MOLECULAR MEDICAL MICROBIOLOGY  BIMS 5374.001  FALL 2012
SYLLABUS v3
TEXAS A&M UNIVERSITY—CORPUS CHRISTI
COLLEGE OF SCIENCE & ENGINEERING

Lecture: M W 7:00-8:15 pm  Engineering (EN) 107--formerly ST 107
Prerequisite:  Biol 2421 (Microbiology); Immunology highly recommended

Instructor: Gregory W. Buck, Ph.D.  Office—Center for the Sciences 251;  
Gregory.Buck@tamucc.edu  Tel 361.825.3717  Office Hours: Mon  Wed 10:00 a.m.-
11:15 a.m., Tues Thurs  1:00 p.m.-2:15 p.m.  Other days & times: By appointment.

Course Description: The course entails a survey of selected bacteria, viruses, fungi, and parasites causing disease in humans. In addition, students will also learn to critically analyze current primary literature in molecular microbiology, and to coherently present that information to a target audience. The course does not discuss all the details of HOW bacteria cause disease (pathogenesis), but WHY specific traits encoded by bacterial genes (virulence factors) may result in disease states, what effects these diseases have on individuals (in short, human microbial ecology), and the basis for therapeutic intervention (antimicrobial treatments). Some effect on groups and populations (public health microbiology) will be discussed.

Student Learning Outcomes--Students will be able to perform these objectives at a level of ≥80%:
1. Categorize the pathology of infectious diseases caused by bacteria and viruses, and by certain selected fungi and parasites;
2. Sort infectious diseases to organ systems in both invertebrate and vertebrate organisms;
3. Formulate treatment plans of infectious agents using current pharmacological interventions;
4. Compare and contrast the epidemiology and immune responses to the pathogens;
5. Revise the information given on the Internet pertaining to current diseases, organisms, and treatments, based on current literature reviews;
6. Investigate an unknown etiologic agent within a case study for differential diagnoses and most probable pharmacologic treatment.
7. Analyze and plan a topic of current interest not covered in class using original primary articles, and design a lecture for undergraduates, including Power Point slides and test questions.
8. Critique original primary literature involving bacterial pathogenesis

Purpose: The course is offered to give graduate students a detailed and exhaustive survey of microorganisms that are of health significance to humans, and to describe the molecular basis for the factors that result in disease. Also, the course also gives graduate students the opportunity to read primary journal articles that focus on current research of these organisms, and to develop the ability to teach current information to undergraduate students. This course may be used for CLS post-bac certification and for the ASCP
Registry examination, although there is now another course in the BIMS post-bac sequence to take (Clinical Microbiology).

**Audience Defined:** This course is for first-year M.S. students who have not previously taken a course in medical microbiology at the college level.

**Prerequisites:** A general-level sophomore introductory course in microbiology (Texas Common Course no. BIOL 2421 or its equivalent) using one of the following texts: Alcamo, Baumann, Lin, Harley and Prescott, Nester *et al.*, Madigan *et al.* Persons having taken a mixed majors microbiology class (BIOL 2420 or equivalent) using the texts of Batzing, Talaro and Talaro, or Totora *et al.* will need to supplement their knowledge base, and should discuss this with the instructor before taking the course. It is STRONGLY suggested that students lacking background in immunology read the supplemental texts suggested in the syllabus.

**Required Bibliographic Format:** Please note the proper bibliographic style is the Council for Science Editors (2006). Papers in APA or MLA WILL NOT BE ACCEPTED. Students may do either the ASM format or NEJM format:

**ASM**


**NEJM**


Within either style, students must use (Author, Year) citation schemes.

**Readings:** One text is recommended; all others are strongly suggested. Texts indicated with (#) are available in Bell Library; graduate students are expected to read the journal articles, most of which may be found on-line using Science Direct.

