Antimicrobics:  
Their Mechanisms of Action and Clinical Use (2017)

PHM 384D and PHM 184H [Fall-2017]  
Unique #59625 (Austin); #59630 (UTEP); #59640 (UTRGV);  
#59635 (UTHSCSA); Honors Antimicrobics [184H #59460]

Tuesday/Thursday  
8:00-9:15 am in Austin, SA, and UTRGV and UT Pan Am; 7:00-8:15 am El Paso  
PHR 4:114 in Austin*

Instructors: Dr. Patrick Davis, Professor (Course Coordinator)  
Division of Chemical Biology and Medicinal Chemistry  
Office hours: Immediately after class or by email  
475-9751 (BME 6.202)  
davispj@austin.utexas.edu

Dr. Bryson Duhon, Clinical Assistant Professor  
Division of Health Outcomes and Pharmacy Practice  
Office hours: immediately after class or by email  
512-475-9756 (PHR 5.112B)  
duhon@austin.utexas.edu

Dr. Grace Lee, Assistant Professor  
Division of Pharmacotherapy, UTHSCSA  
Office hours: immediately after class or by email  
210-450-8097 (MCD 3.4 UTHSCSA)  
leeg3@uthscsa.edu

Dr. Nathan Wiederhold, Associate Professor  
Division of Pharmacotherapy, UTHSCSA  
Office hours: immediately after class or by email  
Phone: (210) 567-8355 (UTHSCSA)  
wiederholdn@uthscsa.edu

Course Objectives:

1) Provide the student a broader and deeper understanding of antimicrobial agents, both on a basic science and a clinical level.  
2) Provide insight into the interactions of these agents with the organism and the patient.  
3) Examine the drug development process as it specifically relates to antibiotics (and responding to resistance development, in particular).  
4) Rationalize the static vs cidal mechanisms of action of antimicrobial agents.  
5) Analyze the mechanisms of resistance and its impact on drug selection (and vice versa).  
6) Analyze new ‘pipeline’ approaches to antimicrobial therapy and project strategies.
7) Articulate and rationalize the main clinical uses of the major antimicrobial drugs prescribed, with an emphasis on acute inpatient therapy.

**Recommended Text:** *Antibiotics Simplified* (J.C. Gallaghan, 4th Ed., 2017)

**Canvas Website:** Go to [http://canvas.utexas.edu](http://canvas.utexas.edu) (F2017 Antimicrobics)

**Demands of the course:** Although this is an elective course, we feel (and the students who have taken the course in the past concur) that it will be rather rigorous. We will approach the course material emphasizing both general concepts and details, and plan to cover a lot of material. Handouts will be available through Canvas® for most classes to help you take notes.

To do well in this course, we list the following recommendations:

- You should enjoy microbiology, medicinal chemistry, and also be interested in the rational use of antimicrobial agents in patients.
- You should have a strong desire to have a deeper understanding on how antibiotics work, how resistance process develop to circumvent their effectiveness, and what we can do prevent and mitigate the impact of resistance.
- You should complete any reading assignments before class; they will be a focal point for discussion.
- You should be able to spend **significant time outside of class** in preparation, be willing to participate in discussions, and ask questions.
- You need to fully commit to your teams weekly exercise as both a preparation for class to expand your understanding of infectious disease issues.

**Grading:** Grading for the course will be based on three 75-minute tests administered during class time on the dates listed in the syllabus. Although the tests are not cumulative, there may be questions that require that you have learned material taught earlier in the course. Each test is worth 100 points.

Your grade will also include a team-based assignment that will be provided to you each week by Thursday (at the latest) and should be completed prior to the class on Tuesday (late submissions will not be accepted). The points for this team-effort will be 10 pts per week for 12 weeks (100 pts; we will drop the lowest two team grades). Class discussion and exam questions may also relate to these exercises. Thus, your total grade will be based on 400 pts and your final grade will be based on test performance as follows:

<table>
<thead>
<tr>
<th>Grade</th>
<th>A Range:</th>
<th>A = 100%-93%</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>B Range:</td>
<td>B+ = 89%-87%</td>
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<tr>
<td></td>
<td>C Range:</td>
<td>C+ = 79%-77%</td>
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<tr>
<td></td>
<td>D Range:</td>
<td>D+ = 69%-67%</td>
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<td></td>
<td>F =</td>
<td>D = 66%-65%</td>
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<td></td>
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<td>Below 65%</td>
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Attendance and participation is considered important for this course. Teams will be called upon in class for responses to the team-based assignments; if no one from the team is present to respond, the team will receive a zero for that week’s 10 pt exercise.
Only validated medical or pre-approved excused absences will be accepted for missing a test. You must contact the course coordinator concerning your inability to take an exam *prior* to that exam! If note, an exam grade of “zero” could be recorded. If a make-up exam *is* granted, the nature of that exam will be entirely the prerogative of the instructor(s).

