

VTPP 625 SECTION 500  
PHARMACOLOGY  
Syllabus

Discussions: Tuesday & Thursday 9:35 to 10:50, VENI 106A

Instructor: JD Herman ([jherman@cvm.tamu.edu](mailto:jherman@cvm.tamu.edu))  
Office: 316 VID  
Number: 979/862-7765  
Office Hours: TTh 8:30 – 9:30 or by appointment

Textbook: *Lippincott's Illustrated Reviews: Pharmacology*, 6<sup>th</sup> edition, Lippincott, Williams, & Wilkins, ISBN – 13: 978-1-4511-9177-6

Course Goal: To understand basic pharmacologic concepts related to administration, absorption and elimination of pharmaceutical compounds as well as mechanisms of action of select classes of drugs. To integrate pharmacology with physiology to further understand how various medications impact on the body.

Student Learning Outcomes:

By the end of this course at student will be able to:

- Explain the processes of absorption, distribution, metabolism, and elimination of the pharmacologic compounds covered in the course.
- Calculate the effects of dosing interval, route of administration, etc., on therapy.
- Understand the mechanisms of action of the drugs covered in this course.
- Discuss contraindications, adverse reactions and therapeutic outcomes for the drugs covered in this course.

Website: [eCampus.tamu.edu](http://eCampus.tamu.edu)

Course

Grading:	Exam 1 -	100 pts
	Exam 2 -	100 pts
	Exam 3 -	100 pts
	Final Exam -	150 pts
	<u>Article Review (x2)</u>	<u>100 pts</u>
	Total -	550 pts

A = 495 – 550 pts

B = 440 – 494 pts

C = 385 – 439 pts

D = 330 – 384 pts

F = < 330 pts

Exams: Three multiple-choice exams worth 100 points each and one multiple-choice final will constitute 450 points out of 550. Please bring a #2 pencil to all exams. A scantron will be provided. In the event that calculations are required, only a non-programmable calculator will be allowed. Cell phones, tablets or other devices will not be allowed during the exams. Exams will be reviewed in class.

Article Reviews

Students will select 2 research articles in the area of pharmacology and write a critical analysis paper on their topic.

Summary: Please write a summary of the journal article not to exceed 1600 words. This summary should cover the following points:

- 1) Why was the research undertaken? What was known prior to conducting the study?
- 2) What was the hypothesis for the research (ie, what did the authors expect to discover through the research)?
- 3) What techniques or experiments were done to answer the hypothesis?
- 4) What were the conclusions or findings of the research?
- 5) What questions were answered, what new questions were raised?

Critique: Please write a 1600-word critique of the experimental design and techniques found in the research article. This critique should comment on: the appropriateness of the experiments for answering the hypothesis; the outcomes of the study; how the authors could have improved the research design; how the article relates to what has been learned in class about the pharmacologic topic.

Format: Please type your report in Word using 11 point Arial or Times New Roman font. The margins of the report should be 1 inch on all sides. Please do not justify your text as this is very difficult to read! Clearly indicate at the top of the report which article is being assessed. Within the body of the report, clearly demarcate the summary and critique paragraphs.

Submit the topic of your articles to Dr. Herman for approval prior to writing the article.  
Due Dates:

All Reviews must be submitted through eCampus

Bonus points: A total of 50 additional points can be earned by correctly answering questions in class using the assigned iClicker system. Questions will be asked at the beginning and end of each class period for a total of at least 2 questions per day and will cover the day's assigned material. Answering all questions correct for the day will result in earning 2 points. Answering less than all of the questions correctly will result in an appropriate fraction of points to be awarded. No points will be awarded for answering all of the questions for a class period incorrectly.

### Americans with Disabilities Act (ADA) Policy Statement

The Americans with Disabilities Act (ADA) is a federal anti-discrimination statute that provides comprehensive civil rights protection for persons with disabilities. Among other things, this legislation requires that all students with disabilities be guaranteed a learning environment that provides for reasonable accommodation of their disabilities. If you believe you have a disability requiring an accommodation, please contact Disability Services, currently located in the Disability Services building at the Student Services at White Creek complex on west campus or call 979-845-1637. For additional information, visit <http://disability.tamu.edu>.

