ENVIRONMENTAL MICROBIOLOGY
BIOL 457

Winter 2025

Instructors:

Zohra Zahir
Contact via e-mail in the UR Courses platform

Dr. Britt Hall
LB 243
Contact via e-mail in the UR Courses platform

Lecture time: M/W/F 10:30-11:20
Location: CL 313

Course description/rationale

This course covers the study of microorganisms in natural environments. We will examine the ecology and diversity of microbial communities in water, soil, and air, as well as in extreme and unusual environments. Other topics will include tools used in environmental microbiology and ways that we can exploit microbes in our environments.

Course objectives

1. To explore the earth's microbial habitats
2. To learn about the diversity of microbial communities.
3. To appreciate the interconnectedness of ecosystem components.

Components

.

Component	Due Date	Grading
Presentation	End of March	10%
Initial assignment meeting	Prior to Feb. break	5%
Wikipedia page draft	March 14th by 11:59pm	20%
Wikipedia page final	March 28th by 11:59pm	
Exam I	February 14th	32.5%
Exam II	April 25h 9:00-10:20	32.5%

Optional textbooks: Environmental Microbiology (2nd ed). R.M. Maier, I.L. Pepper, and C.P. Gerba.

And: https://casls-primo-prod.hosted.exlibrisgroup.com/primo-explore/fulldisplay?docid=01CASLS_REGINA_ALMA51280819260003476&context=L&vid=01CASLS_REGINA&lang=en_US&search_scope=default_scope&adaptor=Local%20Search%20Engine&tab=default_tab&query=any,contains,geomicrobiology&mode=Basic

Office hours for Dr. Hall:

- Drop in if my office door is open.
- Appointments may also be made through email.

Office hours for Ms. Zahir:

- Appointments only - through email.

Tentative Class Schedule: Environmental Microbiology

Date/Day		Subject
6 Jan	M	Introduction/ Assignment Training
8 Jan	W	Bacteria and Archaea
10 Jan	F	
13 Jan	M	
15 Jan	W	Growth and Metabolism
17 Jan	F	
20 Jan	M	Fungi
22 Jan	W	
24 Jan	F	Viruses
27 Jan	M	Methods in Environmental Micro I
29 Jan	W	
31 Jan	F	Methods in Environmental Micro II
3 Feb	M	Microbial Communities and Interactions
5 Feb	W	
7 Feb	F	Host Environments - I
10 Feb	M	Host Environments - II
12 Feb	W	Host Environments - III
14 Feb	F	Exam I
17 Feb	M	*Reading week – No class*
21 Feb	W	*Reading week – No class*
23 Feb	F	*Reading week – No class*
24 Feb	M	Metabolism/Intro to Environments (HALL takes over)
26 Feb	W	Great Oxidation Event
28 Feb	F	Soil Environments
3 Mar	M	Soil Environments
5 Mar	W	Intro to Extreme environments / Extreme environments I (xerophiles)
7 Mar	F	Water Environments
10 Mar	M	Water/ Extreme environments II
12 Mar	W	Extreme environments II (hyperthermophiles, acido-philes)
14 Mar	F	
17 Mar	M	Extreme environments III (halophiles, alkaliphiles)

19 Mar	W	Extreme environments III/ Air Environments
21 Mar	F	Air Environments/
24 Mar	M	Extreme environments V (psychrophiles)
26 Mar	W	Anthropogenic environments.
28 Mar	F	
2 Apr	M	Presentations.
4 Apr	W	Presentations.
7 Apr	F	Presentations.
9 Apr	M	Presentations.
11 Apr	W	(Last day of class)

Exams

There will be two exams (comprising various types of questions) – one midterm given in class (32.5% of final mark) and one in the final exam period (32.5% of final mark).

Assignment

1. Choosing a topic (5%)

Sometime prior to February break, you must find an article from the "grey" literature on any topic in Environmental Microbiology. This article can be taken from general news sources (ex. CBC, Globe and Mail) or from science magazine type sources (ex. New Scientist). The article must have been published within the last 8 months. Once you have chosen an article of interest to you, you need to make an appointment with Dr. Hall to discuss it. This meeting will be worth 5% of your final mark. At the meeting, please come prepared to discuss both the article from the grey literature and the paper you have tracked down from the scientific literature.

2. Mini-review for Wikipedia (20%)

You will write a Wikipedia article based on the topic you have chosen on environmental microbiology. This assignment encourages you to contribute to public knowledge by following Wikipedia's guidelines while developing skills in research, writing, and citation. Your article can expand an existing Wikipedia page (if it is underdeveloped) or create a new page from scratch. Regardless of your choice, the article must follow Wikipedia's policies on notability, plagiarism, and proper citation, as detailed on their website: Help: Your first article.

