

Biology 5317– Bacterial Pathogenesis

Fall 2014

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Office hours: Mondays and Wednesdays 9:15-10:45AM

Course Number, Section Number, and Course Title: Biology 5317, Bacterial Pathogenesis

Course location and times: LS100, Mondays and Wednesdays, 4:00PM – 5:20PM

Course Description: Mechanisms of used by bacteria: to cause diseases in humans; survive within hosts; subvert antibiotic killing and approaches for studying bacterial pathogens; epidemiology of bacterial infections.

Student course learning outcomes:

This course is designed to provide you with fundamental and recent information on the mechanism of pathogenesis used by major bacterial pathogens. This course looks at the genetic, molecular and biochemical strategies adopted by bacteria to avoid being killed by host immune system and antimicrobials. Individual mechanisms of pathogenesis by different major pathogens are overviewed; along with role of the omics era and functional genomics to advancing our knowledge of bacterial pathogenesis. Challenges for therapeutic discoveries. Analysis of scientific papers and submission of a written paper from selected topics of pathogenesis is expected.

Course requirements: BIOL 3312-Immunobiology and BIOL 3444-General Microbiology required.

Required Textbook and Materials: Primary text: Bacterial Pathogenesis: A molecular Approach 3rd Editions. Secondary text: Bacterial Pathogenesis: A molecular Approach 2nd. Other study material will be posted on blackboard.

Exams: There will be three class exams during the course, one take home (paper submission) and one in-class presentation. The first two exams will be covering the material for that portion of the course. The final exam will be a COMPREHENSIVE exam

on material covered through the course. Final grades will be calculated as follows: if you have taken Exams 1 and 2 and are satisfied with your grade and the grade from the submitted essay and in class presentation, you can choose to not take the final exam. If you choose to take the final exam, your final grade for the course will be from the final exam, your submitted essay and in class presentation **or** your grade on the first two exams, the essay grade and the in class presentation grade, whichever is greater. The topics for the take home exam (essay) will be posted on blackboard and will be announced when posted; the topic for in class presentation will be assigned.

NO EXAMS will be administered after the first student to finish the exam has exited the room.

Attendance Policy: Students are strongly encouraged to attend **all** lectures.

MavMail Requirement: UTA has adopted MavMail as an official means of communication with students. Please, check your e-mail regularly. If you have any questions regarding your e-mail, go to: <http://www.uta.edu/oit.email/>

Cell Phone Policy: Cell phones must be turned off (or placed on vibrate mode) at all times during lectures.

Drop Policy: See university guidelines.

Website: Grades and final course grades will be available on blackboard or myMAV.

Grades: Your final grade will be composed of the following:

Option 1:

15% from Take home essay
35 % from Exam 1
35 % from Exam 2
15% from class presentation

Option 2:

15% from Take home essay
70 % from Final Exam
15% from class presentation

No extra credit will be allowed!

Final Grade: The following grade scale will be used to determine your final grade:

- A) 100 – 90%**
- B) 89 – 80%**
- C) 79 – 70%**
- D) 69 – 60%**
- F) below 59%**

Make Up Exam Policy: You are required to be present for announced examinations. Absences will be excused only with written request by a physician, other responsible

professional, or with written proof of jury duty. No exceptions. If you miss an exam, you will be given an exam score of zero. You will have **ONLY** two options for make up exams: (1) your final exam grade will be issued as a make up exam for the lost exam or (2) take the make up exam after the final exam. In the latter case, an exam will be provided after 5 min of the expiration time of the final exam. Either case, it is **YOUR RESPONSIBILITY** to let me know.

Important University Policies:

Drop Policy: Students may drop or swap (adding and dropping a class concurrently) classes through self-service in MyMav from the beginning of the registration period through the late registration period. After the late registration period, students must see their academic advisor to drop a class or withdraw. Undeclared students must see an advisor in the University Advising Center. Drops can continue through a point two-thirds of the way through the term or session. It is the student's responsibility to officially withdraw if they do not plan to attend after registering. **Students will not be automatically dropped for non-attendance.** Repayment of certain types of financial aid administered through the University may be required as the result of dropping classes or withdrawing. For more information, contact the Office of Financial Aid and Scholarships (<http://wweb.uta.edu/aao/fao/>).

