Integrated Basic and Applied Pharmacokinetics (PHM 390N)
&
Integrated Basic & Applied Pharmacokinetics Laboratory (PHM 190P)
Spring 2020

Course Coordinator: Mo Maniruzzaman, Ph.D
   Pronouns: He/him/his
   Email: M.Maniruzzaman@austin.utexas.edu
   Phone: 512-232-4743
   Office: PHR 4.214A
   Office Hours:

Course Unique Number(s): PHM390N and PHM190P

Classroom(s): PHR 3.106

Class Days/Times:
   Lecture: Tuesday and Thursday 9.30 am to 10.50 am
   Prelab: Thursdays at 8.30 am (voluntary)
   Labs: To be completed on canvas

Course Faculty:

   Jim Koeller, M.S.
   San Antonio-McDermott Building
   Telephone: (210) 240-3182 (cell)
   E-mail: koeller@uthscsa.edu

   Steve Saklad, PharmD
   saklad@uthscsa.edu

Teaching Assistants:

   Academic Assistants/Advanced Academic Assistants: N/A
Course Description:
This course has been completely redesigned for this year, preparing for the upcoming catalog change for 2021. This is a 3-credit hour course, with a parallel running 1 credit hour lab.

The course is designed to introduce students to the primary biological processes (absorption, distribution, metabolism, and excretion) that govern the fate of a drug after its administration, and to explain those processes in mathematical terms and then understand the clinical implications of those mathematical determinations. In addition to focusing on what the body does to a drug (pharmacokinetics), it will also provide a brief introduction as to what the drug does to the body (pharmacodynamics). This course will focus on concepts and appropriate use of pharmacokinetic tools (equations, calculations) to develop individualized drug dosage regimens and determine pharmacokinetic parameters. Emphasis will also be placed on understanding how to apply these basic principles to patient-treatment scenarios. This course will focus on specific agents where drug level monitoring is still used for therapeutic monitoring and applying principles to predict how factors (e.g., disease, organ function, genetics, diet, medications) may influence the biological processes that impact the pharmacokinetics of a drug. As identified in the course title, this class will integrate basic and clinically applied pharmacokinetics by including lectures from pharmaceutics (the theory of pharmacokinetics) and clinical (applying kinetics to the patient care setting and drug treatment).

Please note that this course carries the University's Quantitative Reasoning flag. This flag course is designed to equip you with skills that are necessary for understanding the types of quantitative arguments you will encounter in life. You can expect a substantial portion of your grade to come from your use of quantitative skills to analyze pharmacokinetic problems.

Course Prerequisites/Co-Requisites:
1. Foundations in Pharmacokinetics – by Adam Persky. This textbook is available for download from Canvas (https://utexas.instructure.com). You can find support in using Canvas at the ITS Help Desk at 475-9400, Monday-Friday 8AM – 6PM.
2. Lecture and reference materials will be available and posted throughout the duration of the course on Canvas website
3. You must have a personal laptop available during lecture. Quizzes will be taken on Canvas so you must have your own PC in class. Other in-class exercises will also require a laptop
4. Texas Instruments TI 36X-Pro calculator. This is the same calculator that was required for PHR 342C. You must have this specific calculator for admittance to each exam. No other calculator will be allowed.

Canvas:
All course materials, syllabus, timeline, etc., will be located on Canvas under the course title. All announcements will be made on Canvas, so make sure who review your notices.

NOTE: Once TA’s for this class are assigned, their names, contact info and office hours will be posted on Canvas.

Timeline:
Please refer to the color-coded timeline provided. It outlines the entire course, shows all the lectures (and lecturers), and dates for the quizzes and exams.
Lectures: (80 min)
The class is 80 minutes long. For most of the lectures, the actual lecture time will be 50 - 60 minutes, with the remaining time used to be used to go over actual examples in class.

