

# BIOL 208: GENERAL MICROBIOLOGY LABORATORY

**Course Location:** All sections of Biol 208 will meet in Snell Hall 2106

**Laboratory Coordinator/Instructor:** John M. Clauson <mark.clauson@wku.edu>

**Office Hours:** SNELL HALL 2104 THR-FRI 2:00pm to 4:00pm (by appointment)

**Course Description:** This course fulfills the Natural Science Explorations Category of Colonnade. Students taking 208 microbiology will gain the ability to:

1. Demonstrate and understand the methods of scientific inquiry in biology
2. Explain basic concepts and principals in biology
3. Apply scientific principles to interpret and make predictions in biology
4. Explain how scientific principles relate to issues of personal and/or public importance

## LEARNING OUTCOMES:

Students completing general microbiology laboratory (Biol 208) will gain an understanding of the scientific method and how it applies to clinical science and its relevance in our lives. You will learn how clinical scientific knowledge is obtained and evaluated through experimentation and reasoning. You will learn and put into practice laboratory conduct involving aseptic technique, proper attire and the prudent precautions taken when working with pathogens and infectious materials.

## LEARNING OBJECTIVES:

1. To learn microbial theories, concepts, and principles used to explain observations and make predictions.
2. To present and assess the students understanding of laboratory safety, conduct and precautions.
3. To demonstrate the proper use of common microbiological laboratory equipment.
4. To assess each student's ability to perform common laboratory techniques and explain the purpose of each.
5. To demonstrate how scientist record experimental data, analyze and interpret data, and draw appropriate conclusions based upon data.
6. To demonstrate an understanding of microorganisms and the current methods of clinical testing via metabolic, biochemical and serological identification.

## PREPARATION FOR LAB:

Reading your laboratory manual before each meeting is required. You must take a pre-lab exam prior to entering the laboratory (see **GRADING below**). Your lab instructor will demonstrate how to access and complete the pre-lab exam during the first lab period of the semester.

**Lab Manual:** Microbiology Laboratory for the Health Science Student; a Clinical Approach. *Eighth Edition*, All students are required to use a **new** laboratory manual workbook. Available only at WKU College Heights Bookstores.

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### GRADING:

Three exams will be given. **Exam I** (50 points) will be given on week 6 and will cover material from lab exercises 1-14. **Exam II** (50 points) will be given on week 10 and will cover material from lab exercises 15-26. **Exam III** (50 points) will be given on week 14 and will cover material from lab exercises 27-39. **Total 150 points**

**Pre-lab Exams: 10 pre-lab exams each worth 10 points.** There will be a short, 10-point open book pre-lab exam on your WKU black board site each week. You are expected to log in and complete the pre-lab exam prior to each laboratory meeting. You are given 2 attempts to complete the exam. **The pre-lab exam closes and will no longer be available once your scheduled lab section meets.** The pre-lab exam is scored automatically and totaled on your blackboard grade book. **Total 100 points.**

**Participation and Attendance:** 3 points will be awarded for each of 11 lab meetings. These points are given based on 3 criteria that will be assessed every week. Each student is given 1 point in attendance (A). Each student is given 1 point for following all of the laboratory safety guidelines outlined in the first lab period (S). Each student is given 1 point for their laboratory check-off assigned at the beginning of the lab period each week (C). Case Study assignments (located in the back of the laboratory manual) will be included in the credits given for each of the 11 laboratory periods. Most laboratory periods will assess your proficiency at obtaining accurate results from staining procedures and/or biochemical surveys of invasive pathogens. You will be required to present these data for check-off prior to your departure. **Your instructor will clearly state the requirements for your laboratory participation points during each laboratory period. Total 33 points**

**Term Letter Grade:** Each student's Term Letter Grade (TLG) will be determined by the scores earned on the three exams (150 total points) plus your pre-lab exams (100 total points) plus your participation and attendance points (33 total points). Your total points will be summed to obtain a Cumulative Score. The maximum number of points awarded will be 150 (test scores) + 100 (pre-lab exam) + 33 (11 completed laboratories) = 283 points total points.

**Basis for Assigning each TLG: (Required Points) A=255 B=225 C=195 D=165 F= <165**

There is absolutely no extra credit given and there are no make-up exams. Failure to take an exam can be excused under legitimate and approved circumstances.

