

	<b>Department of Biology</b>  <b>BIO2020-1: Microbiology of Infectious Diseases section 1</b>  <b>Lecture (3 units) + Lab (1 unit)</b>
	Fall 2020

<b>Meeting days: M/W/F</b>	<b>Instructor title and name: Dr. David Cummings</b>
<b>Meeting times: 12:15-1:10 pm</b>	<b>Phone: N/A for the fall of 2020</b>
<b>Meeting location: Online</b>	<b>Email: davidcummings@pointloma.edu</b>
<b>Final Exam: 11.30.20 10:30-1:00pm</b>	<b>Office location: N/A for the fall of 2020</b>
<b>Additional info:</b>	<b>Group Office Hours: Mondays 12:15-1:10 on Zoom (see calendar invites for links)</b>  <b>One-on-One Office Hours: Click <a href="#">here</a> to sign up for an available slot. These meetings will be on Zoom as well.</b>

**PLNU Mission**  
**To Teach ~ To Shape ~ To Send**

Point Loma Nazarene University exists to provide higher education in a vital Christian community where minds are engaged and challenged, character is modeled and formed, and service is an expression of faith. Being of Wesleyan heritage, we strive to be a learning community where grace is foundational, truth is pursued, and holiness is a way of life.

**COURSE DESCRIPTION**

A study of microbial physiology, the diseases associated with infections by certain pathogenic microbes and the vertebrate response to microbial infections. Does not apply toward the Biology major. Lecture and lab. Offered every year.

Prerequisite(s): CHE1003 (or CHE1052); BIO1040 (may be taken concurrently).

**COURSE LEARNING OUTCOMES**

The unifying theme of this course is pathogenesis, the detrimental interactions between microorganisms and their human hosts. Our main objectives will be to understand what pathogenic microorganisms are, how they cause disease, and how we may be able to control them.

Specific learning outcomes: By the end of the semester, students will be able to

- describe the physical nature and life cycles of bacteria and viruses;
- distinguish bacteria from viruses and the diseases they cause;
- recognize and distinguish diseases caused by enteric bacteria, Gram-positive rods, and Gram-positive cocci;
- evaluate different antibiotics for application to the different groups of bacterial pathogens;
- carry out and interpret fundamental microbiology lab procedures.

## REQUIRED TEXTS AND RECOMMENDED STUDY RESOURCES

1. *Microbiology with Diseases by Taxonomy + ACCESS CODE*. Fifth Edition. Robert W. Bauman, Pearson, 2016. ISBN: 9780134402819 (eTEXT+ACCESS code)
2. *Follow Your Gut*. Rob Knight, Simon & Schuster, 2015. ISBN 978-1476784748
3. *The Sanford Guide*: Ordering instructions are on CANVAS.
4. *LB Agar Plates*: You will need 10 LB agar plates for week 2 (purchase [HERE](#)).

## COURSE CREDIT HOUR INFORMATION

In the interest of providing sufficient time to accomplish the stated Course Learning Outcomes, this class meets the PLNU credit hour policy for a 4-unit class delivered over 15 weeks. It is anticipated that students will spend a minimum of 37.5 participation hours per credit hour on their coursework. For this course, students will spend an estimated 150 total hours meeting the course learning outcomes. The time estimations are provided in the Canvas modules.

## ASSESSMENT AND GRADING

### Assessment and grading:

A total of 850 points are possible in the class: 700 points in lecture and another 150 point in lab.

**Exams (500 points)** – There will be four multiple-choice exams, including the final, in this course, each worth 125 points. Exam questions will be focused on material from lecture (as opposed to lab). Exams 2 and 3 will be semi-cumulative, with approximately 20% of the points coming from questions associated with the previous chapters (*i.e.*, those on which you have already been tested). The final exam will be 100% cumulative, covering the entire semester. If you have a legitimate conflict with an exam date/time, you must inform the instructor prior to the week of the exam to arrange for a makeup exam. Students are responsible for all lecture material AND everything on the reading guides, whether or not it is covered in class. All exams will be administered through Honorlock.

