MOLECULAR MEDICAL MICROBIOLOGY  BIMS 5374 FALL 2009 Syllabus
Lecture: M W 4:00-5:15 pm  ST 107  v5

Instructor: Gregory W. Buck, Ph.D.  Office—CS251; Gregory.Buck@tamucc.edu
Tel 361.825.3717  Office Hours: Mon Wed 10:00 a.m.-11:00 a.m., Tues Thurs 1:00 p.m.-2:30 pm  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 effects on groups and populations (public health microbiology) will be discussed.

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.

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.

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 (##).

Bibliography (*in TAMU-CC bookstore; # In Bell Library)
Please note the proper bibliographic style is the Council for Science Editors (2006). Students may do either the ASM format or NEJM format:
ASM

NEJM

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

Required Textbook

Suggested Readings:
17. Projan, S.J. and P. A. Bradford. 2007. Late stage antibacterial drugs in the clinical pipeline. Curr Opin Microbiol 10: 441-446. #
18. http://www.pasteur.fr>> date accessed 24 Aug 2009 (Pasteur Institute; in French, but click on link for English)

**Student Learning Outcomes** Students will be able to—

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 to undergraduates.
8. **Critique** original primary literature involving bacterial pathogenesis

**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.

It is the responsibility of the student to obtain any material missed during an absence from his/her classmates. Instructor does not provide copies of Power Points or notes in case of absence. 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.

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 microbial disease or virulence factors (but NOT discussed in class), and using a minimum of at least three primary journal articles and one review, present a 20 min Power Point lecture on the topic. 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.

Missed exams—Excused only per TAMUCC guidelines; such exams are given only under EXTREME circumstances, and will be total essay.

Missed Case Presentations—Make-up work 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 chosen by the professor.

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 2009

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 15-20 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, “uhs,” “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

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.

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.

Academic Integrity: TAMUCC academic policies are in force, including standards for academic integrity & honesty, grammar and spelling. All policies are described in the TAMUCC catalogue and Student Handbook. Please use Council of Science Editors citation style-- http://www.councilscienceeditors.org/publications/citing_internet.cfm.
Note that the ISBN number is NOT part of the CSE bibliographic style. For web sites, the date accessed MUST be placed in the citation. Modifications (e.g., ASM versus NEJM) are irrelevant, provided that all references are consistent. Failure to cite references (even web sites) constitutes plagiarism. The instructor will determine if plagiarism was
intentional or unintentional; the former will result in a zero for the assignment; the latter will result in reduced credit.

**Attendance:** It is the responsibility of the student to obtain any material missed during an absence from his/her classmates. The instructor does not supply students with copies of the Power points. 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.

**Licensure:** This course continues to augment the University Skills through the ASCP Board of Registry Examination components, as mandated by the CLSI/NAACLS National Accreditation Board:

--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.
This course is part of the pathway to licensure as a clinical lab scientist, not the total requirement; please see catalogue for details.

**Communication:** Graduate students are required to subscribe to two list-serves. One list-serve allows the instructor to give you notes and send messages; this list-serve is the Pathogenic Microbiology list-serve. Another list-serve describes opportunities available in science. To subscribe, send a separate e-mail to both Medmicro-list-request@sci.tamucc.edu and 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 Medmicro-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.) filters these messages. You may have to adjust the filters on your inbox to keep these messages from being placed in junk-mail. The **University administration prefers that you use the islander.tamucc.edu accounts.**
At the end of the course, if you want to unsubscribe to both list-serves, send an e-mail that contains your e-mail address in the “From” heading. In the subject heading, type “unsubscribe,” then send the e-mail.

**Courtesy:** Please remove and turn off all cell phones, beepers, Bluetooth devices, Palm Pilots, etc., before entering the classroom, or at least place them on silent mode. **You may not use camera phones to take pictures of lectures or slides.** Please do not eat in class unless you have some medical condition that may require this; if so, please see the instructors (see Disabilities section below). **Recording of lectures with approved electronic recording devices requires advanced consent of the instructor.**

**Students with Disabilities and Veterans:** All programs in Life Sciences (LSCI) comply with the Americans with Disabilities Act in making reasonable accommodations for qualified students with disabilities, including **returning veterans** who may be experiencing cognitive and/or physical access issues in the classroom or on campus. If you are a returning veteran or you suspect that you may have a disability requiring accommodation, please contact the Services for Students with Disabilities Office (located in Driftwood 101) at (361) 825-5816.

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.

**Academic Advising:** The College of Science and Technology requires that students meet with an Academic Advisor as soon as they are ready to declare a major. The Academic Advisor will set up a degree plan, which must be signed by the student, a faculty mentor, and the department chair. The College’s Academic Advising Center is located in Faculty Center 178, and can be reached at 825-6094.

