MICROBIOLOGY and IMMUNOLOGY BIO204-01
Spring 2024

Class Time and Location: **Lecture** **TR** 11:00AM-12:15 PM, Room # Spencer 229
Lab **T 2:00 PM -4:00 PM**

Instructor: Krishna Nath, Ph.D., Pusan National University; M.Sc., B.Ed.
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Office Hours: Posted on the office door

RESOURCES:
Lecture Text *Microbiology Fundamentals: A Clinical Approach,3rdr[d] ed*; by Marjorie Kelly Cowan.
ISBN: 978-0-07-802104-6
Laboratory Manual: *Laboratory Manual for Microbiology Fundamentals: A Clinical Approach 3rd ed*; by Steven Obenauf and Susan Finazzo. ISBN-13:978125929863

FOOD & DRINK: Food and drinks, including water are not allowed in the classroom at any time.

ChatGPT and AI policy: The use of ChatGPT or any other AI program to generate your work in any manner is strictly prohibited in this class and constitutes academic dishonesty. This action will be subject to the penalties of the academic dishonesty policy.

Artificial Intelligence (AI) Tools: Students are turning to artificial intelligence (AI) more and more in the world of education. Common tools include Grammarly, ChatGPT, and Bard, to name a few. It is important that students understand the limitations, biases, and inaccuracies that come with using and/or relying on AI tools and platforms. Even if a student were fortunate enough to escape the penalties for plagiarism, using AI tools to produce writings that are inaccurate, biased, and/or limited in scope would still not yield a desirable grade. Ultimately, the student is responsible for ensuring that his/her writing is original, accurate, and complete.

Review and use the guidelines below to help navigate the ethical and appropriate uses of AI tools in this class. Check the syllabus and with the instructor for each course in which you are enrolled. For more information, review the Academic Dishonesty slides posted in Blackboard.

Appropriate uses for AI tools:	Inappropriate uses for AI platforms:
• Copying and pasting a description or assignment and asking AI to rephrase or explain the concept to you in a different way • Asking AI to provide an example of a particular aspect of writing (e.g., a thesis statement, an introduction, a conclusion, a body paragraph, etc.) • Copying and pasting your original compositions and soliciting feedback from AI regarding clarity and/or organization • Asking AI to generate a list of common reasons for or against a particular issue • Using AI tools to identify grammatical and mechanical errors for revising • Requesting statistical information for use in research (remember to evaluate the source and cite both the AI tool and the original source in your assignment) • Acknowledging the use of AI tools in your Works Cited pages	• Asking AI to write you an essay on (insert prompt here) • Asking AI to rephrase something written by another person and passing it off your own • Asking AI to provide you with a list of quotes from a text to use in your essay because you didn't read the assigned text • Assuming that AI-generated results are accurate, objective, or complete • Using AI tools to generate source citations that are inappropriate for your discipline • Using AI tools to falsify sources

COURSE DESCRIPTION: This is an introductory course in Microbiology, which includes microbiological concepts including the study of bacteria, viruses, fungi, and protozoa as they affect the human body. Designed for majors in health professions programs. Special course fees may apply. Laboratory is an integral part of this course and participation is required for successful completion of this course. **ACTS COURSE BIOL2004**

PROGRAM OUTCOME and Rationale: The purpose of the Associate of Arts Program is to provide students with the knowledge and critical thinking skills that will enable students to analyze problems, arrive at intelligent conclusions, and make reasoned choices in their professional and personal lives.

- Students will demonstrate an understanding of physical and biological principles.
- Students will apply technological and research skills to identify, locate, and process information.
- Students will demonstrate competency in writing, reading, speaking, and listening.
- Students will be able to compete academically upon transfer to a four-year institution.

