BIO204-001 Microbiology for Health Sciences

4 SEMESTER CREDITS
SPRING SEMESTER Jan 09, 2017 - Apr 28, 2017
LECTURE: MWF 1:00-1:50 PM
LAB: MW 2:00-2:50AM

INSTRUCTOR: Warren McClure
EMAIL: warren.mcclure@ojc.edu
PHONE NUMBER: 719-384-6803
OFFICE: Wheeler 125
OFFICE HOURS: MWF 8:30-10:00 am
M 2:00 - 4:00 pm
WF 3:00 – 5:00 pm
Desire2Learn: https://ojc.desire2learn.com
(use when MyOJC portal is inoperable)

COURSE DESCRIPTION
Designed for health science majors. Examines microorganisms with an emphasis on their structure, development, physiology, classification, and identification. The laboratory experience includes culturing, identifying, and controlling microorganisms with an emphasis on their role in infectious disease. ~This course is one of the Statewide Guaranteed Transfer courses. GT-SC1

PRE-REQUISITE
BIO111

STANDARD COMPETENCIES & STUDENT LEARNING OUTCOMES
1. Demonstrate an understanding of the terminology and principles of basic chemistry, cell structure and function, bioenergetics, cell reproduction and genetics, microbial taxonomy, and Darwinian evolution.
2. Demonstrate an understanding of microbial cell biology, and genetics.
3. Demonstrate technical laboratory skills, such as microscopy, aseptic techniques, culturing and isolation, and media and material preparation and sterilization.
4. Demonstrate cognitive laboratory skills, such as collection and analysis of data, identification of microbes, and communication of results.
5. Demonstrate an understanding of terminology and principles immunology, epidemiology,
and virology.
6. Integrate themes by examining microbial evolution, diversity and disease.

**COURSE OUTLINE**

I. Introduction: Nature of Science, Historical Perspective of Microbiology and Survey of Microbes.
II. Fundamentals of Chemistry
III. Microscopy and Cell Structure
IV. Microbial Cell Biology
   A. Structure and function
   B. Metabolism
   C. Growth
V. Genetics
   A. Inheritance
   B. Mutations
   C. Genetic engineering
VI. Taxonomy
VII. Prokaryote and Eukaryote microbes
VIII. Viruses
IX. Interactions and impact of microbes and humans
   A. Microbial Pathogenicity Mechanisms
   B. Epidemiology
   C. Immunology
   D. Antibiotics and control of microbial growth
X. Integrating Themes
   A. Microbial evolution, diversity and disease.

**COURSE COMPETENCY ASSESSMENT**

<table>
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<tr>
<th>SLO</th>
<th>ASSESSMENT ACTIVITIES</th>
<th>Chapter#</th>
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<tr>
<td>I. Demonstrate an understanding of the terminology and principles of basic chemistry, cell structure and function, bio-energetics, cell reproduction and genetics, microbial taxonomy, and Darwinian evolution.</td>
<td>Terminology and Specific facts will be assessed on tests and quizzes. Many topics will be assessed by take home assignments and with active learning strategies in lecture and lab. Concept map building will also be utilized.</td>
<td>Ch. 1-18 and Lab</td>
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<td>II. Demonstrate an understanding of microbial cell biology, and genetics.</td>
<td>Students will be assessed through a variety of exam questions. Students will be assessed on their design a hypothetical operon in an effort to better understand microbial genetics.</td>
<td>Ch. 5-8</td>
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<tr>
<td>III. Demonstrate technical laboratory skills, such as microscopy, aseptic techniques, culturing and isolation, and media and material preparation and sterilization.</td>
<td>Ongoing evaluation of technical skills will occur in the laboratory throughout the semester. Verbal questions and immediate feedback for students will be used.</td>
<td>All lab exercises</td>
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<td>IV. Demonstrate cognitive laboratory skills, such as collection and analysis of data, identification of microbes, and communication of results.</td>
<td>Skill will be assessed with a final project in which students will identify 2 unknown organisms. A final paper will be written on the unknowns project.</td>
<td>Unknown ID and various other labs</td>
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<tr>
<td>V. Demonstrate an understanding of terminology and principles of immunology, epidemiology, and virology.</td>
<td>Terminology and Specific facts will be assessed on tests and quizzes. Students will be using the CDC MMWR to track notifiable diseases.</td>
<td>Ch. 10-18</td>
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<td>VI. Integrate themes by examining microbial evolution, diversity, and disease.</td>
<td>Students will be required to read and interpret graphs and while track notifiable diseases. They will need to be able to identify differences in disease causing microbes and how they are also related. This will also be assessed on exams and quizzes.</td>
<td>Ch. 1-18 especially Ch. 13-16</td>
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**METHOD OF GRADING & CLASSROOM MANAGEMENT**