Topic Selection:

- See below section for topic choices;
- Verify that there isn't already a **comprehensive** article about your topic on Wikipedia.

Article Content & Structure:

- Use your own words and avoid copying text directly from sources.
- Include citations to reliable, independent sources (Wikipedia accepts published books, academic articles, reputable magazines and newspapers.)
- Follow Wikipedia's tone and formatting guidelines.

- Your Wikipedia article must be well-organized, with an appropriate title and sections. Consider including an Introduction, Background, Discovery/Mechanisms/Examples, and Impacts and Applications.

Before publishing the article on Wikipedia, **you must** submit a draft to Turnitin.com for review. The final document should be, at minimum, 2 pages and not exceed 3 pages excluding references. Font must be Times New Roman 12-point, line spacing at 1.5, and margins at 0.75". There should be no title page, but your name and student number should be included on the left side in the document header. The class ID is **46836165** and the enrollment key is **microbes**. Please set up your Turnitin account promptly. Late submissions will not be accepted.

PLEASE NOTE: Do not include direct quotes from electronic sources (i.e., cut and paste text transfers). The presence of such passages will be considered plagiarism and will result in an automatic grade of 0%. All students are responsible to ensure that their assignments are in their own words and include the appropriate citations when necessary. Turnitin.com is able to determine if there is overlap with electronic sources of information as well as overlap with other students' work.

All questions pertaining to the Wikipedia page should be directed to Ms. Zahir.

3. Presentation (10%) and

You will give a short (approximately 15 min) presentation on the topic of your assignment. The date of these presentations will be randomly assigned in mid-February for classes near the end of term.

All questions pertaining to the presentation should be directed to Dr. Hall.

Statement on generative AI use:

In this course, our primary focus is to cultivate an equitable, inclusive, and accessible learning community that emphasizes individual critical thinking and problem-solving skills. To ensure a fair and consistent learning experience for all students, the use of advanced AI tools such as ChatGPT or Dall-E 2 is strictly prohibited for all submitted academic (written/coding/creative/etc.) work, assignments, and assessments in this course.

Students are expected to complete assignments, tests, and other academic evaluations using their own knowledge and abilities. The use of generative AI tools, including but not limited to ChatGPT, is considered a breach of this expectation.

Use may be subject to academic penalties.

UR Courses

Go to the University of Regina UR Courses site:
https://urcourses.uregina.ca/login/index.php

Click on the link:
Login to UR Courses

Type in your Username and Password

Click on the link:
Environmental Microbiology

Getting Help with WebCT

There are several ways to receive general help with UR Courses.

- http://www.uregina.ca/URCourses/studentguide/
- E-mail: IT.Support@uregina.ca
- Phone: 306-585-4685
- In person: Technical Services (AH 106.2)

NOTE: There are machines available for student use on campus (for locations see: http://www.uregina.ca/comps-erv/helpdesk/labs.shtm). The computers in these rooms are equipped with browsers which are compatible with UR Courses. For off-campus students, you should have access to computer labs and the internet at all Regional College sites in the province, or at your local library.

Other information

Plagiarism Policies:

Plagiarism (from the Undergraduate Calendar): Plagiarism is a form of academic dishonesty in which one person submits or presents the work of another person as his or her own, whether from intent to deceive, lack of understanding, or carelessness. Unless the course instructor states otherwise, it is allowable and expected that

students will examine and refer to the ideas of others, but these ideas must be incorporated into the student's own analysis and must be clearly acknowledged through footnotes, endnotes, or other practices accepted by the academic community. Students' use of others' expression of ideas, whether quoted verbatim or paraphrased, must also be clearly acknowledged according to acceptable academic practice. It is the responsibility of each student to learn what constitutes acceptable academic practice. The Department of English Style Guide is available inexpensively from the University Bookstore. Students may also consult on-line resources such as the University of Toronto Writing Centre's "How Not to Plagiarize": https://advice.writing.utoronto.ca/using-sources/how-not-to-plagiarize/.

Plagiarism includes the following practices:

- not acknowledging an author or other source for one or more phrases, sentences, thoughts, code, formulae, or arguments incorporated in written work, software, or other assignments (substantial plagiarism);
- presenting the whole or substantial portions of another person's paper, report, piece of software, etc. as an assignment for credit, even if that paper or other work is cited as a source in the accompanying bibliography or list of references (complete plagiarism). This includes essays found on the Internet.

Students who are uncertain what plagiarism is should discuss their methodology with their instructors.