### Academic Integrity Statement

"It is the responsibility of students and instructors to help maintain scholastic integrity at the university by refusing to participate in or tolerate scholastic dishonesty."

***"An Aggie does not lie, cheat, or steal or tolerate those who do."***

*All examinations in this course are closed book, closed note, and closed neighbor exams. Video recording devices and other technological means may be used to supplement documentation of acts involving Scholastic Dishonesty. The instructors of this course regard Scholastic*

*Dishonesty as a very serious offense and disciplinary action will be taken. Sanctions will include a grade of zero on the examination and a grade of "F\*" in the course.*

**Folks: do not be confused, the instructor does not tolerate cheating. If you engage in an act of scholastic dishonesty, there is a very high probability that you will be caught. Almost every semester, one or more students fail to take this warning seriously. Please do not jeopardize your reputation, academic studies or future professional career.**

For additional information, please visit: <http://aggiehonor.tamu.edu>.

#### Absence Policy:

Class attendance is expected. Your arrival to the class on time will be appreciated. Should you arrive late, please enter via the door at the back of the classroom and quietly apologize to the students who you may disrupt as you take your seat in the classroom. If the first in-class quiz question has been completed, you will not have the opportunity to answer this question.

"The university views class attendance as an individual student responsibility. Students are expected to attend class and to complete all assignments." University rules related to excused and unexcused absences are located on-line at <http://student-rules.tamu.edu/rule07>."

Make-up examinations will only be given for excused absences. The format for make-up examinations will not necessarily be the same as for scheduled examinations; the format will be at the instructor's discretion (eg. short answer, essay, oral, etc.). Note: An Explanatory Absence from Class (<http://shs.tamu.edu/attendance>) does not constitute a University-approved excuse for a major exam.

The instructor will designate the date and time of make-up examinations.

#### Make-up Policy:

If an absence is excused, the instructor will either provide the student an opportunity to make up any quiz, exam or other work that contributes to the final grade or provide a satisfactory alternative by a date agreed upon by the student and instructor. If the instructor has a regularly scheduled make up exam, students are expected to attend unless they have a university approved excuse. The make-up work must be completed in a timeframe not to exceed 30 calendar days from the last day of the initial absence.

The reasons absences are considered excused by the university are listed below. See Student Rule 7 for details (<http://studentrules.tamu.edu/rule07>). The fact that these are university-excused absences does not relieve the student of responsibility for prior notification and documentation. Failure to notify and/or document properly may result in an unexcused absence. Falsification of documentation is a violation of the Honor Code.

- 1) Participation in an activity that is required for a class and appears on the university authorized activity list at <https://studentactivities.tamu.edu/app/sponsauth/index>
- 2) Death or major illness in a student's immediate family.
- 3) Illness of a dependent family member.
- 4) Participation in legal proceedings or administrative procedures that require a student's presence.
- 5) Religious holy day. NOTE: Prior notification is NOT required.
- 6) Injury or illness that is too severe or contagious for the student to attend class.
  - a) Injury or illness of three or more class days:

Student will provide a medical confirmation note from his or her medical provider within one week of the last date of the absence (see Student Rules 7.1.6.1)

b) Injury or illness of less than three class days:

Student will provide one or both of these (at instructor's discretion), within one week of the last date of the absence:

(i.) Texas A&M University Explanatory Statement for Absence from Class form available at <http://attendance.tamu.edu>

or (ii.) Confirmation of visit to a health care professional affirming date and time of visit.

7) Required participation in military duties.

8) Mandatory admission interviews for professional or graduate school that cannot be rescheduled.

In cases where prior notification is not feasible (e.g., accident or emergency) the student must provide notification by the end of the second working day after the absence, including an explanation of why notice could not be sent prior to the class.