**Student Attendance:**

- Regular attendance at all class meetings and laboratory sessions is required of all students. College policy provides that at the instructor’s discretion a student’s grade may be lowered one letter grade after three unexcused absences. Being late to class is unavoidable once in a great while but such occurrences should be exceedingly rare. Two lates in any one week will be counted as an absence. Students should always notify faculty and/or instructors of absences beforehand if possible.
Serious illnesses, death in the family, or participation in college-sponsored activities are examples of conditions for receiving an excused absence. Arrangements for excuses are to be made between the student and the instructor. In case of extended absences, the Student Services Center should be notified.

Past experience has shown a direct correlation between successful completion of this course and good attendance.

Please turn off all cell phones during lecture, lab, tests, and exams unless otherwise instructed.

Please refrain from texting, Instagram or Snapchatting at all times. Your devises may act as a fomite for transmission of microbes, do not use them unless instructed to do so!

Academic Integrity

Otero Junior College is committed to a high standard of academic integrity among its faculty and students. We pledge a spirit of honesty and honor in our academic endeavors. Acts of cheating are personally dishonorable and create barriers to the overall goals of higher education, and generally weaken our society. Any act of academic dishonesty will result in the student grade being dropped to a zero (0) for that assignment, exam, or quiz. Second time repeat offenders of the Academic Code of Integrity will result in a failing grade for this course.

***See the Academic Code of Integrity.

Exams and Quizzes

All tests will be taken at the assigned time in class. Missed quizzes or exams will be given a zero unless the instructor is notified of a good reason within 24 hour following the absence. “Good” excuses include: hospitalization of self or immediate family member or athletic event with less than 3 days notice. Tests will be made up at the instructor’s convenience. Tests may be taken early if approved in advance.

Labs

Completed lab write ups will be due one week after the labs completion. All report questions must be answered to get full credit. Labs are due one week after the completion of the lab. Late labs, up to one week after the due date, will be assessed a 20% penalty and will be awarded a 0 if more than one week late. There is no make-up for missed microbiology labs. Organisms, media and solutions are time sensitive. If you miss a lab it is recorded as a zero. Your lowest lab mark of the semester will be dropped.

Unknown and Report

Students will be required to determine 2 unknown bacterial strains during the lab section of class.
A lab report will be written on the unknowns.

**Class Participation**
- Take home and in class assignments will be given throughout the semester. Many will be discussed in class to assess understanding of concepts.
- Clickers will on occasion be used to review and stimulate classroom conversation.
- At least one journal article will be given as assigned reading and will be discussed in class.
- Students will be expected to participate and contribute to all assignment mentioned and any other that may be assigned.

**Grade Distribution:**
- MMWR Presentation = 7.5%
- Quizzes = 10%
- Tests = 50%
- Labs = 10%
- Class participation and activities = 5%
- Unknowns Lab = 10%
- Final Exam = 7.5%

**GRADING SCALE**
- A = 90-100%
- B = 80-89%
- C = 70-79% *
- D = 60-69%
- F = < 60%
* To earn a C or better overall, the lab and lecture average must be 70% with each section being no worse than 60%. Examples: 60% in lab and 80% lecture will be a C overall. 55% in lab and 80% in lecture will be a D overall. 65% in lab and 68% in lecture will be a D.

