

**Biol 2060 – Elementary Microbiology  
Schedule of Classes, Fall 2016**

<b>Week</b>	<b>Day</b>	<b>Subject</b>	<b>Reading in Booklet</b>	<b>Reading in Text</b>
1	Mon, Aug 29	Course Introduction/The Microbial World and You	1-14	1-23
	Wed, Aug 31	The Microbial World and You	1-14	1-23
	Fri, Sept 2	Observing Microorganisms Through a Microscope Optional Review Session at 2:30 PM in VSB 130	15-22 ---	51-71 ---
	Mon – Tues	[5 point pre-lab quiz] Introduction, video, and #1: Use and Care of the Microscope	287-289	7-18
2	Mon, Sept 5	<b>HOLIDAY</b>	---	---
	Wed, Sept 7	Functional Anatomy of Prokaryotic and Eukaryotic cells	23-38	72-106
	Fri, Sept 9	Functional Anatomy of Prokaryotic and Eukaryotic cells Optional Review Session at 2:30 PM in VSB 130	23-38 ---	72-106 ---
	Mon – Tues	<b>NO LABS THIS WEEK</b>	---	---
3	Mon, Sept 12	Environmental Microbiology	39-48	31, 169, 332, 771-793, 806
	Wed, Sept 14	Environmental Microbiology	39-48	31, 169, 332, 771-793, 806
	Fri, Sept 16	Microbial Metabolism Optional Review Session at 2:30 PM in VSB 130	49-61 ---	107-148 ---
	Mon – Tues	[5 point pre-lab quiz] #5: Preparation of Smears and Simple Staining #7: Gram Staining #8: Acid-Fast Staining	--- --- ---	49-56 61-67 69-74
4	Mon, Sept 19	<b>EXAM #1 (Last Day to Drop Without Notation on Transcript!)</b>	---	---
	Wed, Sept 21	Microbial Metabolism	49-61	107-148
	Fri, Sept 23	Microbial Growth Optional Review Session at 2:30 PM in VSB 130	62-71 ---	149-175 ---
	Mon – Tues	Field Trip to Logan Sewage Lagoons (arrange your <u>own</u> transportation)	290	---
5	Mon, Sept 26	Control of Microbial Growth	72-84	176-200,

				795-798
	Wed, Sept 28	Microbial Genetics	85-92	201-237
	Fri, Sept 30	Bacteria Optional Review Session at 2:30 PM in VSB 130	93-111 ---	290-318 ---
	Mon – Tues	[5 point pre-lab quiz] #3: Microbes in the Environment #4: Transfer of Bacteria: Aseptic Technique #11: Isolation of Bacteria by Dilution Techniques	--- --- ---	29-38 39-48 93-102
6	Mon, Oct 3	Fungi and Algae	112-120	319-337, 595-597, 626-627, 699-701, 764-765
	Wed, Oct 5	Protozoans	121-126	337-343, 347, 627- 628, 662- 666, 733- 735, 765- 767
	Fri, Oct 7	Multicellular Parasites Optional Review Session at 2:30 PM in VSB 130	127-134 ---	343-357, 598-599, 735-741
	Mon – Tues	<b>LAB QUIZ #1</b> and Video	---	---
7	Mon, Oct 10	<b>EXAM #2</b>	---	---
	Wed, Oct 12	Viruses, Viroids, and Prions	135-144	358-388, 630-632
	Fri, Oct 14	Viruses, Viroids, and Prions Optional Review Session at 2:30 PM in VSB 130	135-144 ---	358-388, 630-632
	Mon – Tues	[5 point pre-lab quiz] Video #13: Carbohydrate Catabolism #14: Fermentation #15: Protein Catabolism, Part 1 #16: Protein Catabolism, Part 2	--- --- --- --- ---	--- 107-113 115-122 123-128 129-135
8	Mon, Oct 17	Principles of Disease and Epidemiology	145-161	389-416
	Wed, Oct 19	Principles of Disease and Epidemiology	145-161	389-416
	Thur*, Oct 20	Microbial Mechanisms of Pathogenicity Optional Review Session at 2:30 PM in VSB 130 (*Attend class and review session as if it were Friday)	162-168 ---	417-438 ---
	*Fri, Oct 21	<b>Fall Break Holiday</b>	---	---
	Mon – Tues	[5 point pre-lab quiz] #51: Rapid Identification Methods	291-292	401-409