Learning Objectives and Schedule:

Date	Assignment in Lippincott with approximate page numbers	Learning Objectives
Day 1	Introduction	<ul style="list-style-type: none"> <li>Basics and nomenclature of pharmacy</li> </ul>
Day 2	Chapter 1 <i>Pharmacokinetics</i> – Pages 1 - 16	<ul style="list-style-type: none"> <li>Understand the routes of administration of drugs; know the advantages and disadvantages of each.</li> <li>Understand the factors that influence absorption, distribution, metabolism and elimination of drugs; know how these change in health and disease</li> <li>Understand the concepts of (Apparent) Volume of Distribution, Clearance of Drug, First-order Kinetics, Zero-order Kinetics; understand how these concepts apply to pharmacology and drug therapy</li> <li>Be able to calculate the functions listed above and apply the results</li> </ul>
Day 3	Chapter 1 <i>Pharmacokinetics</i> – Pages 16 - 22	<ul style="list-style-type: none"> <li>Understand the concept of elimination of drug, specifically the role of the kidneys and liver. Understand the concept of half-life and dosing interval.</li> <li>Calculate clearance, kinetics associated with continuous administration, steady state. Know how dosing interval and dose impact clearance.</li> <li>Understand the concept of a loading dose</li> </ul>
Day 4	Chapter 2 <i>Drug-Receptor Interactions and Pharmacodynamics</i> – Pages 25 - 28	<ul style="list-style-type: none"> <li>Understand the concepts of Withdrawal Time, LD 50, LD 99</li> <li>Be able to calculate and apply these concepts</li> <li>Understand the legal implications of these concepts</li> <li>Understand the biochemical interactions of drugs and receptors including the concepts of second messenger systems and receptor families.</li> </ul>
Day 5	Chapter 2 <i>Drug-Receptor Interactions and Pharmacodynamics</i> – Pages 29 - 32	<ul style="list-style-type: none"> <li>Understand the biochemical interactions of drugs and receptors including the concepts of desensitization, potency, efficacy, drug-receptor binding, binding to effect.</li> <li>Understand the concepts of intrinsic activity and quantal dose-response relationships including topics such as agonism/antagonism and therapeutic index.</li> </ul>
Day 6	Chapter 48 – <i>Clinical Toxicology</i> Pages 631 - 637	<ul style="list-style-type: none"> <li>Understand the mechanisms of various intoxicants. Understand indications for use of antidotes versus supportive therapy.</li> </ul>
Day 7	Clinical Toxicology continued	
Day 8	Exam 1	Material from Day 1 to Day 7
Day 9	Review Exam 1	<ul style="list-style-type: none"> <li>Understand the mechanisms of action, effects and indications of benzodiazepams and other</li> </ul>

	Chapter 9 <i>Anxiolytic and Hypnotic Drugs</i> – Pages 121 – 131	<p>anxiolytic compounds. Know the mechanism of antagonists to this class of drugs.</p> <ul style="list-style-type: none"> <li>Understand the mechanisms of action, effects and indications of barbiturates and other hypnotic compounds. Know the clinical uses of these classes of drugs, contraindications, toxicity, etc.</li> </ul>
	Chapter 10 <i>Antidepressants</i> – Pages 135 -143	<ul style="list-style-type: none"> <li>Understand the mechanisms of action of five families of antidepressants. Be familiar advantages, hazards, routes of elimination, contraindications, etc.</li> </ul>
<b>Day 10</b>	Chapter 11 <i>Antipsychotic Drugs</i> – 147 – 153	<ul style="list-style-type: none"> <li>Understand the mechanisms of action and effects of antipsychotic agents. Know advantages, hazards, routes of elimination, contraindications, etc.</li> </ul>
	Chapter 12 <i>Drugs for Epilepsy</i> – Pages 157 - 168	<ul style="list-style-type: none"> <li>Understand the mechanisms of action and effects of antiepileptic agents. Know advantages, hazards, routes of elimination, contraindications, etc</li> </ul>
<b>Day 11</b>	Chapter 13 <i>Anesthetics</i> – Pages 127 – 135	<ul style="list-style-type: none"> <li>Understand the mechanisms of action and effects of inhalant anesthetic agents. Know advantages, hazards, routes of elimination, contraindications, etc.</li> <li>Understand the mechanisms of action and effects of intravenous anesthetics. Know advantages, hazards, routes of elimination, contraindications, etc.</li> <li>Understand the mechanisms of action and effects of local anesthetics. Know advantages, hazards, routes of elimination, contraindications, etc.</li> </ul>
	Chapter 14 <i>Opioids</i> – Pages 191 – 203	<ul style="list-style-type: none"> <li>Know the different mechanisms of action of this class of drugs.</li> <li>Understand the side effects, contraindications, etc.</li> <li>Understand the role of opioid-antagonists and their mechanisms of action</li> </ul>
<b>Day 12</b>	Chapter 3 <i>The Autonomic Nervous System</i> - Pages 39 - 47	<ul style="list-style-type: none"> <li>Understand the basics of the ANS.</li> <li>Understand how the concepts of agonism and antagonism apply</li> </ul>
	Chapter 4 <i>Cholinergic Agonists</i> - Pages 51 – 61	<ul style="list-style-type: none"> <li>Understand the effects of various compounds that activate cholinergic receptors. Know their roles in treatment and their side effects, etc.</li> </ul>
	Chapter 5 <i>Cholinergic Antagonists</i> Pages 65 - 73	<ul style="list-style-type: none"> <li>Understand the effects of various compounds that inhibit or block cholinergic receptors. Know their roles in treatment and their side effects, etc.</li> </ul>
<b>Day 13</b>	Chapter 6 <i>Adrenergic Agonists</i> – Pages 77 – 92	<ul style="list-style-type: none"> <li>Understand the effects of various compounds that activate the various adrenergic receptors. Know their roles in treatment and their side effects, etc.</li> </ul>

