



## Oregon State University Ecampus

**Course Name:** Allied Health Microbiology

**Course Number:** MB/BHS 255

**Credits:** 4

**Instructor name:** Dr. Linda Bruslind

**Instructor email:** [bruslindl@oregonstate.edu](mailto:bruslindl@oregonstate.edu)

**Instructor phone and location:** 541-737-1842, Nash 322 Corvallis Campus

### Course Description

General properties of cellular microbes and viruses, microbial biochemistry and genetics, pathogenesis and disease, immunity, and microbial infections (see Class Schedule at the end of this syllabus). Lecture and lab emphasis is on medical microbiology, infectious diseases, and public health. Not intended for biological sciences majors. Crosslisted as BHS 255. **Enforced pre-requisites:** None.

### Communication

Please post all course-related questions in the Q&A Discussion Forum so that the whole class may benefit from our conversation. Please contact me via the email posted above for matters of a personal nature. I will reply to course-related questions within approximately 24-48 hours. I will strive to return your assignments and grades for course activities to you within 1 week of the due date.

### Course Credits

This course combines approximately 120-150 hours of instruction, online laboratories, and assignments for 4 credits.

### Technical Assistance

If you experience any errors or problems while in your online course, contact 24-7 Canvas Support through the Help link within Canvas. If you experience computer difficulties, need help downloading a browser or plug-in, or need assistance logging into a course, contact the IS Service Desk for assistance. You can call (541) 737-8787 or visit the [IS Service Desk](#) online.

### Learning Resources

The course content is presented using narrated lectures, textbook readings, group discussions, and individual assignments.

- **Lectures** – Lectures are available on a week-by-week basis as streaming video (refer to the Class Schedule for details). Students should read the assigned pages in the online textbook first, before viewing the online lecture.
- **Textbook** – [Allied Health Microbiology](#), a free, open education resource (an abbreviated version of OpenStax [Microbiology](#)).

- **Laboratory** – Lab assignments are completed using an inexpensive lab kit available for purchase through Amazon or other sites, as well as components available through the lab modules on the Canvas course site. Each student must purchase the lab kit or the individual lab supplies as indicated.

**Note to prospective students:** Please check with the OSU Bookstore for up-to-date information for the term you enroll ([OSU Bookstore Website](#) or 800-595-0357).

### **Measurable Student Learning Outcomes**

1. Retain specialized language relevant to medical microbiology.
2. Acquire an understanding of the fundamental concepts of medical microbiology including a detailed understanding of aspects of the different types of microbes, microbial growth and control, pathogenesis and epidemiology, immunology, and infections of various anatomical systems.
3. Demonstrate an ability to formulate hypotheses and design experiments based on the scientific method.
4. Analyze and interpret results from a variety of microbiological methods and apply these methods to analogous situations.
5. Solve problems in microbiology using mathematical reasoning and graphing skills.
6. Effectively communicate fundamental concepts of microbiology in written format.
7. Identify credible scientific sources and interpret and evaluate the information therein.
8. Practice pure culture and selective techniques to enrich for and isolate microorganisms.
9. Practice safe microbiology, using appropriate protective and emergency procedures.
10. Document and report on experimental protocols, results and conclusions.
11. Discuss microbiological issues in context of other subject areas, including epidemiology, economics, public health, and social science.

### **Baccalaureate Core**

This course fulfills the Baccalaureate Core requirement for the **Perspectives** category under Biological and Physical Sciences. It does this by covering fundamental principles and techniques in the area of allied health microbiology, a biological science, and requiring students to conduct and analyze relevant experiments that correlate to the principles being taught. Students will then apply their knowledge to other subject areas, allowing them to view the information in a different context.

Students will:

1. Recognize and apply concepts and theories of basic physical or biological sciences. (weekly quizzes, homework)
2. Apply scientific methodology and demonstrate the ability to draw conclusions based on observation, analysis, and synthesis. (weekly lab exercises, homework)
3. Demonstrate connections with other subject areas. (weekly discussions, homework)

## Grading and Evaluation of Student Performance

- Get Acquainted Activity – 3 points
- Quizzes (10 @ 4 points each, lowest 2 scores dropped) – 32 points
- Homework (3 @ 10 points each, lowest score dropped) – 30 points
- Discussions (10 postings @ 4 points each) – 40 points
- Midterm I – 65 points
- Midterm II – 65 points
- Final Exam – 65 points
- Laboratory Exercises (10 @ 10 points each) – 100 points\*

**Total – 400 points**

\*In order to pass the class as a whole, students must pass the laboratory portion of the class with a 60% or higher, and participate in at least 9 out of the 10 laboratory exercises. **Regardless of class point total**, a student will be awarded an F for the class if they have not received at least 60 out of the 100 lab points **and** participated in at least 9 of the laboratory exercises.

