Advanced Evidence-Based Practice (PHR 295R)
Mondays (10–11:50 AM)
Spring, 2015

Austin (Unique Number 60260): PHR 2.108
San Antonio (Unique Number 60270): McDermott Room 2.108
El Paso Room (Unique Number 60265): TBA
Rio Grande Valley (Unique Number 60275): TBA

Course Coordinator: Leroy C. Knodel, Pharm.D.
Office: Room 3.424 (Pharmacotherapy Division)
        McDermott Clinical Science Building
Telephone: (210) 567-8369 (work)    (210) 492-6893 (home)
        FAX: (210) 567-8328
E-Mail: knodel@uthscsa.edu
Office Hours: Monday-Thursday (8 AM - 5 PM); Friday (8 AM - 3 PM)
Austin Coordinator: Diane Ginsburg, M.S., Ph.D. – (512) 471-363
        (diane.ginsburg@austin.utexas.edu)
El Paso Coordinator: Abigail Strate – (915) 747-8530 aesones@utep.edu
Rio Grande Valley Coordinator: Yasar Tasnif, Pharm.D. – (956) 665-7421 (tasnifyo@utpa.edu)

The course coordinator and local coordinators can be contacted via telephone and/or electronic mail.

**NOTE:** You are responsible for reading all the material in this course syllabus, even if portions are not specifically covered during the first class session.

**GENERAL COURSE DESCRIPTION**

This course is designed to provide the student with an understanding of advanced statistical and study design principles useful in critically evaluating the biomedical literature. A combination of classroom lectures, videotaped lectures, class discussion, required readings, and take-home assignments will be used to facilitate the student's understanding of important biostatistical and literature evaluation principles.

**NOTE:** Students will be held accountable for all material on study design, epidemiological measures, and data presentation and interpretation covered previously in the Drug Information & Evidence-Based Practice Course (PHR 163C). Students are strongly advised to STUDY this material, since it will be assumed that they have a firm understanding of descriptive and explanatory study designs (e.g., how they are conducted, and potential biases and other factors that may confound interpretation of their results); prevalence and incidence; relative risk and odds ratios; confidence intervals; study controls and blinding; randomization methods; data analysis methods including intention-to-treat versus per-protocol; and primary versus secondary endpoints.

*This course carries the Quantitative Reasoning flag. Quantitative Reasoning courses are designed to equip you with skills that are necessary for understanding the types of quantitative arguments you will regularly encounter in your adult and professional life. You should therefore expect a substantial portion of your grade to come from your use of quantitative skills to analyze real-world problems.*
COURSE OBJECTIVES

After completion of this course, students will be able to
1. Demonstrate a fundamental knowledge of common statistical principles and tests useful in analyzing scientific data.
2. Differentiate among statistical analysis procedures (descriptive and inferential) to identify appropriate statistical tests for different types of research data/scales of measurement and study designs.
3. Demonstrate an advanced knowledge of study designs commonly used in clinical and epidemiologic research, including potential limitations and biases that can affect the interpretation of study results.
4. Critically evaluate professional, lay, and scientific literature in a logical, systematic fashion.
5. Apply principles of evidence-based medicine to make informed health-care decisions and recommendations.

RECOMMENDED READINGS AND ASSIGNMENTS

Handout materials will be provided to the student throughout the semester via the class Canvas® website. These will consist of articles/assignments to be reviewed or completed prior to the respective class session, as well as lecture outlines that can be used by the student during class for note-taking. In addition, students will be responsible for material covered in short videotapes that will be provided at different times during the course.

Basic and Clinical Biostatistics (4th edition, 2004) by Beth Dawson and Robert G. Trapp is the recommended textbook for the course. Specific assigned readings are indicated for each topic on the course schedule. The text is intended to supplement the lectures; topics not covered in lecture that are included in the readings will not be tested on the exams. Copies of this reference can be obtained through one of the bookstores serving the UT-Austin, UT-El Paso, and UT-Pan American campuses, or through the University of Texas Health Science Center at San Antonio bookstore. The online edition of the textbook can be found at


If you are unable to get to the textbook through this link, please go to Access Pharmacy (electronic database available through UT Libraries; click on Textbooks, and then click on Basic & Clinical Biostatistics). Because the online textbook does not have page numbers, the course schedule indicates the “sections” of each chapter that relate to the page numbers in the printed version of the text.

