Microbial Diversity and Evolution

MIBO 4300/6300

Instructor: Barny Whitman, whitman@uga.edu [please use uga and not eLC email], 706-542-4219

2 credit hours, for undergraduate and graduate students

Meeting time and place: Monday evenings from 3:35-6:30 pm for 10 weeks in room 216 and room 326, Biological Sciences Bldg.

Format: 30 % lectures, 30 % classroom exercises, and 40 % guided readings and discussion.

Prerequisite: MIBO 3500 or MIBO 3500E

Overview: Descriptions of microorganisms used in biotechnology, agriculture, bioremediation, and industry including distribution, taxonomy, and physiology of environmentally significant microorganisms.

Topics that will be covered: Overview of the diversity of the prokaryotic world, hypotheses on prokaryotic diversity, physiological basis of diversity, history of life on earth, classification of prokaryotic diversity, and definitions of species and higher taxonomic ranks. In addition, the physiological ecology of prokaryotes playing major roles in the N, S and C cycles will be discussed, including nitrifying and denitrifying prokaryotes, the sulfur-oxidizing and sulfur-reducing bacteria, the methanogenic and methanotrophic prokaryotes, and the photosynthetic bacteria.

Attendance. Attendance comprises an important part of our classroom experience and is mandatory. Each unexcused absence will result in 4 points being deducted from your overall grade for the discussion portion of the course. Please document illness with a note from the health center or your physician. Document team activities or interviews with notes from coaches, copies of your invitation, etc. Punctuality is also essential. If you are over 10 minutes late, 2 points will be deducted from your overall grade for the discussion portion of the course. Tardiness greater than 30 minutes will be considered an unexcused absence. On days you are presenting, you will receive a zero for the assignment for an unexcused absence.

Seating. On the second class, students will be requested to take a seat that will be used for the rest of the semester. A seating chart will be passed around so everyone can indicate where they intend to sit. This seating chart will be used to take attendance and facilitating participation in subsequent classes.

Grading.

Quiz at 5 and 10 weeks: multiple choice, short answer 10 x 2 = 20/100
Classroom exercises: LPSN, MEGA, KEGG, bioenergetics: 5 x 4 = 20/100
Oral presentation and paper on assigned group: 20 x 2 = 40/100
Discussion and participation; 20/100

Optional final: multiple choice, short answer, can add 10 points to final grade average
Extra credit: up to 5 points can be added the final grade average. One page report on a Microbiology seminar. Each report can earn up to 1.0 point. See below for more details.

Class	Date	Lecture		On-line exercise	Presentation Topic	
1	Jan. 8	Prokaryotic classification				
	Jan. 15	MLK day, no class				
2	Jan. 22	Diversity of prokaryotes		LPSN		
3	Jan. 29	Photosynthesis		MEGA		
4	Feb. 5	Sulfur-oxidizing prokaryotes		MEGA	1	
5	Feb. 12	Sulfur-reducing prokaryotes		KEGG	2	Quiz (classes 1-4)
6	Feb. 19	Life on Mars		KEGG	3	
7	Feb. 26	Nitrifying and denitrifying prokaryotes		Bioenergetics	4	
8	Mar. 5	Methanogenic archaea		Bioenergetics	5	
	Mar. 12	Spring Break, no class				
9	Mar. 19	Methylotrophic prokaryotes		Bioenergetics	6	
10	Mar. 26	Interesting ideas in prokaryotic biology			7	Quiz (classes 5-9)
	Apr. 25	Paper due by 5 pm. Submit by email or flash drive				
	Apr. 30	Optional final exam	Room 216, 3:30-6:30			Quiz on all classes