RICHLAND COLLEGE DEPARTMENT OF BIOLOGY
School of Mathematics, Science, and Health Professions
Course Syllabus For
Biol 2420 Microbiology for Non-Science Majors
4 credit hours (3 lec/4 lab)

INSTRUCTOR’S INFORMATION
(Instructor reserves the right to amend this information as necessary.)

Semester and Year: Spring 2019
Section: 83002  Class time and days: MW 12:45 – 2:05 PM (Lecture) / MW 2:15 – 4:15 PM (Lab)
Room: WH277 (Lecture) / SH 148 (Lab)

Instructor: Dr. Shahab Danesh  Email: SDanesh@DCCCD.Edu
YouTube Channel: https://www.youtube.com/channel/UCqpo1ekKomzZY0YbN5LD0Ng
Office: WH294  Tel: (214) 890-3824 for voice messages

Office hours: M (11:45-12:45pm), T (1:50-2:50pm), W (11:00-12:00pm), R (10:00-11:00am),
F (10:15-11:15am) I will try to stream office hours live on the YouTube channel when I can.

Last date to withdraw: Wednesday, April 17th, 2019
Final Exam Day and time: Wednesday, May 15, 2019 12:20-2:10 @ WH277. Bring scantron 882E

Evaluation Procedures:

Students may earn a maximum of 1000 points for the lecture and lab components combined. The final
grades for the course will be assigned as follows:

4 lecture exams @ 100 points each = 400 points
2 Lab Practical Exams @ 100 points each = 200 points
Disease Pamphlet & Pres. @ 70 points total = 100 points
4 Lab quizzes @ 25 points each = 100 points
Unknown Bacterium Identification and report = 100 points
4 Homeworks @ 25 points each = 100 points

Total Points Earned = 1000 points possible

Divide the Total Points Earned by 10 to get percentage grade. Convert to letter grade:
90 or above (900 points) = A
80-89.9 (800 points) = B
70-79.9 (700 points) = C
60-69.9 (600 points) = D
Below 60 (<600 points) = F

For an A you must earn: 900 points
For a B you must earn: 800 points
For a C you must earn: 700 points

Revised 5/11/2011
Attendance Policy:
You are expected to be in class every period. If you know in advance that you have to be absent for a particular exam with documentation, you need to notify the instructor BEFORE the exam to arrange an alternative time. All make up examinations will be in short answer format and administered at the Medina Hall testing center. Penalty for late assignments is 10% reduced points for each class day late. It is required that you provide valid written documentation for your absence before any make-up is considered. There are no make-up lab practicals: if you cannot attend your own section’s scheduled lab practical, you will need to schedule and attend another lab period during their lab practical time. All students (including student athletes) are responsible for informing the instructor of excused absences and scheduling any and all make up work.

Academic Progress:
Students are encouraged to discuss academic goals and degree completion. Specific advising is available throughout the semester. Check www.richlandcollege.edu/admissions/process.php for more details.

Required Materials:


2. Lab book: Online Lab Manual
(http://delrio.dcccd.edu/jreynolds/microbiology/2420/BIOL%202420%20lab%20manual%20TOC.html)
Students are responsible for making their own hard copies of lab exercises.

3. LAB MATERIALS NEEDED: safety glasses, lab coat/smock, sharpie pen, masking tape, gloves, and goggles.
(Inexpensive paper lab coats are available in the bookstore)

eCampus: Visit eCampus for assignments, information, grades, and lecture Powerpoints. I suggest that you print out each lecture Powerpoint prior to class to facilitate in-class note taking. Lecture Powerpoints will be available for download the day of, or night before, each lecture.