### LABORATORY CONDUCT:

**Safety and General Laboratory Direction begins on page 1-1 of your 208 Microbiology Laboratory Manual. You are expected to review these rules and regulations then take a short open book quiz covering those requirements during the first lab meeting. You will be required to sign a document stating the instructor has covered the safety guidelines outlined on pages 1-1, 1-2, and 1-3 of your laboratory manual, after which you are cleared to conduct laboratory exercises.**

**Academic Integrity:** It is expected that each student will do his/her own work at all times. Therefore cheating/academic dishonesty in any form (plagiarism, altering exams, copying, etc.) will not be tolerated. Violators will be reported to Judicial Affairs and the **minimum** penalty will be a grade of zero for the exam or assignment. The WKU student conduct code can be seen on the Judicial Affairs web page. Go to <http://wku.edu/judicialaffairs>

**Student Disabilities Services:** In compliance with university policy, students with disabilities who require academic and/or auxiliary accommodations for this course must contact the Office for Student Disability Services in Downing University Center, A-200. Ph. 270 745 5004.

## SUMMER 2018 LABORATORY SCHEDULE

<u>WEEK OF</u>	<u>LAB EXERCISE</u>	<u>WEEK OF</u>	<u>LAB EXERCISE</u>
1. 06-05-18	Orientation, Laboratory Safety 1. The Microscope 2. Handling and Examining Cultures	<b>COLONNADE ASSESSMENT IS AVAILABLE ON BLACKBOARD FOR 5 EXTRA POINTS</b>	
2. 06-06-18	3. The Wet-Mount Preparation 4. *Simple Stains Reference Guide 2.1.1 Specimen Collection and Transport		
3. 06-07-18	5. *Gram stain 6. *Special stains Endospore stain  7. Pure culture technique	11. 06-27-18	Physiological requirements of Oxygen 32. *Clostridium, endospore patterns 33. Culturing Anaerobic Bacteria 34. *Mycobacteria, Acid Fast Stain
4. 06-12-18	8. Biochemical Reactions, Carbohydrates 9. Biochemical Reactions, Sulfate Indole Motility 10. Enzymatic Reactions, Catalase Test 11. Enzymatic Reactions, Oxidase Test 12. Enzymatic Reactions, Urease Test 13. Enzymatic Reactions, Deaminase Test 14. Rapid Methods for Identification	12. 06-28-18	ENTEROBACTERIACEAE 35. Stool Studies and Culture For Gastrointestinal Pathogens: Case Study Exercise UNKNOWN 2  36. Pathogenic Molds and Dermatophytes 37. Tape Method for Staining Molds
5. 06-13-18	15. Antibiotics, Susceptibility Testing, MIC 16. Primary Media for Isolation of Microorganisms. UNKNOWN 1 17. *Isolation of Pathogenic Yeasts	13. 07-03-18	Introduction to Serological Testing 38. Latex Agglutination 39. Antibody Titer
6. 06-14-18	<b>EXAM I (EX.1-14)</b>	14. 07-05-18	<b>EXAM III (EX. 27-39)</b>
7. 06-19-18	18. Alpha Hemolytic Streptococci 19. Beta Hemolytic Streptococci 20. *Enterococci 21. Staphylococci 22. Streptococci from a throat culture	<b>COMPLETE COLONNADE ASSESMENT ON BLACKBOARD FOR 5 EXTRA POINTS</b>	
8. 06-20-18	23. *Klebsiella 24. Haemophilus 25. *Corynebacteria 26. Bordetella	<b>Unforeseen University Cancellations Policy:</b> Students attending a Laboratory section that is involved in an unforeseen cancellation are <b>required to complete the prelab test, answer all questions at the end of the exercises along with any case studies associated and turn them in to the front desk at the BEGINNING of the next appointed laboratory meeting.</b> Students involved in a Laboratory Cancellation will earn their 3 points by completing any assigned case studies, answering 75% of their questions correctly and participate in discussions regarding the expected experimental results using plates and cultures from other sections.	
9. 06-21-18	<b>EXAM II (EX.15-26)</b>	<b>EXAM-Cell Phone Policy:</b> Cell phones, iPods, iPads, laptops, electronic notebooks, pagers or any other texting device and/or any device capable of recording audio, photographic or video content, or capable of viewing or playing back such content are absolutely prohibited during laboratory Exams**. If such a device is in your possession during an exam you will be asked to turn in the exam and leave the laboratory. The minimum penalty for this violation will be a grade of zero points (0) for the exam.	
10. 06-26-18	Urine Culture Techniques 27. *Dip Stick Urine Test 28. *Qualitative Urine Culture 29. *Quantitative Urine Culture 30. Neisseria 31. Spirochetes	**Exceptions to this policy: A student who has preapproval as an accommodation by the Students with Disabilities office prior to the exam date.	
		* Laboratory exercise requires eye protection.	