## Letter Grade

Final grades are assigned on a straight percentage basis per this table:

Grade	Percent Range
A	93-100%
A-	90-92%
B+	87-89%
B	83-86%
B-	80-82%
C+	77-79%
C	73-76%
C-	70-72%
D+	67-69%
D	63-66%
D-	60-62%
F	<60%

Conventional rounding is used.

If you choose S/U grading, you need to achieve 70% (C-) to earn an "S." Election of S/U grading should be known only to the student and their academic advisor.

## Incompletes

Incomplete (I) grades will not be given except in extraordinary circumstances that are acceptable to the instructor, to students that are passing the class at the time of the incomplete request.

### **Pre/Post Assessment (5 points extra credit)**

In order to gain rudimentary information about what students are learning in the course, a pre- and post-assessment of 10 multiple choice questions will be offered. A student receives +2.5 points extra credit for participating in each. Credit is based on participation, not score. The activity is designed to be closed note, closed book, no web, no outside sources at all, and based on independent performance. Both tests will be available through the Canvas course site. **Students must participate in the pre-assessment by Friday, 11:55 pm Pacific of week 1. Students must participate in the post-assessment between Thursday, 12:05 am Pacific of Week 10 and Tuesday, 11:55 pm Pacific of finals week.**

### **Get Acquainted Activity (3 points)**

In order to earn the 3 points available for this activity, students must participate in the Get Acquainted activity, following the instructions provided on the course Canvas site. No make-ups for missing the assignment will be given. **Students must participate in this activity by Saturday, 11:55 pm Pacific of week 1.**

### **Weekly Quizzes (4 points each, 32 points total)**

Each quiz is worth 4 points and will cover material from the textbook chapters assigned each week (equivalent to 1-3 textbook chapters). Each student's lowest two quiz scores (counting zeros) will be dropped. Quizzes are designed as closed book, closed note, with a limited time period (5 minutes) and must be completed within that time period once opened. Students should not start a quiz until they have read the assigned chapters and feel adequately prepared. Quizzes will auto-submit once time has expired or the due date has been reached. Re-takes are not allowed. **Quizzes are due by Tuesday, 11:55 pm Pacific of each week.**

### **Homework Assignments (3 x 10 points each, 30 points total)**

Three homework assignments worth 10 points each are posted in the Canvas course site, with detailed instructions. **Homework assignments are due by Friday, 11:55 pm Pacific of Weeks 3, 7, and 10, on the dates indicated on the schedule.**

### **Group Discussions (4 points each posting, 40 points total)**

Students are expected to participate in four group discussions that are graded, with a posting due every week (10 postings total). Each student will post multiple times for each discussion, following the detailed instructions posted in the Canvas course site. **Each posting must be completed by Saturday, 11:55 pm Pacific.**

### **Exams (65 points each, 195 points total)**

Students are expected to take all three exams. Each exam covers one unit of content, as listed on the Class Schedule included at the end of the syllabus. The final exam is not cumulative, and none of the exam scores are dropped, replaced or averaged. Students will be given 50 minutes for each midterm and 110 minutes for the final exam (per University regulations). Students will have a 3-day window during which to take each exam. Exams auto-submit once the posted time limit has expired or the due date has been reached. Re-takes are not allowed. **Each exam will be available from Sunday, 12:05 am Pacific until Tuesday, 11:55 pm Pacific of Weeks 4, 8, and 11 (finals week), as indicated on the schedule posted on Canvas. No exceptions will be made, no retakes allowed.**

This course requires that you take all exams under the supervision of an approved proctor. Proctoring guidelines and registration for proctored exams are available online through the Ecampus [testing and proctoring website](#). It is important to submit your proctoring request as early as possible to avoid delays, with a recommendation of at least two weeks before each exam. It is the responsibility of the student to schedule a proctor ahead of time. Additional details about scheduling a proctor can be found in the Start Here module.

Students should note that an approved proctor may involve an additional fee. If this will cause hardship, please drop the course before this term's drop deadline to avoid tuition charges.