One class session (April 20) will involve in-class evaluation of two or three published studies. Students are expected to read and critically evaluate the assigned material prior to coming to class. Access to the articles to be discussed will be provided via either the class Canvas® website or your local course coordinator no later than 1 week prior to the class session.

CLASS ATTENDANCE AND PARTICIPATION

Because this is a required course in a professional curriculum, students are expected to attend all lectures and conduct themselves in a manner respectful of both faculty and fellow students in the classroom. The use of electronic devices such as cell phones and laptop computers for non-class-related activities is prohibited.
If you miss a class for any reason, you will be held responsible for all material covered and announcements made in your absence. It is your responsibility to be on time and remain for the entire class period so as not to be inconsiderate of your colleagues. Every student has the right to learn as well as the responsibility not to deprive others of the right to learn. If you have trouble hearing the lecture because of distractions around you, quietly ask those responsible for the distraction to stop. If the distraction continues, please let me know. The Course Coordinator and other course instructors will not hesitate to ask students who are engaged in any unproductive or disruptive activities, or activities that are unrelated to the class session (e.g., reading the newspaper) to leave the class room. A second episode of such conduct in a subsequent class session will require meeting with the Course Coordinator and the Associate Dean for Academic Affairs prior to the student being allowed to attend further class sessions.

Student attendance at the “Evaluation of Selected Articles” session on April 20 is considered mandatory. Students who attend this session AND submit Written Assignment 1 (the only graded written assignment in the course) will receive 100% for this 5% portion of the overall class grade and students not attending will receive a grade of 0% (50% if they submit Written Assignment 1). Verification of attendance at these sessions will be based solely on student signatures on attendance forms provided at the session. Verification by any other means will not be considered acceptable. Because of the importance of this class session to the application of principles taught in class, students are expected to not only attend this session, but to critically evaluate the assigned materials prior to the session.

**EXAMINATIONS AND GRADING POLICY**

Two (2) examinations are scheduled during the semester, including a cumulative final examination. The final course grade will be calculated based on the following:

<table>
<thead>
<tr>
<th>Component</th>
<th>Percentage of Final Course Grade</th>
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</thead>
<tbody>
<tr>
<td>Examination I (class sessions 1-7)</td>
<td>30% of final course grade</td>
</tr>
<tr>
<td>Final Examination (cumulative)*</td>
<td>40% of final course grade</td>
</tr>
<tr>
<td>Quizzes</td>
<td>25% of final course grade</td>
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<tr>
<td>Attendance at April 20 Class Session &amp; electronic submission of Written Assignment 1** by April 28</td>
<td>5% of final course grade</td>
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**Approximately 80% of the final examination will consist of material from class sessions 8-15.**

**Written Assignment 1** – each student is required to submit a brief assignment related to their application of biostatistical/study design biostatistics covered in class to a “real world” situation. Further information on this course assignment will be provided during one of the class sessions in February.

While changes in the point system used to calculate a student course grade are not anticipated, unanticipated events are always possible (e.g., class session cancellations, technology issues, faculty illness). In the event of such unanticipated events occurring, it is the Course Coordinator’s prerogative to make changes in how final course grades will be determined. Any such changes will be communicated immediately to all students enrolled in this course.

Letter grades in this course will be determined based on the following scale:

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<thead>
<tr>
<th>Letter</th>
<th>Percentage</th>
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<tbody>
<tr>
<td>A</td>
<td>93-100%</td>
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<tr>
<td>A-</td>
<td>90-92%</td>
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<tr>
<td>B+</td>
<td>87-89%</td>
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<tr>
<td>B</td>
<td>83-86%</td>
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<tr>
<td>B-</td>
<td>80-82%</td>
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<tr>
<td>C+</td>
<td>77-79%</td>
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<tr>
<td>C</td>
<td>73-76%</td>
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<tr>
<td>C-</td>
<td>70-72%</td>
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<tr>
<td>D+</td>
<td>67-69%</td>
</tr>
<tr>
<td>D</td>
<td>65-66%</td>
</tr>
<tr>
<td>F</td>
<td>Below 65%</td>
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</tbody>
</table>
Supplemental Course Materials

Students will be asked to complete various “assignments” during the course, including problem sets, supplemental readings, and “Mini-Quizzes”. Most of these assignments will NOT be turned in to the Course Coordinator and will NOT be used in the calculation of the student’s final course grade. These assignments are meant to re-enforce student understanding of concepts discussed in class.