		#22: Physical Methods of Control: Heat #23: Physical Methods of Control: Ultraviolet Radiation	--- ---	175-184 185-191
9	Mon, Oct 24	Nonspecific Defenses (Innate Immunity) of the Host	169-179	439-467
	Wed, Oct 26	Nonspecific Defenses (Innate Immunity) of the Host	169-179	439-467
	Fri, Oct 28	Specific Defenses (Adaptive Immunity) of the Host Optional Review Session at 2:30 PM in VSB 130	180-196 ---	468-491, 495-496, 498-499, 501-503, 534
	Mon – Tues	[5 point pre-lab quiz] #24: Chemical Methods of Control: Disinfectants and Antiseptics #25: Chemical Methods of Control: Antimicrobial drugs	--- ---	193-197 199-205
10	Mon, Oct 31	<b>EXAM #3</b> <b>(Last day to drop with “W” on transcript)</b>	---	---
	Wed, Nov 2	Specific Defenses (Adaptive Immunity) of the Host	180-196	468-491, 495-496, 498-499, 501-503, 534
	Fri, Nov 4	Antimicrobial Drugs Optional Review Session at 2:30 PM in VSB 130	197-213 ---	11, 115, 379, 460- 461, 548- 578
	Mon – Tues	[5 point pre-lab quiz] #26: Effectiveness of Hand Scrubbing #39: Epidemiology	--- ---	207-210 309-317
11	Mon, Nov 7	Antimicrobial Drugs	197-213	11, 115, 379, 460- 461, 548- 578
	Wed, Nov 9	Human Immunodeficiency Virus Disease	214-221	18-19, 279, 379, 510, 534-544, 700, 734
	Fri, Nov 11	Human Immunodeficiency Virus Disease Optional Review Session at 2:30 PM in VSB 130	214-221 ---	18-19, 279, 379, 510, 534-544, 700, 734 ---
	Mon – Tues	[5 point pre-lab quiz] #33: Fungi: Yeasts and Molds #45: Bacterial of the Skin	--- ---	259-269 357-364

12	Mon, Nov 14	Microbial Diseases of the Skin and Eyes	222-230	392, 579-606
	Wed, Nov 16	Microbial Diseases of the Nervous System	231-243	378-533, 607-636, 662, 689
	Fri, Nov 18	Microbial Diseases of the Nervous System Optional Review Session at 2:30 PM in VSB 130	231-243 ---	378-533, 607-636, 662, 689
	Mon – Tues	Evaluations of TAs and UAs, <b>LAB QUIZ #2</b> , and Video	---	---
13	Mon, Nov 21	<b>EXAM #4</b>	---	---
	Wed, Nov 23	<b>HOLIDAY</b>		
	Fri, Nov 25	<b>HOLIDAY</b>		
	Mon – Tues	<b>NO LABS THIS WEEK</b>		---
14	Mon, Nov 28	Microbial Diseases of the Cardiovascular and Lymphatic Systems	244-255	637-674
	Wed, Nov 30	Microbial Diseases of Cardiovascular and Lymphatic Systems	244-255	637-674
	Fri, Dec 2	Microbial Diseases of the Urinary and Reproductive Systems Optional Review Session at 2:30 PM in VSB 130	256-267 ---	746-770 ---
	Mon – Tues	Field Trip to Bear River Health Department (Since this facility is closed in the evenings, all students will need to arrange to go with the M 3:00 PM group, the T 9:30 AM group, or the T 3:00 PM group!). Arrange your own transportation	293	---
15	Mon, Dec 5	Microbial Diseases of the Urinary and Reproductive Systems	256-267	746-770
	Wed, Dec 7	Microbial Diseases of the Respiratory System	268-277	675-706
	Fri, Dec 9	Microbial Diseases of the Respiratory System Optional Review Session at 2:30 PM in VSB 130	268-277 ---	675-706 ---
	Mon – Tues	<b>Confirm your points earned in lab with your TA!</b> , then watch <u>two</u> videos	---	---
16	Mon, Dec 12	<b>Comprehensive Final Exam 1:30-3:20 PM</b>	---	---
		Student performance in previous years	294-295	---
		Example exam from previous year	296-308	---



