IDIS(MIBO) 4450/6450-4450L/6450L MICROBIAL GENETICS: 4 Credit Hours
(Microbial Genetics and Genomics)

Course Description: Molecular basis of gene regulation in microorganisms with emphasis on systems pertaining to pathogenesis, evolution, and ecology. Computer lab examines evolutionary relatedness, sequence comparisons, database searches and reconstruction of metabolic pathways.

Expected Learning Outcomes: Students will develop an understanding of bacterial genetic systems and how they relate to important bacterial processes. Students will also develop an understanding for genomic and proteonomic approaches for studying diverse microbial species.

Additional Requirements for Graduate Students: Graduate students must write a term paper pertaining to topic(s) covered in class.

No excused absences from 1abs. Each missed lab results in loss of 50 pts from final grade.

Grades: A-F

Honor Code and Academic Honesty Policy
As a University of Georgia student, you have agreed to abide by the University's academic honesty policy, "A Culture of Honesty", and the Student Honor Code. All academic work must meet the standards described in "A Culture of Honesty" found at: www.uga.edu/honesty <http://www.uga.edu/honesty>. Lack of knowledge of the academic honesty policy is not a reasonable explanation for a violation. Questions related to the course assignments and the academic honesty policy should be directed to the instructor.

The link to more detailed information about academic honesty can be found at:
http://www.uga.edu/ovpi/honesty/acadhon.htm

The course syllabus is a general plan for the course; deviations announced to the class by the instructor may be necessary.

Prerequisites: Undergraduates- MIBO 3500; Graduate MIBO 3500 or permission of department.

Textbook: Molecular Genetics of the Bacterial Cell, 2nd Edition, ASM Press, Washington, D.C.

Topical Outline: **(Labs are highlighted in bold)**

Aug. 16	Lecture 1: Laboratory Notebook, Literature Search and Presentations	MAURER
Aug. 18	Lecture 2: Organization of the Bacterial Cell	MAURER
Aug. 21	Lecture 3: Control of Cell Growth	MAURER
Aug. 23.	Lecture 4: Introduction to Genetics	MAURER

Aug. 23	**Lab 1: Literature Search**	**MAURER**
Aug. 25	Lecture 5: Cell Fractionation	MAURER
Aug. 28	Lecture 6: Microbial Taxonomy	MAURER
Aug. 30	Lecture 7: Molecular Approaches to Classification	MAURER
Aug. 30	**Lab 2: RDP Phylogeny**	**SCHELL**
Sept. 1	Lecture 8: Metabolism I	
Sept. 4	Labor Day (No Class)	
Sept. 6	Lecture 9: Metabolism II	MAURER
Sept. 8	Open	
Sept. 11	*Exam I*	
Sept. 13	Lecture 11: Recombinant DNA Technology I	MAURER
Sept. 13	**Lab 3: PCR Design and Cloning Strategies I**	**MAURER**
Sept. 15	Lecture 12: Recombinant DNA Technology II	MAURER
Sept. 18	Lecture 13: Recombinant DNA Technology III	MAURER
Sept. 20	Lecture 14: Phage	MAURER
Sept. 20	**Lab 4: PCR Design and Cloning Strategies II**	**MAURER**
Sept. 22	Lecture 15: Plasmids and drug resistance	SCHELL
Sept. 25	Lecture 16: Transposons	SCHELL
Sept. 27	Lecture 17: Genes to Genomes I	SCHELL
Sept. 27	**Lab 5: DNA Sequence Analysis**	**SCHELL**
Sept. 29	Lecture 18: Genes to Genomes II	SCHELL
Oct. 2	Lecture 19: Genes to Genomes III	SCHELL
Oct. 4	Lecture 20: Review	SCHELL
Oct. 6	*Exam II*	
Oct. 9	Lecture 21: Transcriptional Control I	HOOVER
Oct. 11	Lecture 22: Transcriptional Control II	HOOVER
Oct. 11.	**Lab 6: Sequence Comparisons I**	**SCHELL**
Oct. 13	Lecture 23: Transcriptional Control III	HOOVER
Oct. 16	*Lecture 24: Student Presentations-Reviews; 15 min*	
Oct. 18	Lecture 25: RNA Processing and Stability	HOOVER
Oct. 18	**Lab 7: Sequence Comparisons II**	**SCHELL**
Oct. 20	Lecture 26: Translation	HOOVER
Oct. 23	Lecture 27: Translational Control	HOOVER
Oct. 25	Lecture 28: Stress Response	HOOVER
Oct. 27	Fall Break	
Oct. 30	Lecture 29: Protein Export	SCHELL
Nov. 1	Lecture 30: Review	
Nov. 1	**Lab 8: Proteonomics and protein sequence analysis**	**SCHELL**
Nov. 3	*Exam III*	
Nov. 6	Lecture 31: Bacterial Pathogenesis: *Salmonella*	MAURER
Nov. 8	Lecture 32: Bacterial Pathogenesis: *Vibrio*	HOOVER
Nov. 8	**Lab 9: Comparative Genomics**	**SCHELL**
Nov. 10	*Lecture 33: Student Presentations*	
Nov. 13	Lecture 34: Biofilms	HOOVER

Nov. 15	*Lecture 35: Student Presentations*	
Nov. 15	**Lab 10: Comparative Genomics (Continued)**	**SCHELL**
Nov. 17	Lecture 38: Genetics of Microbial Development I	MAURER
Nov. 20	Lecture 39: Genetics of Microbial Development II	MAURER
Nov. 22-24	Thanksgiving	
Nov. 27	Lecture 40: Genetics of Microbial Development III	MAURER
Nov. 29	*Lecture 41: Student Presentations*	
Dec. 1	*Lecture 42: Student Presentations*	
Dec. 4	*Lecture 43: Student Presentations*	
Dec. 6	Review	
Dec. 8, 11-14	*Final Exams Week: Exam IV*	

Grades

There are 1,000 total, possible grades for this course. Here is the following breakdown:

-Exams: 100 pts; 4 exams.
-Labs: 50 pts; 10 total labs.
-Student presentations: 100 pts.

Exams I-IV: 40%
LAB/ Student Presentations: 60%

A: 940-1000 pts.
A-: 900-939 pts.
B+: 870-899 pts.
B: 840-869 pts.
B-: 800-839 pts.
C+: 770-799 pts.
C: 740-769 pts.
C-: 700-739 pts.
D: 600-699 pts.
F: $\leq$599 pts.