

Class Information		Instructor Information		First day of classes:	Wed., Sept. 9, 2015
Days:	Tuesdays/Thursdays	Instructor:	Jessmi Ling, Ph.D.	Last day to add/drop, or change to audit:	Sun., Sept 20, 2015
Time:	09:45-11:00	Email:	JLing@ambrose.edu	Last day to request revised exam:	Mon., Oct. 26, 2015
Room:	A2145	Phone:	403-410-2000 ext. 2919	Last day to withdraw from course:	Thu., Nov. 12, 2015
Lab/Tutorial:	A2145	Office:	A2158	Last day to apply for time extension for coursework:	Mon., Nov 23, 2015
FINAL EXAM: To Be Determined.		Office Hrs:	By appointment.	Last day of classes:	Mon., Dec 14, 2015

Textbook:

Brock Biology of Microorganisms, 14th Edition. 2015. ISBN-13: 978-0-321-89739-8.

Course Description:

Microbiology explores the biology of microorganisms, namely viruses, bacteria, unicellular and microscopic multicellular eukaryotes. The course will review fundamental information about the biology of these organisms and will expand this knowledge base with microbial genetics, diversity and ecology. The field of applied microbiology will also be explored in topics regarding health, industry and the environment. The accompanying laboratory component will introduce a variety of laboratory techniques to identify microorganisms.

Expected Learning Outcomes:

At the end of the course, students should have acquired the following skills:

1. Understand the basic features of microbes.
2. Understand and appreciate the diversity of microbes.
3. Comprehend the intimate interaction between humans and microbes in health, industry and the environment.
4. Competently handle and experiment on bacteria.

Course Schedule:
Learning themes:

- A. Foundations of microbiology and microbial genetics (Ch 2 – 7, 10, 11).

- B. Microbial diversity and evolution (Ch 8, 9, 12 - 17).
- C. Microbial ecology and environmental microbiology (Ch 18 – 22).
- D. Pathogenicity, immunology and infectious diseases (Ch 23 – 32).

Please note that the course this year is a directed studies course with laboratory. Allotted class times will be used for theory, lab, or both. Please bring your lab coats and camera for every class. The schedule below lists tasks for each class.

Date	Topic
Thu, Sept 10	Course introduction – PPT of Ch 1. Laboratory safety. Sample collection instructions. Falcon tubes. Lab logbooks. Read: Ch 2, 3
Tues, Sept 15	Overview of Small World Initiative (SWI). Serial dilution and plating of soil sample on potato dextrose agar (PDA) and Luria-Bertani agar (LBA). Soil texture test.
Thu, Sept 17	Discuss: Ch 2, 3 Read: Ch 4, 5 Take pictures of plates.
Tues, Sept 22	Count colonies on plates. Determine colony forming unit (CFU). Colony morphologies. Patch a masterplate, and patch against ESKAPE strains.
Thu, Sept 24	Discuss: Ch 4, 5 Read: Ch 6, 7 Isolate antibiotic producers. Streak to obtain a single colony.
Tues, Sept 29	Discuss: Ch 6, 7 Read: Ch 10, 11 Retest isolates with ESKAPE strains. Colony PCR for 16S rRNA gene.
Thu, Oct 1	Spiritual Emphasis Day (no daytime classes) – We will determine a time to meet between events to perform the following tasks: View retest with ESKAPE strains results. View Agarose gel of PCR. Prepare lawn culture of isolates for antibiotic production.

