

Medical Microbiology Lecture and Lab
MBIO 4300
Lecture: 12:00 PM - 12:50 AM, M/W/F (Naraghi 334)
Lab: 2:00 PM – 4:50 PM, M (Naraghi 331)
Spring 2020

Instructor: Dr. Choong-Min Kang

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Office hours: W/F 1:00 PM-2:00PM, or by appointment

Course Description: This course provides learning opportunities in the basic principles of medical microbiology and infectious disease. It covers mechanisms of infectious disease transmission, principles of aseptic practice, and the role of the human body's normal microflora. The biology of bacterial, viral, fungal, and parasitic pathogens and the diseases they cause are covered. Relevant clinical examples are provided. The course provides the conceptual basis for understanding pathogenic microorganisms and the mechanisms by which they cause disease in the human body. It also provides opportunities to develop informatics and diagnostic skills, including the use and interpretation of laboratory tests in the diagnosis of infectious diseases.

Course Credits: This is a 4-credit course

Course Prerequisites: Students are required to have completed MBIO 3010/3032 or equivalent. Those who managed to enroll in this course without satisfying this prerequisite will probably not succeed in this course and for this reason will be required to drop it. Students who have questions about these prerequisites should see the instructor.

Reference for the class: No textbook is required but you may purchase

Mims' Medical Microbiology and Immunology, 6th edition, 2018, Richard Goering *et al.*

Microbiology, OpenStax
(Free download: <https://openstax.org/details/books/microbiology>)

Every effort will be made to provide the lecture slides on Blackboard a day or more before class. However, not all the slides from each lecture will be provided on Blackboard and some slides may only be shown in class.

Exams & Grades: A total of 580 points are possible for the course. Each exam will follow a similar format, and you will be required to answer multiple choice, short answer, and short essay-type questions.

Grading summary:

4 Exams (120 pts/exam)	480
Group presentation	50
Lab report	50
Total points possible	580 points

There will be 5 regular exams and the lowest one will be dropped among the first 4 exams (5th exam can NOT be dropped). Thus, there will be no make-up exam. If you miss an exam, that exam can NOT be dropped. If you have to miss an exam due to illness, extenuating family circumstances, or official school activity, you will require formal written documentation.

Exam corrections: When each exam is returned, you will have **ONE WEEK** to correct errors in grading or challenge a question on the exam. Corrections and inquiries about specific exam questions must occur in person during office hours.

Final Course Grade: The final grade for this course will be derived from the total points earned divided by the total number of points possible for the course. This numerical value will be converted to a percentage.

The course grade will be derived from the following scale:

A = 90 - 100%

B+ = 85 - 89%

B = 80 - 84%

C+ = 75 - 79%

C = 70 - 74%

D+ = 65 - 69%

D = 60 - 64%

F = 0 - 59%

Lecture Policy: Every effort will be made to begin and end lectures on time. Please try to be in your seats when class starts and do not leave class prematurely.

Students who insist on talking during class will be asked to leave if they continue to disturb the lecture. Questions and other dialog with the instructor are, of course, encouraged.

Cheating Policy: Any individuals caught cheating will automatically receive a grade of "F" for the course.

You must arrive on time for the exam. Students who arrive after the first student has finished with the exam and left the room will not be allowed to take the exam.

Students will not be allowed to leave the room during an exam. Once a student has left the room, he or she will not be allowed to return.

Absolutely no talking among students will be tolerated during the exam.

Course Outline: The **lecture topics** listed below are tentative and subject to change.

Week	Date	Topic
1	27-Jan	Introduction to Medical Microbiology
	29-Jan	Introduction to Medical Microbiology
	31-Jan	Introduction to Medical Microbiology
2	3-Feb	The host-parasite relationship
	5-Feb	The host-parasite relationship
	7-Feb	The host-parasite relationship
3	10-Feb	The host-parasite relationship
	12-Feb	Mechanisms of pathogenicity I
	14-Feb	Exam 1
4	17-Feb	Mechanisms of pathogenicity I
	19-Feb	Mechanisms of pathogenicity I
	21-Feb	Mechanisms of pathogenicity I
5	24-Feb	Mechanisms of pathogenicity II
	26-Feb	Mechanisms of pathogenicity II
	28-Feb	Mechanisms of pathogenicity II
6	2-Mar	Gram-positive cocci pathogens
	4-Mar	Gram-positive cocci pathogens
	6-Mar	Exam 2
7	9-Mar	Gram-positive cocci pathogens
	11-Mar	Gram-positive cocci pathogens
	13-Mar	Gram-positive rods pathogens
8	16-Mar	Gram-positive rods pathogens
	18-Mar	Gram-positive rods pathogens
	20-Mar	Gram-negative cocci pathogens
9	23-Mar	Spring Break
	25-Mar	Spring Break
	27-Mar	Spring Break
10	30-Mar	Gram-negative cocci pathogens
	1-Apr	Gram-negative cocci pathogens
	3-Apr	Exam 3
11	6-Apr	Gastrointestinal Gram-negative rods
	8-Apr	Gastrointestinal Gram-negative rods
	10-Apr	Gastrointestinal Gram-negative rods
12	13-Apr	Gastrointestinal Gram-negative rods
	15-Apr	Gastrointestinal Gram-negative rods
	17-Apr	Gastrointestinal Gram-negative rods
13	20-Apr	Clostridia and other anaerobic rods
	22-Apr	Clostridia and other anaerobic rods
	24-Apr	Exam 4
14	27-Apr	Clostridia and other anaerobic rods
	29-Apr	Spirochetes
	1-May	Spirochetes
15	4-May	Mycoplasma and Chlamydia
	6-May	Mycoplasma and Chlamydia
	8-May	Warrior Day (no class)
16	11-May	Retoviruses
	13-May	Retoviruses
	15-May	Retoviruses
17	20-May	Exam 5 (11:15 AM)

Laboratory:

Gain hands-on experience with basic methods of culturing, identifying, and handling of pathogenic bacteria. Many experiments will require previous skills you learned during the pre-req Bacteriology class. The tentative lab schedule is shown.

Week	Date	Topic
1	1/27	Introduction, Lab safety, and Check-in
2	2/3	Sterilization techniques & preparing culture media
3	2/10	Microbial flora of the Mouth: Determination of susceptibility to Dental caries
4	2/17	Normal microbial flora of the throat and skin
5	2/24	Identification of Human Staphylococcal pathogens
6	3/2	Identification of Human Streptococcal pathogens
7	3/9	Identification of <i>Streptococcus pneumoniae</i>
8	3/16	Identification of your GI tract bacteria: swabbing and plating (pure culture during the week)
9	3/23	Spring Break
10	3/30	Identification of your GI tract bacteria: EnteroPluri and culture of DNA prep
11	4/6	Identification of your GI tract bacteria: Chromosomal DNA purification
12	4/13	Identification of your GI tract bacteria: Agarose gel and PCR
13	4/20	Identification of your GI tract bacteria: PCR purification and Nano drop
14	4/27	Identification of your GI tract bacteria: Sequence Analysis
15	5/4	Finishing up Identification of your GI tract bacteria or Group Presentation
16	5/11	Group presentations