COURSE OBJECTIVES Upon successful completion of Biological Science BIOL 154, the students will increase their fundamental concepts and problem-solving skills in:

Microbiological and medical terminology, building blocks of microorganisms, tools and techniques of laboratory, viral structure and multiplication, microbial growth and metabolism, microbial genetics and genetic engineering, process of transcription and translation, ways to control microorganisms by physical and chemical means, causative agents, symptoms, transfer and treatments of common microbial diseases antimicrobial treatment, antibiotics and chemotherapeutic drugs, host defense including immunity and immunization,

TENTATIVE LECTURE AND EXAM SCHEDULE

Week	Topic
1-4	Ch 1 Introduction to Microbes and Their Building Blocks Ch 2 Tools of the Laboratory: The Methods for the culturing and microscopic analysis of Microorganisms Ch 3 Bacteria and Archaea
Test 1	**2/15 R**
5-8	Ch4 Eukaryotic Cells and Microorganisms Ch 5 Viral Structures and Life Cycles Ch 6 Microbial Nutrition and Growth
Test 2 (Mid-term)	**3/12 T**
9-12	Ch 7 Microbial Metabolism Ch 8 Microbial Genetics and Genetic Engineering Ch 9 Physical and Chemical Control of Microbes
Test 3	**4/9 T**
13-16	Ch 10 Antimicrobial Treatment Ch 11 Interactions Between Microbes and Humans Ch 12 Host Defenses I: Nonspecific Defenses
Test 4	**5/2 R**
Test 5 (Final Exam)	**5/7 T**

Disclaimer: The information contained in this syllabus is as accurate as possible but may be subject to change with reasonable advance notice. The schedule and content of lectures and assignments may be changed at the discretion of the instructor upon oral notification in class. Changes may involve additions, deletions, substitutions, or changes in sequence or due date.

Tentative Lab Schedule

Lab topic and assignment	Lab activities/ Exercises
Discuss for syllabus, Introduction/ Safety and Overview / Microscopes	1
Algae, Protists, Fungi	4, 5, 6
Aseptic Technique, Intro to Staining, Negative Stain	2, 8, 9
Isolation Streak, Motility Slides, Capsule Stain	3, 7, 10
Gram Stain, Acid-Fast Stain, Endospore Stain	11, 12, 13
Blood Agar, Catalase and Oxidase Reaction	14, 22, 23
Mannitol Salt, EMB, and MacConkey Agars	15, 16, 17
Antimicrobial Susceptibility Testing	25
Hand Washing Technique	
Parasitic Protozoa, Worms, Vectors of Disease	29-31
Final Exams	

COURSE CONDUCT: Classroom presentation is basically of the lecture-demonstration type. Lecture will be over pre-assigned chapters with PowerPoints delivered as a visual aid. This will be supplemented

with various scientific models, representative specimens, supplemental handouts, and special projects. Students should **TAKE NOTES** and are expected to **STUDY** beyond the lab and classroom and manage their time to develop good study habits for this course.

LABORATORY CONDUCT: The laboratory consists of a series of hands-on exercises that are designed to reinforce some of the principles covered in lecture. Labs will also introduce the student to some common laboratory equipment and Good Laboratory Practices. Students are expected to follow the instructor's direction and comply with the Rules of the Laboratory. Lab exercises are assigned beforehand and it is expected that you **read the material BEFORE coming to class**. Labs are designed to be investigative and will require critical thinking skills to analyze results of experiments.

UARM CREDIT HOUR CALCULATOR: For every course credit hour, you should expect to spend at least three clock hours per week of concentrated attention on course-related work, including but not limited to time attending class, as well as out-of-class time spent reading, reviewing, organizing notes, preparing for upcoming quizzes/exams, problem solving, developing and completing homework, and other activities that enhance learning. For a three-hour course, a typical student should expect to spend at least nine hours per week dedicated to the course. This includes the time spent in class.

Course Requirements / Evaluation for Lecture: Evaluation of student performance in the course will be based on the followings. However, each student needs to be graded independently for Lecture & Lab, respectively.

1. Three Tests	3 @ 50 points each	= 150 points
2. Ten Quizzes/Assignments	10 @ 20 points each	= 200 points
3. One Mid-term	1 @ 100 points each	= 100 points
4. One Final Exam:	1 @ 150 points	= 150 points
Total points		**600**

Course Requirements / Evaluation for Lab: Evaluation of student performance in the course will be based on the followings. However, each student needs to be graded independently for Lecture & Lab, respectively.

1. Lab activities:	10 @ 10 points each	= 100 points
2. Final Exam:	1 @ 100 points	= 100 points
Total points		**200**

GRADING SCALE:
The final grade for the course will be determined by dividing the student's total number of points earned by the number of possible points. Grades are assigned on the basis of the following percentage scale, after rounding the calculated percentage to the nearest whole number

Percentage	Final Grade
90-100	A
80- 89	B
70- 79	C
60- 69	D
<60	F

EXAMS: Exam dates are given in the syllabus and students are required to take all the tests offered including the final exam. Exam questions will be taken from lecture notes, laboratory exercises, discussion, audiovisuals, handouts, textbook and other assignments. Many exam questions will require use of this material and critical thinking to conclude the answer. Exams may include all or any combination of the following types of questions: multiple choice, true/false, short-answers, fill-in-the blank, draw and label, matching, and short answer.