**Required Textbook**


**Suggested Readings** (*in TAMU-CC bookstore; # In Bell Library):

6. <http://virology.net/> All the virology on the WWW; date accessed 1 August 2012
22. http://www.pasteur.fr>> date accessed 1 August 2012 (Pasteur Institute; in French, but click on link for English)
23. <<http://www.cdc.gov>> date accessed 1 August 2012 (Centers for Disease Control & Prevention)

REQUIRED UNIVERSITY POLICIES
Students with Disabilities and Veterans: All programs in Life Sciences (LSCI) comply with the federal Americans with Disabilities Act (ADA) of 1990, including the ADA Amendments from 2008 (PL 110-325). This anti-discrimination statute provides civil
rights protection for persons with disabilities. This statute requires that all qualified students with disabilities be guaranteed a learning environment that provides reasonable accommodations of their disabilities. This act also includes **returning veterans** who may be experiencing cognitive, emotional and/or physical access issues in the classroom or on campus. If you believe you have a disability requiring an accommodation, please call or visit Disability Services at (361) 825-5816 in Corpus Christi Hall, Room 116. Please contact this office in a timely manner, as they must review requests and prepare accommodations and send the accommodation letters.

If you need disability accommodations in this class, please contact the instructor as soon as possible. If you have mobility problems, are pregnant, or you may have a history of seizures, please notify the instructor PRIVATELY so that assistance can be given in case of fire drills or emergencies. Please have your Faculty Notification Letter from the Disabilities Service Office when you talk with Dr. Buck.

**Grade Appeals:** As stated in the Texas A&M University-Corpus Christi University Rules and Procedures (Section B [Academic Program], Part 13 [Students]: 13.02.99.C2 [Student Grade Appeals] and 13.02.99C2.01 [Student Grade Appeal Procedures]), any student who believes that he or she has not been held to appropriate academic standards as outlined in the class syllabus, equitable evaluation procedures, or appropriate grading, may appeal the final grade given in the course. The burden of proof is on the student to demonstrate the appropriateness of the appeal. A student with a complaint about a grade is encouraged to first discuss the matter with the instructor. For complete details, including the responsibilities of the parties involved in the process and the number of days allowed for completing the steps in the process, consult the University Rules and Procedures specified above (accessible through the University Rules and Procedures website at [http://www.tamucc.edu/provost/university_rules/index.html](http://www.tamucc.edu/provost/university_rules/index.html)). For assistance and/or guidance in the grade appeal process, students may contact the Office of Student Affairs.

**Academic Advising:** The College of Science and Engineering requires that graduate students meet with their Graduate Advisory Committee (GAC) Chair as soon as possible to formulate a committee and a degree plan, which must be signed by the student, the Chair, and the GAC members. The College's Academic Advising Center is located in CI-350, and can be reached at (361) 825-6094.

**CLASS POLICIES**

**Attendance:** It is the responsibility of the student to obtain any material missed during an absence from his/her classmates. **It is the responsibility of the student to obtain any material missed during an absence from his/her classmates. Power Points are not placed in the library, on Blackboard™ 9.1, or on a website.** In general, only unavoidable absences are excused (major family illness or accidents, deaths, funerals). Other events (scientific meetings, professional school, training seminars, job interviews, work-related events) will be determined on a case-by-case basis. For emergencies, please leave a voice mail or e-mail for the instructor. For all other unavoidable events, a note from a doctor, dentist, funeral director, supervisor or notification letter from an
admissions committee is necessary to receive an excused absence. All notes should be received within one week of the absence. Please bring your textbooks to class each time.

**Missed or tardy assignments:** Students will be given a Late Assignment Penalty for tardy work: 10% assignment grade deduction per class day late. However, after the 3rd day, late assignments will not be accepted. In-class late assignments are defined by being turned in after 7:05 pm. Missed exams are excused only per TAMUCC guidelines; such exams are given only under EXTREME circumstances, and I am not obligated to give a make-up exam in the exact same format as a regular exam. Make-up work for missed case presentations will be given only under EMERGENCY circumstances as defined by TAMUCC catalogue and Student Handbook, and may involve writing a 3 page précis of a 10+ page journal article. I usually do not give make-ups for quizzes and extra credit.

Please note that case studies and extra credit may be sent to me by e-mail or slid under my office door; tardiness is determined by the time noted on the instructor’s Inbox, but allowances can be made for server problems. Files contaminated by viruses, spyware, and worms will not be accepted. DO NOT ASK THE CUSTODIANS to let you into my office to place an assignment on my desk.

**Academic Integrity:** TAMUCC academic policies are in force, including standards for academic integrity & honesty, plagiarism, grammar and spelling. All policies are described in the TAMUCC catalogue and the Code of Conduct in the Student Handbook. DO NOT LOOK IN STUDENT ORGANIZATION FILES FOR OLD CASE STUDIES! THIS IS PLAGIARIISM, AND I WILL AWARD ALL OFFENDING PARTIES A ZERO ON THE ASSIGNMENT! We also have to report all instances of cheating to the Dean of Students office on an Academic Misconduct form—this report will be forwarded to graduate and professional schools.