Quizzes

Six class sessions have been designated as “Quiz” days on the course schedule. Class sessions from which quiz questions will be drawn are indicated on the course schedule. There will be no make-up for missed quizzes; students who miss a quiz will receive a zero for that quiz grade. At the end of the semester, the lowest quiz score for each student will be dropped. It is the prerogative of the course coordinator to drop more than one quiz scores for each student, if issues arise during the semester that are beyond the control of the course coordinator (e.g., bad weather days, technology issues).

Quizzes will be administered via the Canvas® website for this course at the beginning of each class, so be sure to bring an electronic device capable of accessing Canvas® to complete your quizzes. The official Canvas® web site for this course can be accessed either through UTDirect or via http://courses.utexas.edu. Either access point is UTEID-protected, and provides you links to the courses in which you are currently enrolled.

If you encounter problems with accessing Canvas® please contact the ITS helpdesk at: 512-475-9400 or the Canvas® Guide for Student at https://utexas.instructure.com/courses/633028/pages/welcome-to-Canvas.

Students are NOT allowed to use any notes or handout materials while taking any of the GRADED quizzes that are administered during selected classes. Use of anything that gives you an unfair advantage over other students in the class is considered scholastic dishonesty and will result in a grade of zero. Students are allowed to use calculators to do basic arithmetic calculations for all quizzes. However, cell phones with computing capability and PDAs are expressly NOT allowed for quizzes or examinations. The use of any such devices during a quiz or examination will be considered academic dishonesty and will result in a zero score on the quiz or examination (and potentially other penalties as determined by the College of Pharmacy).

NOTE: The use of devices to capture photographs of quiz questions or to save quiz content information in any other way is prohibited.

In order to cover any other potential situation, it is the policy of this course that “The use of any device which can make or send an electronic copy of any quiz material is grounds for receiving a zero on that particular quiz. Such action may also be grounds for additional penalties as determined by the Course Coordinator in consultation with the Senior Associate Dean of the College of Pharmacy.

Examinations

Examinations in this course may consist of multiple-choice, true-false, fill-in-the-blank, and short answer questions. Tests must be turned in to the instructor/proctor at the end of the examination. Answers to multiple-choice and true-false questions will be assessed based on answers indicated on the scantron sheets (if used) and NOT on answers written on the actual examination. Students are expected to arrive on time for each examination. Students arriving after an exam has been completed and turned in by another student will not be allowed to sit for the examination and may receive a score of zero for the exam. No talking will be allowed during examinations.
ALL students must take each examination at the scheduled time on the scheduled date unless the Course Coordinator has given PRIOR approval for an alternate examination time. Students who fail to take an examination as scheduled and who do not have an approved excused absence from the Course Coordinator will receive a score of zero for the examination. No exceptions will be made. It is College policy that a student must submit a “Student Request for Alternate Examination Time” form when he or she wishes to request consideration for an alternate time for an exam. This form asks the student to justify the reasons for their request. The Course Coordinator will have an opportunity to review this request and either approve or disapprove it. Forms can be obtained from any secretarial/staff member associated with the College of Pharmacy in San Antonio, Austin, El Paso, or the Rio Grande Valley or via the course Canvas® web site under “Course Documents.” Completed forms should be forwarded to Dr. Knodel via mail, fax (210-567-8328), or e-mail (knodel@uthscsa.edu) for consideration. Approval of such requests is solely the prerogative of the course coordinator, and may be contingent on provision of written documentation of the existing situation that precludes the student from taking the examination as scheduled (e.g., physician documentation of a medical condition that precludes the student from being able to take an examination). In general, only in the most extreme extenuating circumstances will approval be given to take an examination at a time other than that scheduled. In these cases the makeup examination may be, at the discretion of the Course Coordinator, in a different format than that used for the original examination. Makeup Examination 1 will be given either as soon as possible after the regularly scheduled examination date OR during Finals Week; this is the sole decision of the Course Coordinator. Again, makeup examinations will only be administered for excused absences.

