RANGER COLLEGE

STEPHENVILLE, TEXAS

COURSE SYLLABUS
AND
INSTRUCTOR PLAN

MICROBIOLOGY FOR NON-SCIENCE MAJOR
BIOL 2420

4 credit hours

INSTRUCTOR:

Gordon Woolam

BIOL 2420 Syllabus

SCHEDULED HOURS/WEEK: Lecture: 3 Lab: 3 Lec/Lab Combined: **6**

Instructor: Gordon Woolam
E-Mail: gwoolam@rangercollege.edu
Office Phone: 254 965 1078
Office Hours: By appointment

***Disclaimer: All schedules and procedures in this syllabus and this course are subject to change in the event of extenuating circumstances. ***

I. Texas Core Curriculum Statement of Purpose

Through the Texas Core Curriculum, students will gain a foundation of knowledge of human cultures and the physical and natural world, develop principles of personal and social responsibility for living in a diverse world, and advance intellectual and practical skills that are essential for all learning.

II. Course Description

This course covers basic microbiology and immunology and is primarily directed at pre-nursing, pre-allied health, and non-science majors. It provides an introduction to historical concepts of the nature of microorganisms, microbial diversity, the importance of microorganisms and acellular agents in the biosphere, and their roles in human and animal diseases. Major topics include bacterial structure as well as growth, physiology, genetics, and biochemistry of microorganisms. Emphasis is on medical microbiology, infectious diseases, and public health. This course covers basics of culture and identification of bacteria and microbial ecology. Emphasis is on medical microbiology, infectious diseases, and public health.

III. Required Background or Prerequisite

Passing score on THEA Reading section or equivalent alternate test is recommended.

IV. Required Textbook and Course Materials

FOUNDATIONS IN MICROBIOLOGY 10th edition. Kathleen Park Talaro. McGraw Hill. 2009 ISBN. 978-1-259-70521-2

V. Course Purpose

Courses in this category focus on describing, explaining, and predicting natural phenomena using the scientific method.

Courses involve the understanding of interactions among natural phenomena and the implications of scientific principles on the physical world and on human experiences

VI. Course Objectives

Biology 2420 is designed to instruct students in methods that will result in a student obtaining a working knowledge in the following areas:

1. Main themes of microbiology,
2. Chemistry of microbiology,
3. Study methods and tools used in microbiology laboratories,
4. Vital characteristics and diversity of viral, prokaryotic, and eukaryotic microbes,
5. Microbial nutrition, ecology, growth,
6. Microbial metabolism and genetics,
7. Physical and chemical agents for microbial control,
8. The effects of drugs on microbes and hosts,
9. Microbe-Human interactions,
10. Host defenses and immunity,
11. Major diseases caused by each microbial group.

VII. Learning Outcomes

After the completion of this course students will be able to:

1. Provide examples of the impact of microorganisms on agriculture, environment, ecosystem, energy, and human health, including biofilms.
2. Identify unique structures, capabilities, and genetic information flow of microorganisms.
3. Compare the life cycles and structures of different types of viruses.
4. Discuss how microscopy has revealed the structure and function of microorganisms.
5. Give examples of the range of metabolic diversity exhibited by microorganisms, impact of metabolic characteristics on growth, and control of growth.
6. Describe evidence for the evolution of cells, organelles, and major metabolic pathways from early prokaryotes and how phylogenetic trees reflect evolutionary relationships.

7. Describe the causes and consequences of mutations on microbial evolution and the generation of diversity as well as human impacts on adaptation.
8. Classify interactions of microorganisms on human and non-human hosts as neutral, detrimental, or beneficial.

VIII. Core Objectives

Life and Physical Sciences Courses in this category focus on describing, explaining, and predicting natural phenomena using the scientific method. Courses involve the understanding of interactions among natural phenomena and the implications of scientific principles on human experiences. The Core Objectives of critical thinking skills, communication skills, empirical and quantitative skills, and teamwork are addressed by each course in this component area.

This course directly meets the following of the six Core Objectives:

- ☒ **Critical Thinking Skills**: To include creative thinking, innovation, inquiry, and analysis, evaluation, and synthesis of information
- ☒ **Communication Skills**: To include effective development, interpretation, and expression of ideas through written, oral, and visual communication
- ☒ **Empirical and Quantitative Skills**: To include the manipulation and analysis of numerical data or observable facts resulting in informed conclusions
- ☒ **Teamwork**: To include the ability to consider different points of view and to work effectively with others to support a shared purpose or goal
- ☐ **Personal Responsibility**: To include the ability to connect choices, actions, and consequences to ethical decision-making
- ☐ **Social Responsibility**: To include intercultural competence, knowledge of civic responsibility, and the ability to engage effectively in regional, national, and global communities.