	Chapter 7 <i>Adrenergic Antagonists</i> – Pages 95 – 104	<ul style="list-style-type: none"> <li>Understand the effects of various compounds that inhibit or block the various adrenergic receptors. Know their roles in treatment and their side effects, etc.</li> </ul>
<b>Day 14</b>	Chapter 24 <i>Pituitary and Thyroid</i> – Pages 325 – 333 Handout on Provocative Testing	<ul style="list-style-type: none"> <li>Know the different mechanisms of action of this class of drugs. Understand the side effects, contraindications, etc.</li> <li>Understand Provocative Testing procedures for evaluation of these disorders</li> </ul>
<b>Day 15</b>	Exam 2	Material from Day 9 to Day 14
<b>Day 16</b>	Review Exam 2	
	Chapter 25 <i>Drugs for Diabetes</i> – Pages 335 – 349	<ul style="list-style-type: none"> <li>Understand the goals of insulin therapy. Know the role the various insulin preparations play in meeting these goals.</li> <li>Understand the causes and effects of treatment failure.</li> <li>Know the mechanism of action of the various oral hypoglycemic drugs. Understand their side-effects and limitations.</li> </ul>
<b>Day 17</b>	Chapter 26 <i>Estrogens and Androgens</i> – Pages 351 – 363	<ul style="list-style-type: none"> <li>Understand the mechanisms of action of this class of drugs. Explain the contraindications and side effects of these drugs.</li> <li>Understand how the concepts of agonism and antagonism apply</li> </ul>
	Chapter 27 <i>Adrenal Hormones</i> – Pages 365 - 373	<ul style="list-style-type: none"> <li>Understand the mechanisms of action of this class of drugs. Explain the contraindications and side effects of these drugs. Understand the role of provocative testing in the diagnosis of adrenal disease</li> </ul>
<b>Day 18</b>	Chapter 19 <i>Heart Failure</i> – Pages 255 – 268	<ul style="list-style-type: none"> <li>Know the causes and implications of heart failure. Understand the role of pharmacology in treatment of heart failure</li> </ul>
	Chapter 20 <i>Antiarrhythmics</i> – Pages 269 – 280	<ul style="list-style-type: none"> <li>Know the potential causes of various arrhythmias. Understand the mechanisms by which this class of drugs mediates their effects. Know the contraindications and side effects of treatments.</li> </ul>
<b>Day 19</b>	Chapter 17 - <i>Antihypertensives</i> – Pages 225 – 239	<ul style="list-style-type: none"> <li>Understand the mechanisms of action of this class of drugs. Explain the contraindications and side effects of these drugs.</li> </ul>
	Chapter 18 – <i>Diuretics</i> – Pages 241 - 253	<ul style="list-style-type: none"> <li>Understand the mechanisms of action of this class of drugs. Explain the contraindications and side effects of these drugs.</li> </ul>
<b>Day 20</b>	Chapter 36 <i>Anti-inflammatory Drugs</i> – Pages 447 – 469	<ul style="list-style-type: none"> <li>Understand the mechanisms of actions of various anti-inflammatory compounds. Know the clinical uses, contra-indications and side effects.</li> </ul>
<b>Day 21</b>	Chapter 37 <i>Principles of Antimicrobial Therapy</i> – Pages 471 – 481	<ul style="list-style-type: none"> <li>Understand the different goals and mechanisms of antimicrobial therapy.</li> </ul>