Reviewing Examinations
Examinations in this course will NOT be returned to the students. Test scores will be provided to students within 2 weeks of the examination. Examination grades will be provided to each student individually by electronic means (Canvas® Gradebook). Individual scores will not be publicly posted in any manner.

Graded examinations can be reviewed by San Antonio students in the Pharmacotherapy office (see Laura Patterson) and by Austin students in the Health Outcomes & Pharmacy Practice offices (see Angela Clapper); the process for reviewing examinations in all other regions will be determined and announced by the respective local coordinators. Graded examinations will be made available for student review for a period of 2 weeks following issuance of examination grades. Any student who attempts in any manner to save examination content (e.g., use of a device to capture photographs of examination questions; handwritten copying of material from examinations) or removes an examination from the designated area for review will receive a score of zero for the examination, and may be subject to other academic penalties because of academic dishonesty. Posting course materials (handouts, slides, exams or any other course-related documents provided by course instructors) to any website (e.g., Coursehero) is not permitted.

Examination Seating Charts (Austin and San Antonio Students Only)
Due to the large number of students in both San Antonio and Austin during this course, there will be assigned seating for Examination 1; this does not apply to El Paso or the Rio Grande Valley. Most students typically will require the entire class session to complete Examination 1. Should you have any special needs that prevent you from sitting in certain locations of the classroom, please notify Dr. Knodel no later than 1 week after the first day of class. Exam seating for El Paso and Rio Grande Valley students will be determined by the local course coordinators. Books, backpacks, or bags should be placed away from the chairs, next to the walls in the rooms where the exams are administered. Items in a student’s possession during an examination are subject to inspection.
**Use of Calculators and Other Electronic Devices During Graded Quizzes and Examinations**

For Examination 1 and the Final Examination, students are allowed to use calculators to do basic arithmetic calculations, but the use of any other device (e.g., cell phones, PDAs, laptop computers) is prohibited. The use of any such device during an examination will be considered academic dishonesty and will result in a zero score on the examination (and potentially other penalties as determined by the College of Pharmacy).

In order to cover any other potential situation, it is the policy of this course that “The use of any device to make or send an electronic copy of any quiz or examination material (either during a quiz or examination or when reviewing an examination) is grounds for receiving a zero on that particular quiz or examination. Such action may also be grounds for additional penalties as determined by the Course Coordinator in consultation with the Senior Associate Dean of the College of Pharmacy.”

**Taking Examinations on Another Campus**

Course Coordinator approval is required for any student wanting to take Examination 1 or the Final Examination on a campus other than the one to which they are officially assigned/registered.

**Re-Examinations**

No re-examinations will be administered in this course and re-examination on the final exam (as described in the University’s policy on “Re-Examination Petition”) will not be an option in this course. All examinations will be retained by the course coordinator. ANY student who removes their examination or that of any other student from the examination room will receive a score of zero for the examination.

**Examination Challenges**

No challenges to examination questions will be allowed. If any question is assessed to be a "poor question" based on an item analysis of the examination, it is the prerogative of the Course Coordinator to discard such questions from the examination or accept additional answers.

**Calculators**

Calculators will be helpful during the examinations. The ONLY calculators acceptable to use during examinations are the TI-36X or TI-35X Pro calculator (which you were required to purchase for Pharmaceutics) or a calculator that does only basic arithmetic calculations (i.e., addition, subtraction, division, and multiplication). The use of statistical functions on either of these calculators is expressly prohibited; students caught using statistical functions on their calculator will be given a grade of zero on the exam.