### **Laboratory (10 points each lab report/worksheet, 100 points total)**

The course utilizes a variety of experiments, both hands-on and online. Many of the experiments utilize materials/resources in a special kit provided by eScience Labs, which may be purchased directly from eScience Labs or by using a voucher available through the OSU bookstore. It is important that students follow the directions and safety instructions provided. Other lab exercises are conducted using freely available online resources from a variety of sites (see Laboratory Schedule below).

All students must complete the Pre-Lab (Lab00) and submit a Lab Safety Contract before they will gain access to any of the other labs **by Sunday, 11:55 pm Pacific at the end of Week 1**. After completion of the Pre-Lab, labs are available two at a time for a two week window. Both the lab reports/worksheets due for any two week period will be due **by Sunday, 11:55 pm Pacific** at the end of the two weeks (although students are welcome to submit items before the deadline). Students should keep in mind that some of the laboratory experiments rely upon prep works, the growth of the microbes and/or multiple observations over several days, and will therefore require an extended period of time. Students should plan accordingly. Details may be found in the Estimated Time section of the lab schedule, posted on Canvas.

## Course Policies

- **Class information:** Course materials (i.e., narrated lectures, homework instructions, quizzes, discussions, labs) are posted in Canvas structured in weekly modules. Students must have an operational ONID account to access class material.
- **Correspondence:** Please ensure that email correspondence with the instructor is respectful in nature and tone, with transparency as to sender.
- **Exams** (midterm I, midterm II, final exam) are only available to be taken in the presence of a proctor. Proctoring guidelines and registration for proctored exams are available online through the [Ecampus testing and proctoring website](#). Additional details about scheduling a proctor can be found on Canvas.
- **Quizzes** are available online in the Canvas course site and must be completed by Tuesday of each week, by the dates indicated. No late quizzes are accepted. Correct answers for the quiz questions will be revealed once the quiz deadline has passed.
- **Release of Course Components:**
  - Lecture – most components related to lecture will be released on a week-by-week basis, on Saturday, 12:05 am Pacific of each week (exception: Week 1 will start on Sunday, 12:05 am Pacific). The homework assignments and key words/study guide questions will be released on a unit-by-unit basis, on Saturday, 12:05 am Pacific at the start of each unit.
  - Laboratory – the laboratory exercises will be released two at a time, for a two week period. Lab reports/worksheets for any two labs released will be Sunday, 11:55 pm Pacific at the end of the two week period.
- **Laboratory Participation/Grade:** it is required that students pass the laboratory portion of the class with a 60% or higher, and participate in at least 9 out of the 10 laboratory exercises, in order to pass MB/BHS 255E. **Regardless of class point total**, a student will be awarded an F for the class if they have not received at least 60 out of the 100 lab points **and** participated in at least 9 of the laboratory exercises.
- **Grading:** It is the student's responsibility to carefully examine all graded papers when made available. Students have one week to contest a score, from the time of the posting of a score. Any grade adjustments made after this period are at the instructor's discretion.
- **Late work guidelines**
  - No make-up is given for the Get Acquainted activity or discussion activities. Students must post appropriate submissions by the deadline listed.
  - No make-up is given for exams, quizzes, homework assignments, or labs not completed within the specified time period. Exams, quizzes, homework assignments, and labs must be completed by the deadline listed.

### **Guidelines for a Productive and Effective Online Classroom**

Students are expected to conduct themselves in the course (e.g., on discussion boards, email) in compliance with the university's regulations regarding civility. Civility is an essential ingredient for academic discourse. All communications for this course should be conducted constructively, civilly, and respectfully. Differences in beliefs, opinions, and approaches are to be expected. In all you say and do for this course, be professional. Please bring any communications you believe to be in violation of this class policy to the attention of your instructor.

Active interaction with peers and your instructor is essential to success in this online course, paying particular attention to the following:

- Unless indicated otherwise, please complete the readings and view other instructional materials for each week before participating in the discussion board.
- Read your posts carefully before submitting them.
- Be respectful of others and their opinions, valuing diversity in backgrounds, abilities, and experiences.
- Challenging the ideas held by others is an integral aspect of critical thinking and the academic process. Please word your responses carefully, and recognize that others are expected to challenge your ideas. A positive atmosphere of healthy debate is encouraged.

