Semester and Year: Summer 2019
Meeting Dates: MW
Section: 85701
Class time and days: Lecture: MW 5:40-7:40 Lab: MW 7:50-10:30
Room: Lecture: WH277 Lab: SH146
Instructor: Ye Luo
Contact Info: Office: SH263
Office phone: 972-761-6727
Email: yluo@dcccd.edu
Last date to withdraw: July 22, 2019
Final Exam Day and time: Wednesday, August 7, 2019, 5:40-7:20

Evaluation Procedures:
Course grade is determined as follows:
- 2 Lecture quizzes (140pts each) 280
- Final exam (last chapters (140 pts) + comprehensive (40pts)) 180
- 2 Lab practicals (100 pts each) 200
- 8 Lab quizzes (12.5 pts each) 100
- Unknown ID 15
- Case study 15
- Lecture & Lab activity and responsibility 10

Total Points 800

Final Grade Determination:
720- 800 = A
640- 719 = B
560- 639 = C
480- 559 = D
less than 480 = F

[This may change at the discretion of the instructor.]
Attendance Policy:
In order to be successful, students must attend and participate each class and lab. Attendance is necessary for class participation and course work. There will be no make-up opportunities for missed assignments.

If you are unable to complete this course, it is your responsibility to withdraw formally---by July 22, 2019. The withdrawal request must be received in the Registrar’s Office by the drop date. Failure to do so will result in your receiving a performance grade, usually an “F.”

Required Materials:
A. Textbook: Brock Biology of Microorganisms 15th edition, Michael T. Madigan, etc.
ISBN: 01346226109 or 978013426109 for the 3-hole punch paper print.
B. Lab Manual (free online) at http://delrio.dcccd.edu/jreynolds/microbiology/RLCmicroindex.html
More lab documents are available at the website, including handouts, pictures, practice samples, etc. Students are responsible for making their own hard copies of lab exercises.

C. LAB MATERIALS NEEDED: safety glasses, lab coat/smock, sharpie pen, masking tape, gloves.

D. OPTIONAL: Photographic Atlas for Microbiology by Leboffe (Morton Publishing)—good descriptions and pics

Class Calendar and Units of Instruction: on the last page.

Instructor Policies and Suggestions for Success:
- Please turn off your mobile phones/devices during class periods.
- No Food or drinks will be permitted in the laboratory.
- You are expected to take good care of all the equipment/materials provided to you in the lab. It is your responsibility to keep your working area and materials clean.
- You will be expected to utilize your time in the lecture/lab session efficiently. Conversations other than those related the topic of the lab session will not be allowed. Student(s) may be asked to leave the classroom/lab at the discretion of the instructor if persistent talking during class.
- Be prepared to be an active independent learner and to work cooperatively with other students as well.
- Consider this class as or more important than your job. It is not O.K. to leave lab early, or miss lab completely, because of work.
- Attendance and note-taking will provide an efficient way to succeed in the class.
- It is suggested that you will need to spend at least 2 hours of reading and self-study for each hour of lecture. If you cannot or will not do this, you might want to re-think this class. Be realistic about your work and class schedule when registering.

Academic Misconduct Regarding Exams & Lab Practicals:
Students should not leave during an exam or a lab practical to use the bathroom. Go BEFORE the test.
Cheating on tests and lab practicals include, but is not limited to, the following activities:
- looking onto someone’s answer sheet, even if you do not use their answers,
- knowingly allowing someone to look onto your answer sheet,
- using a cheat sheet, or other unauthorized material or looking at cell phone,
- talking to someone or otherwise exchanging information during an exam,
- asking someone what is on a lab practical or telling someone what is on a lab practical,
- waiting out in the hallway when people have just taken the exam to hear them discuss the lab exam.
- removing from lab any material meant to stay in lab, e.g., models, dissected organs, etc.,
- writing answers on the table
- writing answers on the question card
- going or looking into a lab where the lab practical is set up, and,
- getting the answer key before the test.