**Homework (100 points)** – Weekly homework, found on Mastering Microbiology (PEARSON) will be assigned (approximately 10 points each). Due dates can be found in the course schedule posted on CANVAS (Calendar). These assignments are usually due on Monday nights by 11:59 pm. In addition, there are a series of Dynamic Learning Modules that are associated with each chapter; these are due the day before your exams. Each Dynamic Learning Module chapter will count as 2.5 extra credit points towards your exam score. So, for instance if there are 2 chapters covered on that exam, you can earn 5 extra credit points. These are an excellent way to prepare for your exam.

**Chemistry review quiz (10 points)** – Chemistry is an important pre-requisite to BIO2020. To ensure that you remember basic chemistry terminology and principles, you will be given a quiz early in the semester. The instructor will inform you in advance of the topics you can expect on the quiz.

**Case studies (30 points)** – Learning infectious disease principles in context can be a powerful way to ensure retention of the material. At three strategic points in the semester, students will be

assigned a case study describing a real infection. Worksheets will be assigned and should be typed up and turned in on the due date in hard copy (10 pts each). All of class time on the due date will be dedicated to discussion, and two or three questions from the case studies will be found on the exams.

**Participation/Attendance/Group Learning (60 points)** – BIO2020 will meet synchronously every Wednesday, and sometimes on Fridays as well. Attendance will be taken at these synchronous lectures. In addition, there will be group learning opportunities most weeks. Your participation in these discussion boards, group assignments, etc. will contribute towards your participation grade.

**Laboratory activities (150 points)** – The BIO2020 lab is designed to expose the student to some of the essential tools of the microbiologist in a safe, controlled environment. More details can be found in the separate lab syllabus.

**Point breakdown**

Exams (4)	500 points
Homework assignments (10)	100 points
Chemistry review quiz (1)	10 points
Case studies (3)	30 points
Participation/Attendance/Group Learning	60 points
Laboratory activities	150 points
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TOTAL	850 possible points

**Grade Scale Based on Percentages**

A	B	C	D	F
A 92-100	B+ 88-89	C+ 78-79	D+ 68-69	F 59 or lower
A- 90-91	B 82-87	C 72-77	D 62-67	
	B- 80-81	C- 70-71	D- 60-61	

\*NOTE: Final percentages will be rounded to the nearest whole number and the letter grade assigned will be non-negotiable.

**STATE AUTHORIZATION**

State authorization is a formal determination by a state that Point Loma Nazarene University is approved to conduct activities regulated by that state. In certain states outside California, Point Loma Nazarene University is not authorized to enroll online (distance education) students. If a student moves to another state after admission to the program and/or enrollment in an online course, continuation within the program and/or course will depend on whether Point Loma Nazarene University is authorized to offer distance education courses in that state. It is the student’s responsibility to notify the institution of any change in his or her physical

location. Refer to the map on [State Authorization](#) to view which states allow online (distance education) outside of California.

## **INCOMPLETES AND LATE ASSIGNMENTS**

All assignments are to be submitted/turned in by the beginning of the class session when they are due—including assignments posted in Canvas. Incompletes will only be assigned in extremely unusual circumstances.

## **PLNU COPYRIGHT POLICY**

Point Loma Nazarene University, as a non-profit educational institution, is entitled by law to use materials protected by the US Copyright Act for classroom education. Any use of those materials outside the class may violate the law.

## **PLNU ACADEMIC HONESTY POLICY**

Students should demonstrate academic honesty by doing original work and by giving appropriate credit to the ideas of others. Academic dishonesty is the act of presenting information, ideas, and/or concepts as one's own when in reality they are the results of another person's creativity and effort. A faculty member who believes a situation involving academic dishonesty has been detected may assign a failing grade for that assignment or examination, or, depending on the seriousness of the offense, for the course. Faculty should follow and students may appeal using the procedure in the university Catalog. See [Academic Policies](#) for definitions of kinds of academic dishonesty and for further policy information.

## **PLNU ACADEMIC ACCOMMODATIONS POLICY**

While all students are expected to meet the minimum standards for completion of this course as established by the instructor, students with disabilities may require academic adjustments, modifications or auxiliary aids/services. At Point Loma Nazarene University (PLNU), these students are requested to register with the Disability Resource Center (DRC), located in the Bond Academic Center ([DRC@pointloma.edu](mailto:DRC@pointloma.edu) or 619-849-2486). The DRC's policies and procedures for assisting such students in the development of an appropriate academic adjustment plan (AP) allows PLNU to comply with Section 504 of the Rehabilitation Act and the Americans with Disabilities Act. Section 504 prohibits discrimination against students with special needs and guarantees all qualified students equal access to and benefits of PLNU programs and activities. After the student files the required documentation, the DRC, in conjunction with the student, will develop an AP to meet that student's specific learning needs. The DRC will thereafter email the student's AP to all faculty who teach courses in which the student is enrolled each semester. The AP must be implemented in all such courses.

