

Biology 31 (BIOL31) Microbiology

Semester: Fall 2016 Reedley Community College

Instructor: Andrew Strankman	Office: LFS 5
Email: andrew.strankman@reedleycollege.edu	Office Hours:
Phone: 559-638-0300 ext. 3499	Monday: 9:00-10AM
Class No. 51195	Tuesday: 4:30-5:30PM
Date: 08/15/16 - 12/16/16	Friday: 12:00-1:00PM (Digital)
Lecture: Tuesday/Thursday	5:30PM - 6:45PM
Lab: Tuesday/Thursday	7:00PM - 9:50PM

- I. Catalog Description: Microbiology, 5 units, 3 hours lecture, 6 hours lab, including classification, morphology, identification, and physiology of microorganisms. May include a field trip.
- II. Pre requisites: Successful completion of Biology 1 or Biology 5 and Chemistry 1A or 3A. Recommended: Successful completion of Biology 20 and Biology 22.
- III. Required Texts:
 - A. Tortora, Gerard J. et al., Microbiology, 11th Edition, 2012.
Benjamin Cummings Publishing Company Inc
ISBN-10: 0321929152
 - B. Symbiosis for Reedley College. Latest Edition.
Benjamin Cummings Publishing Company.
THIS MUST BE PURCHASED NEW AT THE RC BOOKSTORE! NO USED/RENTAL BOOKS ACCEPTED!
- IV. Other required materials:
 - A. White Laboratory Coat
 - B. Assorted color pencils
 - C. Seven scantron miniblue books (form 886)
 - D. Short cleaned fingernails, no polish, acrylic, or gel coverings are allowed!
- V. Course Objectives:
 - A. To have a basic understanding of microbes as living organisms.
 - B. To become familiar with laboratory techniques necessary to work with microorganisms.
 - C. To understand and practice aseptic techniques.
 - D. To become familiar with microbial morphology, classification, and identification.
 - E. To understand the role of microorganisms in health and disease and the mechanisms used to control microbial populations.

- VI. Student Projects:
- A. Students will be required to complete a reading assignment. Specific details will be given to you in a separate hand out.
 - B. A research paper on a subject in Microbiology, chosen by the student, will be required. Specific details will be given to you in a separate hand out. Project will include a digital deliverable component as well.

VII. Evaluation of Student Progress

I reserve the right to change evaluation, assessments, and all aspects of this syllabus with notification.

A. Lecture Points	
1. Three midterm exams	300
2. One final examination	150
3. Lecture or lab quizzes/homework	50
4. Reading Assignment & Term Paper	<u>125</u>
Total Lecture Points	<u>625</u>

B. Laboratory Points	
1. Three lab exams	300
2. Laboratory Quizzes	50
3. Unknowns	<u>25</u>
Total Laboratory Points	<u>375</u>

Total Points for the Semester 1000

C. Grades will be assigned on a percentage basis:

A= 100-90% B=89-80% C=79-70% D=69-60% F= < 60%

Tests **CANNOT** be made up unless arrangement is made prior to the exam or under extenuating circumstances with prior arrangement. Any absence from the class can result in reduction of course grade. If you are late please report your tardy to the instructor at the end of class and it will be changed from as absence to a tardy.

D. Any student doing unsatisfactory work, failing, lack of participation (attitude), lack of following safety rules etc. may be dropped from the course at the discretion of the instructor. Plagiarism, **in any form**, will have consequences from earning a zero on an assignment to dismissal from the class.

E. If you have a verified need for an academic accommodation or materials in alternate media (i.e., Braille, large print, electronic text, etc.) per the Americans with Disabilities Act (ADA) or Section 504 of the Rehabilitation Act, please contact me as soon as possible.

- F. Plagiarism will not be tolerated and may result in a loss of points or expulsion.