Cell phones with computing capability and PDAs are expressly NOT allowed for examinations. The use of any such devices during an examination will be considered academic dishonesty and will result in a zero score on the examination (and potentially other penalties as determined by the College of Pharmacy). In order to cover any other potential situation, it is the policy of this course that “The use of any device which can make or send an electronic copy of any examination material (either during an examination or when reviewing an examination) is grounds for receiving a zero on that particular examination. Such action may also be grounds for additional penalties as determined by the Course Coordinator in consultation with the Senior Associate Dean of the College of Pharmacy.”

**COMMUNICATION VIA ELECTRONIC MAIL**

For students who prefer communicating with the Course Coordinator via e-mail, responses to questions related to the course are generally returned within two to three working days. In the event that you do not receive a response within that timeframe, please send another e-mail message (also verify that you
are using the correct spelling for the e-mail address) or call Dr. Knodel. If you encounter technical difficulty when sending e-mail messages to the course coordinator, please promptly notify the Course Coordinator via telephone so that the problem can be identified and resolved. For questions that require lengthy responses, students may be asked to discuss these topics in person or via telephone with Dr. Knodel.

ACADEMIC DISHONESTY

Students are expected to work independently on all graded components of this course (i.e., examinations, quizzes). Any student caught cheating will be given a grade of zero on that examination/quiz. Acts of suspected academic dishonesty will be dealt with as per the College of Pharmacy Honor Code and University regulations. Students should be aware that it is the policy of the College of Pharmacy to dismiss for at least one long semester any student determined to be involved in any flagrant scholastic dishonesty. Common examples of scholastic dishonesty include, but are not necessarily limited to, the following:

1. Copying answers from another student’s exercise or exam paper
2. The use of crib notes or crib sheets
3. Stealing copies of the examination
4. Writing notes or information for testing purposes or concealed pieces of paper, desktops, your skin, your clothing, or any other material
5. Changing answers after the examination period is completed
6. Talking to another student during the examination
7. Any act which gives a student an unfair advantage over other students on an examination
8. Use of a calculator other than that described earlier in the course syllabus during examinations

Students who violate University rules on scholastic dishonesty are subject to disciplinary penalties, including the possibility of failure in the course and/or dismissal from the University. Since such dishonesty harms the individual, all students, and the integrity of the University, policies on scholastic dishonesty will be strictly enforced. Also, you should refer to the Student Judicial Services website at http://www.utexas.edu/depts/dos/sjs/ to access the official University policies and procedures on scholastic dishonesty as well as further elaboration on what constitutes scholastic dishonesty.

COURSE CORRESPONDENCE (through Canvas®)

The official Canvas® website for this course can be accessed either through UT Direct or via http://courses.utexas.edu. Either access point is UTEID-protected and provides you with links to the courses in which you are currently enrolled. You must access this site for all course-related materials and information (lecture handouts, answers to problem sets, examination grades, course schedule changes, etc.). In addition, this website will be used for official, course-related announcements and exchange of other information. It is the responsibility of all students enrolled in this course to check their e-mail linked with the Canvas® site every business day for important course communication. Consequently, "I didn’t check my email" or returned mail with "Mailbox Full" or “user unknown” should not be a problem for any communication with students.

If you encounter any problems with accessing the Canvas® website for this course, contact the Instructional Technologies Help Desk on the Austin campus at (512) 475-9400. The course coordinator and local coordinators for this course do not have the expertise to handle such problems.
IMPORTANT: Austin, San Antonio, El Paso, and Rio Grande Valley students taking this course are registered under different course unique numbers based on their location (Austin – 60260; San Antonio – 60270; El Paso – 60265; Rio Grande Valley – 60275). In order to minimize any confusion and problems, San Antonio, El Paso, and Rio Grande Valley students have been combined with the Austin students into the Austin student course site. This should be transparent to you as a student, but if San Antonio, El Paso, or Rio Grande Valley students experience any problems and contact the ITS Help Desk, it may be necessary to let them know that the combined course site unique number is 60260.

LECTURE TAPES AND VIDEO-STREAMED RECORDINGS

Taped and video-streamed recordings of lectures are intended to facilitate learning for those students who find this type of supplementation useful; they are not a substitute for attending class. You are expected to attend all scheduled lectures in this course. However, should you miss a class or wish to view a lecture for any other reason, tapes of all class lectures will be available throughout the semester UNLESS an official College of Pharmacy policy is enacted which reduces the length of time that lecture videotapes are available.