Tues, Oct 6	<p>Discuss: Ch 10, 11</p> <p>Organic extraction.</p> <p>Antibiotic confirmation test – spot antibiotic preparation on ESKAPE lawn.</p>
Thu, Oct 8	<p>Record results of antibiotic confirmation test.</p> <p>Bacterial staining: Gram stain and endospore stain.</p>
Tues, Oct 13	<p>Test 1 (Ch 2 – 7, 10, 11)</p> <p>Read: Ch 8, 9</p>
Thu, Oct 15	<p>Lab logbook and data analysis.</p>
Tues, Oct 20	<p>Discuss: Ch 8, 9</p> <p>Read: Ch 12, 13</p> <p>Microbial biochemical assays: Inoculate various tubes, and plates</p>
Thu, Oct 22	<p>Collect data of microbial biochemical assays.</p>
Tues, Oct 27	<p>Discuss Ch 12, 13</p> <p>Analysis of 16S rRNA gene sequences.</p> <p>Microbial diversity worksheet (Excel file: Ch 14 – 17)</p>
Thu, Oct 29	<p>Microbial diversity worksheet (Excel file: Ch 14 – 17)</p> <p>Email submission, due on Dec 22.</p> <p>Read: Ch 18, 19, 20</p>
Tues, Nov 3	<p>Discuss: Ch 18, 19, 20</p> <p>Read: Ch 21, 22</p>
Thu, Nov 5	<p>Case study: Petroleum microbiology and microbial ecology</p>
Tues, Nov 10	<p>Discuss: Ch 21, 22</p>
Thu, Nov 12	<p>Test 2 (Ch 8, 9, 12, 13, 18 – 22)</p> <p>Read: Ch 23, 24</p>
Tues, Nov 17	<p>Case study: Current topics on human microbiomes.</p> <p>Discuss: Ch 23, 24</p> <p>Read: Ch 25, 26</p>

Thu, Nov 19	Immunology tutorial
Tues, Nov 24	Discuss: Ch 25, 26 Read: Ch 28, 29
Thu, Nov 26	Case study: Typhoid Mary Discuss: Ch 28, 29 Read: Ch 30 - 32
Tues, Dec 1	Microscopy of selected pathogens
Thu, Dec 3	Discuss: Ch 30 - 32
Tues, Dec 8	Test 3 (Ch 23 – 26, 28-32)
Thu, Dec 10	Q and A for Presentation Day and Lab Report.
TBD	Final Exam – Presentation Day, Lab Report due.

Requirements:

Mark distribution:

Lab Report and presentation	12%
Microbial Diversity worksheet	8%
Tests (3 × 20%)	60%
Lab component	20%

Mark distribution for the Lab component:

Lab logbook	50%
Case Study – Petroleum microbiology/ecology	10%
Case Study – Microbiomes	10%
Case Study – Public Health	10%
Immunology Tutorial	10%
Microscopy of selected pathogens	10%

Tests will consist of short answer questions based on topics covered during lectures. The tests are not cumulative. Each test carries 20% of the total course marks. There will be neither a make-up test nor assignments for failed tests. The final exam for this course is replaced by Lab Report with presentations held on the allotted final exam time and venue (to be determined). Please refer to Lab Report outline for further instructions.

Students must score a minimum of 60% for the Bio 241L in order to have it included in the final marks used to determine their grades. Assignments for the Bio 241L are due at various dates – please note deadlines in Moodle and in the assignment sheets. Late submissions are not accepted unless sufficient reason is provided as a written request for extension to the instructor prior to the due date. Note that any request for extension is not automatically granted. Each request is assessed individually and the length of extension, if any, will vary. The instructor's decision on the extension is final.

Attendance:

There are no penalties for non-attendance for any lectures. However, attendance is compulsory for all laboratory exercises, presentations, tests and exams. Allocated marks will not be awarded if student is absent from any laboratory, presentation, test or exam without notice and sufficient reason.

Grade Summary:

The available letters for course grades are as follows:

<u>Letter Grade</u>	<u>Description</u>
A+	Excellent
A	
A-	
B+	Good
B	
B-	
C+	Satisfactory
C	
C-	
D+	Minimal Pass
D	
F	Failure

A+	93.0 – 100%	C+	66.0 – 69.9%
A	87.0 – 92.9%	C	62.0 – 65.9%
A-	82.0 – 86.9%	C-	58.0 – 61.9%
B+	78.0 – 81.9%	D+	54.0 – 57.9%
B	74.0 – 77.9%	D	50.0 – 53.9%
B-	70.0 – 73.9%	F	Below 49.9%

Because of the nature of the Alpha 4.00 system, there can be no uniform College-wide conversion scale. The relationship between raw scores (e.g. percentages) and the resultant letter grade will depend on the nature of the course and the instructor's assessment of the level of each class, compared to similar classes taught previously.

Please note that final grades will be available on student registration system. Printed grade sheets are not mailed out.

Other

Any added features in the syllabus are optional. You may or may not wish to include elements such as a bibliography, reading list, or reporting form.

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Policies:

Communication

All students have received an Ambrose e-mail account upon registration. It is the student's responsibility to check this account regularly as the Ambrose email system will be the professor's instrument for notifying students of important matters (cancelled class sessions, extensions, requested appointments, etc.) between class sessions. If students do not wish to use their Ambrose accounts, they will need to forward all messages from the Ambrose account to another personal account.

