MCB 6670C

The Microbiome

Spring 2026
Course Format Online Asynchronous, 3 Credits

Instructors

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Zoom or in-person office hours, by request via e-mail or phone. Office hours are difficult to schedule since our students have such varied schedules. We will always be available to answer questions by email or set up an individual phone or Zoom conversation. Just contact us to arrange it.

Teaching Assistant

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Zoom or in-person office hours, by request via e-mail or phone.

Course Description

This course is designed to bolster scientific literacy while exploring your own interests in the microbiome. Students will apply concepts from course lectures, exploring how theoretical knowledge is applied in practical scenarios. At the end of the course, students will develop a foundational understanding of how to interpret findings in the scientific literature and acquire a versatile set of skills that can be applied across various fields, including microbiome data analysis, which is increasingly important in science, academia, and industry.

Course Learning Objectives

At the end of this course, each student will be able to:

1. Understand what the microbiome is and the principles that drive microbial life in different niches.

2. Be introduced to how microbial omics data is used to understand the human microbiome and its role in human health.

3. Be introduced to the modern technologies used in microbiome research. By understanding the technologies, the students can learn which biological questions can be asked and answered, given today's tools.

4. Learn how to analyze and interpret microbiome data.

Course Overview and Purpose

The course is structured into 12 lessons or modules, one per week of the semester. Each week will cover a different topic. The topics build upon each other, so to understand a topic in week 6, for example, it is necessary that you understand the material from week 1. The first 4 weeks of the course lay the foundation for the remaining weeks.

Each week begins on Tuesday, which is the day by which a new week's worth of material will be posted. Every effort on our part will be made to post material prior to Tuesdays, but that may not always happen.

For each week's lesson, there may be several items to complete. Keep the learning objectives in mind as you learn the week's material. After reading the learning objectives, please go through the week's material in the order presented. After you have gone through the material in the presented order, you are always free to return and revisit any of the content.

Students are expected to check Canvas regularly and are encouraged to log in to Canvas every Tuesday evening (EST) so they can stay ahead with the weekly material and, at a minimum, understand what is required of them that week. As there are no exams, students can expect scaffolding assignments. Although deadlines will be posted using the Canvas calendar tool, it is each student's responsibility to keep track of assignments on a personal calendar, so they fulfill the course requirements.

Course Prerequisites

This course has introductory microbiology (MCB 3020, MCB 3023, or equivalent) as a prerequisite with a minimum grade of C. It will be taught at the senior level, with its primary objective being to increase knowledge and appreciation of the microbiome.

Textbooks, Learning Materials, and Supply Fees

There is no required text for the course. Online readings will be provided for each learning topic.

Technical Support

UF Computing Help Desk & Ticket Number: All technical issues require a UF Helpdesk Ticket Number. The UF Helpdesk is available 24 hours a day, 7 days a week. https://helpdesk.ufl.edu/ | 352-392-4357

Weekly Course Schedule

Week	Dates	Topic
1	Jan/12	Course Orientation; History Microbiome Research
2	Jan/19	The great plate anomaly and scientific literacy Next generation sequencing (different platforms and uses)
3	Jan/26	Amplicon survey; ASV vs OTUs; Quality control
4	Feb/2	16S databases; Barcodes; Metadata; Contingency table
5	Feb/9	Practical analysis of 16S: from sequences to biological information.
6	Feb/16	Metagenome and metatranscriptome; Approaches to detection of genes (databases and software)
7	Feb/23	Alpha Diversity - principles and analysis
8	Mar/2	Beta diversity - principles and analysis
9	Mar/9	Differential abundance - principles and analysis

Week	Dates	Topic
10	Mar/16	Introduction to metaproteomics. Introduction to mass spec platforms and how they are used in the context of metaproteomics.
11	Mar/23	Metaproteome data analysis I.
12	Mar/30	Metaproteome data analysis II.

Assignments

	Draft Submission Period	Final Submission Period
Assignment 1: 16s Sequence Processing	02/09 – 02/16	02/16 – 02/25
Assignment 2: 16s Data Analysis	02/25 – 03/09	03/09 – 03/23
Assignment 3: Metaproteome Analysis	03/23 – 04/03	04/03 – 04/13

Quizzes dates

	Quiz Submission Period	Weeks Covered
Quiz 1	01/19 – 01/27	1, 2
Quiz 2	02/02 – 02/10	3, 4
Quiz 3	02/09 – 02/16	5, 6
Quiz 4	02/23 – 03/03	7
Quiz 5	03/09 – 03/17	8, 9
Quiz 6	03/23 – 03/31	10, 11

Grading Policy

Course grading is consistent with UF grading policies.

Course Grading Structure

This course includes three major assignments, each designed as a two-stage process: a **draft submission** followed by a **final submission**. The goal of this structure is to communicate expectations, promote iterative learning, and give students the opportunity to improve their work based on detailed instructor feedback.

For each assignment, students will first submit a draft version, which will be graded and receive written feedback. The **draft will account for 30% of the assignment grade** and will be evaluated using the same criteria as the final version. After receiving feedback, students will revise and resubmit their work as a final version, which will **be worth 70%** of the assignment grade. The final submission must address the feedback provided on the draft and demonstrate improvement in content, clarity, and scientific reasoning.

The draft and final submissions are related to the same assignment topic, allowing students to refine their analysis rather than start a new project. This approach mirrors the scientific process of proposal development, peer review, and revision, and is intended to help students develop stronger writing, critical thinking, and data interpretation skills in microbiome research.

Assignment Type	Point Value	Percent of Final Grade
Assignments	Draft (150) + Final (550) =	70%

Assignment Type	Point Value	Percent of Final Grade
	700	
Quizzes	300	30%

Assignments submitted **after the deadline will incur a penalty of 5% per calendar day**, including weekends, with a maximum late period of three days. No submissions will be accepted after this period without documented, university-approved justification. Both draft and final submissions are subject to the same late policy, and failure to submit a draft may significantly limit the quality of feedback available for the final submission.

Grading Scale

Grade	Points	Percentage
A	900-1000	90-100
A-	870-899	87-89.9
B+	840-869	84-86.9
B	800-839	80-83.9
B-	770-799	77-79.9
C+	740-769	74-76.9
C	700-739	70-73.9
C-	670-699	67-69.9
D+	640-669	64-66.9
D	600-639	60-63.9
D-	570-599	57-59.9
S	<=569	<=56.9

Academic Policies and Resources

Academic policies for this course are consistent with university policies. See https://syllabus.ufl.edu/syllabus-policy/uf-syllabus-policy-links/

Campus Health and Wellness Resources

Visit https://one.uf.edu/whole-gator/topics for resources that are designed to help you thrive physically, mentally, and emotionally at UF.

Please contact UMatterWeCare for additional and immediate support.

Software Use

All faculty, staff, and students of the university are required and expected to obey the laws and legal agreements governing software use. Failure to do so can lead to monetary damages and/or criminal

penalties for the individual violator. Because such violations are also against university policies and rules, disciplinary action will be taken as appropriate.

Privacy and Accessibility Policies

- Instructure (Canvas)
  - Instructure Privacy Policy
  - Instructure Accessibility
- Zoom
  - Zoom Privacy Policy
  - Zoom Accessibility