**Elementary Microbiology (Biol 2060)**  
**Fall 2016 – 4 credits**

**A. Instructor:** **D. Andy Anderson** (Please, call me “Andy”)  
**Address:** Biology Department  
VSB 231  
Utah State University  
Logan, UT 84322-5305

**Phone:** 797-1913 – If I’m not in, leave a message on my voice mail.

**E-mail:** andy.anderson@usu.edu

**B. Teaching Assistants (TAs), Undergraduate Aides (UAs), and Supplemental Instructor (SI):**

1. There are several departmental TAs and volunteer UAs assigned to this class to aid you in mastering the large amount of information presented in the lectures and laboratories of this class. Their names and office hours will be provided to you during the first week of class.
2. The SI will be available several times each week to provide scheduled review sessions to help interested students and provide prepared questions and practice quizzes.

**C. Meeting Times:**

1. **Lecture** (index # 40546) – This class meets Mondays, Wednesdays, and Fridays for 50 minutes of lecture from 1:30 – 2:20 PM. There will be an optional review session every Friday at 2:30 PM in VSB 130.
2. **Laboratory** – There are four laboratory offerings which meet in VSB 236 at the times indicated below. Students are **required** to sign up for one laboratory

section per week. Please go to the laboratory you regularly attend! **Don't move around!**

Index #	Section	Day	Time*
40548	501	Monday	2:30 – 05:20 PM
40549	502	Monday	5:30 – 08:20 PM
40651	503	Tuesday	09:00 – 11:45 AM
40652	504	Tuesday	02:30 – 05:20 PM

**\*Note:** Because of the slow rate of microbial growth, students are typically required to return to VSB 236 throughout the week to check the results of their tests and cultures.

**\*Note:** The field trip to the Bear River Health Department the week of November 28 will only occur on Monday, Nov. 28, at 3:00 PM (NO evening times!), and on Tuesday, Nov. 29, at 9:30 AM and 3:00 PM. All students must attend at one of those times!

#### **D. Required Materials for Biol 2060:**

1. Tortora, Funke, and Case. “*Microbiology – An Introduction,*” 12<sup>th</sup> edition 2016. This text is available from the USU bookstore.
  - a. I recommend that each student regard this textbook as a tool, which if used properly, will aid you in learning the material to be presented in this course. At the end of each chapter, there is a Study Outline and Study Questions. On pages G1-G18 there is an excellent Glossary which defines many of the terms used in the text. Use this text well and conscientiously and you should obtain an excellent grade in this course.
2. Course booklet which contains all needed handouts and an example exam from last quarter. This booklet can be bought from the USU Bookstore.
3. Johnson and Case “*Laboratory Experiments in Microbiology,*” 11<sup>th</sup> edition 2016. This text is available from the USU bookstore.

#### **E. Course Booklet (Course Reader):**

1. For each lecture in this course the student is provided with an outline of the subjects to be discussed that day. These outlines are designed to guide your participation during the lectures and also to guide you in your reading of the textbook. These outlines usually have articles attached on which you will be tested. **All of these outlines and articles have been collected into a course booklet for your use.**
2. If there is information in your textbook that is not mentioned in class, or not mentioned in the course booklet, it will not be on the exam
  - a. You are encouraged to read supplemental information in your text, but you will only be tested on what is cited in the booklet or in our class discussion.
  - b. Note that the booklet often requires you to read articles in the text (i.e.: Read “*Designer Jeans: Made by Microbes?*” on page 3) for use on your tests!

## F. Lecture Recordings and Images On-Line

1. Each lecture will be recorded (if all goes well with the equipment) and placed on reserve, with the images used, until the end of the semester. The lectures and images are there not only from the current semester, but also from the last time the course was taught. These can serve as a great study aid and also a good way to prepare for upcoming lectures. They can be accessed by going to the CANVAS site for this course.

