SYLLABUS — Graduate Topics in Biology - Microbiome

Fall 2016:	**BIOL 8053 - 001**
Instructor:	Trinity Hamilton, 731F Rieveschl, trinity.hamilton@uc.edu
Lecture:	Mon, Wed 10:10 am - 11:10 am,
Room:	Rieveschl 713
Office Hours:	Tuesday, 3:30-5:00 PM Rieveschl 731F, by appointment
Grading:	Normal

In this graduate-level class, we will focus on microbiomes — the microorganisms that reside in an environmental niche. We will examine the microbiomes of different hosts (humans, model systems, and non-model systems) and in natural systems and explore concepts in microbial ecology and physiology in this context. We will discuss research methods and tools used to collect and analyze microbiome data and students will perform analyses and present results in both written and oral formats.

Learning Goals and Objectives:

1. Familiarize students with techniques to study microbial diversity and function.
2. Describe laboratory and bioinformatics tools for microbiome analysis and perform data analyses techniques to investigate and interpret microbiome data.
3. Understand how "multi-omic" technology can be utilized to understand the roles of microbiota in microbiomes.
4. Support students in the development of a model system or project in order to perform a discovery-based or hypothesis-based study of the microbial composition of an environmental or model system sample.

In addition, it is the objective of my courses at the University of Cincinnati that students will develop:

1. Knowledge of advanced concepts in microbiology research
2. Ability to make a scientific argument and support it with appropriate evidence
3. Knowledge of and ability to apply the scientific method
4. Ability to find, evaluate, & use published scientific information
5. Competence in scientific writing and oral communication
6. Ability to integrate concepts within and among disciplines of science

Course Policies and Expectations

Attendance Policy. Attendance is mandatory. Please contact Dr. Hamilton if you are unable to attend. You are permitted one unexcused absence each semester. Failure to adhere to attendance guidelines will result in class failure.

Instructional delivery. 70% seminar/discussion, 20% individual presentations, 10% lecture.

Course Organization. The first week will provide an overview of the field and allow us to briefly discuss the topics and papers to be covered. Over the following weeks, we will read and discuss scientific articles during at least one class period. The other will be dedicated to data analyses or interpretation. Each registered student is required to lead at least one weekly discussion, and the responsibility of leading weekly discussions will be distributed as equally as practical among all students.

Reading. Course readings will consist of papers from the primary literature. Selected students will lead a discussion (not by lecturing, but by facilitating a group discussion) in which we will critique the paper(s), interpret the data, and discuss the implications of the results.

Course Outline. Evolving and subject to change depending on enrollment and interest.

- Week 1 - Introduction to microbiomes
- Week 2 - Data analyses and interpretation
- Week 3 - 7 - Student-lead discussions
- Week 8 - 9 Data analyses
- Week 10 - Proposals due
- Week 11 - Proposal reviews
- Week 12 - Reports due, peer review
- Week 13 - 14 - Presentations

Please Note. The professor reserves to right to make changes to the syllabus, including the specific topics and papers that will be covered, or project due dates when unforeseen circumstances occur. These changes will be announced as early as possible so that students can adjust their schedules as needed.

Reading Assignments. All reading should be completed prior to the class. In addition, students are expected to arrive to class on time and be courteous to the instructors and fellow students.

Article Summaries. Throughout the semester, journal articles covering class-related topics will be assigned for additional reading. Unless otherwise noted, these are required to be read and summarized as follows:

Article summaries should be typed and use the following general format:

> Your Name
> Date
> Aim: [1-2 sentence summary about the mission and method of the paper]
> Method: [3-4 sentence summary of the methods used to achieve the Aim, in some detail]
> Results: [short paragraph explaining the results of these methods]
> Main Conclusions: [longer paragraph explaining the impact or relation of this research to the discipline or other related work. Your opinion and interpretation is an important part of this section].

What you can expect of me. To the best of my ability, I will provide this information in a fun and relaxed environment. I will be available for help and assistance on a regular basis. If you cannot make office hours, please email me and to set up an appointment.

Academic Integrity Statement. The University Rules, including the Student Code of Conduct, (http://www.uc.edu/conduct/Code_of_Conduct.html) and other documented policies of the department, college, and university related to academic integrity will be enforced. Any violation of these regulations, including acts of plagiarism or cheating, will be dealt with on an individual basis according to the severity of the misconduct.

Special Needs Statement. If you have any special needs related to your participation in this course, including identified visual impairment, hearing impairment, physical impairment, communication disorder, and/or specific learning disability that may influence your performance in this course, you should meet with the instructor to arrange for reasonable provisions to ensure an equitable opportunity to meet all the requirements of this course. At the discretion of the instructor, some accommodations may require prior approval by Disability Services (513-556-6823).

Required Hardware & Software. Students are required to utilize their laptop computers for this course (Computer will be required each day). Minimum requirements for laptops are below, and in line with the McMicken College Laptop requirements: http://www.artsci.uc.edu/undergrad/admissions/laptop_program.aspx

Operating System: Microsoft Windows 7 or higher, MacOS X 10.5. Processor: Pentium 4, PowerPC G4 or faster. Memory: 1024MB or more. Hard-disk: 500MB or more of free space. Video: 1024x768 resolution or higher.

Grading. Grade is based on attendance, participation, leading discussion, completing writing assignments and completion of a presentation.

Grades will be calculated as follows:

Discussion leader	100 points (for your SL Topic)
Participation	175 points (5 or 10 for attendance, includes submission of summary prior to 10:10AM Mon. and Weds.)
Peer review	100 points (50 for panel, 50 for reports)
Blog Post	50 points
Proposal	250 points
Final Paper	250 points
Total	925 points

** Attendance is mandatory. Failure to adhere to attendance guidelines will result in class failure. **

** Participation will be based on attendance, article summaries, active participation in discussions and the peer review panel, and blog posts. **