Biology (BIOL) 325

Introductory Microbiology (Revision 7)

Status:	Replaced with new revision, see the **course listing** for the current revision
Delivery mode:	**Individualized study online** with **eText**, and a **Supervised Lab**. BIOL 325 has a **lab exemption** This course is charged a **lab fee**
Credits:	3
Area of study:	Science
Prerequisites:	**BIOL 204**; and **BIOL 205** or **BIOL 207** or the equivalent. Professor approval required.
Precluded:	None
Challenge:	BIOL 325 is not available for challenge.
Faculty:	**Faculty of Science and Technology**

Notes:	Four days of in-person supervised laboratory work offered five times per year in Athabasca, Alberta. Check **dates and locations** of supervised lab prior to registering for the course.

Overview

BIOL 325 is a three-credit, university-level course that covers fundamental elements of the study of microorganisms and their environment. This course emphasizes the impact microorganisms have in nature. The course provides an overview of microbial environments, with special emphasis on structural and functional differences among bacteria, fungi, algae, protozoa, and viruses.

Upon completion of this course, the student will be well-versed in the current classification system of bacteria, in microbiological techniques, and in biochemical function. Clinical and industrial applications in microbiology will be discussed. As there is a laboratory component in this course, students will gain experience in microbiological techniques, and in isolation and identification of bacteria.

Outline

BIOL 325 comprises the following 15 units.

- Unit 1: Introduction to Microbiology
- Unit 2: Microbial Anatomy
- Unit 3: Microbial Biochemistry
- Unit 4: Microbial Growth
- Unit 5: Microbial Genetics
- Unit 6: Classification of Microorganisms
- Unit 7: The Prokaryotes: Domains Bacteria and Archaea
- Unit 8: The Eukaryotes: Fungi, Algae, Protozoa, and Arthropods
- Unit 9: Viruses, Viroids, and Prions

- Unit 10: Diseases and Epidemiology
- Unit 11: Pathogenicity
- Unit 12: Immunology
- Unit 13: Microbial Diseases
- Unit 14: Environmental Microbiology
- Unit 15: Microbiological Applications

Learning outcomes

Upon successful completion of this course, you will be able to

- understand how key historical experiments and theories have shaped our knowledge of microorganisms.
- demonstrate familiarity and competency with a wide variety of microbiological laboratory techniques, including transfer, culture, isolation and identification, growth rates and antibiotic sensitivity.
- describe the components and cellular structure of bacteria, viruses and fungi.
- explain the bacterial genetic processes of replication, transcription and translation.
- understand the principles of microbial pathogenic mechanisms and strategies to identify and manage infectious disease transmission.
- define immunity and understand the mechanisms of the immune response.
- outline the applications of microorganisms in the food industry, biotechnology, industrial processes, and the development of medical treatments.

Evaluation

To **receive credit** for BIOL 325, you must obtain at least 50 percent on each of the Assignments and examinations and on the laboratory component. The weighting of the composite grade is as follows:

Activity	Weight
Four Assignments (10% each)	40%

Activity	Weight
Midterm Exam	20%
Final Exam	20%
Laboratory Exercises	20%
Total	**100%**

The **midterm and final examinations** for this course must be requested in advance and written under the supervision of an AU-approved exam invigilator. Invigilators include either ProctorU or an approved in-person invigilation centre that can accommodate online exams. Students are responsible for payment of any invigilation fees. Information on exam request deadlines, invigilators, and other exam-related questions, can be found at the **Exams and grades** section of the Calendar.

To learn more about assignments and examinations, please refer to Athabasca University's **online Calendar** .

Materials

Tortora, G. J., Funke, B. R., & Case, C. L. (2019). *Microbiology: An introduction* (13th ed.). Pearson. (eText)

Leboffe, M. J., & Pierce, B. E. (2021). *A photographic atlas for the microbiology laboratory* (5th ed.). Morton Publishing. (Mailed to students.) (Print)

eText

Registration in this course includes an electronic textbook. For more information on **electronic textbooks** , please refer to our **eText Initiative site** .

All other learning resources will be available online.

Important links

- **Academic advising**
- **Program planning**

- **Request assistance**
- **Support services**
- **Lab dates and locations**

Athabasca University reserves the right to amend course outlines occasionally and without notice. Courses offered by other delivery methods may vary from their individualized study counterparts.

Opened in Revision 7, May 15, 2014

Updated December 10, 2024

View **previous revision**