Any student violating any rule(s) above will get a ZERO on the lecture exam and lab practical.
Institutional Policies:
Institutional Policies relating to this course can be accessed from the following link
www.richlandcollege.edu/syllabipolicies

RICHLAND COLLEGE’S QUALITY ENHANCEMENT PLAN ~ LEARNING TO LEARN:
DEVELOPING LEARNING POWER:
Richland College is piloting its Quality Enhancement Plan (QEP) in select classes. The QEP provides techniques, practices, and tools to help students develop the habits, traits or behaviors needed to be effective and successful lifelong learners in college and in life. For more information, please check QEP 2013 (http://www.richlandcollege.edu/qep)

ACADEMIC PROGRESS:  Students are encouraged to discuss academic goals and degree completion with their instructors. Specific advising is available throughout the semester. Check Richland College Steps to Success (http://www.richlandcollege.edu/admissions/process.php) Also, consult the Advising Syllabus http://richlandcollege.edu/assets/uploads/2015/02/advising-syllabus.pdf regularly to check if you are on track.

DCCCD CATALOG COURSE DESCRIPTION
Study of the morphology, physiology, and taxonomy of representative groups of pathogenic and nonpathogenic microorganisms. Emphasis is placed on applications to humans. Pure cultures of microorganisms grown on selected media are used in learning laboratory techniques. Includes a brief preview of food microbes, public health, and immunology. Designed for non-science majors and allied health students. (3 Lec., 4 Lab.)

PREREQUISITES
BIOL 1406 or BIOL 2401 or SCIT 1407. One of the following must be met: Student cannot take both BIOL 2420 and BIOL 2421 to satisfy the Core science credit.

ACGM COURSE DESCRIPTION AND LEARNING OUTCOMES
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.

The lab part of this course covers basics of culture and identification of bacteria and microbial ecology. This course is primarily directed at pre-nursing and other pre-allied health majors and covers basics of microbiology.

Learning Outcomes
Upon successful completion of this course lecture part, students will:
1. Describe distinctive characteristics and diverse growth requirements of prokaryotic organisms compared to eukaryotic organisms.
2. Provide examples of the impact of microorganisms on agriculture, environment, ecosystem, energy, and human health, including biofilms.
3. Distinguish between mechanisms of physical and chemical agents to control microbial populations.
4. Explain the unique characteristics of bacterial metabolism and bacterial genetics.
5. Describe evidence for the evolution of cells, organelles, and major metabolic pathways from early prokaryotes and how phylogenetic trees reflect evolutionary relationships.
6. Compare characteristics and replication of acellular infectious agents (viruses and prions) with characteristics and reproduction of cellular infectious agents (prokaryotes and eukaryotes).
7. Describe functions of host defenses and the immune system in combating infectious diseases and explain how immunizations protect against specific diseases.
8. Explain transmission and virulence mechanisms of cellular and acellular infectious agents.
Upon successful completion of this course lab part, students will:
1. Use and comply with laboratory safety rules, procedures, and universal precautions.
2. Demonstrate proficient use of a compound light microscope.
3. Describe and prepare widely used stains and wet mounts, and discuss their significance in identification of microorganisms.
4. Perform basic microbiology procedures using aseptic techniques for transfer, isolation and observation of commonly encountered, clinically significant bacteria.
5. Use different types of bacterial culture media to grow, isolate, and identify microorganisms.
6. Perform basic bacterial identification procedures using biochemical tests.
7. Estimate the number of microorganisms in a sample using methods such as direct counts, viable plate counts, or spectrophotometric measurements.
8. Demonstrate basic identification protocols based on microscopic morphology of some common fungi and parasites.

CORE CURRICULUM STATEMENT
The objective of the study of a natural sciences component of a core curriculum is to enable the student to understand, construct, and evaluate relationships in the natural sciences, and to enable the student to understand the bases for building and testing theories.