Instructor Policies and Suggestions for Student Success:
- You are expected to behave in an adult manner while in class, avoid interruptions / distractions to others in class. You may be asked to leave the class if you are disruptive.
- This class DEMANDS group interactive skills, both in lab and lecture. Be aware that you will have to COOPERATE with lab partners, in addition to collaborative groups in the lecture class.
- Late assignments are given a penalty of 10% grade reduction per class period late.
- Plagiarism is taking of someone’s ideas and misrepresenting them as one’s own. This includes word-for-word lifting of words as well as lifting ideas (even paraphrasing them in your own words) without giving someone credit for them (either by footnoting, or in the Works Cited at end of the paper). Plagiarism is not allowed and will result in a zero grade.
- Cheating is forbidden and is grounds for a grade of F for the semester.
- Food and drink are allowed during lecture so long as it does not disrupt others and messes are avoided. However, there is absolutely no food allowed in lab (SH148).
- Cell phones, pagers, etc. must all be switched to silent upon entering the class/lab room.
**BE ON TIME for lecture and lab.** Arriving late will not only prevent you from getting a good start on course material, but also it poses a great distraction for other students and the instructor. Exams can be made up with valid excuse and written documentation. **Make-up exams will be in short answer format only. You may not make-up the lab practicals for any reason.** If you will be missing that lab day, it is your responsibility to attend another section’s practical exam. Because many labs are collaborative, your absence from lab is detrimental to your lab partner’s success. Make sure to attend all lab sessions.

**Late works:** Any assignment that is turned in late will be assessed a 10% penalty for each **CLASS DAY** it is late.

**Disease pamphlet and presentation:**
In this course you are required to submit a disease pamphlet and present powerpoint covering a disease based on chapters 19 to 25. You and a partner will select an infectious disease of your choosing for this presentation. Presentation dates will be assigned for each group. Equal participation is expected. Guidelines for this presentation will be posted on eCampus.

**Practical Exams:**
Practicals are lab examinations. Thirty two stations will be set up in the lab, each with 1-4 questions for a total of 50 questions. Students will rotate from station to station observing specimens and answering questions related to concepts learned during previous labs. Students may not miss the practical examination for any reason. If a student misses the practical, it is the student’s responsibility to coordinate with the professor of another BIOL2420 lab section and ask permission to attend their lab practical time.

**Unknown bacterium identification and report:**
Students will be assigned an unknown bacterium to identify utilizing a series of tests which span several lab periods. The journey toward identification of the unknown must be journaled and once you have identified the bacterium, you must turn in a report detailing test results and your findings. Guidelines will be posted on eCampus for this report.

**Homework:** Homework will be posted on eCampus and must be printed out, completed and turned in by an assigned due date as a physical document. Homework covers concepts related to lecture.

**Lab Quiz & Exams:** Scantron form 882E is required for all exams and the final exam. Scantrons must be filled in with pencil. **Written documentation is required for exam. Valid excuses include hospitalization and death in the family. All make-up exams will be conducted in short answer format only.** Lab quizzes and deadlines will be posted on eCampus and must be printed out and turned in as a physical document.

