Microbiology Lecture and Laboratory 4 Units
Course Description, Prerequisites, Entry Skills, SLOs, and Course Content.

Course Description:
General characteristics of microorganisms with emphasis on morphology, growth, control, metabolism and reproduction; their role in disease, body defenses, and application to the biomedical field. 54 hours lecture and 54 hours laboratory.

Prerequisites: CHE 2A: Intro Chemistry I and any one of the following:
- AMY 2A: Anatomy & Physiology I or
- AMY 2B: Anatomy & Physio II or
- AMY 10: Survey Human Anat/Physio or
- BIO 1: General Biology or
- BIO 2A: Zoology I Invert or
- BIO 5: General Botany or
- BIO 8: Principles of Ecology or
- BIO 11: Intro Molec & Cell Biology

Entry Skills: Before entering the course, students will be able to:
1. Solve basic level problems relating to the metric system, unit conversions and dilutions.
2. Relate the principles of chemistry to biological molecules.
3. Describe the basic chemical structure and function of biological molecules.
4. Students should be able to relate chemical concepts to physical phenomena in the areas of health, the environment and their everyday lives.
5. Describe the nature of chemicals and their properties, chemical bonding, reactions, mixtures, atoms, molecules, acids, and bases.
6. Analyze experimental results and utilize scientific method.

Lecture Student Learning Outcomes (SLOs): Upon successful completion of the Lecture component of the course, students should be able to:
1. Describe the contribution of important figures in microbiology.
2. Compare and contrast the major taxonomic groups of microorganisms.
3. Compare and contrast the structure and physiology of prokaryotic & eukaryotic cells.
4. Be able to define the major biochemical molecules and explain the important biochemical pathways.
5. Apply the principles of microbial physiology and metabolism to their growth requirements and control in vivo and in vitro.
6. Relate genotype to phenotype, inventory the mechanics of microbial reproduction.
7. Explain the genetic mechanisms of microbial variability, including its role in the development of antibiotic resistance.
8. Compare nonspecific with specific defense mechanisms.
9. Evaluate immunological tests and procedures.
10. Evaluate the beneficial and detrimental aspects of the immune system.
11. Analyze the etiology and epidemiology of infectious disease.

Laboratory Student Learning Outcomes (SLOs): Upon successful completion of the Laboratory component of the course, students should be able to:

1. Prepare specimens for microscopic observation and demonstrate the effective use of a compound light microscope.
2. Employ proper laboratory procedures, including aseptic technique to ensure safe handling of microbes and equipment.
3. Evaluate different staining techniques to investigate morphological characteristics.
4. Select and interpret appropriate biochemical tests and chemical stains to identify unknown bacteria.
5. Demonstrate the understanding of scientific method by composing scientific papers and evaluating the experimental results.

Course Content: Topics covered in this course will include the following:

- Introduction and scope of microbiology.
- History of microbiology.
- Microscopy and staining techniques.
- Classification and identification of microbes.
- Functional anatomy of prokaryotic cells.
- Physical and chemical conditions required for microbial growth.
- Bacterial reproduction and growth of bacterial cultures.
- Microbial metabolism.
- Microbial genetics.
- Physical and chemical methods of controlling microbial growth in vitro and in vivo antimicrobial agents.
- Microbial mechanisms of pathogenicity and etiology of infectious diseases.
- Specific and non specific host defense mechanisms against infection.
- Cell-mediated and humoral immunity, antigen-antibodies and their reactions.
- Practical applications of immunology: vaccines and diagnosis.
- Protozoa and Protozoan diseases.
- Yeasts and molds; mycoses.
- Viruses and viral diseases.
- Prions and human disease.
- Pathogenic bacteria and human disease.
**General Education Course Content:** Topics covered in this course will include the following:

- **Critical Thinking**
  - Analyze and solve complex problems across a range of academic and everyday contexts.
  - Recognize and assess evidence from a variety of sources.
  - Integrate knowledge across a range of contexts
- **Information Skills**
  - Locate, evaluate and use information effectively
- **Communication Skills**
  - Write with precision and clarity to express complex thought.
  - Read college-level materials with understanding and insight.
- **Breadth of Knowledge**
  - Analyze experimental results and draw reasonable conclusions from them.
  - Use the symbols and vocabulary of mathematics to solve problems and communicate the results.
- **Application of Knowledge**
  - Maintain and transfer academic and technical skills to workplace.
  - Be lifelong learners, with ability to acquire and employ new knowledge
- **Global Awareness**
  - Demonstrate appreciation for civic responsibility and ethical behavior.
  - Demonstrate teamwork skills.
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Professionalism - The 'DO's':
This is just a gentle reminder of how I expect my students to conduct themselves in my class.

1. Always act like a professional.
2. Take responsibility for your “actions” as well as your “inactions”.
3. Respect yourself and your peers.
4. Don’t be a ‘parasite’! Reciprocity is essential in a good study group.
5. Safety is paramount.
6. Attendance (lecture, lab, quizzes, tests, exams) is mandatory - be on time.
7. Adhere to RCC’s policy on academic honesty at all times.
8. Always keep me informed –
   • Communicate with your professor!
     a. e-mail: elisabeth.thompson-eagle@rcc.edu,
     b. voicemail: (951) 328 - 3835,
     c. office visit &/or leave notes: LS101-B).
9. Keep your area clean & disinfect whenever possible. Leave tables, benches, cupboards tidy and all stools and equipment must be put away.
10. Wash your hands!