IX. Methods of Instruction

Lectures (twice weekly) on the major concepts and theories in biology will be discussed.

Labs (2.75 hours once weekly) in which major biological principles will be demonstrated by examination of specimens, conducting experiments and viewing videos

X. Methods of Assessment

Lecture: The lecture portion of the course comprises 66% of your final grade in BIOL 2420. Exams will cover all material discussed since the last exam and may consist of one or more of

the following:

- fill-in-the-blank questions,
- short answer questions or short essay,
- matching,
- multiple choice

Each question will be graded as correct or incorrect in accordance with information in the text and lectures. Exam grades will be taken as the number of points correct. Each exam will carry equal weight in the average, including the Final Exam.

Lecture Exams and Final Exam (CT, COM, EQS): Students will take a 4 Exams and a Final.

Laboratory grades: The lab portion of the course comprises 33% of your final grade in BIOL 2420. Further information including safety guidelines in the laboratory will be given by your lab instructor.

- Students will often work in teams of two or more to accomplish lab objectives. **(EQS, TW)**
- **Lab Practicals:** Two lab tests **(CT, COM)**
- **Lab Essay:** Short essay of contemporary disease **(CT, COM)**
- **Lab Report:** Lab report on procedure and results of lab test preform on unknown specimens. **(CT, COM, EQS)**

No make-up tests!

XI. Course/Classroom Policies

The following rules and guidelines about classroom behavior are to be memorized, internalized, and strictly adhered to. Failure to do so will negatively impact your experience of this class, not to mention your grade.

- **Arrive on time.** Class begins promptly at the scheduled time. This means you should be in your seat and ready to begin.
- **Come to class prepared.** You are expected to participate in class discussions and come to class meetings having completed all assigned readings and written work.
- **Turn in assignments on time.** By accepting this syllabus, you agree to accept a score of zero on any late work.

- **Don't cheat.** Any assignment reflecting cheating, plagiarism, or any other form of academic dishonesty will receive a grade of zero. A second instance will result in automatic failure of the class and a report being filed with Ranger College's Vice President of Instruction. The consequences of this report can be quite severe for your academic future. For more details, see the section of the Ranger College Catalog (available at www.rangercollege.edu/catalog.pdf), titled "Student Misconduct," subsection "Academic Dishonesty."
- **Six absences = Dropped from class with a failing grade.** I expect you to attend class regularly. As per Ranger College's stated absence policy in the general college catalog (see pages 25-26 at http://rangercollege.edu/catalog.pdf), the only absences that will be excused are "official" ones, defined as those that occur due to authorized Ranger College activities (such as sporting events). Unofficial absences are counted from the first day of class as listed in the College Calendar, regardless of the date of your registration.
- **No phones.** Your phone must be turned off and properly stowed in your bag or otherwise stored off your person prior to class.
- **Email:** I am happy to communicate with you by email and will do my best to respond within 24 hours during the week. Messages sent over the weekend will be read on Mondays. In the subject line of any email that you send me, please indicate the content of the email. Then begin your message in the following manner:

  Dear Mr. Woolam,

  My name is _____ and I am in your Microbiology class.

XII. Course Outline/Schedule

See Handout

XIII. Non-Discrimination Statement

Admissions, employment, and program policies of Ranger College are nondiscriminatory in regard to race, creed, color, sex, age, disability, and national origin.

XIV. ADA Statement

Ranger College provides a variety of services for students with learning and/or physical disabilities. The student is responsible for making the initial contact with the Ranger College Counselor. It is advisable to make this contact **before** or **immediately** after the semester begins.

XV. Laboratory Safety

Students are expected to understand and comply with all environmental, health and safety procedures and protocols, and must agree to abide by all lab safety policies. Specific safety guidelines will be discussed at the beginning of each lab activity. Any student who is late and misses the safety training or instructions may not be allowed to participate in the lab activity. Any student who intentionally or thoughtlessly jeopardizes the safety of another student will be immediately dismissed from the lab, and may be withdrawn from the course.

Students should read the upcoming lab exercises (if available) **prior** to attending labs to be prepared for the required protocols and procedures, and enhance safety.