## G. Examinations, Pre-lab Quizzes, Lab Assignments, Lab Quizzes, and Course Grade for Biol 2060:

1. **Lecture Exams (500 pts total)**
  - a. There will be four 50 minute exams of 100 points each and a 110 minute comprehensive final exam (over everything except articles required in earlier exams) worth 200 points. The lecture notes, outlines, **class discussions**, articles distributed in class, and some laboratories will be used to formulate exam questions.
    - 1) These exams and quizzes will be posted on the wall outside VSB 219 for you to pick up several days after they are taken.
  - b. An example first exam is included at the back of your course booklet. While the questions will be different this quarter, the style will be exactly the same (multiple choice, fill-in-the-blank, two-part story questions, and essay).
  - c. **One** of the 50 minute exams (the lowest) will be “thrown out” and your exam points will be calculated using the remaining three 50 minute exams and the final.
  - d. Those students who have difficulty with the example first exam and example questions in the book should see the instructor or teaching assistants **as soon as possible** to arrange tutoring.
  - e. Those students who (“heaven forbid!”) score less than 70% on the first two exams **should seriously seek intensive tutoring or drop the class.**
2. **Pre-lab Quizzes (40 pts total)**
  - a. To ensure that students arrive for their active labs on time and are prepared for the labs to be done that day, the TA will administer a very straightforward and short 5 question pre-lab quiz 3 minutes after the scheduled lab starting time. It will only last for about 5 minutes.
    - 1) These pre-lab quizzes are only administered at the start of **active** labs and not for the two field trips or on weeks where there is a lab quiz.
      - a) See the listings of the pre-lab quizzes in course schedule for active labs.
  - b. If a student arrives in the lab too late to take the pre-lab quiz, they will NOT be allowed to take the pre-lab quiz. Remember, one of the purposes for this pre-lab quiz is to have students arrive on time!
  - c. **Each TA** in each of the respective labs will create 5 straightforward questions for the students to answer, print this pre-lab quiz before lab,

score it, and keep a record of points earned (5 points per pre-lab quiz) to be turned in to me at the end of the semester.

1) The scored pre-lab quizzes can be returned to the students at the next lab.

3. **Lab Assignments (100 pts total)**

a. Each lab assignment (There are 20 to be completed) is worth 5 points and must be turned into the TAs and UAs **promptly after the work is done**. If you have problems answering the assignment questions, see your TA or UA before the work is due!

b. The scored lab assignments can be returned to the students at the next lab.

4. **Lab Quizzes (100 pts total)**

a. **There will be two lab quizzes (50 points each) presented in the laboratory that will be prepared and administered by the TAs and UAs.**

b. These lab quizzes will be scored by the UA in each lab and then turned in to me for recording. They will then be posted on the wall outside of VSB 219 later.

5. **Course Grade**

a. The letter grade for students is based on the percentage of total points earned on their three highest 50 minute exams (100 points each), the two lab quizzes (50 points each), the lab assignments (5 points each, 100 points total), the pre-lab quizzes (40 points), and their final (200 points). **THERE IS NO EXTRA CREDIT OR SPECIAL PROJECTS TO IMPROVE YOUR GRADE!** The breakdown is listed below.

b. Up until the last office hour you are invited to see me or the TAs to view the exam keys and debate your scores. **After the last office hour of the semester I will only discuss the final exam with you, not your scores on earlier tests, quizzes, pre-lab quizzes, or lab assignments.**

Actual Points Earned	Percentage of Total Points Earned	Grade
685-740	93-100	A
662-684	90-92	A-
633-661	86-89	B+
611-632	83-85	B
588-610	80-82	B-
559-587	76-79	C+
537-558	73-75	C
514-536	70-72	C-
485-513	66-69	D+
440-484	60-65	D
439 or less	59 or less	F

H. **Course Goals:**



1. The main goal of this course is to give students a firm understanding of the fundamentals of microbiology and why microorganisms are important in our daily lives. Numerous medical and environmental examples will be provided. Numerous hands-on opportunities will be provided in the laboratories. It is truly amazing the huge impact microbes have in the environment, in or bodies, and in industry!
2. It is expected that upon completion of this course, students will be able to effectively apply the knowledge gained in more advanced courses, in their careers, and in their daily activities.