Americans with Disabilities Act: The University of Texas at Arlington is on record as being committed to both the spirit and letter of all federal equal opportunity legislation, including the *Americans with Disabilities Act (ADA)*. All instructors at UT Arlington are required by law to provide "reasonable accommodations" to students with disabilities, so as not to discriminate on the basis of that disability. Any student requiring an accommodation for this course must provide the instructor with official documentation in the form of a letter certified by the staff in the Office for Students with Disabilities, University Hall 102. Only those students who have officially documented a need for an accommodation will have their request honored. Information regarding diagnostic criteria and policies for obtaining disability-based academic accommodations can be found at www.uta.edu/disability or by calling the Office for Students with Disabilities at (817) 272-3364.

Title IX: The University of Texas at Arlington is committed to upholding U.S. Federal Law "Title IX" such that no member of the UT Arlington community shall, on the basis of sex, be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any education program or activity. For more information, visit www.uta.edu/titleIX.

Academic Integrity: Students enrolled all UT Arlington courses are expected to adhere to the UT Arlington Honor Code:

I pledge, on my honor, to uphold UT Arlington's tradition of academic integrity, a tradition that values hard work and honest effort in the pursuit of academic excellence.

I promise that I will submit only work that I personally create or contribute to group collaborations, and I will appropriately reference any work from other sources. I will follow the highest standards of integrity and uphold the spirit of the Honor Code.

UT Arlington faculty members may employ the Honor Code as they see fit in their courses, including (but not limited to) having students acknowledge the honor code as part of an examination or requiring students to incorporate the honor code into any work submitted. Per

UT System *Regents' Rule* 50101, §2.2, suspected violations of university's standards for academic integrity (including the Honor Code) will be referred to the Office of Student Conduct. Violators will be disciplined in accordance with University policy, which may result in the student's suspension or expulsion from the University.

Electronic Communication: UT Arlington has adopted MavMail as its official means to communicate with students about important deadlines and events, as well as to transact university-related business regarding financial aid, tuition, grades, graduation, etc. All students are assigned a MavMail account and are responsible for checking the inbox regularly. There is no additional charge to students for using this account, which remains active even after graduation. Information about activating and using MavMail is available at <http://www.uta.edu/oit/cs/email/mavmail.php>.

Student Feedback Survey: At the end of each term, students enrolled in classes categorized as "lecture," "seminar," or "laboratory" shall be directed to complete an online Student Feedback Survey (SFS). Instructions on how to access the SFS for this course will be sent directly to each student through MavMail approximately 10 days before the end of the term. Each student's feedback enters the SFS database anonymously and is aggregated with that of other students enrolled in the course. UT Arlington's effort to solicit, gather, tabulate, and publish student feedback is required by state law; students are strongly urged to participate. For more information, visit <http://www.uta.edu/sfs>.

Final Review Week: A period of five class days prior to the first day of final examinations in the long sessions shall be designated as Final Review Week. The purpose of this week is to allow students sufficient time to prepare for final examinations. During this week, there shall be no scheduled activities such as required field trips or performances; and no instructor shall assign any themes, research problems or exercises of similar scope that have a completion date during or following this week *unless specified in the class syllabus*. During Final Review Week, an instructor shall not give any examinations constituting 10% or more of the final grade, except makeup tests and laboratory examinations. In addition, no instructor shall give any portion of the final examination during Final Review Week. During this week, classes are held as scheduled. In addition, instructors are not required to limit content to topics that have been previously covered; they may introduce new concepts as appropriate.