**SERVICES FOR STUDENTS WITH DISABILITIES**
Students with documented disabilities should contact the Disabilities Services Coordinator located in McBride Room 129, or call 719-384-6862 in the first two weeks of the semester about free services to assist them. Services include: tutoring, note-takers, readers/writers for tests, in-class aide for reading/writing, accommodation of physical setting in classroom, tape recorded lectures, enlarged print on handouts/tests, tests in the testing center, sign language and oral interpreting, adaptive equipment, alternative testing, software/hardware accommodations and other specialized academic procedures.

**MANDATORY REPORTING**
Our College is committed to preserving a safe and welcoming educational environment for all students. As part of this effort, I have an obligation to report certain issues relating to the health and safety of campus community members. I must report to the appropriate College officials any allegation of discrimination or harassment. Sexual misconduct, which includes sexual
harassment, non-consensual sexual contact, non-consensual sexual intercourse, and sexual exploitation, is considered a form of discrimination.

In addition to reporting all discrimination and harassment claims, I must report all allegations of dating violence or domestic violence, child abuse or neglect, and/or credible threats of harm to yourself or others. Such reports may trigger contact from a College official who will want to talk with you about the incident that you have shared. In almost all cases, it will be your decision whether you wish to speak with that individual. If you would like more information, you may reach the Title IX/EO Coordinator at 719-384-6824. Reports to law enforcement can be made 719-384-2525.

If you would like a confidential resource, please contact 719-384-6824.

Further information may be found on the College web site: www.ojc.edu.

REQUIRED LEARNING RESOURCES
Texts – Microbiology Principles and Explorations, 8th Edition or newer, J.G. Black, Wiley 2012
Hardcover Lab Notebook (Provided)

TENTATIVE COURSE CALENDAR
This sequence of content is subject to change.

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<td>W 1/11</td>
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<td>Chapter 2 &quot;Fundamentals of chem.&quot;</td>
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<td>F 1/13</td>
<td>Chapter 2</td>
<td>Lab results and Chapter 2 &quot;Fund. of chem.&quot;</td>
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<td>M 1/16</td>
<td>Chapter 3</td>
<td>Chapter 3 &quot;Microscopy and Staining&quot;</td>
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<td>W 1/18</td>
<td>Chapter 4</td>
<td>Chapter 4 &quot;Characteristics of Pro and Euk Cells&quot;</td>
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<tr>
<td>F 1/20</td>
<td>Chapter 4</td>
<td>Chapter 4 &quot;Characteristics of Pro and Euk Cells&quot;</td>
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<tr>
<td>M 1/23</td>
<td>Chapter 4</td>
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<tr>
<td>W 1/25</td>
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<td>Chapter 6&quot;Growth and Culturing&quot;</td>
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<tr>
<td>W 2/1</td>
<td>Chapter 5</td>
<td>Chapter 5 &quot;Essential Concepts of Metabolism&quot;</td>
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<tr>
<td>F 2/3</td>
<td>Chapter 5</td>
<td>Chapter 5 &quot;Essential Concepts of Metabolism&quot;</td>
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<tr>
<td>M 2/6</td>
<td>Chapter 5</td>
<td>Chapter 5 &quot;Essential Concepts of Metabolism&quot;</td>
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<tr>
<td>W 2/8</td>
<td>Chapter 7</td>
<td>Chapter 7 &quot;Microbial Genetics&quot;</td>
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<td>F 2/10</td>
<td>Chapter 7</td>
<td>Chapter 7 &quot;Microbial Genetics&quot;</td>
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### Laboratory Schedule