Lab Assignments: Twelve lab activities will be considered as written exams or quizzes or assignment as per the need. Each activity will contain multiple choice, true/false, matching, short-answer, and fill in the blank questions on laboratory exercises students have done during lab activities (one lowest will be dropped)

TECHNIQUES IN MICROBIOLOGY– Gram stain and isolation streaks and/or any other techniques which were performed during lab activities, in particular **GRAM STAIN AND ISOLATION STREAK,** are techniques that all microbiology students should know the importance of them and how to do. After practicing these several times, each student will be graded individually on the results of their technique.
LABORATORY REPORT – One formal laboratory report will be submitted during the semester. These will be a summary report over one of the exercises performed in the lab. An outline will be provided when assigned. Each student is expected to write their own lab report. **Completion of a lab report is a course requirement for successful completion of this course.**

Disability Policy: It is the policy of UARM to accommodate students with disabilities, pursuant to state and federal law. Any student with a disability who needs accommodations should contact the Vice President for Student Affairs Office, 394-7622 ext.1400.
Title IX and Discrimination Policy: UA Rich Mountain adheres to a policy that enables all individuals regardless of race, color, gender, national origin, age, religion, sexual orientation, veteran's status, or disability, to work and study in an environment unfettered by discriminatory behavior or acts. Harassment of an individual or group will not be condoned, and any person (student, faculty, of staff member) who violates this policy will be subject to disciplinary action.

Harassment that is considered discriminatory includes actions or conduct (verbal, graphic, gestural, or written) directed against any person or group with the intent to demean or create a hostile or threatening environment. It is not the intent of this policy to infringe upon or limit educational, scholarly, or artistic expression. Any person who

believes he or she has been discriminated against should contact the Title IX Coordinator to obtain assistance and information concerning the filing of a complaint.

Face mask policy: Students are encouraged but not required to wear face masks in class and public spaces.

Attendance Policy: For attendance purposes, a student who is displaying symptoms of illness must email: contact.tracing@uarichmountain.edu to determine next steps for an excused absence related to COVID or flu. Contacting an instructor **DOES NOT** start this process or guarantee an excused absence.

Arkansas Clean Air Act: In compliance with the Arkansas Clean Air Act, UARM is a smoke and tobacco free facility. Students are to refrain from the use of all tobacco products while on campus.

Student Misconduct: Students committing misconduct are subject to disciplinary sanction(s) and or restrictions. Misconduct or prohibited behavior includes, but is not limited to endangerment, harassment, disruption, sexual misconduct, dishonesty, illegal drugs and/or alcohol, fire or safety issues, gambling, property violations, computer violations or other violations as listed in detail in the UARM catalog.

Campus Security: UA Rich Mountain strives to provide a safe learning environment; therefore, students who know of any security risk are asked to contact a college official. For more information follow this link and look under Health and Safety: http://www.uarichmountain.edu/at-a-glance/disclosures

UA Rich Mountain Mission: UA Rich Mountain provides transformative education to all learners.

Credit Hour Requirement Calculator

Course Information				
Department, Course Number			Biological Science	BIO204
Course Title			Microbiology & Immunology	I
Credit Hours	4			
Mode of Delivery	Traditional			Lecture/Lab
Weeks in Part of Term	15			
Level of Reading Material	Advanced/Scientific/Technical (2)			2
Reading Level of Students	Average Student (2)			2
Average Pages per Hour	11			

Enter either week or term, not both

Contact Hours		**Hours/Week**	**Hours/Term**	**Total Hours**
Lecture/Recitation			45	45
Lab Contact Hours			30	30
	Pages Asg'd	**Hours/Week**	**Hours/Term**	
Syllabus Items				
Reading Lecture Material	650		18.9	59.1
Reading Lab Assignment	50		10.8	4.5
Writing Lab Reports			6	6
Reviewing for Practical			3	3
Reviewing for Exams			10	10
				0
Total Hours				157.6
Required Hours				150
Difference				Ok + 7.6