### **Statement Regarding Students with Disabilities**

Accommodations for students with disabilities are determined and approved by Disability Access Services (DAS). If you, as a student, believe you are eligible for accommodations but have not obtained approval, please contact DAS immediately at 541-737-4098 or at <http://ds.oregonstate.edu>. DAS notifies students and faculty members of approved academic accommodations and coordinates implementation of those accommodations. While not required, students and faculty members are encouraged to discuss details of the implementation of individual accommodations.

### **Accessibility of Course Materials**

All materials used in this course are accessible. If you require accommodations please contact [Disability Access Services \(DAS\)](#). Additionally, Canvas, the learning management system through which this course is offered, provides a [vendor statement](#) certifying how the platform is accessible to students with disabilities.

### **Reach Out for Success:**

University students encounter setbacks from time to time. If you encounter difficulties and need assistance, it's important to reach out. Consider discussing the situation with an instructor or academic advisor. Learn about resources that assist with wellness and academic success at [oregonstate.edu/ReachOut](http://oregonstate.edu/ReachOut). If you are in immediate crisis, please contact the Crisis Text Line by texting OREGON to 741-741 or call the National Suicide Prevention Lifeline at 1-800-273-TALK (8255).

## **Expectations for Student Conduct**

Student conduct is governed by the university's policies, as explained in the [Student Conduct Code](#). Students are expected to conduct themselves in the course (e.g., on discussion boards, email postings) in compliance with the university's regulations regarding civility.

## **Academic Integrity**

Students are expected to comply with all regulations pertaining to academic honesty. For further information, visit [Student Conduct and Community Standards](#), or contact the office of Student Conduct and Mediation at 541-737-3656.

OAR 576-015-0020 (2) Academic or Scholarly Dishonesty:

- a) Academic or Scholarly Dishonesty is defined as an act of deception in which a Student seeks to claim credit for the work or effort of another person, or uses unauthorized materials or fabricated information in any academic work or research, either through the Student's own efforts or the efforts of another.
- b) It includes:
  - i) CHEATING - use or attempted use of unauthorized materials, information or study aids, or an act of deceit by which a Student attempts to misrepresent mastery of academic effort or information. This includes but is not limited to unauthorized copying or collaboration on a test or assignment, using prohibited materials and texts, any misuse of an electronic device, or using any deceptive means to gain academic credit.
  - ii) FABRICATION - falsification or invention of any information including but not limited to falsifying research, inventing or exaggerating data, or listing incorrect or fictitious references.
  - iii) ASSISTING - helping another commit an act of academic dishonesty. This includes but is not limited to paying or bribing someone to acquire a test or assignment, changing someone's grades or academic records, taking a test/doing an assignment for someone else by any means, including misuse of an electronic device. It is a violation of Oregon state law to create and offer to sell part or all of an educational assignment to another person (ORS 165.114).
  - iv) TAMPERING - altering or interfering with evaluation instruments or documents.
  - v) PLAGIARISM - representing the words or ideas of another person or presenting someone else's words, ideas, artistry or data as one's own, or using one's own previously submitted work. Plagiarism includes but is not limited to copying another person's work (including unpublished material) without appropriate referencing, presenting someone else's opinions and theories as one's own, or working jointly on a project and then submitting it as one's own.
- c) Academic Dishonesty cases are handled initially by the academic units, following the process outlined in the University's Academic Dishonesty Report Form, and will also be referred to SCCS for action under these rules.



### **Tutoring and Writing Assistance**

[NetTutor](#) is a leading provider of online tutoring and learner support services fully staffed by experienced, trained and monitored tutors. Students connect to live tutors from any computer that has Internet access. NetTutor provides a virtual whiteboard that allows tutors and students to work on problems in a real time environment. They also have an online writing suite where tutors critique and return essays within 24 to 48 hours. Access NetTutor from within your Canvas class by clicking on the Tools button in your course menu.

The Oregon State [Online Writing Suite](#) is also available for students enrolled in Ecampus courses.

### **Turnitin**

Your instructor may ask you to submit one or more of your writings to Turnitin, a plagiarism prevention service. Your assignment content will be checked for potential plagiarism against Internet sources, academic journal articles, and the papers of other OSU students, for common or borrowed content. Turnitin generates a report that highlights any potentially unoriginal text in your paper. The report may be submitted directly to your instructor or your instructor may elect to have you submit initial drafts through Turnitin, and you will receive the report allowing you the opportunity to make adjustments and ensure that all source material has been properly cited. Papers you submit through Turnitin for this or any class will be added to the OSU Turnitin database and may be checked against other OSU paper submissions. You will retain all rights to your written work. For further information, visit [Academic Integrity for Students: Turnitin – What is it?](#)

### **Student Evaluation of Courses**

The online Student Evaluation of Teaching system opens to students during the week before finals and closes the Monday following the end of finals. Students receive notification, instructions and the link through their ONID. They may also log into the system via Online Services. Course evaluation results are extremely important and used to help improve courses and the online learning experience for future students. Responses are anonymous (unless a student chooses to “sign” their comments, agreeing to relinquish anonymity) and unavailable to instructors until after grades have been posted. The results of scaled questions and signed comments go to both the instructor and their unit head/supervisor. Anonymous (unsigned) comments go to the instructor only.

