Biology 5317– Bacterial Pathogenesis

Fall 2012

Instructor: Dr. Julian Hurdle

Office number: 332 Engineering Research Building

E-mail: hurdle@uta.edu (use e-mail option before calling, see UTA policy on official communication)

Phone: **817-272-2986**

Office hours: Mondays and Wednesdays 8:30-10:00AM

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

Course location and times: PKH 109, 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 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 or equivalent.

Textbook and Materials: Primary text: Bacterial Pathogenesis: A molecular Approach 2nd. Second text: Bacterial Pathogenesis: A molecular Approach 3rd Editions. 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:

Americans With Disabilities Act: The University of Texas at Arlington is committed to both the spirit and letter of federal equal opportunity legislation; reference Public Law 92-112 – The Rehabilitation Act of 1973 as amended. With the passage of federal legislation entitled *Americans with Disabilities Act (ADA)*. It is your responsibility to inform me of your disability at the beginning of the semester and to provide authorized documentation through designated administrative channels. If you require accommodation based on disability, I would like to meet with you in my office the first week of class to discuss your special needs.

Academic Dishonesty: It is the philosophy of The University of Texas at Arlington that academic dishonesty is a completely unacceptable mode of conduct and will not be tolerated in any form. All persons involved in academic dishonesty will be disciplined in accordance with University regulations and procedures. Discipline may include suspension or expulsion from the University. According to the UT System Regents' Rule 50101, §2.2, "Scholastic dishonesty includes but is not limited to cheating, plagiarism, collusion, the submission for credit of any work or materials that are attributable in whole or in part to another person, taking an examination for another person, any act designed to give unfair advantage to a student or the attempt to commit such acts."

Student Support Services Available: The University of Texas at Arlington supports a variety of student success programs to help you connect with the University and achieve academic success. These programs include learning assistance, developmental education, advising and mentoring, admission and transition, and federally funded programs. Students requiring assistance academically, personally, or socially should contact the Office of Student Success Programs at 817-272-6107 for more information and appropriate referrals.

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 syllabi. 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. Classes are held as scheduled during this week and lectures and presentations may be given.

Bomb Threats: If anyone is tempted to call in a bomb threat, be aware that UTA will attempt to trace the phone call and prosecute all responsible parties. Every effort will be made to avoid cancellation of presentations/tests caused by bomb threats. Unannounced alternate sites will be available for these classes. Your instructor will make you aware of alternate class sites in the event that your classroom is not available.

After Hours Safety Escort: The Sam Mav Escort service provides a service to assist students, faculty, staff, and campus visitors to reach their destinations after regular business hours. The hours of service are 7:00 p.m. to 1:00 a.m., Sunday through Saturday. 817-272-3381

Other Policies

Electronic Communication Policy: The University of Texas at Arlington has adopted the University "MavMail" address as the sole official means of communication with students. MavMail is used to remind students of important deadlines, advertise events and activities, and permit the University to conduct official transactions exclusively by electronic means. For example, important information concerning registration, financial aid, payment of bills, and graduation are now sent to students through the MavMail system. All students are assigned a MavMail account. ***Students are responsible for checking their MavMail regularly.*** Information about activating and using MavMail is available at http://www.uta.edu/oit/email/. There is no additional charge to students for using this account, and it remains active even after they graduate from UT Arlington.

Smoking, Food, and Drink in the Lecture Hall: University regulations prohibit smoking, eating, and drinking in lecture halls.

After Hours Safety Escort: The Sam Mav Escort service provides a service to assist students, faculty, staff and campus visitors to reach their destinations after regular business hours. The hours of service are 7:00 p.m. to 1:00 a.m., Sunday through Saturday. 817-272-3381

Americans With Disabilities Act: The University of Texas at Arlington is on record as being committed to both the spirit and letter of federal equal opportunity legislation; reference Public Law 92-112 - The Rehabilitation Act of 1973 as amended. With the passage of federal legislation entitled *Americans with Disabilities Act (ADA)*, pursuant to section 504 of the Rehabilitation Act, there is renewed focus on providing this population with the same opportunities enjoyed by all citizens.

As a faculty member, I am required by law to provide "reasonable accommodations" to students with disabilities, so as not to discriminate on the basis of that disability. Student responsibility primarily rests with informing faculty of their need for accommodation and in providing authorized documentation through designated administrative channels. *You must provide me with the ARC exam test 10 days in advance to the test.* Information regarding specific diagnostic criteria and policies for obtaining academic accommodations can be found at www.uta.edu/disability. Also, you may visit the Office for Students with Disabilities in room 102 of University Hall or call them at (817) 272-3364.

Academic Integrity: All students enrolled in this course 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.

Instructors 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).

Student Support Services Available: 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.

Student Feedback Survey: At the end of each term, students enrolled in classes categorized as lecture, seminar, or laboratory shall be directed to complete a 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.

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 27	Course outline & Introduction to pathogenesis	Chapter 1
Aug 29	Introduction to pathogenesis	Chapter 1
Sept 05	Approaching & studying bacterial diseases	Chapter 2; plus handouts
Sept 10	Molecular approaches to diagnose & characterize of bacterial pathogens	Chapter 3; handouts
Sept 12	Molecular approaches to diagnose & characterize of bacterial pathogens	Chapter 3; handouts
Sept 17	Skin and mucosa defense systems	Chapters 4
Sept 19	The innate immune system	Chapters 4-5; handouts
Sept 24	Adaptive immune system	Chapter 6; handouts
Sept 26	Bacterial evasion	Chapters 8; handouts
Oct 1	Bacterial toxins	Chapters 9; handouts
Oct 3	Bioterrorism	Handouts
Oct 8	Vaccine	Chapters 7; Handouts
Oct 10	**Review**	
Oct 15	**Exam 1**	
Oct 17	Antibiotics	Handout
Oct 22	Antibiotic resistance	Handout
Oct 24	*Bacillus anthracis*	
Oct 29	*Mycobacterium tuberculosis*	Handout
Oct 31	*Helicobacter pylori*	
Nov 5	Case studies/Paper reviews	Handout
Nov 7	Spirochetes	
Nov 12	Intracellular pathogens	
Nov 14	Gram-positive pathogens- *Streptococcus* sp., Enterococcus *sp.*, *Staphylococcus sp*., *Clostridium sp.*	Handouts

Nov 19	Gram-positive pathogens- *Streptococcus* sp., Enterococcus *sp.*, *Staphylococcus sp*., *Clostridium sp.*	Handouts
Nov 21	Gram-negative pathogens- e.g. *Pseudomonas aeruginosa*, *E. coli*	Handouts
Nov 26	Gram-negative pathogens- e.g. *Pseudomonas aeruginosa*, *E. coli*	Handouts
Nov 28	**Review**	
Dec 3	**Exam 2**	
Dec 5	Class presentations	
Dec 12	**Final exam**	**2:00-4:30**

Final exam schedule: http://wweb.uta.edu/ses/recordsandregistration/assets/pdf/final_exam_schedule_fall_2012.pdf