Thursday Morning Pre-Lab: (Review Sessions)
Thursday morning pre-lab is scheduled at 8:30am, just prior to the Thurs., lecture time. This time is being reserved for PRN sessions that may be needed to review math, or other materials that students are may need additional help with. These sessions will be announce on Canvas prior to the session. Attendance will be voluntary. Faculty and/or TA’s may lead these sessions

-Current Scheduled Voluntary Pre-Lab Sessions:
  1/30/19 - Mo/TA’s – Math Review
  2/13/19 - Mo/TA’s – Math Review
  2/20/19 - Mo/TA’s – Math Review
  2/27/19 - Mo/TA’s – Math Review
  3/19/19 - Mo/TA’s – Math Review

Quizzes
There will be 5 quizzes during the semester. Each quiz will be worth 25 points. At the end of the semester, the lowest quiz score will be dropped, leaving 4 quizzes for a total of 100 points. The dates for all quizzes will be listed at the beginning of the semester, so there should be no reason for missing a quiz. NOTE: There are NO MAKEUP QUIZZES. If you miss a quiz, that would be then be the dropped quiz. If you miss more than one quiz that can be dropped (without formal medical justification), you will receive a 0.

Course Success:
Chapter readings from the textbook are suggested prior to each class. The class session format is a review of the topics with interactive Q&A followed by case studies during which students are expected to be able to apply the reading the lecture material. Attendance and active participation in class discussions will provide students with the opportunity to seek clarification and readily apply the material.

Course Website:
This course uses Canvas, a Web-based course management system in which a password-protected site is created for each course. Canvas will be used to distribute course materials, to communicate, and to post grades. Canvas is available at http://canvas.utexas.edu. Support is provided by the ITS Help Desk at 475-9400 Monday through Friday 8 am to 6 pm.

Course Communications:
Official course communications will take place in class, through e-mail and on the course Canvas website. Students are advised to configure their Canvas settings to forward course announcements to their official e-mail address. Canvas uses only the e-mail address listed on the official University of Texas directory, so please check the University’s online directory to ensure your e-mail address is listed correctly.

Course Video Recordings:
A video capture system will be used in this course. The video streams are offered as a supplement to lecture attendance, not as a substitute. Therefore, if technical problems preclude recording the lecture, the lecture will not be re-recorded, but students are still responsible for the content of the lecture. Lecture recordings will be available to you for the balance of the semester unless otherwise specified. Do not expect to have access after the semester is over.

Faculty and students utilizing class video recordings 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. 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 (handouts, PowerPoints, etc.) are the intellectual property of that faculty member and cannot be distributed further without the permission of that faculty member.

Viewing video-streamed recordings of lectures can be streamed on campus or can be viewed off-campus using a DSL broadband connection. Your faculty are not in a position to troubleshoot your video-streaming problems, so please do not ask them to do so; rather, you should access the LRC’s help website at https://www.utexas.edu/pharmacy/help/ to address those problems. You will find additional information about the lecture capture system or can report technical issues at http://sites.utexas.edu/phr-lrc/

Course Policies

Course Grading Policies:

There will be two, 3-hour evening examinations and a final exam covering course material since the second exam plus a comprehensive section (the final exam will also be 3 hours). All exams will be worth 100 points. Students must take all 3 exams.

Students must arrive on time for examinations. All instructions and corrections will be made at the beginning of the examination period and will not be repeated. Students arriving after a test has been handed in by another student will not be allowed to sit for the examination and may receive a score of zero for the exam.

The only items allowed during examinations are pencils and a Texas Instruments TI 36X calculator. Books, bags, and coats will need to be left in a location designated by the faculty proctor. No student may possess a cell phone, digital music player or any other type of electronic device during the exam. Students caught with any of these devices will be reported to the Dean of Students and may receive a score of zero for that exam.

Absences on any test day must be approved by the Course Director prior to the scheduled test. Requests must be in emailed to Prof. Koeller. If permission is granted by telephone at the last minute (e.g. due to illness), it is the student's responsibility to confirm the request by email as soon as possible. For very special College activities, alternative date/time for the exam will be set by the Course Director. An unexcused absence from an exam may result in a grade of zero for that exam.