VIII. Attendance Policy

- A. Students are required to attend all class sections.
- B. Students must be in their seat on time. Class begins promptly.
- C. If a student misses more than 8 class hours (lab and/or lecture) before the ninth week of class, the student may be dropped from the class. I consider 3 tardies as an absence.
- D. If you must miss class, you should alert me as soon as possible via email, or you can contact me at 638-0300 ext. 3499.
- E. Plan your schedule so that you will arrive to class on time. This is particularly important with regards to the lab as explanations and directions are given in the first 30 minutes. You are required to read the lab exercises before the lab period in which it is to be performed.
- F. No formal break period is scheduled during the lab period. If it is necessary to leave, you must leave your lab coat in the lab, wash and dry your hands, and fit this short break in to the lab work schedule so all work is completed during the allotted time. If you leave the classroom wearing your lab coat, your grade will be reduced... repeat offenders will be severely punished.
- G. If you should decide to drop this course for any reason, it is **YOUR** responsibility to make the drop official. This can be done by requesting a drop in person or by filling out the appropriate form in the admissions office. Failure to officially drop this course could result in receiving the grade of "F". The drop deadline for this semester is _____.

IX. Student Conduct in the Laboratory- Safety Handout

- A. Students are to maintain clean areas at all times. Keep unnecessary books, papers, purses, etc., off the laboratory tables.
- B. Disinfectant laboratory tables at the beginning and at the end of every lab period.
- C. Aseptic techniques are to be followed at all times.
- D. Lab coats are to be worn in the lab at all times. Students with long hair must keep it contained with pins, clips, headbands, or rubber bands, etc. so that it will not sweep across desks, Bunsen burners, and/or microscopes. Legs are to be covered at all times. Close toed-shoes and socks are to be worn at all times.
- E. Caution must be exercised in handling stains and other reagents, as they may be harmful to clothing, skin, eyes, floor, etc. Safety glasses

must be worn when handling and using caustic or other dangerous chemicals. They are available in the classroom.

F. Any spills of living organisms must be reported to your instructor **immediately!** Should a spill occur and not be reported immediately, these are grounds for removal from the class.

G. Food and drinks are NOT allowed in the laboratory! NEVER eat or drink in the laboratory and avoid putting objects in your mouth. Some organisms used in class are potentially pathogenic or are pathogenic.

H. Wash your hands thoroughly and dry them before you leave the laboratory.

I. Adhere to the Reedley Community College rules of student dress and conduct.

J. All backpacks, bags, jackets, accessories, or any other item must be stored away from the laboratory benches! If it gets spilled on, its going in the autoclave!

X. **Tutorial Services:** If you find the material presented talk to your instructor as soon as possible. Often, a few minutes can clear up many problems! If you are having trouble studying, perhaps you need a few study hints or a tutor at the Tutorial Center. Please go in for help!

Always keep in mind that this is a three-unit course. As a general rule, each hour of lecture requires two hours of additional study outside of the classroom each week. Do your planning accordingly. Success comes before work only in the dictionary. Overall, I hope you have a fun semester and learn Biology along the way. Good Luck

I. “With this statement on my course syllabus, I am referring each of my enrolled students in need of academic support to tutorial services. Referral reason: Mastering the content, study skills, and basic skills of this course is aided by the use of trained peer tutors”.

II. Miscellaneous

A. Laboratory and Field Trip Safety

1. Follow directions in the student conduct section.
2. Report all accidents or injuries immediately.
3. Wear appropriate clothing as indicated above and on field trips wear appropriate footwear. This would be oxford or walking shoes or leather closed toe tennis shoes.

NO SANDALS OR OPEN TOED LOOSE FOOTWEAR OR SHORTS WILL BE ALLOWED IN CLASS OR ON FIELDTRIPS.

- b. If you should experience difficulty understanding the material presented in the class or lab, please see your instructor in her office at the earliest possible date, either during scheduled office hours or by appointment.
- c. If you have a verified need for an academic accommodation or material in alternate media (i.e. Braille, large print, electronic text, etc.) per the Americans with Disabilities Act (ADA) or Section 504 of the Rehabilitation Act, please contact me as soon as possible.
- d. Absolutely, NO pagers, beepers, or cell phones will be allowed to ring or be used in the class. If this occurs, the student will receive a 0 for the assignment or exam. You may NOT have a pager, etc on your person during lab or an exam or a quiz.

XI Tentative Lecture Schedule – I reserve the right to change this schedule with notice.