Graded exams will be returned in a timely fashion, and once the key to an exam is posted, the student will have three calendar days to submit *requests for reconsideration of specific questions*. The student must outline his/her arguments *in writing* and submit them *(dated)* to the Faculty. After this three-day period *no* exams will be re-graded, and no grade changes will be made.

Direct all course administration issues to Dr. Davis, course coordinator. If a particular question arises regarding a particular instructor's material or exam questions, you should first discuss the issue(s) with that instructor.

**Additional Requirements for the 184H Honors Companion Course:** Students taking this course for additional honors credit must also complete the following:

1. Complete a written evaluation, summary, or analysis of an antimicrobial-related topic which has been approved by the Course Coordinator.
2. Satisfactorily prepare and deliver a 20 minute presentation of the specific topic.

**Timeline:**

- November 1st: Topic identified and approved
- November 15th: Preliminary outline of paper/presentation due
- Nov 30th, Dec 6th: Oral presentation in class
- December 12th: Written paper & Powerpoint (if used) due

**Policy on academic dishonesty:** The “Statement on Scholastic Dishonesty of the College of Pharmacy” reads as follows: "Pharmacy practitioners enjoy a special trust and authority based upon the profession's commitment to a code of ethical behavior in its management of client affairs. The inculcation of a sense of responsible professional behavior is a critical component of professional education, and high standards of ethical conduct are expected of pharmacy students. Students who violate University rules on scholastic dishonesty are subject to disciplinary penalties, including failure of the course involved and dismissal from the college and/or the University. Since dishonesty harms the individual, fellow students, and the integrity of the University and the College of Pharmacy, policies of scholastic dishonesty will be strictly enforced in this class".

Students are expected to work independently on all examinations. Any student caught cheating will be given an "zero" on the exam (minimum). Any student suspected of dishonesty will be reported to the Dean of the College of Pharmacy and to the Dean of Students, as per University regulations. Students are expected to have read and understood the current issue of the General Information Catalog published by the Registrar's Office for information about procedures and about what constitutes scholastic dishonesty. Students are also expected to be familiar with and abide by the College Honor Code, and will be expected to sign the Honors Statement at the end of each examination.
Students with Disabilities

The University of Texas at Austin provides upon request appropriate academic accommodations for qualified students with disabilities. All University rules concerning accommodations must be followed, including the student arranging for special accommodations prior to each examination. In the absence of such prearrangement, the student will be expected to take the exam with the rest of the class at the regularly scheduled exam time. For more information, contact the Office of the Dean of Students at 471-6259, 471-4641 TTY.

