

# Medical Microbiology (BISC 520)

Fall 2019

1:00 – 1:50 pm M-W-F Barnard Observatory, Room 105

**Instructor:** Wayne L. Gray, PhD. [wlgray@olemiss.edu](mailto:wlgray@olemiss.edu)

Office- Shoemaker Hall, Room 310

**Course Description:** Basic principles of medical microbiology are introduced, including bacterial, fungal, protozoal, and parasitic human diseases.

**Course Objective:** Upon completion of the course students are expected to know and understand the following aspects of medical microbiology:

- bacterial, fungal, protozoal, and parasitic cell structure
- bacterial, fungal, protozoal, and parasitic replication and life cycles
- bacterial, fungal, protozoal, and parasite pathogenesis and disease
- diagnosis and treatment of bacterial, fungal, protozoal, and parasitic diseases
- prevention and control of bacterial, fungal, protozoal, and parasitic diseases, including vaccines

This objective will be achieved through attending and actively participating in class lectures, reading course materials, and performing successfully on examinations.

A goal of the course is to enhance student learning through oral and written communication, reasoning and critical thinking through data analysis, and ethical reasoning.

**Prerequisites-** Grade of a C or better in General Microbiology, BISC 333.

**Recommended Textbook:** *Medical Microbiology 8th edition*. Authors: Murray, Rosenthal, Pfaller. ISBN: 978-0-323-29956-5. Publisher: Elsevier/Saunders, Philadelphia PA.

**Dr. Gray's office hours: Tuesday 10:00 – 11:00 am; Thursday 4:00 - 5:00 pm. (no appointment necessary).** If you cannot meet during scheduled office hours, you can make an appointment by email. Please include the following: (1) BISC 520 in the subject line, (2) what you would like some help with in the main text of the email. You should receive a response within 24 hours.

**Attendance and In-Class Policies:** Regular class attendance and participation is expected. To comply with attendance verification requirements, attendance will be taken by August 31. Cell phones must be turned off during class. Use of **laptop computers** for note-taking is OK.

**Turning Technologies Response Cards (Clickers)-** Clickers or I-phone will be used as an optional extra-credit class participation grade. Most classes will include 3-4 clicker questions. Your final class participation grade will depend on the number of correct answers during the semester and will count as much as 20% of your final grade. You must register your Response Card on Blackboard. It is the student's responsibility to correctly register and maintain the clicker (I-phone). Bring your fully charged card to every class. Using another person's clicker or phone is serious academic misconduct

and will be reported to the University Academic Discipline Committee. Violation will also result in loss of participation points, a zero grade for the course, and possible expulsion from the course.

**Blackboard:** You are assigned a Web ID and Password for access to online resources including Blackboard, the UM course management system (<https://blackboard.olemiss.edu>). Course announcements, Power Point slides, study materials, grades, and other course information will be posted on a regular basis. You should consult Blackboard daily for important class messages.

**Exams and Grading:** There will be three exams including the final exam. Each of the 3 exams will consist of 40 multiple choice questions for a total of 120 points. A final grade is calculated based on total points earned out of a possible 120 points.

The optional class participation grade will count as an additional exam and you may earn up to 30 points based on the total number of questions you get correct during the semester. These extra credit points are added to your exam 1- 3 total score and your final grade is calculated based on total points earned out of a possible 150 points. Your final course grade will be determined based on the higher final grade calculated with or without the class participation grade.

Students should bring **student ID, #2 pencil, and one Scantron form # F-289** to every exam (I will not provide these). The Scantron form # F-289 (1/2 page, red print) can be purchased at the Bookstore in the Student Union. If you suspect that a question was graded improperly, you have one week from the date of test return to contact me about it.

#### Final Grading Scale

93.0 and over	=	A
90.0 to 92.99	=	A-
87.5 to 89.99	=	B+
80.0 to 87.49	=	B
78.0 to 79.99	=	C+
70.0 to 77.99	=	C
60.0 to 69.99	=	D
0 – 59.99	=	F

I generally stick with this grade scale since there is a generous extra-credit policy.

Make-up exams- Valid reasons for missing an exam are very limited and include medical or family emergency or University-sanctioned events. Depending on the circumstances, a student may or may not be allowed to make-up an exam. To be eligible to make up an exam:

- 1) You must notify Dr. Gray by email or in person immediately, preferably prior to the exam, but at most, 24 hours after the exam.
- 2) Documentation for an excused absence may be required.
- 3) Upon receiving an excused absence, a make-up exam will be scheduled, within 1- 2 days.
- 4) The format of the make-up exam will be multiple choice, short answer, oral, and/or discussion.
- 5) Unexcused absence for a missed exam results in a grade of zero.

**Microbiology/Biology in the News:** Students will be required to access Dr. Gray's twitter account- **@wgrayvirologist** - which covers infectious disease news items. For each of the three exams, students are required to select one article to read and to write a one page summary of the article. The summary

will include a short background, a description about what you learned from the article, what may have surprised you about the article, and what the take-home message was. The summary will count for one question on each exam (2.5% of the exam grade).

**Biology Graduate Students-** Graduate students enrolled in the course will be required to present one research paper to Dr. Gray by the end of the course. Students should meet with Dr. Gray to discuss selection of an approved paper. Students must successfully pass this requirement to complete the course.