Week	Day	Lecture Topic	Reading Assignment
1	Tu	Introduction – Syllabus	
	Th	Historical Developments in Microbiology	Ch 1
2	Tu	Microscopes & Staining Techniques	Ch 3
	Th	Anatomy of Bacteria	Ch 4
3	Tu	Microbial Growth I	Ch 6
	Th	Microbial Growth II	Ch 6
4	Tu	Lecture Exam 1 – Chs: 1, 3, 4, & 6	
	Th	Physical Control of Microbial Growth	Ch 7
5	Tu	Physical Control of Microbial Growth	Ch 7
	Th	Chemical Control of Microbial Growth	Ch 7
6	Tu	Important Biological Molecules	Ch 2
	Th	Microbial Metabolism I	Ch 5
7	Tu	Microbial Metabolism II	Ch 5
	Th	Microbial Genetics I	Ch 8
8	Tu	Microbial Genetics II	Ch 9
	Th	Classification of Microorganisms	Ch 10

9	Tu Th	Lecture Exam 2 Bacteria	ch. 7, 2, 5, 8, 9	Ch 11
10	Tu Th	Fungi and Protozoa Viruses I		Ch 12 Ch 13
11	Tu Th	Viruses II Principles of Disease and epidemiology		Ch 13 Ch 14
12	Tu Th	Lecture Exam 3 – Ch 10, 11, 12, 13, & List of Diseases Mechanisms of Pathogenicity		Ch 15
13	Tu Th	Non-Specific Defenses of the Host I Non-Specific Defenses of the Host II		Ch 16 Ch 16
14	Tu Th	The Immune Response I The Immune Response II		Ch 17 Ch 17
15	Tu Th	The Immune Response III THANKSGIVING NO CLASS		Ch 17
16	Tu Th	Microbiology of Water Microbiology of Water		Ch 27 Ch 27
17	Tu Th	Chapter 20 Final Chapters Covered – 14, 15, 16, 17, 27, 20		Ch 20
18		Final Examination		

Chapters: 21, 22,, 23, 24, 25, & 26. Read for Content. This material will NOT be covered in lecture. You will be tested on this material in Examination 3. I would suggest that you begin reading this material at your earliest convenience. Further instructions will follow in lecture.

XII. Tentative Laboratory Schedule- I reserve the right to change this with notice.

Week	Day	Lab Exercise	Reading Assignment
1	Tu Th	Syllabus- handouts: microscopy Microscopy and Aseptic Technique	pg 23
2	Tu Th	Viewing Live Organisms Microscopic Measurements	pg 33 Handout
3	Tu Th	Simple Staining and Media Making Negative Staining	pg 43 pg 49
4	Tu Th	Gram Stain Acid Fast and Endospore Stains	pg 53 Pgs 59 & 65
5	Tu Th	Lab Exam #1 Environmental Microorganisms	pg 83
6	Tu Th	Transfer of Bacteria Isolation of Bacteria by Dilution And Streak Plate Techniques	pg 91 pg 101
7	Tu Th	Carbohydrate Catabolism Fermentation of Carbohydrates	pg 113 pg 119
8	Tu Th	Differential/Selective Media DNA	Handout Handout
9	Tu Th	Protein Metabolism I & II Respiration- nitrate/cat/Entero/Oxidase	pg 127 & 133 Pg 139 & 143
10	Tu Th	Lab Exam #2 Oxygen Requirements and And pH/Osmotic Pressure	pgs 153 & 363
11	Tu Th	Physical Methods of Control: Heat Ultraviolet Radiation	pg 177 pg 185
12	Tu Th	Disinfectants and Antiseptics Chemical Methods of Control: Antimicrobial Drugs	pg 191 pg 195
13	Tu Th	Effectiveness of Hand Scrubbing Yeasts and Molds	pg 203 pg 253 & 259

14	Tu Th	Protozoans Flora of the Mouth, Throat, & Skin	HO pgs 331, 335, 339
15	Tu Th	Isolation of Unknowns NO CLASS THANKSGIVING	pg 247, 390 391
16	Tu Th	Isolation of Unknowns Laboratory Exam #3	
17	Tu Th	PowerPoint Presentations Unknowns/Presentations/Clean up	

Important Dates

- September 2 Last day to add/drop a class (no "W" on transcript)
- October 14 Last day to be dropped with a "W"