Antimicrobics 384D Course Schedule - Fall 2017

<table>
<thead>
<tr>
<th>Lec #</th>
<th>Date</th>
<th>Title</th>
<th>Instructor</th>
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<tbody>
<tr>
<td>1</td>
<td>Thurs, Aug 31</td>
<td>Course Introduction</td>
<td>Davis</td>
</tr>
<tr>
<td>2</td>
<td>Tues, Sept 5</td>
<td>Monitoring Resistance: Locally to Globally</td>
<td>Davis</td>
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<tr>
<td>3</td>
<td>Thurs, Sept. 7</td>
<td>Antibiotic Discovery (Classic &amp; Genomic Approaches)</td>
<td>Davis</td>
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<tr>
<td>4</td>
<td>Tues, Sept. 12</td>
<td>Antibiotic Discovery (Classic &amp; Genomics Approaches)</td>
<td>Davis</td>
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<tr>
<td>5</td>
<td>Thurs, Sept. 14</td>
<td>Novel Mechanisms of Diagnosis</td>
<td>Lee</td>
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<tr>
<td>6</td>
<td>Tues, Sept. 19</td>
<td>Pandemic Influenza &amp; Emerging Viral Infections</td>
<td>Wiederhold</td>
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<tr>
<td>7</td>
<td>Thurs, Sept. 21</td>
<td>Clinical Use of Antifungals</td>
<td>Wiederhold</td>
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<td></td>
<td>Tues, Sept. 26</td>
<td>Exam #1 (Lec 2-7)</td>
<td>Davis/Lee/Wiederhold</td>
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<tr>
<td>8</td>
<td>Thurs, Sept. 28</td>
<td>CWSI's: Glycopeptides - MOA/Resistance</td>
<td>Davis</td>
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<tr>
<td>9</td>
<td>Tues, Oct. 3</td>
<td>CWSI's: B-lactams - MOA/Resistance (45 min)</td>
<td>Davis</td>
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<tr>
<td>10</td>
<td>Thurs, Oct 5</td>
<td>Therapy with Cephalosporins</td>
<td>Duhon</td>
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<tr>
<td>11</td>
<td>Tues, Oct. 10</td>
<td>Therapy with Penicillins &amp; Vancomycin</td>
<td>Wiederhold</td>
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<tr>
<td>12</td>
<td>Thurs, Oct. 12</td>
<td>Therapy with Other Beta-Lactams</td>
<td>Duhon</td>
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<tr>
<td>13</td>
<td>Tues, Oct 17</td>
<td>B-lactamases and B-Lactamase Inhibitors</td>
<td>Duhon</td>
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<tr>
<td>14</td>
<td>Thurs, Oct 19</td>
<td>Mycobacterial Infections (TB)</td>
<td>Davis</td>
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<tr>
<td>15</td>
<td>Tues, Oct. 24</td>
<td>Protein Synthesis Inhibitors - MOA/Resistance</td>
<td>Davis</td>
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<td></td>
<td>Thurs, Oct. 26</td>
<td>Exam #2 (Lec 8-14)</td>
<td>Davis/Duhon/Wiederhold</td>
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1. Dr. Davis will post team assignment for the following week
2. Dr. Davis will post team assignment for the following week
3. Dr. Wiederhold will post team assignment for the following week
4. Dr. Davis will post team assignment for the following week
5. Dr. Duhon will post team assignment for the following week
6. Dr. Wiederhold or Dr. Duhon will post team assignment for the following week
7. Dr. Duhon will post team assignment for the following week
8. Dr. Davis will post team assignment for the following week
9. Dr. Lee will post team assignment for the following week
<table>
<thead>
<tr>
<th>Date</th>
<th>Topic</th>
<th>Instructor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tues, Oct. 31</td>
<td>Protein Synthesis Inhibitors – Clinical Applications</td>
<td>Lee</td>
</tr>
<tr>
<td>Thurs, Nov 2&lt;sup&gt;10&lt;/sup&gt;</td>
<td>Nucleic Acid Inhibitors – MOA/Resistance</td>
<td>Davis</td>
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<tr>
<td>Tues, Nov 7</td>
<td>Quinolones – Clinical Applications</td>
<td>Duhon</td>
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<tr>
<td>Thurs, Nov 9&lt;sup&gt;11&lt;/sup&gt;</td>
<td>New Approaches &amp; Molecular Targets (45 min)</td>
<td>Davis</td>
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<tr>
<td>Tues, Nov 14</td>
<td>New Approaches &amp; Molecular Targets (45 min)</td>
<td>Davis</td>
</tr>
<tr>
<td>Thurs, Nov 16&lt;sup&gt;12&lt;/sup&gt;</td>
<td>A Predictable Catastrophe: The Anti-Vaccine Impact</td>
<td>Davis</td>
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<tr>
<td>Tues, Nov 21</td>
<td>Antibiotic Stewardship</td>
<td>Duhon</td>
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<tr>
<td>Thurs, Nov 23</td>
<td>Thanksgiving Holiday</td>
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<tr>
<td>Tues, Nov. 28</td>
<td><strong>Exam #3 (Lec 15-22)</strong></td>
<td>Davis/Lee/Duhon</td>
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<tr>
<td>Thurs, Nov 30</td>
<td>Honors Presentations (as needed)</td>
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<tr>
<td>Tues, Dec 5</td>
<td>Honors Presentations (as needed)</td>
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<sup>10</sup> Dr. Duhon will post team assignment for the following week
<sup>11</sup> Dr. Davis will post team assignment for the following week
<sup>12</sup> Dr. Duhon will post team assignment for the following week