**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]), a 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.

Caveats:
(1) The syllabus is a general guide; deviations may be necessary.
(2) 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.
(3) You may have either a Case Study or Extra Credit assignments during the Dead Week (final week of classes).

Last day to drop with automatic “W”: Fri Nov 6, 2009
Last Day to withdraw for the semester: Monday, December 7, 2009
Last Day of Class: Tuesday, December 8, 2009

<table>
<thead>
<tr>
<th>Lecture Schedule</th>
<th>BIMS 5374</th>
<th>Fall 2009 v5</th>
</tr>
</thead>
<tbody>
<tr>
<td>pm</td>
<td>Texts: M=Chapters in Murray et al; I= chapters in Abbas and Lichtman, 2nd ed  K= chapters in Kuby Immunology, 6th ed.</td>
<td>HW=Homework</td>
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<table>
<thead>
<tr>
<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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<tbody>
<tr>
<td>1</td>
<td>1</td>
<td>W</td>
<td>Aug 26</td>
<td>The Microbes</td>
<td>M-Ch 2-6</td>
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<td></td>
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<td>M</td>
<td>Aug 31</td>
<td>Normal flora</td>
<td>M-Ch 7</td>
<td>Normal Flora</td>
<td>Staph., Strep, enterics, enterococci</td>
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<td>2</td>
<td>2</td>
<td>W</td>
<td>Sep 2</td>
<td>Pathogenesis</td>
<td>M-Ch 18, 48, 68, 78</td>
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<td>M</td>
<td>Sep 7</td>
<td>Labor Day</td>
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<td>3</td>
<td>4</td>
<td>W</td>
<td>Sep 9</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 14</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 16</td>
<td>Immunity &amp; Vaccines; <strong>Case Study 1</strong></td>
<td>M-Ch. 13 K-ch. 1, 18, 19</td>
<td><strong>Antimicrobials Handout</strong></td>
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<td>M</td>
<td>Sep 21</td>
<td>Antimicrobials 1</td>
<td>M-Ch 20, 49</td>
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<td>5</td>
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<td>W</td>
<td>Sep 23</td>
<td>Antimicrobials 2</td>
<td>M-Ch. 70, 80</td>
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<td>Lectures</td>
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<td>14</td>
<td>M</td>
<td>Oct 19</td>
<td>CNS Infectn 2</td>
<td>M-Ch. 34</td>
<td>Naegleria</td>
<td>HSV, EBV, Rabies, Adeno, Prions</td>
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<td>9</td>
<td>15</td>
<td>W Oct 21</td>
<td>CNS Infectn 3</td>
<td>M-Ch. 52, 53, 58, 60, 66</td>
<td>Enterobacteriaceae</td>
<td>Enterobacteriaceae, Bacillus</td>
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<td>16</td>
<td>M Oct 26</td>
<td>GI Infectn 1</td>
<td>M-Ch. 24, 30</td>
<td>Vibrio</td>
<td>Helicobact., Campylobact. Clostridium, Giardia</td>
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<td>10</td>
<td>17 W Oct 28</td>
<td>GI Infectn 2</td>
<td>M-Ch 30, 31-33, 39</td>
<td>Hepatitis</td>
<td>Polio, Echo, Rota</td>
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<td>18</td>
<td>M Nov 2</td>
<td>GI Infectn 3</td>
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<td>11</td>
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<td>12</td>
<td>19 W Nov 9</td>
<td>GU-STD 1; Case Study 3</td>
<td>M-Ch. 51, 53</td>
<td>HPV, HSV</td>
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<td>20</td>
<td>M Nov 16</td>
<td>Obligate Intracellular Parasites</td>
<td>M-Ch 44-47</td>
<td>Chlamydia, Rickettsia, Erlichia, Orientia, Coxiella</td>
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<td>13</td>
<td>21 W Nov</td>
<td>Skin &amp; Soft</td>
<td>M-Ch 21-</td>
<td>Pseudomonas</td>
<td>Yersinia,</td>
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<td>18 Nov</td>
<td>M</td>
<td>Tissue Infectn Grad Presentations</td>
<td>Staph., Strep., Nocardia, Clostridium, superficial mycoses</td>
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<td>22 Nov</td>
<td>M</td>
<td>Grad Presentations; Case Study 4</td>
<td>Happy Thanksgiving!</td>
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<td>14 Nov</td>
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<td>No class</td>
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<td>23 Nov</td>
<td>M</td>
<td>HIV/Immuno-comp.</td>
<td>Candida, MAC, Aspergillus</td>
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<td>15 Dec</td>
<td>W</td>
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<td>24 Dec</td>
<td>M</td>
<td>Bioterrorism Handouts; M-Ch 76</td>
<td>Anthrax, tularemia, smallpox, brucellosis aflatoxins</td>
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<td>16 Dec</td>
<td>W</td>
<td>Final Exam</td>
<td>1:45-4:15 pm Cumulative</td>
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