**Professional Courtesy:** DO NOT USE CAMERA PHONES IN LECTURE OR LAB. DO NOT SEND TEXT MESSAGES DURING CLASS. Please turn off all cell phones, beepers, Bluetooth devices, Palm Pilots, Black Berries, etc., before entering the classroom or laboratory, or at least place them on silent mode. I would prefer that earpieces not be worn in lecture—please see me if you have concentration problems. Recording of lectures with tape recorders can only be done with permission of instructor. Please refrain from eating in class; if you must eat for medical reasons, please see me privately.

**Class room Behavior:** “Texas A&M University-Corpus Christi, as an academic community, requires that each individual respect the needs of others to study and learn in a peaceful atmosphere. Under Article III of the Student Code of Conduct, classroom behavior that interferes with either (a) the instructor’s ability to conduct the class or (b) the ability of other students to profit from the instructional program may be considered a breach of the peace and is subject to disciplinary sanction outlined in Article VII of the Student Code of Conduct. Students engaging in unacceptable behavior (including excessive text messaging) may be instructed to leave the classroom. This prohibition
applies to all instructional forums, including classrooms, electronic classrooms, labs, discussion groups, field trips, etc.”

**List-serve:** All students must subscribe to the opportunities list serve; I will use Blackboard 9.1 to make a distribution list of individuals’ e-mail addresses. To subscribe, send a separate e-mail to opportunities-list-request@sci.tamucc.edu. Make sure that your e-mail appears in the “From” heading. In the subject heading, type “subscribe,” then send the e-mail. Next, you will receive a second message with a long set of letters and numbers in the subject line. You must also reply to that message in order to be subscribed to the list-serve.

After the initial message to subscribe, to send items on the list-serve, just type opportunities-list@sci.tamucc.edu (do NOT add –request after list). You may not receive the messages from the list-serve if your Internet service provider (Yahoo, Hotmail, Excite, Roadrunner, Grande, etc.) keep these messages from being placed in junk-mail.

**The University administration prefers that you use the islander.tamucc.edu accounts.** If class is cancelled due to a pending hurricane, that information is sent via your islander.tamucc.edu account, not to other accounts.

**Dropping courses:** I hope that students do not find it necessary to drop this class. However, life events can sometimes occur that make dropping a course necessary or wise. Please consult with me before you decide to drop to be sure it is the best thing to do. You as adults have to be the final judge of your action whether to drop or not. **It is rare for graduate students to drop a course;** you WILL have to explain at some point why you dropped this class or any other class as a graduate student. Receiving a “W” is NOT automatic; you must initiate the paperwork in the Student Services Center (the “Round Building”). Just stopping attendance and participation WILL NOT automatically result in your being dropped from the class.

Deadline to drop course with a “W” grade: F Nov 2  
Deadline to withdraw from University for the fall term: M Dec 3

**Special Clinical Laboratory Science Information:** This course continues to augment the University Skills through the ASCP Board of Registry Examination components:  
--Registry Level 1: Recall; most information transcends this level;  
--Registry Level 2: Data analysis and interpretation, especially with tables and graphs;  
--Registry Level 3: Critical thinking beyond rote memorization occurs by analysis, synthesis and evaluation of material presented in lectures and case studies;  
--Oral skills will be improved through discussion of case studies;  
--Reading and writing skills are improved through essays on exams

As stated earlier, **while CLS students now have a separate course, information needed for the CLS Registry exam overlaps with what pre-professional students need to know.** As a graduate student, you have a high probability of teaching this population of students, so you should be aware of their student learning outcomes!
Evaluation:

Attendance—**Strongly suggested** for successful grade in course. Class participation will be taken into consideration for borderline grades and letters of recommendation. The instructor may award points for additional case studies, Internet assignments, journal articles to read/summarize, impromptu quizzes and class participation as extra credit. These assignments **may be given at prerogative of instructor, who is not obligated to give make-up or alternative assignments for missed extra credit opportunities, excused or unexcused.**

Exams—66.6%: Four exams at 100 pts each, including a comprehensive final; these exams will consist of short answer, essay, multiple choice, case studies, matching and descriptive T/F questions.