Registration

During the **Registration Revision Period** students may enter a course without permission, change the designation of any class from credit to audit and /or voluntary withdraw from a course without financial or academic penalty or record. Courses should be added or dropped on the student portal by the deadline date; please consult the List of Important Dates. After that date, the original status remains and the student is responsible for related fees.

Students intending to withdraw from a course after the Registration Revision Period must apply to the Office of the Registrar by submitting a "Request to Withdraw from a Course" form or by sending an email to the Registrar's Office by the **Withdrawal Deadline**; please consult the List of Important Dates on the my.ambrose.edu website. Students will not receive a tuition refund for courses from which they withdraw after the Registration Revision period. A grade of "W" will appear on their transcript.

Exam Scheduling

Students wishing to withdraw from a course, but who fail to do so by the applicable date, will receive the grade earned in accordance with the course syllabus. A student obliged to withdraw from a course after the Withdrawal Deadline because of health or other reasons may apply to the Registrar for special consideration.

Students, who find a conflict in their exam schedule must submit a Revised Examination Request form to the Registrar's Office by the deadline date; please consult the List of Important Dates. Requests will be considered for the following reasons only: 1) the scheduled final examination slot conflicts with another exam; 2) the student has three final exams within three consecutive exam time blocks; 3) the scheduled final exam slot conflicts with an exam at another institution; 4) extenuating circumstances. Travel is not considered a valid excuse for re-scheduling or missing a final exam.

Electronic Etiquette

Students are expected to treat their instructor, guest speakers, and fellow students with respect. It is disruptive to the learning goals of a course or seminar and disrespectful to fellow students and the instructor to use electronics for purposes unrelated to the course during a class session. Turn off all cell phones and other electronic devices during class. Laptops should be used for class-related purposes only. Do not use iPods, MP3 players, or headphones. Do not text, read, or send personal emails, go on Facebook or other social networks, search the internet, or play computer games during class. Some professors will not allow the use of any electronic devices in class. The professor has the right to disallow the student to use a laptop in future lectures and/or to ask a student to withdraw from the session if s/he does not comply with this policy. Repeat offenders will be directed to the Dean. If you are expecting communication due to an emergency, please speak with the professor before the class begins.

Academic Policies

It is the responsibility of all students to become familiar with and adhere to academic policies as stated in the Academic Calendar. Personal information (information about an individual that may be used to identify that individual) may be required as part of taking this class. Any information collected will only be used and disclosed for the purpose for which the collection was intended. For further information contact the Privacy Compliance Officer at privacy@ambrose.edu.

Extensions

Although extensions to coursework in the semester are at the discretion of the instructor, students may not turn in coursework for evaluation after the last day of the scheduled final examination period unless they have received permission for a course Extension from the Registrar's Office. Requests for course extensions or alternative examination time must be submitted to the Registrar's Office by the deadline date; please consult the List of Important Dates. Course extensions are only granted for serious issues that arise "due to circumstances beyond the student's control."

Appeal of Grade

An appeal for change of grade on any course work must be made to the course instructor within one week of receiving notification of the grade. An appeal for change of final grade must be submitted to the Registrar's Office

in writing and providing the basis for appeal within 30 days of receiving notification of the final grade, providing the basis for appeal. A review fee of \$50.00 must accompany the appeal. If the appeal is sustained, the fee will be refunded.

Academic Integrity

We are committed to fostering personal integrity and will not overlook breaches of integrity such as plagiarism and cheating. Academic dishonesty is taken seriously at Ambrose University as it undermines our academic standards and affects the integrity of each member of our learning community. Any attempt to obtain credit for academic work through fraudulent, deceptive, or dishonest means is academic dishonesty. Plagiarism involves presenting someone else's ideas, words, or work as one's own. Plagiarism is fraud and theft, but plagiarism can also occur by accident when a student fails or forgets to acknowledge to another person's ideas or words. Plagiarism and cheating can result in a failing grade for an assignment, for the course, or immediate dismissal from the university college. Students are expected to be familiar with the policies in the current Academic Calendar that deal with plagiarism, cheating, and the penalties and procedures for dealing with these matters. All cases of academic dishonesty are reported to the Academic Dean and become part of the student's permanent record.

Note: Students are strongly advised to retain this syllabus for their records.