All students must take the final examination. The final will consist of materials covered since the second exam and cumulative materials from the rest of the semester.

A designated person for the course will retain all examinations during the semester. Any student who removes an examination, equation sheets or scratch paper from the testing room may receive a score of 0 for the exam. Students will be provided an opportunity to view their exams after the test (see below).

Answers to multiple choice questions are based on the answers placed on the scantron sheets and not answers written on the test papers. All tests are taken to the Scanning Office for grading. After the tests have been graded and an item analysis is performed, questions may be discarded at the discretion of the Course Coordinator. Only after that time, may the students request a challenge to a specific question. All challenges must be sent to the instructor who wrote the question and the course director must be CC’ed. Any changes to the exam will be done by the course director. A 15 min. period at the beginning of a class (after the exam) will be used for students to review their exams. Exams will be returned at the end of that review. No pictures, etc., can be taken of the exam.
Final Exam Re-Examination Policy

The re-examination policy for this course will follow the General Information Catalog (GIC) policy for the University, which reads as follows: "Only a student who has a grade average of at least a C on all class work and lab work submitted before the final exam may request a temporary delay of the final course grade because he or she failed the final examination, which is the examination given during the final exam period as printed in the official examination schedule."

"If the petition is denied by the instructor, the student’s final course grade will remain as originally determined. If the instructor grants the petition, the grade on the reexamination will be substituted for the grade on the original exam in determining the student’s final course grade, provided the student earns at least a C on the reexamination. If the grade on the reexamination is less than a C, a final course grade of F must be recorded."

If a re-examination of the final must be given, the student must meet with the course director and take the exam prior to the start of the following semester.

Calculation of Final Scores:

- Quizzes: 25%
- Examination #1: 25%
- Examination #2: 25%
- Comprehensive Final: 25%

100%

Posting Class Scores

Following each examination, the scores will be posted on the password-protected course Canvas website.

Grading Policy:

<table>
<thead>
<tr>
<th>Grade</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>93 -100%</td>
</tr>
<tr>
<td>A-</td>
<td>90 -92%</td>
</tr>
<tr>
<td>B+</td>
<td>87 -89%</td>
</tr>
<tr>
<td>B</td>
<td>83 -86%</td>
</tr>
<tr>
<td>B-</td>
<td>80 -82%</td>
</tr>
<tr>
<td>C+</td>
<td>77 -79%</td>
</tr>
<tr>
<td>C</td>
<td>73 - 76%</td>
</tr>
<tr>
<td>C-</td>
<td>70 - 72%</td>
</tr>
<tr>
<td>D+</td>
<td>67 - 69%</td>
</tr>
<tr>
<td>D</td>
<td>63 - 66%</td>
</tr>
<tr>
<td>D-</td>
<td>60 - 62%</td>
</tr>
<tr>
<td>F</td>
<td>Below 60%</td>
</tr>
</tbody>
</table>

A curve may be used in assigning grades in this class at the discretion of the Course Director. No test scores are "dropped" and no "re-takes" will be offered for poor performance. NOTE: once the final grade is determined, there will be NO Rounding of the final numeric grade to obtain a higher letter grade (eg., an 89.89 is a B+, and will not be rounded to 90 for an A-).

Attendance:
- Class Attendance: Mandatory
- Lab Attendance: Mandatory

Excused Absences:
The only absences that will be considered excused are for religious holy days or extenuating circumstances due to an emergency. If you plan to miss class due to observance of a religious holiday, please let the course coordinator know at least two weeks in advance, preferably at the beginning of the semester. You will not be penalized for this absence, although you will still be responsible for any work you will miss on that day if applicable. Check with the course coordinator for details or
Arrangements.

**Attendance at Professional Meetings:**
It is the student’s responsibility to ASK permission IN ADVANCE if they plan to attend a professional meeting that would necessitate missing an exam, assignment, or other required course activity. It is at the discretion of the course coordinator as to whether to grant permission and allow the student to make up any missed work.