Case Histories—16.7%: You will have four of these exercises, which will be done outside of class as a group unless otherwise noted. These studies may be taken from texts, or written by me. The goal is not to focus on the medical treatment given, but on demonstrating a logical, coherent, rational thought process in elucidating a correct answer. **I reserve the right to give graduate students a different, more challenging case than those given to undergraduates.**

Power Point presentation—16.7%. Students will research a current topic related to some micro-organism causing microbial disease or describe its virulence factors, and using a minimum of at least three primary journal articles and one review, present a 20 min Power Point lecture on the topic. **The microorganism cannot be one that the instructor has discussed in lecture!** They will also design at least 4 multiple choice questions and one short answer question for possible use on a test. The basis for evaluation will be a rubric with 50% of the grade determined by the instructor, and 50% determined by the undergraduate and other graduate students. **The rubric (see next page) will allow grading of the presentation based on format, scientific content, and oral presentation. The instructor will grade the proposed exam questions.**

**N.B:** Instructors reserve the right to assign talks by visiting seminar speakers as an extra case history not included in the four (4), or as a make-up. Instructor may also give information on selected microorganisms not covered in lecture as handouts (“The Weekly Microbe”), Web-based assignments, case histories, journal articles, or MMWR synopses. These organisms can be included on examinations. Students will be responsible for all material (textbook, guest lectures, web sites, case studies, and handouts) covered in the lecture.
Rubric--Power Point Presentations BIMS 5374  Fall 2012 Professor edition
Name of presenter ___________________________  Start time______ End time ______
Directions: Score as follows: 0= Missing  1= Poor   1.5= Suboptimal   2= Fair   3= Good
4=Very Good   4.5= Excellent  5= Flawless
Format
1. Student has 20-25 slides with consistent format, background, and color scheme _____
2. Font size and color are legible for all slides____
3. Narrative slides do not have too many words/facts on a single slide ______
4. Narrative slides contain tables, figures, and graphs that help to tell the story____
5. Graphs/tables are clear, concise and accurate with correctly-labeled axes, labels_____
6. Order of presentation tells a clear, logical story of the information presented. ______

Content
1. Student had sufficient knowledge about area of presentation. ______
2. Student understood area well enough to explain content. ______
3. Student presented scientific content in a coherent fashion. ______
4. Student cited/acknowledged work done by others. ______

Oral Presentation of Power Point Presentation
1. Presenter spoke in 20-25 minutes. _____
2. Presenter gave presentation in IMRAD form____
3. Presenter clearly articulated major points of the work._____ 
4. Presenter gave a talk that was concise in describing work presented. _____
5. Presenter gave a talk that was relatively free of grammatical errors. _____
6. Presenter adequately handled questions at the end of the presentation. ______
7. Presenter spoke without many pauses, giggles, “uhhs,” “you knows,” and “likes.” ____
8. Presenter exhibited professionalism in making presentation. ______
9. Presenter gestured to words/graphics.____
10. Presenter talked to audience, not to wall, slides, or inanimate objects. _____

Final score given by instructor ______
Average number of points from peers______
Average of two scores _________________
(Score avg/100) x 80 pts= _______________Final Grade Pwrpt
+ Questions
_________________________Final assignment grade

Class Grading Scale
4 class exams (including final exam, which may or may not be cumulative) 
@ 100 pts. each = 400 pts
4 case histories @ 25 pts. each = 100 pts.
Power Point Presentation
(50% from Professor evaluation; = 80 pts.
50% from student evaluation) 
MCQ exam and SA exam questions = 20 pts.
600 pts
Extra credit assignments are added in, and do not count toward the 600 total points.
A>90%  B=80-89.9%  C=70-79.9%  D=60-69%  F<60%
Grades of “C” or below are suboptimal for graduate students.

Caveats:
(1) Although the instructor has made every attempt to give accurate and current information, rapid changes and advances in the field mean that the instructor cannot guarantee 100% accuracy in treatment regimens, medications, and vaccinations described in lectures or case studies, especially since instructor is not a practicing clinician.
(2) You may have either a Case Study or Extra Credit assignments during the Dead Week (final week of classes).