If students do not wish to avail themselves of some or all of the elements of their AP in a particular course, it is the responsibility of those students to notify their professor in that course. PLNU highly recommends that DRC students speak with their professors during the first two weeks of each semester about the applicability of their AP in that particular course and/or if they do not desire to take advantage of some or all of the elements of their AP in that course.

## **PLNU ATTENDANCE AND PARTICIPATION POLICY**

Regular and punctual attendance at all **synchronous** class sessions is considered essential to optimum academic achievement. If the student is absent for more than 10 percent of class sessions (virtual or face-to-face), the faculty member will issue a written warning of de-enrollment. If the absences exceed 20 percent, the student may be de-enrolled without notice until the university drop date or, after that date, receive the appropriate grade for their work and participation. In some courses, a portion of the credit hour content will be delivered **asynchronously** and attendance will be determined by submitting the assignments by the posted due dates. See [Academic Policies](#) in the Undergraduate Academic Catalog. If absences exceed these limits but are due to university excused health issues, an exception will be granted.

### **Asynchronous Attendance/Participation Definition**

A day of attendance in asynchronous content is determined as contributing a substantive note, assignment, discussion, or submission by the posted due date. Failure to meet these standards will result in an absence for that day. Instructors will determine how many asynchronous attendance days are required each week.

## **SPIRITUAL CARE**

Please be aware PLNU strives to be a place where you grow as whole persons. To this end, we provide resources for our students to encounter God and grow in their Christian faith. If students have questions, a desire to meet with the chaplain or have prayer requests you can contact the [Office of Spiritual Development](#).

## **USE OF TECHNOLOGY**

In order to be successful in the online environment, you'll need to meet the minimum technology and system requirements; please refer to the [Technology and System Requirements](#) information. Additionally, students are required to have headphone speakers compatible with their computer available to use. If a student is in need of technological resources please contact [student-tech-request@pointloma.edu](mailto:student-tech-request@pointloma.edu).

Problems with technology do not relieve you of the responsibility of participating, turning in your assignments, or completing your class work.

## **ASSIGNMENTS AT-A-GLANCE (details can be found in Canvas Modules)**

Week 1: The Chemistry of Microbiology (CH.2) and Cell Structure and Function (CH.3)

### **CHEM QUIZ (DUE 8.21.20)**

Week 2: Cell Structure and Function (CH.3) and Pathogenic Gram-Positive Bacteria (CH.19)

Week 3: Microbial Metabolism (CH.5)

### **CASE STUDY 1: URINARY TRACT INFECTION (DUE 9.4.20)**

Week 4: Microbial Metabolism (CH.5)

### **EXAM 1 (9.11.20)**

Week 5: Microbial Nutrition and Growth (CH.6)

Week 6: Microbial Genetics (CH.7)

Week 7: Antimicrobial Drugs (CH.10)

### **CASE STUDY 2: RESPIRATORY TRACT INFECTION (DUE 10.2.20)**

Week 8: Viruses (CH.13)

Week 9: Pathogenic RNA Viruses (CH.25)

### **EXAM 2 (10.16.20)**

Week 10: Infection (CH.14)

Week 11: Innate Immunity (CH.15)

Week 12: Adaptive Immunity (CH.16) and Immunization (CH.17)

Week 13: Pathogenic Gram-Negative Bacilli (CH.20)

### **EXAM 3 (11.13.20)**

Week 14: Gut Week

### ***FOLLOW YOUR GUT***

### **CASE STUDY 3: GASTROINTESTINAL TRACT INFECTION (DUE 11.20.20)**

Week 15: Final Exam Review and Thanksgiving Break

Week 16: FINALS

### **FINAL EXAM MONDAY 11.30.20 AT 10:30 AM - 1:00 PM**

Format for each week:

- 1) MONDAY – Optional live office hours 12:15-1:10 pm
- 2) WEDNESDAY – Required live class 12:15-1:10 pm
- 3) FRIDAY – Varies: See CANVAS