**Special Needs:** Accommodations will be made for students with disabilities that may affect their ability to participate in the course or meet course requirements. The University of Mississippi is committed to the creation of inclusive learning environments for all students. If there are aspects of the instruction or design of this course that result in barriers to your full inclusion and participation, or to accurate assessment of your achievement, please contact Dr. Gray as soon as possible. Barriers may include, but are not necessarily limited to, timed exams and in-class assignments, difficulty with the acquisition of lecture content, inaccessible web content, and the use of non-captioned or non-transcribed video and audio files. If you are approved through SDS, you must log in to your Rebel Access portal at <https://sds.olemiss.edu> to request approved accommodations. If you are NOT approved through SDS, you must contact Student Disability Services at **662-915-7128** so the office can: 1. determine your eligibility for accommodations, 2. disseminate to your instructors a Faculty Notification Letter, 3. facilitate the removal of barriers, and 4. ensure you have equal access to the same opportunities for success that are available to all students.

**Academic Misconduct:** Academic dishonesty and cheating of any kind is not tolerated. Procedures for handling academic misconduct are described in the UM Policy Code ACA.AR.600.001. Penalties include, but are not limited to, taking a 0 on an exam and/or expulsion from the course.

**Keys to Success in this Course:**

- Review the PowerPoint slides and textbook, preferably before coming to class
- Attend class- listen, take notes, ask questions
- Keep up with the material- don't put off studying until the night before the exam
- Contact Dr. Gray if you need additional help

**BISC 520 Medical Microbiology Fall 2019**

**(M-W-F- 1:00 - 1:50 pm, Barnard Observatory, Room 105)**

**Dr. Wayne Gray, PhD.**

Monday, August 26 - Course Introduction

Wednesday, August 28 - Bacterial Structure and Classification, Chapter 12

Friday, August 30 - Bacterial Pathogenesis and Disease, Chapters 14 and 15

Monday, Sept. 2 – No Class, Labor Day

Wednesday, Sept. 4 - Lab Diagnosis, Chapter 16

Friday, Sept. 6 - Antibiotics and Resistance, Chapter 17

Monday, Sept. 9 - Frontline Documentary- Antibiotic Resistance

Wednesday, Sept. 11 - Gram positive bacteria- *Staphylococcus*, Chapter 18

Friday, Sept. 13 - Gram positive bacteria, *Streptococcus*, Chapter 19

Monday, Sept. 16 - Bacterial Respiratory Diseases, *Streptococcus pneumoniae*, Chapter 19

Wednesday, Sept. 18 – *Corynebacteria*, Diphtheria, Chapter 21

Friday, Sept. 20 - *Bacillus*, Anthrax, Chapter 20

Monday, Sept. 23 - *Bordetella*, Whooping Cough

Wednesday, Sept. 25 – Review

Friday, Sept. 27- **Exam #1 Bring Scantron form F-289**

Monday, Sept. 30 - *Mycoplasma*, Atypical Pneumonia, Chapters 33

Wednesday, Oct. 2 – *Mycobacteria*, Tuberculosis, Leprosy, Chapter 22

Friday, Oct. 4 - Frontline TB Documentary

Monday, Oct. 7 - *Legionella*, Legionaire's Disease, Chapter 27

Wednesday, Oct. 9 – *Pseudomonas*, Cystic Fibrosis, Chapter 27, *Klebsiella*

Friday, Oct. 11 - Bacterial CNS Disease- Bacterial Meningitis - *Haemophilus*, Chapter 24

*Neisseria*, Chapter 23

Monday, Oct. 14 – Bacterial CNS Disease- Brain Abscess, Encephalitis, Eye infections

Wednesday, Oct. 16 – Bacterial Neurotoxin Diseases- *Clostridium*, Botulism, Tetanus, Chapter 30

Friday, Oct. 18 - Gram Positive Bacterial Gastrointestinal Disease- *Bacillus*, *Clostridium*,  
*Listeria* Chapters 20, 21, 30

Monday, Oct. 21 – Gram Negative Bacterial GI Disease- *E.coli*, *Shigella*, *Salmonella*, *Cholera*,  
*Helicobacter*

Wednesday, Oct. 23 – Bacterial Sexually Transmitted Disease - *Gonorrhea*, *Syphilis*, *Chlamydia*,  
Chapters 23, 32

Friday, Oct. 25 - Arthropod Transmitted (*Rickettsia*, *Borrelia*, *Yersinia*) and Zoonotic Diseases,  
Chapters 34

Monday, Oct. 28 – Review

Wednesday, Oct. 30 – **Exam # 2 Bring Scantron form F-289**

Friday, Nov. 1 - Frontline Documentary- "*The Trouble with Chicken*"- *Salmonella*

Monday, Nov. 4 - Introduction to Medical Mycology: Superficial Mycoses, Chapters 57, 58, 60

Wednesday, Nov. 6 – Mycology: Cutaneous and Subcutaneous Mycoses, Chapter 62, 63

Friday, Nov. 8 - Mycology: Systemic Mycoses- *Blastomycosis*, *Histoplasmosis*, Chapter 64

Monday, Nov. 11 - Mycology: Opportunistic Mycoses Chapter 65

Wednesday, Nov. 13 - Introduction to Medical Parasitology, Chapter 68, 69

Friday, Nov. 15 - Parasitology: Gastrointestinal and Genitourinary Protozoa, Chapter 73

Monday, Nov. 18 - Parasitology: Blood Protozoa, Malaria, Chapter 74

Wednesday, Nov. 20 - Parasitology: Tissue Protozoa; *Toxoplasmosis*, *Trypanosomes*, Chapter 74

Friday, Nov. 22 - Malaria documentary

Nov. 25 - Nov. 29 – No classes, Thanksgiving

Monday, Dec. 2 – Parasitology: Roundworms, Chapter 75

Wednesday, Dec. 4 – Parasitology: Flatworms, Tapeworms, Chapter 76 and 77

Friday, Dec. 6 - Review- Mycoses, Protozoal and Parasitic Diseases

**Final Exam on Wednesday, Dec. 11, at 12:00 noon. Bring Scantron form F-289.**