**INSTITUTIONAL POLICIES**
[www.richlandcollege.edu/syllabipolicies](http://www.richlandcollege.edu/syllabipolicies)

**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.
<table>
<thead>
<tr>
<th>Week of</th>
<th>Lecture Topic</th>
<th>Date</th>
<th>Lab Topic</th>
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<tbody>
<tr>
<td>Jan 21</td>
<td><strong>No Class Monday – MLK Holiday</strong></td>
<td>M</td>
<td><strong>No Lab Monday – MLK Holiday</strong></td>
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<tr>
<td></td>
<td>Ch1 - History</td>
<td>W</td>
<td>Introduction, Safety and Check in Mock epidemic, Ubiquity of Bacteria</td>
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<td>Jan 28</td>
<td>Ch3- Cell Structure &amp; Function (Focus on prokaryotes &amp; Self-study eukaryotes)</td>
<td>M</td>
<td>Transfer of bacteria, Pure Culture Techniques</td>
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<td>W</td>
<td>Microscopy Use (and simple staining), Preparation of Specimens</td>
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<td>Sep 10</td>
<td>Ch4- Microscopy and Specimen Preparation</td>
<td>M</td>
<td>Gram Stain; Spore Stain; Acid-fast Stain</td>
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<td></td>
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<td>W</td>
<td>Capsule Stain; Motility tests</td>
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<td>Feb 11</td>
<td>Ch5- Metabolism</td>
<td>M T</td>
<td>Dilutions &amp; Pipetting Colony Morphology</td>
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<td>W R</td>
<td>Counting Bacteria</td>
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<td>Feb 18</td>
<td><strong>LECTURE EXAM 1</strong>&lt;br&gt;Ch6- Nutrition &amp; Growth</td>
<td>M</td>
<td>Environmental Conditions &amp; Growth</td>
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<td></td>
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<td>W</td>
<td>Effects of Temperature, Surgical Handscrub</td>
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<td>Feb 25</td>
<td>Ch9, 10- Control of Microorganisms</td>
<td>M</td>
<td>Antibiotic (Kirby-Bauer) Sensitivity Antimicrobial Chemicals</td>
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<td></td>
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<td>W</td>
<td>Lecture during lab</td>
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<td>Mar 4</td>
<td>Ch 11, 12- Classifying Prokaryotes &amp; Eukaryotes</td>
<td>M</td>
<td>Protozoa; Fungi</td>
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<td>W</td>
<td><strong>LAB PRACTICAL #1</strong></td>
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<td>Mar 11</td>
<td><strong>SPRING BREAK NO CLASS THIS WEEK</strong></td>
<td>M/W</td>
<td><strong>SPRING BREAK NO LAB THIS WEEK</strong></td>
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<td>Mar 18</td>
<td>Ch 19 -Gram-Positive Bacteria</td>
<td>M</td>
<td>Ectoparasites</td>
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<td>W</td>
<td><strong>Gram- ID 1</strong>&lt;br&gt;UNIVERSAL BACTERIUM ASSIGNED Stocks on TSA slant and TSB, Oxygen Requirements, Gram Stain, Streak TSA Plate for Colony Morphology</td>
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<td>Mar 25</td>
<td>Ch 20 -Gram-Negative Bacteria</td>
<td>M</td>
<td><strong>Gram- ID 2</strong>&lt;br&gt;IMViC, TTC, Phenol Red broth, Oxidase, Catalase</td>
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<td>W</td>
<td><strong>Gram- ID 3</strong>&lt;br&gt;Nitrate, Decarboxylase, Deaminase, Gelatin</td>
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<td>Apr 1</td>
<td><strong>LECTURE EXAM 2</strong>&lt;br&gt;Ch 21-Atypical Bacteria</td>
<td>M</td>
<td><strong>Gram- ID 4</strong>&lt;br&gt;Skim Milk, Lipid, Starch, Urea</td>
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<td>W</td>
<td><strong>Gram- ID 5</strong>&lt;br&gt;Additional Tests as Needed API 20E identification</td>
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<td>Apr 8</td>
<td>Ch13 -Viruses</td>
<td>M</td>
<td><strong>UNKNOWN DUE</strong>&lt;br&gt;Staph &amp; Strep ID 1</td>
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<td>W</td>
<td>Staph &amp; Strep ID 2</td>
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<td>Apr 15</td>
<td>Ch24 -DNA Viruses</td>
<td>M</td>
<td>Urine culture</td>
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<td>W</td>
<td>Staph &amp; Strep ID 3</td>
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<td>Apr 22</td>
<td>Ch25 -RNA Viruses</td>
<td>M</td>
<td>Staph &amp; Strep ID 4 Bacteriophages</td>
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<td>W</td>
<td>Staph &amp; Strep ID Finish Serological Testing – DEMO</td>
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<td>Apr 29</td>
<td><strong>LECTURE EXAM 3</strong>&lt;br&gt;Ch14- Infection &amp; Epidemiology</td>
<td>M</td>
<td>Helminths</td>
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<td>W</td>
<td><strong>Disease Presentation</strong></td>
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<td>May 6</td>
<td>Ch 15-16: Immunity</td>
<td>M</td>
<td><strong>LAB PRACTICAL #2</strong></td>
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<td>W</td>
<td>Lab Cleanup / <strong>Disease Presentations</strong></td>
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<td>May 13</td>
<td><strong>Final] EXAM 4</strong> Wednesday, May 15, 2019 12:20-2:10 @ WH277. Bring scantron 882E</td>
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**Biology 2420: Microbiology for Non-science Majors Spring 2019 Richland College**