



COURSE INFORMATION SHEET

Biology 241 Microbiology (3)

(Tentative course outline and schedule for Winter 2013)

Course description

The course introduces students to the biology, ecology and diversity of microorganisms. A large emphasis is placed on the biology of bacteria, as well as their role in causing disease and use in industry. Students taking this course are required to enroll in Bio 241L, which encompass the laboratory accompaniment for this course.

Further course information

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.

Class schedules

Lectures: A2145, Wednesdays and Fridays, 1:00 – 2:15 pm

Laboratory (Bio 241L): A2151, Fridays, 4:00 – 6:30 pm

Instructor information

Instructor: Jessmi Ling, PhD.

Office: A2158

Telephone: 1-403-410-2000 ext. 2919

Email: jling@ambrose.edu

Instructor's office/lab hours

Mondays: 12:30 – 2:30 pm

Tuesdays and Thursdays: 9:30 – 11 am, 12:30 – 2:30 pm

Course prerequisites: Biology 131 and 133

Course objectives:

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.

Required textbook:

Brock Biology of Microorganisms. Madigan MT, Martinko JM, Stahl DA and Clark DP. 2012. 13th edition. Benjamin Cummings. (ISBN-13: 978-0321649638).

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.

Lecture and laboratory schedule:

Date	Topic	Chapter
Jan 9	Introduction to the course.	1 and 2
Jan 11	Cell structure and function, and genetics of <i>Bacteria</i> and <i>Archaea</i> . Lab 1: Introduction and analyses of microbial communities. Sample collection. Term paper 1 handout.	3 and 10 Parts of 22
Jan 16	Molecular biology of <i>Bacteria</i> , <i>Archaea</i> and Eukaryotes.	6 and 7
Jan 18	Regulation of gene expression. Lab 2: Microbial growth and factors influencing it. Microbial growth in vitro in a nutshell. Colony count assignment. Isolate selection or assignment of student per unknown isolate followed by subculture of isolate on LB and TSA as the master plate. Isolate's plate morphology.	8 4, 5, 26
Jan 23	Lab 3 Inoculations: Microbial biochemical properties.	
Jan 25	Viruses and Virology. Lab 3: Microbial biochemical properties. Microbial metabolic diversity I	9 13
Jan 30	Microbial metabolic diversity II Term paper 2 handout (Due April 5 by email)	14
Feb 1	Commercial products and biotechnology. Lab 4: Bacterial staining.	15 16

Feb 6	Test 1: Chapters 1, 3, 6, 7, 8, 9 and 10, and Lab 2 lecture.	
Feb 8	Microbial evolution and systematics Lab 5: Microbial genomics. Microbial identification via rRNA sequences.	16 12 and some 22
Feb 13	Microbial habitats and diversity.	23 and 25
Feb 15	Nutrient cycles, biodegradation and bioremediation. No lab Case study articles and assignment.	24
	Feb 19-23 Mid-semester break	
Feb 27	Global Impact Community Day (No daytime classes)	
Mar 1	Case studies in microbial diversity discussions. Lab 6: Microbial morphology - Microscopy.	
Mar 6	Test 2: Chapters 12, 13, 14, 15, 16, 23, 24 and 25.	
Mar 8	Microbe-human interaction. Lab: (Lecture) The human immune system.	27 28
Mar 13	Immunology in a nutshell.	29 and 30
Mar 15	Epidemiology. Lab 7: Diagnostic immunology. Immunology tutorial.	32 31
Mar 20	Person-to-person microbial diseases.	33
Mar 22	Vector- and soil-borne microbial pathogens. Food preservation and foodborne microbial diseases. Lab 8: Typhoid Mary.	34 36
Mar 27	Water treatment and purification, waterborne microbial diseases.	35
Mar 29	Good Friday (No classes)	
Apr 3	Test 3: Chapters 27 - 35.	
Apr 5	Question and answer time on term paper 1 preparations. Term paper 2 due by email.	

Apr 18	Term paper 1 presentations. 1:00 pm at A1085. Term paper 1 deadline at midnight by electronic submission to jling@ambrose.edu	
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Mark distribution:

Term paper 1 and presentation	15%
Term paper 2	12%
Case study assignment	2%
Tests (3 × 17%)	51%
Lab component	20%

Tests will consist of short answer questions based on topics covered during lectures. The tests are not cumulative. Each test carries 15% of the total course marks. The final exam for this course is replaced by Term paper 1 with presentations held on the allotted final exam time and venue. Please refer to Term paper 1 outline for further instructions.

There will be no exam or tests for the laboratory component. Assignments are due at various dates. Late submissions are penalized 20% of the possible score per week. So please don't be late.

Laboratory assignment marks distribution:

Lab 1	100
Lab 2	150
Lab 3	300
Lab 4	300
Lab 5	150
Lab 6	250
Lab 7	150
Lab 8	200

Grading scheme

A+	95 – 100%	C+	67 – 70%
A	88 – 94%	C	63 – 66%
A–	84 – 87%	C–	58 – 62%
B+	80 – 83%	D+	54 – 57%
B	75 – 79%	D	50 – 53%
B–	71 – 74%	F	Below 50%

Important dates

Convocation Chapel: Thursday, January 10.

Registration revision period: Wednesday, January 10 – Sunday, January 20.

Last day to enter course without permission; last day to withdraw from a course, change to audit, and receive tuition refund: Sunday, January 20.

Returning Scholarship application available: Wednesday, January 30.

Returning Scholarship application deadline: Tuesday, February 26.

Community Day (Program Day): Thursday, January 31.

Global Impact Community Day: Wednesday, February 27.

Legacy Youth Conference: Friday, March 15 – Sunday, March 17.

Last day to withdraw from courses without academic penalty: Friday, March 22.

Ambrose Research Conference: Monday, March 25.

Registration period commences: Monday, April 1.

Last day to request revised time for a final exam: Monday, April 1.

Last day to apply for time extension for coursework: Monday, April 1.

From the registrar

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 engage in electronically-enabled activities unrelated to the class during a class session. Please turn off all cell phones and other electronic devices during class. Laptops should be used for class-related purposes only. Please 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. 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 Student Handbook and Academic Calendar. Personal information, that is information about an individual that may be used to identify that individual, may be collected as a requirement 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 appropriate deadline (as listed in the Academic Calendar <http://www.ambrose.edu/publications/academiccalendar>). Course extensions are only granted for serious issues that arise "due to circumstances beyond the student's control."

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 College 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

give credit 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 and the Student Handbook 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.

Students are advised to retain this syllabus for their records.