

## **Applied and Environmental Microbiology 2020F (Biol. 4711)**

**Lecture:** 8:30 - 10:00 am (Monday and Wednesday)

**Lecture Room:** Online Zoom classes

**Office Hours:** By appointment

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### **Outline of topics**

1. Evolution of the biosphere
2. Physiological ecology: Microbial energetic and survival.
3. Quantification of environmental microbes (numbers, biomass and activity).
4. Molecular-based detection of microorganisms.
5. Microbial Diversity
6. Water treatments and bioremediation.
7. Microorganisms in aquatic and terrestrial environments.
8. Biogeochemical cycles.

### **Examinations**

Quizzes: A Quiz in each class (Sept. 14 – Oct. 26; Nov. 4 – Dec. 2).

Mid-term exam: October 28 (Wednesday).

Due date of research paper: November 30 (Monday).

Final exam: TBA.

Final date to register: September 21 (Monday).

Final date to withdraw: November 6 (Friday).

### **Mark distributions:**

- 10% for Quizzes (Sept. 14 – Oct. 26; Nov. 4 – Dec. 2);
- 20% for the Mid-term Exam;
- 20% for 5 Assignments;
- 20% for a 10-page Term Paper;
- 30% for Final Exam.

### **Books and References**

#### **Text book:**

Environmental Microbiology: From genomes to biogeochemistry, 2<sup>nd</sup> Ed (2016). By Eugene L. Madsen. Blackwell Publishing.

#### **References:**

1. Environmental Microbiology, by R.M. Maier, I.L. Pepper and C.P. Gerba. Published by Academic Press.
2. Microbial Ecology, 4<sup>th</sup> edition, by R. Atlas and R. Bartha. Published by Benjamin/Cummings.
3. Brock Biology of Microorganisms, by M.T. Madigan and J.M. Martinko. Published by Pearson/Prentice Hall.
4. Selective articles from journals.