	Chapter 38 <i>Cell Wall Inhibitors</i> – Pages 483 – 497	<ul style="list-style-type: none"> <li>• Understand the basic terminology associated with this therapy such as MIC, bacteriostatic, bacterial resistance, etc.</li> <li>• Know the members of these classes of antimicrobials. Understand their specific mechanisms, the advantages and disadvantages to this type of therapy</li> </ul>
<b>Day 22</b>	Chapter 39 <i>Protein Synthesis Inhibitors</i> – Pages 499 – 512	<ul style="list-style-type: none"> <li>• Know the members of this class of antimicrobials. Understand their specific mechanisms, the advantages and disadvantages to this type of therapy</li> </ul>
	Chapter 40 <i>Quinolones, Folic Acid Antagonists, and Urinary Trap Antiseptics</i> – Pages 513 – 523	<ul style="list-style-type: none"> <li>• Know the members of these classes of antimicrobials. Understand their specific mechanisms, the advantages and disadvantages to this type of therapy.</li> </ul>
<b>Day 23</b>	Exam 3	Material from Day 16 to Day 22
<b>Day 24</b>	Review Exam 3	
	Chapter 45 <i>Antiviral Drugs</i> – Pages 567 - 617	<ul style="list-style-type: none"> <li>• Know the members of these classes of antimicrobials. Understand their specific mechanisms, the advantages and disadvantages to this type of therapy.</li> </ul>
<b>Day 25</b>	Chapter 46 <i>Anticancer Drugs</i> – Pages 587 – 617	<ul style="list-style-type: none"> <li>• Understand the mechanisms of action of this class of drugs. Explain the contraindications and side effects of these drugs.</li> </ul>
	Chapter 47 <i>Immunosuppressants</i> - Pages 619 - 629	<ul style="list-style-type: none"> <li>• Understand the mechanisms of action of this class of drugs. Explain the contraindications and side effects of these drugs.</li> </ul>
<b>Day 26</b>	Chapter 29 <i>Drugs for Disorders of the Respiratory System</i> – Pages 381 – 391	<ul style="list-style-type: none"> <li>• Understand the mechanisms of action of this class of drugs. Explain the contraindications and side effects of these drugs.</li> </ul>
	Chapter 31 – <i>Gastrointestinal and anti-emetic Drugs</i> Pages 401 – 413.	<ul style="list-style-type: none"> <li>• Understand the mechanisms of action of this class of drugs. Explain the contraindications and side effects of these drugs.</li> </ul>
<b>Day 27</b>	Chapter 30 <i>Antihistamines</i> – Pages 393 – 400.	<ul style="list-style-type: none"> <li>• Understand the mechanisms of action of this class of drugs. Explain the contraindications and side effects of these drugs.</li> </ul>
	Chapter 34 <i>Drugs for Dermatologic Disorders</i> – Pages 431 – 440.	<ul style="list-style-type: none"> <li>• Understand the mechanisms of action of this class of drugs. Explain the contraindications and side effects of these drugs.</li> </ul>
<b>Day 28</b>	Special Topics – <i>Advances in Pharmacology</i>	<ul style="list-style-type: none"> <li>• Gene therapy</li> <li>• Pharmacogenomics</li> </ul>