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<td>Growth Patterns on Different media</td>
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<td>Week 3</td>
<td>2-8, 2-10, 2-12</td>
<td>Environmental Factors and growth</td>
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<td>24-25, 27-29, 32-33</td>
<td>Eukaryotic Microorganisms...</td>
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<td>24-25, 27-29, 32-33</td>
<td>Antimicrobial Therapy</td>
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<td>24-25, 27-29, 32-33</td>
<td>Innate Host Defenses</td>
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<td>24-25, 27-29, 32-33</td>
<td>Immunological Disorders...</td>
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<td>24-25, 27-29, 32-33</td>
<td>Epidemiology &amp; Nosocomial</td>
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<td>24-25, 27-29, 32-33</td>
<td>S. aureus Paper Discussion</td>
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<td>24-25, 27-29, 32-33</td>
<td>Immunology 1: Basic Principles</td>
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<td>24-25, 27-29, 32-33</td>
<td>Immunological Disorders...</td>
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<td>Week 4</td>
<td>2-13 and 2-15</td>
<td>34-35 and 39-40</td>
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<td>Week 13</td>
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<td>Week 16</td>
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**CRITICAL DATES AND FACULTY VIEWS ON ACADEMIC INTEGRITY**

**TO:** Faculty and Instructors  
**FROM:** Kim Grimsley, Vice President for Instruction  
**SUBJECT:** Withdrawal Policy and Dates of Inclusion for Spring Semester 2017, Academic Code of Integrity, Mandatory reporting and Mission Statement  
**DATE:** November 29, 2016  

Faculty members are encouraged to include this material in their syllabus.

**Withdrawal Policy and Dates of Inclusion for Spring Semester 2017**

This memo identifies the inclusive dates for the use of the “W” grade for Spring Semester 2017 classes. Students should be clearly informed of these dates. **NOTE:** The first two stages are student initiated.

**January 9 – January 24 (no later than 5:00 p.m.)**

Students can drop a course with no financial obligation. This activity is completed by the student at the Student Services Center.

**January 25 – April 7 (no later than 5:00 p.m.)**

Students can earn the grade of “W” ( withdrew) regardless of their academic standing, but are financially obligated for the course. Students initiate the activity by completing a withdrawal form available from the Student Services Center. The instructor is informed of this activity by the Student Services Center.

**April 8 – April 28**

No withdrawals are permitted – standard grading is in effect. No grades of “W” are to be used.
Compressed courses will have individual census and withdrawal dates: calculate 15% of total calendar days excluding weekends to determine drop date and 80% of total calendar days excluding weekends to determine the last day to receive a "W."

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**Academic Code of Integrity**

*Faculty Developed*

*Otero Junior College is committed to a high standard of academic integrity among its faculty and students. We pledge to maintain a spirit of honesty and honor in our academic endeavors.*

As a general rule, using the ideas, words, and work of another (others) and passing them off as your own violates this code. Other specific examples include, but are not limited to:

1. Copying homework of another student.
2. Failure to cite sources used in writing assignments.
3. Bringing facts or any aid not allowed by the instructor to an exam situation for the purpose of copying or referencing them on the exam.
4. Bringing pre-written essays into an exam situation.
5. Copying another student's work on an exam.
6. Making up sources and information for inclusion in a research paper.
7. Using research papers found online.
8. Giving or receiving information on any assignment or exam where working with others is not allowed by the instructor.
9. Obtaining a copy of an exam, by whatever means, before it is administered.
10. Copying from published material as it is written, copying most of the text and changing a few words here and there, or restructuring sentences of the text.
11. Claiming an idea is your own when it is not.
12. Having someone else take an exam for you or complete an assignment for you.

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**Otero Junior College Institutional Student Learning Outcomes**

Upon completion of an Associate’s Degree, as well as many certificates at OJC, students can expect to attain the following outcomes:

**Information Literacy**

Students will read and use technology to prioritize and interpret relevant information to formulate justifiable theories and/or courses of action.

**Written Communication**

Students will write effectively to communicate concepts using applicable vocabulary.

**Mathematics**

Students will use appropriate quantitative literacy methods and data analysis to investigate and solve problems.

**Technology**

Students will select and apply appropriate forms of technology to solve problems or compile information.

**Critical Thinking**

Students will identify and analyze credible information, develop a well-supported solution and apply and communicate ideas in a variety of settings.
Otero Junior College Mission Statement

“To provide quality higher education that is accessible, transforms lives, expands employment opportunities, enriches our communities, promotes individual and global cultural diversity, and fosters economic development.”