression and financial aid status.

The Add/Drop Period is the first 5 days of the semester for **full term** classes. Add/Drop periods are shorter for accelerated format courses. 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.

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 in order 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.**

For online and hybrid courses, check your Instructor's Course Information Sheet for any required on-site meeting times. Please note, instructors may require tests to be taken at approved testing sites, and if you use a testing center other than those provided by HGTC, the center may charge a fee for its services.

Part V: Student Resources

THE STUDENT SUCCESS AND TUTORING CENTER (SSTC):

The SSTC offers to 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 in the EPIC Labs.

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 to 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. Or please call (843) 349 – TECH (8324), Option # 1.

HGTC LIBRARY:
Each campus location has a library where HGTC students, faculty, and staff may 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 an **online/hybrid** course and in **make-up exam** situations may be accomplished in a variety of ways:

- Test administered within D2L.
- Test administered in writing on paper.
- Test administered through Publisher Platforms (which may have a fee associated with the usage)

Furthermore, tests may have time limits and/or require a proctor.

Testing candidates must make their appointments 24 hours in advance.

Students must bring a physical ID in order to take a test.

Proctoring can be accomplished either face-to-face at an approved site or online through our online proctoring service. To find out more about proctoring services, please visit the Online Testing section of the HGTC's Testing Center webpage.

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 sex, race/color, religion, national origin, age, disability, service in the uniformed services (as defined in state and federal law), veteran status, political ideas, marital or family status, pregnancy, childbirth, or related medical conditions, including, but not limited to, lactation, genetic information, genetic identity, gender expression, or sexual orientation 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.

INQUIRIES REGARDING THE NON-DISCRIMINATION/TITLE IX POLICIES:

Student and prospective student inquiries concerning Section 504, Title II, Title VII, and Title IX and their application to the College or any student decision may be directed to the Vice President for Student Affairs.

Dr. Melissa Batten, VP Student Affairs
Title IX, Section 504, and Title II Coordinator
Building 1100, Room 107A, Conway Campus
PO Box 261966, Conway, SC 29528-6066
843-349-5228
Melissa.Batten@hgtc.edu

Employee and applicant inquiries concerning Section 504, Title II, and Title IX and their application to the College may be directed to the Vice President for Human Resources.

Jacquelyne Snyder, VP Human Resources
Affirmative Action/Equal Opportunity Officer and Title IX Coordinator
Building 200, Room 205B, Conway Campus
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 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).

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PO Box 261966, Conway, SC 29528-6066
843-349-5212
Jacquelyne.Snyder@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.