

Biochemistry & Microbiology
Alma Mater Europaea University
Alma Mater Vienna

Course Name:	Biochemistry & Microbiology
Semester:	Fall 2024
Intended for:	Bachelor students
ECTS:	5
Language:	English + German
Contact:	bio@almamater.at

Course Description: This course provides the basics of microbiology and biochemistry, focusing on microbiological samples, infectious agents, and biochemical processes in the human body. Students will learn to handle microbiological samples correctly and understand the biochemical mechanisms affecting life. The course includes the most advanced knowledge, methods, and contents of self-paced edX courses, including lectures with a combination of discussions and assignments. It includes work in study groups. Students meet the teacher weekly in live consultations and Q&A sessions.

Biochemistry: Each student will complete the Harvard University course: "[Principles of Biochemistry](#)" taught by Harvard University Professor of Molecular and Cellular Biology Rachelle Gaudet and Alain Viel, Director of Undergraduate Research and Senior Lecturer in the Department of Molecular and Cellular Biology.

The course is described as a 15-week course, with a total of 90 hours, and at an intermediate level. It includes five units. Alma Mater students should complete it in 5 weeks, one unit per week.

Students should complete:

- Unit 1 by Sunday, 24 November 2024
- Unit 2 by Sunday, 1 December 2024
- Unit 3 by Sunday, 8 December 2024
- Unit 4 by Sunday, 15 December 2024
- Unit 5 by Sunday, 22 December 2024

There are two study group meetings on Biochemistry:

- Week of 2 December 2024 (covers Units 1 and 2)
- Week of 16 December 2024 (covers Units 3 and 4).
- There is no study group after Unit 5.

Microbiology: Each student will complete one of the following four courses:

1) Massachusetts Institute of Technology: "[Cell Biology: Cell-Cell Interactions](#)" taught by MIT lecturers Rebecca Lamason, Sebastian Lourido, and Mary Ellen Wiltrot.

The course is described as a 7-week, 35-hour course at the advanced level. It covers Cell Adhesion and Polarity, Morphogenesis, Stem Cells and Regeneration, Cell Death and Autophagy, Host-Pathogen Interactions, Cell Biology of Immune Systems, and Cancer and Metastasis.

2) University of Adelaide: "[Essential Human Biology: Cells and Tissues](#)" taught by University of Adelaide professors Mario Ricci, Rachel Gibson, Sophie Karanicolas, Catherine Snelling, and Femke Buisman-Pijlman.

It is described as a 5-week, 15h hours total Introductory level. It includes The cell, Epithelial, Connective, Muscular, and Nervous tissue.

3) EIT Food: "[The Human Microbiome.](#)" described as 3 weeks, 12h total.

4) KU Leuven: "[How to analyze a microbiome.](#)" described as 7 weeks, 12h total.

There is one study group meeting on the Microbiology part of the course in the week of 6 January 2025.

Weekly consultations: Between 25 November and 10 January, students meet the teacher weekly in live consultations (in German). For students, meetings are optional. To attend or book a consultation, email at latest 48h before the meeting with questions or topics you wish to discuss.

Grading: Grades consist of edX points/grades, class participation, and assignments. There is no additional exam.

The student who completes Harvard University's Principles of Biochemistry and the Massachusetts Institute of Technology's Cell Biology: Cell-Cell Interactions MITx course can receive grades up to 10.

The student who completes the Harvard University "Principles of Biochemistry" course and either the University of Adelaide "Essential Human Biology: Cells and Tissues" course, EIT Food: "The Human Microbiome," or KU Leuven: "How to Analyze a Microbiome" course can receive a maximum grade of 8.

Harvard + MIT = max grade 10.

Harvard + Adelaide/EIT/Leuven = max grade 8.

Complete the selected edX courses by 8 Jan 2025. Missing the deadline results in a grade reduction by 1 (10%), and missing the deadline by 7 or more days results in a failing grade. In case of excusable reasons (health etc lasting more than 5 days), send an email to the address above.

EdX points/grades (80% of grade)

The points/grades you receive on edX are calculated proportionally to 80%.

Class Participation and Assignments (20% of grade)

Lectures are included in edX and are self-paced. There are no additional lectures.

In Study Groups, you will:

- Report on your progress in a few min
- Report on a chosen narrow topic within the Unit 5 min. You should present additional insight, an interesting study, or whatever you think is relevant to this narrow topic based on your additional research.
- Prepare 3 discussion questions and lead a discussion for around 15 min.

At the beginning of the first meeting, each group selects a coordinator who manages the group in all its meetings and a replacement coordinator who replaces the coordinator in case they are absent. The group may agree to appoint a new coordinator. The group manages itself and solves issues internally. Students are expected to come to study groups prepared and ready to participate. Poor participation, unexcused absences, and consistent tardiness will lead to lost points for participation.

Optional Reading

- Nelson, David L., Albert L. Lehninger, and Michael M. Cox. [Lehninger principles of biochemistry](#). Macmillan, 2008.

- Gladwin, Mark T., William Trattler, and C. Scott Mahan. [Clinical Microbiology Made Ridiculously Simple: Color Edition](#). MedMaster Inc., 2022.

Topics, Materials, and Assignments by Session

<i>Session</i>	<i>Date/Time</i>	<i>Meeting or Deadline</i>	<i>Material</i>	<i>Assignment</i>
1	November 14th, 2024		None	None
2	Week of 2 December 2024	Student Group Meeting 1	Harvard University Units 1 + 2 completed	Report on your Harvard University progress and chosen topic for 5 min, prepare 3 questions, and lead a discussion for 15 min
3	Week of 16 December 2024	Student Group Meeting 2	Harvard University Units 3 + 4 completed	Report on your Harvard University progress, chosen topic for 5 min, prepare 3 questions, and lead a discussion for 15 min
	23 December 2024	Deadline to complete Harvard University: "Principles of Biochemistry" course	Harvard University Unit 5 complete	None
4	Week of 6 January 2025	Student Group Meeting 3	Microbiology 50% completed	Report on your Microbiology progress and chosen topic for 5 min, prepare 3 questions and lead a discussion for 15 min
	12 January 2025	Deadline to complete all edX courses		None
	20 January 2025	Grades		

Week of DATE means the week that starts on a Monday, DATE.

Version: Nov 2024