

# BIOL202

**STUDENT WARNING:** This course syllabus is from a previous semester archive and serves only as a preparatory reference. Please use this syllabus as a reference only until the professor opens the classroom and you have access to the updated course syllabus. Please do NOT purchase any books or start any work based on this syllabus; this syllabus may NOT be the one that your individual instructor uses for a course that has not yet started. If you need to verify course textbooks, please refer to the online course description through your student portal. This syllabus is proprietary material of APUS.

## Course Summary

**Course :** BIOL202 **Title :** Principles of Microbiology with Lab

**Length of Course :** 8

**Prerequisites :** BIOL133, SCIN130 **Credit Hours :** 4

## Description

**Course Description:** This course includes the study of the history of Microbiology, as well as the fundamentals of microbe staining, culture and growth. We will also focus on sterilization, disinfection and antimicrobial therapies that help to keep microbes in check. Finally, the course will focus on microbial infections of the skin, eyes and wounds as well as the urogenital, respiratory, oral gastrointestinal and nervous systems. This course includes a laboratory component that allows the student to explore exercises in the principles and concepts of microbiology. This course is designed for students with interests in basic science, microbiology and the medical professions. NOTE: Students may take either BIOL202 or SCIN202 for credit, but not both versions of microbiology. (Prerequisites: BIOL133 or SCIN130)

### Course Scope:

The course is eight weeks long and is appropriate for all levels of undergraduate work. Microbiology is an excellent complement to General Education degrees related to Environmental Studies, any program concerned with the natural environment, or any future goals that include careers in the health sciences. Assignments and exams will consist of a variety of question formats to include, but not limited to, multiple choice, true/false, short answer and essays. The at-home lab exercises will offer hands-on experience to provide a practical understanding of microbiology. No prior knowledge of microbiology is necessary, although an understanding or interest in environmental science, ecology, biology, cell biology, genetics and/or chemistry may enhance the classroom and lab exercises experience.

## Objectives

After successfully completing this course, you will be able to:

**CO-1** Define the scope and history of Microbiology

**CO-2** Compare and contrast the characteristics of prokaryotes and eukaryotes, to include cellular activities, structure and function, growth and division and metabolism

**CO-3** Describe the inheritance of genetic information, gene action, gene regulation and mutations in microbes

**CO-4** Summarize the interactions and impact of microorganisms and humans

**CO-5** Categorize the different host defense mechanisms and their relation to microbial disease processes

**CO-6** Attribute the principles, properties and applications of antimicrobial agents

**CO-7** Examine the interactions, impact, and evolutionary relationships of microorganisms in the environment

**CO-8** Apply the scientific method in experiments, analyze and interpret data and communicate findings

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## Outline

### **Week 1: Introduction to the History of Microbiology, Visualizing and Staining Microbes**

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Learning Objectives

CO-1, CO-2

Readings

Chapter 1: An Invisible World

Chapter 2: How We See the Invisible World

Assignments

Forum 1

Lab 1

Week 1 Quiz

### **Week 2: Prokaryotic and Eukaryotic Cells, Microbial Genetics, Gene Transfer and Genetic Engineering**

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Learning Objectives

CO-2, CO-3, CO-4

Readings

Chapter 3: The cell

Chapter 11: Mechanisms of Microbial Genetics

Chapter 12: Modern Applications of Microbial Genetics

Assignments

Forum 2

Lab 2

Week 2 Quiz

### **Week 3: Taxonomy, Evolution and Diversity of Microbes, Viruses, Eukaryotic Organisms and**

## Parasites

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Learning Objectives

CO-2, CO-4, CO-8

Readings

Chapter 4: Prokaryotic diversity

Chapter 5: The Eukaryotes of Microbiology

Chapter 6: Acellular Pathogens

Assignments

Forum 3

Lab 3

Week 3 Quiz

### **Week 4: Antimicrobial Therapy, Host Microbe Relationships and Disease Processes, Epidemiology and Nosocomial Infections**

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Learning Objectives

CO-4, CO-6

Readings

Chapter 14: Antimicrobial Drugs

Chapter 15: Microbial Mechanisms of Pathogenicity

Chapter 16: Disease and Epidemiology

Assignments

Forum 4

Lab 4

Week 4 Quiz

### **Week 5: Innate Host Defenses, Microbial Infections of the Skin, Eyes, Wounds and Bites, Urogenital and Sexually Transmitted Diseases**