**Cell Phones:** Cell phones must be put away during class. We will have a break about half way through the lecture and this time may be used to catch up on texts and e-mail.

**Laptops:** Laptop computer use during class is strictly limited to viewing lecture handouts and taking notes.

**PHM 190P Laboratory:**

**Lab Sections:**
Lab sections are for grading purposes only (Note: All are listed in the catalog as a Monday lab)

- Monday (Unique)

The 190P laboratory will be run in parallel to the lecture course. NOTE: In the catalog PHM 190P is a separate 1 credit course and thus there will be a separate grade for labs completed. There will be **10 labs** that run parallel to lecture course. The labs will test the application of specific theory or clinical information. Specific lab titles will be provided at the start of the semester. Each lab will be available on Canvas Monday morning at 9AM and due Thurs., by 5:00PM sharp. You can work by yourself or in groups, but EVERYONE must upload their own lab answers for grading by Thurs., evening. There will be NO MAKEUP labs! You will have 4 days to complete the lab, and the lab dates will be posted at the beginning of the semester, so all students will be expected to complete all 10 labs. Each lab will be worth 10 points, for a total of 100 points. All lab grades will be posted within one week of the labs completion. A spread sheet is used to designate why points were taken off. If you have an issue with your grade, you will have 5 days after their posting to contract the grading TA and try and resolve your issue. If, with that discussion, the issue cannot be resolved, you will need to bring your issue to me. I will resolve the issue within 72 hours, and that grade will then be final. If there are no issues raised within the 5 day window after the lab grade is posted, those grades will then be final, and further changes will not be allowed. As noted, the lab grade will be a separate grade, and the final grade will be based on the following grading scheme:

<table>
<thead>
<tr>
<th>Grade</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>90 - 100</td>
</tr>
<tr>
<td>B</td>
<td>80 - 90</td>
</tr>
<tr>
<td>C</td>
<td>70 - 80</td>
</tr>
<tr>
<td>D</td>
<td>60 - 70</td>
</tr>
<tr>
<td>F</td>
<td>Below 60</td>
</tr>
</tbody>
</table>

NOTE: As with the lecture course, there will be NO ROUNDING UP of grades.

**University of Texas Honor Code**
The core values of The University of Texas at Austin are learning, discovery, freedom, leadership, individual opportunity, and responsibility. Each member of the university is expected to uphold these values through integrity, honesty, trust, fairness, and respect toward peers and community.

**Students with Disabilities**
Students with disabilities will need to request appropriate academic accommodations from the Division of Diversity and Community Engagement, Services for Students with Disabilities at 471-6259 (voice), 232-2937 (video phone) or http://www.utexas.edu/diversity/ddce/ssd/. Once you have your accommodation letter or if you already have your letter, please provide it to the course director as soon as possible, so adjustments to exams can be planned.

Use of E-Mail for Official Correspondence to Students
I will use e-mail for official course announcements. You are required to check the e-mail account officially listed with the University on a regular basis, but no less than every day during the semester. You are responsible to keep the university informed about changes to your e-mail address.

Religious Holy Days
By UT Austin policy, you must notify me of your pending absence at least fourteen days prior to the date of observance of a religious holy day. You will be responsible for any ‘activities’ missed, but for a quiz or an exam, the course coordinator will make alternative arrangements.

Behavior Concerns Advice Line (BCAL)
If you are worried about someone who is acting differently, you may use the Behavior Concerns Advice Line to discuss by phone your concerns about another individual’s behavior. This service is provided through a partnership among the Office of the Dean of Students, the Counseling and Mental Health Center (CMHC), the Employee Assistance Program (EAP), and The University of Texas Police Department (UTPD). Call 512-232-5050 or visit www.utexas.edu/safety/bcal/

Emergency Evacuation Policy
• Occupants of buildings on the UT Austin campus are required to evacuate and assemble outside when a fire alarm is activated or an announcement is made. Please be aware of the following policies regarding evacuation: Familiarize yourself with all exit doors of the classroom and the building. Remember that the nearest exit door may not be the one you used when you entered the building.