## MB/BHS 255 Lecture Schedule

Week	Lecture Topic	Reading Assignments Chapter: Section	Learning Activities
	Extra Credit – Pre-Assessment Get Acquainted Activity		
<b>Unit 1</b>			
1	1 – An Invisible World 2 – The Cell	Chapter 1 Chapter 2	Quiz 1 Discussion 1, part 1
2	3 – Prokaryotic Diversity 4 – The Eukaryotics of Microbiology 5 – Accelular Pathogens	Chapter 3 Chapter 4 Chapter 5	Quiz 2 Discussion 2, part 2
3	6 – Microbial Biochemistry 7 – Microbial Growth 8 – Modern Applications of Microbial Genetics	Chapter 6 Chapter 7 Chapter 8	Quiz 3 Discussion 2, part 3 Homework 1
<b>Midterm I</b>			
<b>Unit 2</b>			
4	9 – Control of Microbial Growth 10 – Antimicrobial Drugs	Chapter 9 Chapter 10	Quiz 4 Discussion 2, part 1
5	11 – Microbial Mechanisms of Pathogenicity 12 – Disease and Epidemiology	Chapter 11 Chapter 12	Quiz 5 Discussion 2, part 2
6	13 – Innate Nonspecific Host Defenses 14 – Adaptive Specific Host Defenses	Chapter 13 Chapter 14: 14.1-14.4	Quiz 6 Discussion 3, part 1
7	15 – Vaccines 16 – Diseases of the Immune System	Chapter 14: 14.5 Chapter 15	Quiz 7 Discussion 3, part 2 Homework 2
<b>Midterm II</b>			
<b>Unit 3</b>			
8	17 – Skin and Eye Infections 18 – Respiratory System Infections	Chapter 16 Chapter 17	Quiz 8 Discussion 3, part 1
9	19 – Urogenital Infections 20 – Digestive System Infections	Chapter 18 Chapter 19	Quiz 9 Discussion 3, part 2
10	21 – Circulatory and Lymphatic Infections 22 – Nervous System Infections	Chapter 20 Chapter 21	Quiz 10 Discussion 3, part 3 Homework 3
	Extra Credit – Post-Assessment		
<b>Final Exam</b>			

## MB/BHS 255 Laboratory Schedule

Week	Topic	Lab Activity	Source
1	Microscopy & the Gram Stain	Virtual Microscopy & Staining	OSU Ecampus activity/ SciencePop Virtual Labs
2	Streak Plate	Virtual streak plate lab	Virtual Interactive Bacteriology Laboratory
3	Bacterial Identification	Bacterial ID Virtual Lab: ID of bacteria based on their DNA sequences	HHMI BioInteractive site
4	Antibiotic Sensitivity	Kirby-Bauer disk diffusion test	OSU Ecampus activity
5	Epidemiology of Nipah Virus	Virus Hunter: Monitoring Nipah Virus in Bat Populations	HHMI BioInteractive site
6	Immunology	Immunology Virtual Lab: use of an ELISA to test blood samples for evidence of disease	HHMI BioInteractive site
7	Microbial Sampling & the Scientific Method	Growth of microbes from various surfaces (student's choice)	Amazing Bacteria Science Kit (available from Amazon.com for ≈\$25)* iver site
8	Patterns of Zoonotic Disease	Analysis of Data Points	HHMI BioInteractive site
9	Case Studies in Microbiology	The Fatal Flu, Battle of the Biofilms, Middle Ear Mayhem, or Aches on a Plane	Cornell site
10	Case Studies in Microbiology	Solve the Outbreak: Become a Disease Detective	Centers for Disease Control and Prevention site

\*It is not required that you purchase this particular kit. The materials that are needed are: 10 nutrient agar plates, 10 sterile swabs, and about 100 ml of sterile saline.