Student Code of Conduct - The 'DON'T's':
This is just a gentle reminder of how I expect my students to conduct themselves in my class.

1. Do not be late to class, a late student must not disturb the class or interrupt learning - in particular do not walk across the front of the class.
2. Leaving early is unprofessional as well as rude.
3. Electronic devices (cell phones, texting, beepers, watch alarms etc) must be turned off before class.
4. The use of electronic devices (see #3 above) is not permitted during class or in quizzes/exams as per the student handbook. Consequences may include one or more of the following: dismissal from the class, point/exam grade deductions.
5. No eating or drinking in class.
6. Avoid side conversations and whispering as this is disruptive and disturbs other students
7. Do not cheat or plagiarize. Anyone caught cheating or plagiarizing on exams, quizzes, assignments or any other work for this course will be issued a failing grade for the assignment, removed from the classroom and subject to severe institutional disciplinary action according to RCC policy. If you are suspected of plagiarism, you will bear the burden of proof. Copying the work of another
person, whether an essay, a disease card, homework assignment or answers on a quiz/test, is considered plagiarism. See Board Regulation 6080, Section III. C. 1 and 2 approved on January 25, 2005 for possible consequences.

**Student Code of Conduct – The 'DO's:**

This is just a gentle reminder of how I expect my students to conduct themselves in my class.

1. Keep hydrated during breaks and between classes.
2. Keep a diary to write in your tasks and assignments.
3. Allow yourself 2 to 3 hours of study time per hour of class attendance, attending class is the least of it!
4. Always ask questions – only the brightest students ask the so called ‘stupid’ questions!
5. Just in case you have an emergency – always have a ‘study buddy’ who can pass on information on to you so you keep up.
6. Form a study group asap (preferably by the end of the 2nd week of class).
7. Attend SI groups.
8. Get a tutor.
9. Attend at least 1 or 2 of my office hours during the semester, even if only to introduce yourself to your Professor – establishing connections is an important skill for your future career.
10. Buy a white board and dry erasers.
11. Practice active learning – don’t just read your notes.
12. Don’t take A & P (Anatomy and Physiology) at the same time as Micro unless you can devote your entire life to the sciences and you absolutely have to!
13. Make all your disease cards by week 13, make at least 5 – 8 disease cards from the disease list per week.
14. Use visualization techniques to increase proficiency in lab tasks.
15. Always read book chapters ahead of class (or at least read the synopsis).
16. Keep me informed – if I know ahead of time if you have a problem with respect to this class, then I am more likely to be able to help you.

**Exam Guidelines:**

1. You will need 4 red, half-sheet ‘ParScore’ forms (F-288) for lecture midterms and exams, pencils and erasers.
2. Fill out your name, student ID and phone number on the blank ParScore form before you come to the exam.
3. Bring photo I.D. with you to all exams.
4. If you miss an exam due to an extraordinary circumstance (hospitalization, court date, family death etc), then you have 24 hours after the exam begins to contact me. Valid documentation such as a doctor’s note, death certificate, or court summons must be provided.
5. No backpacks, purses, beverages, food, hats, headphones or cell phones will be allowed to be in your possession during an exam. These items must be placed
under your seat or along the sides of the room. Anyone caught with any of the above items in their possession during an exam will be assumed to be cheating and will earn 0 points on the exam and will be escorted from the classroom.

6. You may not use any dictionary, translation device or calculator during lecture exams or quizzes.

**Quiz Guidelines:**

1. You will need a pencil and an eraser.
2. Quizzes are held at the start of class, if you are late, you will not be permitted to take the quiz.
3. There are no make up lecture or lab quizzes.

**Attendance:**

1. Attendance is mandatory and will be taken at the beginning of the class. It is your responsibility to check in on the attendance sheet – this is a legal document and may not be changed after the class ends.
2. I reserve the right to drop you or issue you with a failing grade if you miss more than 5 hours of class.
3. It is your responsibility to drop yourself if you decide to stop attending the class, don’t assume that I will.

**Accommodations:**

1. Do keep me informed and feel free to come and talk to me in my office at any time during my office hours.
2. If you have a physical, psychiatric/emotional, medical or learning disability that may impact your ability to carry out assigned course work or complete classroom hours, I urge you to contact the staff in Disabled Student Programs and Services in the Administration Building or call (951) 222 – 8060. DSP&S will review your concerns and determine with you what accommodations are necessary and appropriate. All information and documentation is confidential.
3. If you would like to record my lectures, please check with me first.

**Emergency and Safety Issues:**

**In the case of an emergency, keep calm.**

1. One student may be asked to call emergency 911.
2. Locate roll sheet & give it to the Professor

EarthQuake
1. Drop down and go under your desk.
2. Cover the back of your neck with a book.
3. Hold on tight.

**Evacuation**
1. Locate exits & calmly exit 2 by 2 from each door.
2. Head to the evacuation space – car park is safest.

**Fire**
1. Know where the fire extinguisher is located.
2. Only tackle a fire if it is smaller than a trash can, otherwise evacuate & call 911.
3. Calmly evacuate.

**And Finally Welcome to Microbiology!**

I do hope that you are as excited as I am to be studying Microbiology together this semester! Good luck to you all - always remember that I am here to facilitate your learning and that I will help you in any way I can. Let’s have a great semester!