• If you require assistance to evacuate, inform me in writing during the first week of class. In the event of an evacuation, follow my instructions or those of class instructors. Do not re-enter a building unless you’re given instructions by the Austin Fire Department, the UT Police Department, or the Fire Prevention Services office.
Exam Policies

ExamSoft®:
Students are responsible for the maintenance of their approved personal devices and Examplify® software. Students are required to bring approved personal devices and privacy screens for all exam and indicated assignments. Lack of preparation may result in an inability to take the exam, adjustments to course grades at the discretion of course coordinators, and/or an unprofessional conduct referral.

Any problems with Examplify® or ExamSoft® should be addressed via phone to Student Tech Support at 866.429.8889, email to support@examsoft.com, or live chat at www.examsoft.com. Do not expect your faculty to troubleshoot your technology issues.

Students found improperly using ExamSoft® or Examplify® to gain unfair academic advantage are violating the College of Pharmacy Honor Code. Violations such as “academic dishonesty” and/or “professional misconduct” would include, but are not limited to using a classmate’s login/password, tampering with exam files, and falsifying upload or download information, or any attempt to circumvent the security features of the software.

Students should refer to the ExamSoft® Policies Handbook for a complete listing of policies related to exams, quizzes and assignments.

Exam Format:
Exam questions will cover learning objectives given at the beginning of each topic. Exam questions may include: multiple choice, true/false, fill-in-the-blank, matching and/or short answer.

Exam Grading:
Grading of exams, along with statistical analysis and review of exam questions, will be the responsibility of the course coordinator and faculty, who may choose to grant credit for statistically poor questions.

Exam Return:
No examinations will be returned. Exam scores will be posted on the course Canvas site.

Exam Review: secure immediate review, and secure delayed review

Exam Reconsideration Requests: Comment section for question during exam, during exam review session.

Final Exam Review of Old Exams:
Old exams will not be available for review prior to the final. Students should attend the review sessions for the individual exams during the semester.

Final Exam Re-Examination Policy:
There is no final exam reconsideration requests or re-examinations allowed for this course.

Request for an Alternate Exam Time:
No allowances will be made for an exam being missed, other than documented illness or emergency, or by prior approval by the Course Coordinator. An unexcused absence from an exam may result in a grade of “zero” for that exam. Any student requesting accommodation for an upcoming exam must submit the request to the course coordinator using the online form posted on Canvas® at least one month prior to the exam.

Note the new policy that an alternate exam time will be considered only if the student documents that they can’t be
physically present on the date the exam is already scheduled.¹

**Academic Integrity:**
Students who violate University rules on academic dishonesty are subject to disciplinary penalties, including the possibility of failure in the course and/or dismissal from the University. See College Policies and Information, and University Policies and Information for more details.

**Religious Holy Days**
If you will miss a class, an examination, a work assignment or a project in order to observe a religious holy day, you must notify the course coordinator the first week of class so that arrangements for all such students can be made for the full semester.

**Services for Students with Disabilities:**
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 [https://diversity.utexas.edu/disability/](https://diversity.utexas.edu/disability/). 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.

Please provide a copy of the letter to the course coordinator and the office of the Associate Dean for Academic Affairs as soon as possible after receipt.
# Course Schedule