Videorecordings of class sessions in this course are made available by the College of Pharmacy, and they are intended solely for the purpose of review by students currently enrolled in this class. Faculty and students utilizing class videorecordings should be careful to not compromise the privacy of either themselves or other users (http://registrar.utexas.edu/students/records/ferpa), or the rights of the presenter. Any additional distribution of these recordings (regardless of format) is prohibited without the written and signed permission of the presenter. Students are free to make their own recordings of lectures unless specifically prohibited from doing so by the presenter. Any additional distribution of College- or student-generated recordings (regardless of format) is prohibited without the written and signed permission of the presenter and students identifiable on the recording. Likewise, all course materials developed by the faculty member (e.g., handouts, slides) are the intellectual property of that faculty member and cannot be distributed further without the permission of that faculty member.

NOTE: On rare occasions, system mishaps occur that result in the failure of a lecture to be recorded. Students should NOT assume that videorecordings of all lectures will always be available. This is one reason why class attendance is strongly encouraged.

IMPORTANT: The Course Coordinator and local coordinators for this course do not have the expertise to troubleshoot video-streaming problems. If you experience problems, you can contact John Reineke in the LRC via e-mail (reinekej@mail.utexas.edu) or by phone (512) 475-9175.

REQUEST FOR APPROPRIATE ACCOMMODATIONS

“Students with disabilities may request appropriate academic accommodations from the Division of Diversity and Community Engagement, Services for Students with Disabilities at 471-6259 (voice) or 232-2937 (video phone) or www.utexas.edu/diversity/ddce/ssd.” 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, it will be assumed that the student is not requesting special accommodations for that exam, and will be expected to take the exam with the rest of the class at the regularly scheduled exam time.
Students who qualify for such accommodations should notify Dr. Knodel within 1 week of the start of class.

EMERGENCY PROCEDURES

It is vitally important that you familiarize yourself with all exit doors in each of the classrooms and buildings you occupy. Remember that the nearest exit door may not be the one you used when entering the building.

While the following recommendations from the Office of Campus Safety and Security (512-471-5767) http://www.utexas.edu/safety/ are written with regard to students on the Austin campus, they provide useful guidance for students on ALL campuses.

- Occupants of buildings on The University of Texas at Austin campus are required to evacuate buildings when a fire alarm is activated. Alarm activation or announcement requires exiting and assembling outside.
- Students requiring assistance in evacuation shall inform their instructor in writing during the first week of class.
- In the event of an evacuation, follow the instruction of faculty or class instructors.
- Do not re-enter a building unless given instructions by the following: Austin Fire Department, The University of Texas at Austin Police Department, or Fire Prevention Services office.
- If you have concerns about another student’s behavior, particularly if you believe they could potentially harm themselves or others, do not hesitate to contact the Behavior Concerns Advice Line (BCAL): 512-232-5050

IMPORTANT DEADLINES

February 2  Request for specific seating assignment for examination 1 (Austin & San Antonio students)

Request to take Examination 1 on a campus other than the one to which you are officially assigned/registered

Request for appropriate academic accommodations (students with disabilities)

April 28  Submission of Written Assignment 1 related to the application of biostatistical/study design concepts covered in class to a “real world” situation

May 1  Request to take Final Examination on a campus other than the one to which you are officially assigned/registered
Advanced Evidence-Based Practice (PHR 295R)
Spring, 2015
(Last Updated: January 20, 2015)

Recommended reading from *Basic and Clinical Biostatistics* (4th edition) is indicated for selected lectures.