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Learning Objectives

CO-4, CO-5

Readings

Chapter 17: Innate Nonspecific Host Defenses

Chapter 18: Adaptive Specific Host Defenses

Chapter 21: Skin and Eye Infections

Chapter 23: Urogenital System

Assignments

Forum 5

Lab 5

Week 5 Quiz

Project Topic Proposal

**Week 6: Diseases of the Respiratory System, Oral and Gastrointestinal Diseases, Cardiovascular, Lymphatic and Systemic Diseases, Diseases of the Nervous System**

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Learning Objectives

CO-4

Readings

Chapter 22: Respiratory System Infections

Chapter 24: Digestive System Infections

Chapter 25: Circulatory and Lymphatic System Infections

Chapter 26: Nervous System Infections

Assignments

Forum 6

Lab 6

Week 6 Quiz

**Week 7: Environmental Microbiology**

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Learning Objectives

CO-4, CO-7

Readings

Chapter 8: Microbial Metabolism

Assignments

Forum 7

Lab 7

Week 7 Quiz

Project

## Week 8: Applied Microbiology

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Learning Objectives

CO-4, CO-8

Readings

Chapter 9: Microbial Growth

Chapter 12: Modern Applications of Microbial Genetics

Chapter 13: Control of Microbial Growth

Assignments

Forum 8

Lab 8

Week 8 Quiz

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## Evaluation

Please see the [Student Handbook](#) to reference the University's [grading scale](#).

**Grading:**

Name	Grade %
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## Materials

**Book Title:** BIOL202 Custom Microbiology Kit

**Author:** eScience

**Publication Info:** eScience

**ISBN:** 6055

**Book Title:** Microbiology - e-book available online; please visit <http://apus.libguides.com/er.php> to locate the course eReserve.

**Author:** Parker, Nina

**Publication Info:** OpenStax

**ISBN:** 9781938168147

**Book Title:** Until further notice, eScience kits will ship without any action needed from students. Your shipping address on file must be current - <https://apus.libanswers.com/coursematerials/faq/238652>

**Author:**

**Publication Info:**

**ISBN:** eScience Note

**Book Title:** Various resources from the APUS Library & the Open Web are used. Please visit <http://apus.libguides.com/er.php> to locate the course eReserve.\*

**Author:**

**Publication Info:**

**ISBN:** ERESERVE NOTE

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### Required Technology

- See the Technology Requirements section of the undergraduate catalog for the minimum hardware and software requirements.
- Microsoft Office 365 is available to APUS students for free. To sign up, visit <http://products.office.com/en-us/student>. If you have questions about accessing the software, please contact Classroom support at [classroomsupport@apus.edu](mailto:classroomsupport@apus.edu).

### Additional Resources

Juneja, V., & Sofos, J. (2009). *Pathogens and Toxins in Foods: Challenges and Interventions*. NY:ASM Press. *Pathogens and Toxins in Foods: Challenges and Interventions* offers a farm-to-table approach to food safety that enables readers to control microbial pathogens and toxic agents at all stages of the food supply chain.

Norkin, L. (2009). *Virology: Molecular Biology and Pathogenesis*. NY: ASM Press. *Virology: Molecular Biology and Pathogenesis* enables readers to develop a deep understanding of fundamental virology by emphasizing principles and discussing viruses in the context of virus families.

Krasner, R.(2009). *Microbial Challenge: Science, Disease and Public Health*. NY: ASM Press. *The Microbial Challenge: Science, Disease, and Public Health*, 2nd Edition, presents a fascinating look at human-microbe interactions and examines the disease producers while discussing how, with knowledge-based preparation, we can live in harmony with microbes. It also discusses the ways in which beneficial microbes are involved in the cycles of nature and in the food industry, and how they are used as research tools.

Walsh, C. (2003). *Antibiotics: Actions, Origins, Resistance*. NY: ASM Press. *Antibiotics: Actions, Origins, Resistance* offers a comprehensive, up to date account of those structural classes of antibiotics that have had an impact in human infectious disease.

Miller, M. (1998). *A Guide to Specimen Management in Clinical Microbiology*. NY: ASM Press.

Simmons, E. (2007). *Alternaria: An Identification Manual*. NY: ASM Press.

Beck, R (2000).. *A Chronology of Microbiology in Historical Context*. NY: ASM Press.

Sherman, I. (2009). *The Elusive Malaria Vaccine: Miracle of Mirage?* NY: ASM Press.

### Web Sites

In addition to the required course texts, the following public domain web sites are useful. Please abide by the university's academic honesty policy when using Internet sources as well. Note web site addresses are subject to change.