<table>
<thead>
<tr>
<th>Date</th>
<th>Instructor</th>
<th>Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/21/2019</td>
<td>Koeller/Mo</td>
<td>Syllabus Review/Technology enhanced learning (TEL)/Virtual Learning Environment (VLE)/Conceptualisation of PK</td>
</tr>
<tr>
<td>1/23/2019</td>
<td>Mo</td>
<td>Basic Principles of PK and examples of TEL and VLE</td>
</tr>
<tr>
<td>1/28/2019</td>
<td>Mo</td>
<td>Distribution concepts and practice examples</td>
</tr>
<tr>
<td>1/30/2019</td>
<td>Mo</td>
<td>Clearance concepts and practice examples</td>
</tr>
<tr>
<td>2/4/2019</td>
<td>Mo</td>
<td>Intravenous bolus and practice examples</td>
</tr>
<tr>
<td>2/6/2019</td>
<td>TA's</td>
<td>Homework #1 and In-Class Review</td>
</tr>
<tr>
<td>2/11/2019</td>
<td>Mo/TA's</td>
<td>Quiz 1 and In-Class Review</td>
</tr>
<tr>
<td>2/13/2019</td>
<td>Mo</td>
<td>IV Infusion and practice examples</td>
</tr>
<tr>
<td>2/18/2019</td>
<td>Mo</td>
<td>Oral absorption and practice examples</td>
</tr>
<tr>
<td>2/20/2019</td>
<td>Mo</td>
<td>Metabolism/Hepatic Clearance and practice examples</td>
</tr>
<tr>
<td>2/27/2019</td>
<td>Mo</td>
<td>Homework #2/Quiz 2 and In-Class Review</td>
</tr>
<tr>
<td>3/3/2019</td>
<td>Mo</td>
<td>Multiple Dosing #1 and practice examples</td>
</tr>
<tr>
<td>3/5/2019</td>
<td>TA's</td>
<td>Homework #3 and In-Class Review</td>
</tr>
<tr>
<td>3/10/2019</td>
<td>Mo/TA's</td>
<td>Quiz 3 and In-Class Review</td>
</tr>
<tr>
<td>3/12/2019</td>
<td>Mo</td>
<td>Multi-Compartments and practice examples</td>
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<tr>
<td>3/16/2019</td>
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<tr>
<td>3/20/2019</td>
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<td></td>
</tr>
<tr>
<td>3/24/2019</td>
<td>Mo</td>
<td>Non-Linear PK and practice examples</td>
</tr>
<tr>
<td>3/26/2018</td>
<td>Mo</td>
<td>Basic Pharmacodynamics and practice examples</td>
</tr>
<tr>
<td>3/31/2019</td>
<td>TA's</td>
<td>Homework #4 and In-Class Review</td>
</tr>
<tr>
<td>4/2/2019</td>
<td>Mo/TA's</td>
<td>Quiz 4 and In-Class Review</td>
</tr>
<tr>
<td>4/7/2019</td>
<td>Koeller</td>
<td>Creatine/Creatine Clearance/Clinical Determination of Renal Function</td>
</tr>
<tr>
<td>4/9/2019</td>
<td>Koeller</td>
<td>IV Dosing in Normal Renal Function/In 'PK Monitored' Drugs</td>
</tr>
<tr>
<td>4/14/2019</td>
<td>Koeller</td>
<td>Drug Dosing in Renal Dysfunction and practice examples</td>
</tr>
<tr>
<td>4/16/2019</td>
<td>Saklad</td>
<td>(Evening Exam 1 7:00 - 10:00pm) Phenotoin #1 and practice examples</td>
</tr>
<tr>
<td>4/21/2019</td>
<td>Saklad</td>
<td>Phenotoin #2 and practice examples</td>
</tr>
<tr>
<td>4/23/2019</td>
<td>Saklad</td>
<td>Psychotropics and practice examples</td>
</tr>
<tr>
<td>4/28/2019</td>
<td>TBD</td>
<td>Vancomycin and practice examples</td>
</tr>
<tr>
<td>4/30/2019</td>
<td>TBD</td>
<td>Aminoglycosides and practice examples</td>
</tr>
<tr>
<td>5/5/2019</td>
<td>TBD</td>
<td>Miscellaneous Agents and practice examples</td>
</tr>
<tr>
<td>5/7/2019</td>
<td>Koeller</td>
<td>Quiz 5 and In-Class Review</td>
</tr>
<tr>
<td></td>
<td>TBD</td>
<td>Final EXAM (40% Lecture after exam #2/60% Comprehensive)</td>
</tr>
</tbody>
</table>