Intellectual Competencies:
- **READING**: the ability to analyze and interpret a variety of printed materials - books, documents, and articles - above 12th grade level.
- **WRITING**: the ability to produce clear, correct and coherent prose adapted to purpose, occasion and audience - above 12th grade level.
- **SPEAKING**: ability to communicate orally in clear, coherent, and persuasive language appropriate to purpose, occasion, and audience above 12th grade level.
- **LISTENING**: analyze and interpret various forms of spoken communication, possess sufficient literacy skills of writing, reading - above 12th grade level.
- **CRITICAL THINKING**: think and analyze at a critical level.
- **COMPUTER LITERACY**: understand our technological society, use computer-based technology in communication, solving problems, and acquiring information.
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<thead>
<tr>
<th>Week of</th>
<th>Lecture Topic</th>
<th>Lec. Exam</th>
<th>Date</th>
<th>HW &amp; Lab Quiz</th>
<th>Lab Topic</th>
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<tbody>
<tr>
<td>Jun 3</td>
<td>TR Classes start on Thursday June 6&lt;br&gt;MW Classes start on Friday June 7&lt;br&gt;Ch1 Microbial World&lt;br&gt;Ch2 Cell Structure &amp; Function</td>
<td>RF</td>
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<td>Introduction, Safety and Check in&lt;br&gt;14,15- Use of the Microscope/Bacterial smears</td>
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<td>Jun 10</td>
<td>Ch2 Cell Structure &amp; Function</td>
<td>MT</td>
<td></td>
<td>WR √</td>
<td>1-Media preparation; 2-Aseptic transfers&lt;br&gt;8-Bacterial Colony Morphology&lt;br&gt;16-Hanging drop wet mount; 21-Flagella stains; 38-TTC motility&lt;br&gt;5-Bacteria isolates from sponge (kitchen sponge needed)</td>
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<td>Jun 17</td>
<td>Ch3 &amp;14 Metabolism</td>
<td>MT</td>
<td>WR √</td>
<td>F</td>
<td>TR CLASSES ALSO MEET FRIDAY JUNE 14&lt;br&gt;(EXTRA LECTURE IN CLASSROOM OR LAB)</td>
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<td>Jun 24</td>
<td>Ch5 Growth &amp; Control</td>
<td>MT</td>
<td>WR √</td>
<td>F</td>
<td>MW CLASSES ALSO MEET FRIDAY JUNE 21&lt;br&gt;(EXTRA LECTURE IN CLASSROOM OR LAB)</td>
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<tr>
<td>Jul 1</td>
<td>Ch18 Diversity of Microbial Eukarya&lt;br&gt;Ch15-17 Diversity of Bacteria</td>
<td>M</td>
<td>TW √</td>
<td>F</td>
<td>Staph ID: 31-Coagulase; 44-Beta-Galactosidase test (ONPG)&lt;br&gt;46-Water Analysis 47-Mead&lt;br&gt;9-Antibiotic Sensitivity (Kirby-Bauer); 10-Antimicrobials&lt;br&gt;50-Protozoa&lt;br&gt;53-Algae&lt;br&gt;NO CLASS THURSDAY ( JULY4 HOLIDAY)</td>
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<td>Jul 8</td>
<td>Ch15-17 Diversity of Bacteria continued</td>
<td>MT</td>
<td>WR √</td>
<td></td>
<td>Lab Practical #1&lt;br&gt;Gram (-) Unknown Begin (Gram stain, Steak TSA )&lt;br&gt;6-O: requirements; 35-Carbohydrate use&lt;br&gt;52-Helminths</td>
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<td>Jul 15</td>
<td>Ch24-25 Microbe-Human interactions &amp; infection&lt;br&gt;Ch28 Clinical Microbiology&lt;br&gt;Ch29-33 Epidemiology, Diseases</td>
<td>MT</td>
<td>WR √</td>
<td></td>
<td>37-IMViC; 38-TTC motility; 39-Gelatin hydrolysis&lt;br&gt;40-Decarboxylation of amino acids; 41-Deamination of amino acids&lt;br&gt;42-Nitrate reduction&lt;br&gt;25-OF glucose; 28-30- Starch, Lipid hydrolysis, Casein hydrolysis&lt;br&gt;34-Urea hydrolysis&lt;br&gt;48-Yogurt</td>
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<td>Jul 22</td>
<td>July 22 – LAST DAY TO WITHDRAW&lt;br&gt;Ch8, 10 Viruses and Viral Genomics</td>
<td>MT</td>
<td>WR √</td>
<td></td>
<td>Gram (-) UNKNOWN DUE&lt;br&gt;45-API -20E (two strips per class)&lt;br&gt;12-Oral biofilms (toothbrush needed)&lt;br&gt;13- Urine culture&lt;br&gt;51-Bacteriophages</td>
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<td>Jul 29</td>
<td>Ch12 Genetics and Biotechnology</td>
<td>MT</td>
<td>WR √</td>
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<td>54-DNA Restriction and electrophoresis part 2&lt;br&gt;55-Serology: Antigen-antibody tests&lt;br&gt;Disease Presentation&lt;br&gt;LAB Cleanup &amp; Checkout</td>
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<td>Aug 5</td>
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<td>WR √</td>
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<td>Lab Practical #2</td>
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