Emergency Exit Procedures: Should we experience an emergency event that requires us to vacate the building, students should exit the room and move toward the nearest exit, which is located at the main entrance door. When exiting the building during an emergency, one should never take an elevator but should use the stairwells. Faculty members and instructional staff will assist students in selecting the safest route for evacuation and will make arrangements to assist individuals with disabilities.
<https://www.uta.edu/policy/procedure/7-6>).

Student Support Services: UT Arlington provides a variety of resources and programs designed to help students develop academic skills, deal with personal situations, and better understand concepts and information related to their courses. Resources include tutoring, major-based learning centers, developmental education, advising and mentoring, personal counseling, and federally funded programs. For individualized referrals, students may visit the reception desk at University College (Ransom Hall), call the Maverick Resource Hotline at 817-272-6107, send a message to resources@uta.edu, or view the information at www.uta.edu/resources.

Writing Center. : The Writing Center, 411 Central Library, offers individual 40 minute sessions to review assignments, *Quick Hits* (5-10 minute quick answers to questions), and workshops on grammar and specific writing projects. Visit <https://uta.mywconline.com/> to register and make appointments. For hours, information about the writing workshops we offer, scheduling a classroom visit, and descriptions of the services we offer undergraduates, graduate students, and faculty members, please visit our website at www.uta.edu/owl/.

<p>Emergency Phone Numbers: In case of an on-campus emergency, call the UT Arlington Police Department at 817-272-3003 (non-campus phone), 2-3003 (campus phone). You may also dial 911.</p>

Tentative Schedule of Lectures*

* This is **ONLY** an outline of lectures. It might change according to our progress. You **MUST** attend lectures to know when changes in schedule will take place AND sections covered in the Chapters. ** Listed chapters are from the 2nd Edition of Bacterial Pathogenesis: A molecular approach.

Date	Subject	Required Readings**
Aug 25	Course outline & Introduction to pathogenesis	Chapter 1
Aug 27	Introduction to pathogenesis	Chapter 1
Sept 03	Approaching & studying bacterial diseases	Chapter 2; plus handouts
Sept 8	Molecular approaches to diagnose & characterize bacterial pathogens	Chapter 3; handouts
Sept 10	Molecular approaches to diagnose & characterize bacterial pathogens	Chapter 3; handouts
Sept 15	Skin and mucosa defense systems	Chapters 4
Sept 17	The innate immune system	Chapters 4-5; handouts
Sept 22	Adaptive immune system	Chapter 6; handouts
Sept 24	Bacterial evasion	Chapters 8; handouts
Sept 29	Bacterial toxins	Chapters 9; handouts
Oct 1	Bioterrorism	Handouts
Oct 6	Vaccine	Chapters 7; Handouts
Oct 8	Review	
Oct 13	Exam 1	
Oct 15	Review + Antibiotics	
Oct 20	Antibiotics	Handout
Oct 22	Antibiotic resistance	
Oct 27	<i>Mycobacterium tuberculosis</i>	Handout
Oct 29	<i>Neisseria gonorrhea</i> and STDs	
Nov 3	Gram-positive pathogens- <i>Streptococcus</i> sp., Enterococcus sp., <i>Staphylococcus</i> sp., <i>Clostridium</i> sp.	Handout
Nov 5	Gram-positive pathogens- <i>Streptococcus</i> sp., Enterococcus sp., <i>Staphylococcus</i> sp., <i>Clostridium</i> sp.	

Nov 10	Gram-negative pathogens- e.g. <i>Pseudomonas aeruginosa</i> , <i>E. coli</i>	Handout
Nov 13	Gram-negative pathogens- e.g. <i>Pseudomonas aeruginosa</i> , <i>E. coli</i>	Handouts
Nov 17	Review + Start of Graduate presentations	
Nov 19	In Class Presentations by Graduates	
Nov 24	Exam 2	
Nov 26	In Class Presentations by Graduates	
Dec 2	Review of Exam 2	
Dec 10	Final exam	2:00-4:30

Final exam schedule: http://web.uta.edu/aao/recordsandregistration/content/student_services/final_exam_schedule.aspx