#### **I. Student's Responsibilities:**

1. Each student is expected to attend each lecture and laboratory, take supplemental notes, read the assigned readings, refer to suggested references as needed, turn in all lab assignments promptly, and achieve a cumulative score of greater than 70% on the exams and quizzes. To prepare for the exams students should study approximately 2 hours per day outside of class (make notes, write practice questions, analyze articles, etc.)
2. In the event there is some difficulty, it is the **student's responsibility** to contact the instructor, TAs, or UAs for advice or assistance. Free tutoring can be arranged for those students who request it with the TAs and UAs.
3. The student is expected to attend all laboratories **AND TO VISIT THE LABORATORY TO CHECK CULTURES** and read the assigned laboratory exercises **before coming to the laboratory**.
  - a) The pre-lab quizzes are being done to ensure you have read over the labs before arriving.
4. The student is expected to read the questions for each lab exercise before leaving the laboratory. If there is any difficulty, the student should consult the TA/UA or suitable references in the library. Do not wait until the report is due to ask questions.

#### **J. Instructor's Responsibilities:**

1. The instructor is expected to attend all lectures, read the assigned reading, present supplemental articles, and prepare examinations which are fair and representative of the material covered. The instructor will also be available at posted office hours during the day to answer **specific** student questions and provide needed assistance.

#### **K. TAs' and UAs' Responsibilities**

1. Typically there are several TAs and UAs assigned to this course. These persons will attend the lectures as necessary so they can act as competent tutors for the students. They will assist with the optional review sessions and have published office hours to provide help to interested students (**If a TA or UA fails to show up at his/her office hour, please let me know!**) The TAs and UAs will assist the instructor in writing the exams. The TAs will correct and score the exams promptly after they are taken by the students.

2. The TAs and UAs are also expected to attend their individual laboratories, write the pre-lab quizzes, write and score the two lab quizzes, have all the necessary materials available, score and record the lab assignments, and be knowledgeable about the scheduled lab exercises.

#### **L. Supplemental Instructor's (SI) Responsibilities:**

1. USU has hired an undergraduate student to serve as an SI to assist you in getting a good grade in this challenging course. The SI will have regular meetings throughout the week and will have prepared practice questions of the same style as you may expect on your upcoming exams and quizzes. The end-of-the-semester data I am provided by the SI program clearly reveals it improves the performance of most of those students who participate.

#### **M. Library References**

1. It is recommended (but not required) that students have one other elementary microbiology text available for study. An extra text will often serve to clarify points which are confusing, or reinforce those which are considered important. There are several books in the Library which would be fine for this purpose (see the electronic library catalog).
2. One copy of the course textbook will be available at the Library Media Collections Department during the entire semester.

#### **N. Below You Will Find a University Statement on Academic Honesty.**

1. **DO NOT REMOVE ANY EXAMINATION MATERIALS FROM THE CLASSROOM OR LABORATORY ON EXAM DAYS!**
2. **DO NOT COPY OR REMOVE ANY EXAMINATION MATERIAL FROM THE TEACHING ASSISTANT'S OFFICE!**
3. If you fail to follow these rules, I will make every effort to subject the offender to the disciplinary procedures designated by the University:

#### **Honor Pledge**

Students will be held accountable to the Honor Pledge which they have agreed to: "I pledge, on my honor, to conduct myself with the foremost level of academic integrity."

#### **Academic Dishonesty**

The Instructor of this course will take appropriate actions in response to Academic Dishonesty, as defined the University's Student Code:

Acts of academic dishonesty include but are not limited to:

1. Cheating: (1) using or attempting to use or providing others with any unauthorized assistance in taking quizzes, tests, examinations, or in any other academic exercise or activity, including working in a group when the instructor has designated that the quiz, test, examination, or any other academic exercise or activity be done "individually"; (2) depending on the aid of sources beyond those authorized by the instructor in writing papers, preparing reports, solving problems, or carrying out other assignments; (3) substituting for another student, or permitting another student to substitute for oneself, in

taking an examination or preparing academic work; (4) acquiring tests or other academic material belonging to a faculty member, staff member, or another student without express permission; (5) continuing to write after time has been called on a quiz, test, examination, or any other academic exercise or activity; (6) submitting substantially the same work for credit in more than one class, except with prior approval of the instructor; or (7) engaging in any form of research fraud.

2. Falsification: altering or fabricating any information or citation in an academic exercise or activity.
3. Plagiarism: representing, by paraphrase or direct quotation, the published or unpublished work of another person as one's own in any academic exercise or activity without full and clear acknowledgment. It also includes using materials prepared by another person or by an agency engaged in the sale of term papers or other academic materials.