Site Name	Web Site URL/Address
Microbe World	<a href="http://www.microbeworld.org/types-of-microbes">http://www.microbeworld.org/types-of-microbes</a>
Centers for Disease Control	<a href="http://www.cdc.gov">http://www.cdc.gov</a>
NIH Allergy and Infectious Disease	<a href="http://www.niaid.nih.gov/topics/microbes/pages/default.aspx/Pages/default.aspx">http://www.niaid.nih.gov/topics/microbes/pages/default.aspx/Pages/default.aspx</a>
WHO Epidemiology	<a href="http://www.who.int/topics/epidemiology/en/">http://www.who.int/topics/epidemiology/en/</a>

## Course Guidelines

### Citation and Reference Style

- Attention Please: Students will follow the APA Format as the sole citation and reference style used in written work submitted as part of coursework to the University. Assignments completed in a narrative essay or composition format must follow the citation style cited in the APA Format.

### Tutoring

- [Tutor.com](http://www.tutor.com) offers online homework help and learning resources by connecting students to certified tutors for one-on-one help. AMU and APU students are eligible for 10 free hours\* of tutoring provided by APUS. Tutors are available 24/7 unless otherwise noted. Tutor.com also has a SkillCenter Resource Library offering educational resources, worksheets, videos, websites and career help. Accessing these resources does not count against tutoring hours and is also available 24/7. Please visit the APUS Library and search for 'Tutor' to create an account.

### Late Assignments

- Students are expected to submit classroom assignments by the posted due date and to complete the course according to the published class schedule. The due date for each assignment is listed under each Assignment.
- Generally speaking, late work may result in a deduction up to 15% of the grade for each day late, not to exceed 5 days.
- As a working adult I know your time is limited and often out of your control. Faculty may be more flexible if they know ahead of time of any potential late assignments.

### Turn It In

- Faculty may require assignments be submitted to Turnitin.com. Turnitin.com will analyze a paper and report instances of potential plagiarism for the student to edit before submitting it for a grade. In some cases professors may require students to use Turnitin.com. This is automatically processed through the Assignments area of the course.

### Academic Dishonesty

- Academic Dishonesty incorporates more than plagiarism, which is using the work of others without citation. Academic dishonesty includes any use of content purchased or retrieved from web services such as CourseHero.com. Additionally, allowing your work to be placed on such web services is academic dishonesty, as it is enabling the dishonesty of others. The copy and pasting of content from any web page, without citation as a direct quote, is academic dishonesty. When in doubt, do not copy/paste, and always cite.

## **Submission Guidelines**

- Some assignments may have very specific requirements for formatting (such as font, margins, etc) and submission file type (such as .docx, .pdf, etc) See the assignment instructions for details. In general, standard file types such as those associated with Microsoft Office are preferred, unless otherwise specified.

## **Disclaimer Statement**

- Course content may vary from the outline to meet the needs of this particular group.

## **Communicating on the Forum**

- Forums are the heart of the interaction in this course. The more engaged and lively the exchanges, the more interesting and fun the course will be. Only substantive comments will receive credit. Although there is a final posting time after which the instructor will grade comments, it is not sufficient to wait until the last day to contribute your comments/questions on the forum. The purpose of the forums is to actively participate in an on-going discussion about the assigned content.
- “Substantive” means comments that contribute something new and hopefully important to the discussion. Thus a message that simply says “I agree” is not substantive. A substantive comment contributes a new idea or perspective, a good follow-up question to a point made, offers a response to a question, provides an example or illustration of a key point, points out an inconsistency in an argument, etc.
- As a class, if we run into conflicting view points, we must respect each individual's own opinion. Hateful and hurtful comments towards other individuals, students, groups, peoples, and/or societies will not be tolerated.

## **Identity Verification & Live Proctoring**

- Faculty may require students to provide proof of identity when submitting assignments or completing assessments in this course. Verification may be in the form of a photograph and/or video of the student's face together with a valid photo ID, depending on the assignment format.
- Faculty may require live proctoring when completing assessments in this course. Proctoring may include identity verification and continuous monitoring of the student by webcam and microphone during testing.

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## **University Policies**

### [Student Handbook](#)

- [Drop/Withdrawal policy](#)
- [Extension Requests](#)
- [Academic Probation](#)
- [Appeals](#)
- [Disability Accommodations](#)

The mission of American Public University System is to provide high quality higher education with emphasis



on educating the nation's military and public service communities by offering respected, relevant, accessible, affordable, and student-focused online programs that prepare students for service and leadership in a diverse, global society.

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