Tentative Lecture Schedule  BIMS 5374.001  Fall 2012 v3
EN 107  7:00-8:15 pm  The syllabus is a general guide; deviations may be necessary.
Texts: M=Chapters in Murray et al; I= chapters in Abbas and Lichtman, 2nd ed  K= chapters in Kuby Immunology, 6th ed.  HW=Homework

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<th>Wk</th>
<th>Class#</th>
<th>Day</th>
<th>Date</th>
<th>Topic</th>
<th>Readings</th>
<th>Wkly Microbe</th>
<th>Examples*</th>
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<td>W</td>
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<td>M-Ch 2-6</td>
<td>Normal Flora</td>
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<td>M</td>
<td>Aug 27</td>
<td>Normal flora</td>
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<td>2</td>
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<td>W</td>
<td>Aug 29</td>
<td>Pathogenesis</td>
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<td>Sep 3</td>
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<td>No class</td>
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<td>3</td>
<td>4</td>
<td>W</td>
<td>Sep 5</td>
<td>Infection &amp; Immunity 1</td>
<td>M-Ch 9-10; I-Ch 1, 2, 6, 8; K- Ch 2-4</td>
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<td>M</td>
<td>Sep 10</td>
<td>Infection &amp; Immunity 2</td>
<td>M-Ch 11-12; I-Ch 1, 2, 6, 8; K-Ch 2-4</td>
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<td>4</td>
<td>6</td>
<td>W</td>
<td>Sep 12</td>
<td>Immunity &amp; Vaccines: Case Study 1</td>
<td>M-Ch. 13 K-ch. 1, 18, 19</td>
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<td>M</td>
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<td>Antimicrobials 1</td>
<td>M-Ch 20, 49</td>
<td>Antimicrobials Handout</td>
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<td>Sep 19</td>
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<td>M-Ch. 70, 80</td>
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<td>Sep 24</td>
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<td>Lectures 1-8</td>
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<td>6</td>
<td>9</td>
<td>W</td>
<td>Sep 26</td>
<td>Resp Infectns 1: Viruses</td>
<td>M-Ch.52, 56-59, 63</td>
<td>Pneumonia etiologic</td>
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<td>10</td>
<td>M</td>
<td>Oct 1</td>
<td>Resp Infectns 2: Bacteria</td>
<td>Ch. 21, 22, 26-28, 33, 36-38</td>
<td>Burkholderia, <em>F. tularensis</em> Pseudomonas</td>
<td>Listeria, Bordetella, Legionella</td>
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<td>W</td>
<td>Oct 3</td>
<td>Resp. Infections 3: Bacteria</td>
<td>M-Ch. 28, 34,</td>
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<td>Mycobac., H. flu</td>
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<td>M</td>
<td>Oct 8</td>
<td>Intravas. Infect: Sepsis; Case Study 2</td>
<td>M-Ch. 21, 22, 30</td>
<td>Staph &amp; Strep</td>
<td>Intravas. Infect: Sepsis</td>
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<td>W</td>
<td>Oct 10</td>
<td>Anaerobes &amp; CNS Infectn 1</td>
<td>M-Ch. 21-22, 23, 30, 40-42</td>
<td>Anaerobes</td>
<td><em>Clostridium</em>, H. flu, Meningococci</td>
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<td>CNS Infectn 2</td>
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<td>W</td>
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<td>HSV, EBV, Rabies, Adeno, Prions</td>
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<td>Enterobacteriaceae, <em>Bacillus</em></td>
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<td>17</td>
<td>W</td>
<td>Oct 24</td>
<td>GI Infectn 2 Bacteria, Viruses, selected parasites</td>
<td>M-Ch 30, 31-33, 39, 56, 61, 65, 81</td>
<td><em>Vibrio</em></td>
<td><em>Helicobact.</em>, <em>Campylobact.</em> <em>Clostridium</em>, <em>Giardia</em>, Rota, Polio, Echo</td>
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<td>Treponema, <em>E. coli</em>, <em>Proteus</em>, <em>Neisseria</em>, <em>Candida</em></td>
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<td>M- Ch 44-47</td>
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<td><em>Chlamydia</em>, <em>Rickettsia</em>, <em>Erhlichia</em>, <em>Orientia</em>, <em>Coxiella</em></td>
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<td><em>Yersinia</em>, <em>Staph.</em>, <em>Strep.</em>, <em>Nocardia</em>,</td>
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<td>Dec 10 Final Exam 7:15-9:45 pm Cumulative</td>
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