Full text of the Student Code available at available at available at <http://www.usu.edu/student-services/pdf/StudentCode.pdf>:

#### **O. Students With Disabilities**

1. Students with physical, sensory, emotional or medical impairments may be eligible for reasonable accommodations in accordance with the Americans with Disabilities Act and Section 504 of the Rehabilitation Act of 1973. All accommodations are coordinated through the Disability Resource Center (DRC) in Room 101 of the University Inn, 797-2444, 797-0740 TTY, or toll free at 1-800-259-2966. Please contact the DRC as early in the semester as possible. Alternate format materials (Braille, large print or digital) are available with advance notice.

#### **P. Unacceptable Classroom Behavior**

Since a significant goal of this class is to prepare each of you for your upcoming exams, then behavior that disrupts the classroom environment will be discouraged.

1. Once class has started, **cell phones should be silenced** and no ring tones or conversations are permitted.
2. Once class has started, **talking among students is strongly discouraged (yes, whispering is still considered to be talking!)**. If you need to talk, please leave the class and conduct your conversation outside. If students persist in talking among themselves during class they will be invited to my office and given a written warning. If they persist after this warning, they will be asked to leave the room so other students can benefit from the limited amount of class time available.
3. Use of laptop computers in class is acceptable, provided it is utilized for notes or materials used in this class. **It is not acceptable to use your computer in class for recreational purposes or for doing work for a different class.** When you come to this class it is expected that you will focus your attention on this class and not engage in computer activities that detract from the classroom experience or that will distract your classmates. If the problem persists, you will be requested to cease your computer activities.

**Q. University Policy on Withdrawals and Incomplete Grades.**

1. I direct your attention to the new USU policy on dropping courses in the USU Catalog.
2. You will note that “incomplete grades” are only given for conditions beyond the students’ control and not due to poor performance. Students who receive an incomplete **MUST** keep the scores they earned up until they leave the class. At a later date they are only allowed to complete the quizzes and exams that remained behind.

**R. Hallway Lockers**

1. Any locker in the hallway outside the teaching labs is available for you to use with your own personal lock during fall semester.
2. **However, you must remove your lock and belongings after you take your final exam. Any locks remaining after that time will be cut off and your possessions taken to “lost and found” in main Biology Office (BNR 121)!**

**S. Lab Fee (\$120)**

1. As part of your registration for this class you were required to pay a “lab fee.” This fee is used by me to buy lab supplies, obtain specimens, pay our Tech Support Student and prepare images. All of your lab fees are used to enhance your learning opportunities in this course and to help your TA, UAs, SI, and your instructor, to hopefully make it easier for you to succeed in this challenging subject.

**CONTINUED ON THE NEXT PAGE!**

# General Information for Interested Students

## Biol 2060

Some students may be interested in taking further courses with me. This section will provide that information.

### A. Courses Taught by D. Andy Anderson

1. Fall Semester 2016
  - a. Elementary Microbiology (Biol 2060) 4 credits
  - c. Human Dissection (Biol 4000) 1 credit
  
2. Spring Semester 2017
  - a. Human Anatomy (Biol 2320) 4 credits
  - b. Bioethics (Biol 3100) 3 credits
  - c. Advanced Human Physiology (Biol 4600) 5 credits
  
3. Summer Semester 2017
  - a. Human Anatomy (Biol 2320) 4 credits
  - b. Human Physiology (Biol 2420) 4 credits, **if** there is suitable enrollment!
  
4. Others
  - a. Independent Study (Biol 3760) 1-2 credits – available every semester
    - 1) Students earn 1-2 credits from Andy by writing one or more term papers on a mutually agreed topic.
  - b. Teaching Internship (Biol 4710) 1-2 credits – available every semester
    - 1) This credit is available to students who wish to volunteer as an undergraduate aide in a class they have previously excelled in.
  - c. I oversee a Medical College Admissions Test (MCAT) review course (Biol 1030: MCAT Preparation), one credit, pass-fail) that is offered in the spring.
  - d. I oversee a Dental Admissions Test (DAT) review course (Biol 1040: DAT Preparation), once credit, pass-fail) that is offered in the spring.

### B. Other Courses of Interest

1. Emergency Medical Technician (EMT), 6 credits possible (see EMT instructor)
  - a. Contact Bridgerland Applied Technology College (435-753-6780).
    - 1) These classes have limited enrollment.