BioMI 1100
The Microbiology of College Life

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Office Hours: Mondays 4-5pm Rm 106 Wing Hall, or on Zoom

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Lectures: M W F 12:20 - 1:10pm Uris Hall G01

Textbook: Stearns et al. "Microbiology for Dummies" provides an excellent resource for students. Instructors will also assign relevant readings for lecture clarification.

Course Description: Microbial habitats are literally everywhere on a college campus – and college students interact with microorganisms daily. From the athlete locker room, to the kitchen, to the bathroom, to between the sheets, college students are exposed to a plethora of microorganisms that are benign, beneficial, and pathogenic. The goal of this class is for students to learn about microbiology and microbial ecology as it relates to them – in the college campus environment. Students will learn about viruses, bacteria, eukaryotes and metazoans that cause common illnesses (i.e. gastroenteritis, influenza and STDs), the microbially-driven elemental cycling of alcohol production, and ecology of microorganism that spoil food. Students will take away a practical understanding of the microorganisms that they can apply to their own lives.

Learning Objectives: By the end of the course, students should:

1. Demonstrate an understanding of core concepts of microbiology, including the evolution and diversity of microbes; cell structure and function; pathogenic and non-pathogenic lifestyles; and the role of microbes in human health and the built environment.
2. Recognize the differences between pathogens, opportunists, and non-pathogenic microorganisms and have an appreciation for their roles in the college campus environment.
3. Describe how microorganisms facilitate major biogeochemical cycles in natural and agricultural habitats.

4. **Apply the scientific method, as well as use objective observation and empirical measurement to evaluate alternative ideas concerning the underlying principles that govern biological, physical and chemical processes.**
5. **Explain fundamental concepts of microbiology, both in written and in oral format**

Assessment and Grading:

Midterm 1 – 10%
Midterm 2 – 10%
Final Exam – 25%
Attendance/Participation in Activities – 25%
Homework Assignments – 20% on Canvas
Wikipedia Assignment – 10%

Module	Lecture or Discussion	Date	Title
Introduction	**L1**	**Mon Jan 22**	**Welcome and Overview**
The Microbiology of Growing Up	**L2**	**Wed Jan 24**	**Zits and Dandruff**
	Activity 1	**Fri Jan 26**	**Critical Thinking online minicourse**
	L3	**Mon Jan 29**	**Head lice**
The Microbial Ecology of the Bathroom	**L4**	**Wed Jan 31**	**Dental plaque and bad breath!**
	Activity 2	**Fri Feb 2**	**How to read a science paper, bacterial diversity**
	L5	**Mon Feb 5**	**Mold and Mildew**
	L6	**Wed Feb 7**	**E. coli, Biofilms**
	Activity 3	**Friday Feb 9**	**Cultivation and swab distribution**
	L7	**Mon Feb 12**	**Waterborne, Human Microbiome**

	L8	**Wed Feb 14**	**Athlete's foot, jock itch**
	Activity 4	**Fri Feb 16**	**Paper Human Microbiome**
Locker Room Microbiology	**L9**	**Mon Feb 19**	**Swimming pool microbiology**
	Class Exam!	**Wed Feb 21**	**Midterm Exam 1** **Content from L1-L9**
	No Activity!	**Fri Feb 23**	**Start of February Break!**
	L10	**Wed Feb 28**	**Pinkeye, strep throat**
	Activity 5	**Fri Mar 1**	**See what grew during microbial cultivation**
	L11	**Mon Mar 4**	**Bad BO**
Microbial Ecology of the bedroom	**L12**	**Wed Mar 6**	**STDs syphilis and chlamydia**
	Activity 6	**Fri Mar 8**	**The STI simulation**
	L13	**Mon Mar 11**	**HIV, HPV, Herpes,**
Microbiology of the dorm	**L14**	**Wed Mar 13**	**mPox and COVID**
	Activity 7	**Fri Mar 15**	**Paper discussion on Hand Sanitizers and Pandemics…are they effective?**
	L15	**Mon Mar 18**	**Vaccines**
	L16	**Wed Mar 20**	**GMOs and genome edited foods**
	Activity 8	**Fri Mar 22**	**Guest Lecture on the social aspects of GMOs** **Professor Ron Herring**

Microbial ecology of the kitchen	**L17**	**Mon Mar 25**	**Food Safety/fermented foods & drinks/microbiome health?**
	Class Exam!	**Wed Mar 27**	**Midterm 2** **Content from L10-L17**
	No Activity!	**Fri Mar 29**	**Spring Break begins!**
	L18	**Mon Apr 8**	**Food, synthetic biology and the alt protein movement**
	L19	**Wed Apr 10**	**Soil microbes and wine**
	Activity 9	**Fri Apr 12**	**Guest Lecturer on Grape microbes, Professor Tim Martinson**
	L20	**Mon Apr 15**	**Water borne Gastroenteritis cholera, giardia**
	L21	**Wed Apr 17**	**Food borne E. coli, listeria, Norwalk**
	Activity 10	**Fri Apr 19**	**Gastro Paper: sick on a cruise ship!**
	L22	**Mon Apr 22**	**Person to person, mumps, tuberculosis, measles**
	L23	**Wed Apr 24**	**Vector-borne**
	Activity 11	**Fri Apr 26**	**Wikipedia Activity**
	L24	**Mon April 29**	**Antibiotics and resistance**
	L25	**Wed May 1**	**Symbiosis**

	Activity 12	Fri May 6	BLAST search and microbial diversity
	L26	Mon May 8	Review for Final

Exams: There will be two in-class midterms covering Lectures 1 – 9 and Lectures 10 – 17. The final exam will cover Lectures 1 – 25. Examinations will be mostly multiple choice, however may include a short answer question and/or essay question.

Homework: Each week during lecture, the instructor will assign some multiple choice/short answer questions on Canvas.

Assignments: There will be one short written assignment. The assignment (Wikipedia) can be performed as a group or individually, it is up to you! More information about the requirements for the assignment and due dates will be provided in Week 3 of the class.

Policy on Late Work: Students are strongly encouraged to ensure on-time submission of assignments. Work handed in 0 – 12 hrs after the submission date/time will be assessed a 20% penalty. Work handed in 12 – 48 hrs after submission date/time will be assessed a further 20% penalty. Work submitted > 48 hrs after the due date will not be graded.

Policy for Class Absences: It is very important that you attend all lectures and discussion periods. Attendance is highly recommended at lectures, since information not contained on powerpoint slides will be conveyed during the lecture itself. Attendance will be taken for the discussion periods. You may miss a total of 2 discussion periods during the class without penalty.

If you get sick (!) during the class and need to miss lectures, **please go to Cornell Health Services and let us know.**

Please note that the midterm examinations occur on the Wednesday prior to February and Spring breaks. Please do not make travel plans that depart prior to these break periods.

Integrity for Assignments: Sharing of materials from previous years is not permitted. Additionally, work that has been presented for assessment in other courses is not acceptable in this course.

Mental Health: The instructors, teaching assistants and university care about you and your wellbeing! If you experience unusual personal or academic stress during the course or need to talk with someone, seek support from your instructors or Cornell Student Health Services as soon as possible.