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<th>SESSION</th>
<th>DATE</th>
<th>TOPIC</th>
<th>INSTRUCTOR</th>
</tr>
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</table>
| JANUARY | 1 26 | Practice Quiz (no credit) Course Overview & Descriptive Statistics  
Chapter 3 (pages 26-48)  
Chapter 3 (sections 1-12, 20)* | Dr. Knodel |
| FEBRUARY | 2 2 | Practice Quiz (no credit) Descriptive Statistics; Introduction to Probability  
Chapter 4 (pages 63-68)  
Chapter 4 (Sections 1, 2, 7)* | Dr. Knodel |
| | 3 9 | QUIZ (Covers Sessions 1 & 2) Probability  
Chapter 4 (pages 63-68)  
Chapter 4 (Sections 1, 2, 7)* | Dr. Knodel |
| | 4 16 | Binomial Distribution; Normal & Sampling Distributions  
Chapter 4 (pages 72-90)  
Chapter 4 (Sections 9-12)* | Dr. Knodel |
| | 5 23 | QUIZ (Covers Sessions 3 & 4) Hypothesis Testing & Statistical Analysis of Data: t-Distribution  
Chapter 5 (pages 96-118); Chapter 6 (pages 135-142)  
Chapter 5 (Sections 1, 2, 4-6, 8-11, 13-14)*  
Chapter 6 (Sections 5, 6)* | Dr. Knodel |
| MARCH | 6 2 | QUIZ (Covers Session 5) Analysis of Variance (ANOVA); Regression and Correlation  
Chapter 7 (pages 164-180) & Chapter 8 (pages 190-220)  
Chapter 7 (Sections 1-11, 16)* &  
Chapter 8 (Sections 1-4, 10-13, 15, 20-21)* | Dr. Knodel |
| | 7 9 | QUIZ (Covers Session 6) Non-Parametric Statistical Tests; Common Epidemiologic Measures & Survival Analysis  
Chapter 5 (pages 119-125, Chapter 6 (pages 139-154), & Chapter 9 (pages 223-242)  
Chapter 5 (Section 16)*, Chapter 6 (Sections 8, 10-12)* &  
Chapter 9 (Sections 1-11)* | Dr. Knodel |
### MARCH

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<th>16-20</th>
<th>SPRING BREAK</th>
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| 8     | 23           | Review of Problem Set 1 |
|       |              | Review of Basic Study Designs and Common Study Biases |
|       |              | Dr. Knodel |

| 9     | 30           | QUIZ (Covers Session 8) |
|       |              | Data Measurement and Collection; Outcome Measures |
|       |              | Dr. Knodel |

**APRIL**

| 10    | 6            | EXAM I (Sessions 1-7) |
|       |              | Chapter 12 (Sections 1, 3-9) |
|       |              | Dr. Knodel |

| 11    | 13           | Data Presentation & Interpretation; Systematic Approaches to Literature Evaluation |
|       |              | Chapter 13 |
|       |              | Chapter 13* |
|       |              | Dr. Knodel |

| 12    | 20           | Evaluation of Selected Articles (not televised) ‡ |
|       |              | Dr. Knodel (SA) |
|       |              | Dr. Seltzer (SA) |

| 13    | 27           | QUIZ (Covers Session 11) |
|       |              | Systematic Reviews & Meta-Analyses |
|       |              | Chapter 10 (pages 267-271) |
|       |              | Dr. Young |

**MAY**

| 14    | 4            | Evaluation of Promotional Materials from Pharmaceutical Companies (70 minutes); Miscellaneous Topics in Study Design and Data Interpretation; Final Examination Review (30 minutes) |
|       |              | Dr. Young |
|       |              | Dr. Knodel |

| 15    | TBA          | FINAL EXAMINATION |
|       |              | Dr. Knodel |

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* Recommended reading from *Basic and Clinical Biostatistics* online version (available via [http://accesspharmacy.mhmedical.com.ezproxy.lib.utexas.edu/book.aspx?bookid=356](http://accesspharmacy.mhmedical.com.ezproxy.lib.utexas.edu/book.aspx?bookid=356)). If you are unable to get to the textbook through this link, please go to Access Pharmacy (electronic database available through UT Libraries; click on Textbooks, and then click on *Basic & Clinical Biostatistics*).

‡ Articles for evaluation will be made available for Austin and San Antonio students via the course Blackboard website at least 1 week prior to the class session. Articles for El Paso and Rio Grande Valley students will be made available by the local course coordinators at least 1 week prior to the class session.

**NOTE:** Examination material will not be taken from any of the articles evaluated during session 12. Any conceptual information presented during these sessions that augments material covered during regular class sessions may be included on the final examination.