Therapeutics I – Cardiovascular **PHRD 4064** CRN# 44491

I. Contact Information (*preferred method of communication)

Course Coordinators:

Victoria Miller, Pharm.D., BCPS

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Course Instructors:

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Clinical Professor

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Office Hours: M-Th 1:30-4 pm, or by appointment*

II. Course Pre-requisites/Co-requisites

Prerequisites: PHRD 4027, PHRD 4035

III. Course Description

6 cr. Principles of pathophysiology, pharmacology, medicinal chemistry, clinical pharmacokinetics and pharmacotherapy (including both prescription and non-prescription medications) as they apply to cardiovascular drug therapy management.

IV. Curricular Objectives and Outcomes

CAPE Outcomes

- 1.1. Learner (Learner) Develop, integrate, and apply knowledge from the foundational sciences (i.e., *pharmaceutical, social/behavioral/administrative*, and *clinical sciences*) to evaluate the scientific literature, explain drug action, solve therapeutic problems, and advance population health and *patient-centered care*.
- 2.1. Patient-centered care (Caregiver) Provide *patient-centered care* as the medication expert (collect and interpret evidence, prioritize, formulate assessments and recommendations, implement, monitor and adjust plans, and document activities).
- 3.1. Problem Solving (Problem Solver) Identify problems; explore and prioritize potential strategies; and design, implement, and evaluate a viable solution.

ACPE APPENDIX 1

Biomedical Sciences

Human Physiology

Homeostatic function and normal response reactions across the lifespan of non-diseased human cells, organs, and systems.

Pharmaceutical Sciences

Medicinal Chemistry

Chemical basis of drug action and behavior in vivo and in vitro, with an emphasis on pharmacophore recognition and the application of physicochemical properties, structure activity relationships, intermolecular drug-receptor interactions, and metabolism to therapeutic decision-making.

Pharmacogenomics/genetics

Genetic basis for disease and individual differences in metabolizing enzymes, transporters, and other biochemicals impacting drug disposition and action that underpin the practice of personalized medicine.

Pharmacology

Pharmacodynamics, mechanisms of therapeutic and adverse drug actions and interactions, lifespan-dependent variations in physiology or biochemistry that impact drug action and effectiveness, and application of these principles to therapeutic decision making.

Clinical Sciences

Clinical Pharmacokinetics

Application of basic pharmacokinetic principles and mathematical models to calculate safe and effective doses of drugs for individual patients and adjust therapy as appropriate through the monitoring of drug concentration in biological fluids.

Patient Assessment

Evaluation of patient function and dysfunction through the performance of tests and assessments leading to objective (e.g., physical assessment, health screening, and lab data interpretation) and subjective (patient interview) data important to the provision of care.

Pharmacotherapy

Evidence-based clinical decision making, therapeutic treatment planning, and medication therapy management strategy development for patients with specific diseases and conditions that complicate care and/or put patients at high risk for adverse events. Emphasis on patient safety, clinical efficacy, pharmacogenomic and pharmacoeconomic considerations, and treatment of patients across the lifespan.

V. Course Specific Objectives and Outcomes

At the conclusion of this course, students should be able to:

- Demonstrate knowledge of medicinal chemistry, pharmacological mechanism of action, and related pharmaceutical topics of selected medications and medication classes used to treat endocrine disorders.
- Identify appropriate non-pharmacologic therapy, based upon patient- and disease-specific information.
- Develop appropriate pharmacotherapeutic regimens based upon patient- and disease-specific information.
- Develop a plan for monitoring the pharmacotherapeutic regimen for efficacy, toxicity, and adverse effects.
- Develop a plan for educating the patient regarding drug therapy.
- Review a patient-specific drug therapy regimen and adjust as necessary.

Additional subject-area-associated objectives may be posted separately.

VI. Course Topics

Pharmacology, medicinal chemistry and therapeutics related to hypertension, dyslipidemia, angina, anticoagulation, shock syndromes, acute coronary syndromes, myocardial infarction, heart failure, Advanced Cardiac Life Support (ACLS), arrhythmias (including atrial fibrillation), thromboembolism and stroke.

VII. Instructional Methods and Activities

Instructional methods may include traditional lectures, distance learning, in-class discussion of patient cases, small group discussions, problem-based (team-based) learning, case-based learning, and individual projects or assignments. Participation in lectures using distance technology will be expected of all enrolled students. Technical resources used may include but are not limited to Zoom, Kaltura, ExamSoft, Moodle, Poll Everywhere, Kahoot, NearPod, etc.

VIII. Evaluation and Grade Assignment

- There will be four exams and a final exam. The final exam will not be comprehensive. Each 50-minute class period will be represented by 6 points on the exam.
- The grade breakdown will be as follows:

<u>Assessment</u> :	<u>Points:</u>		
Exam 1	96		
Exam 2	72		
Exam 3	84		
Exam 4	84		
Exam 5 (Final)	84		
*Assignments/Activities	<u>20</u>		
Total Class Points:	450		

*Assignments, quizzes, or other point-based activities will be given as deemed necessary by each faculty member and may be added at any point of the semester. The points available from these activities will be added to the total course denominator. Exams and assignments grading will be returned to the students within 2 weeks of completion. Bonus points may be added at the discretion of each faculty member.

- Exam dates are scheduled in the course syllabus and will only be changed in the event of University closure.
- Exams may be multiple-choice, fill-in-the-blank, short-answer, case- or scenario-based discussion, essay, or any other format deemed necessary by the faculty members and Course Coordinators.
- Information acquired from previous portions of the course and from other courses in the professional pharmacy curriculum may be needed in preparing for these examinations.
- Exams may cover material (readings, outside assignments) not covered in class.
- Exams will NOT be returned to the student. All instructors will have copies of the exam and students' results, and students may view their exam results (inc. right/wrong) in instructors' offices, at times convenient for all involved. At this time, they may also discuss exam questions with the instructors who wrote them; however, any official "challenges" of questions must be done in writing. (See below)
 - Students wishing to review their exams with the course coordinators or with a specific faculty member must do so within 2 weeks of when the exam scores are posted, or within 1 week of the time that the score for the final exam is posted OR prior to the final grade due date, whichever is first.
- Exams will be issued using Exam Soft; all students are required to download the exams prior to the date of the scheduled exam. In the event that a student cannot take the exam on the scheduled date the student must reverse download the exam to Exam Soft. Under no circumstances should a student open an examination, except during the scheduled time and at the approved location. Scratch paper will be issued on the day of the exam, and all students are required to sign the scratch paper and return it to the exam proctor prior to leaving the room. No other paper items will be allowed during the exam unless supplied by the faculty administering the exam. All exams most be uploaded before leaving the classroom; in the event of a power outage or loss of Wi-Fi connection all students are required to upload the exam at the earliest possible reconnection time. Proof of exam closeout will be required prior to leaving the classroom.
 - If an exam is administered to a student in mandatory self-isolation or who is ill, the exam may be taken outside the classroom if the student has a verified and approved excuse. If a student will be outside the classroom for the exam for self-isolation or illness, he or she MUST contact the course coordinator BEFORE the exam begins and submit an excuse for approval. <u>Students taking exams outside the classroom may be monitored using a live proctor via Zoom (or similar platform) or software to detect suspected misconduct</u>. If monitoring is not possible due to limitations of technology, the student will not be allowed to take the exam at the scheduled date and time and will be administered a makeup exam at a date and time chosen by the course coordinator(s).
- Acceptable exam behavior:
 - Only a writing instrument should be at your desk. All book bags and other bags should be left at the front of the room.
 - Cell phones should be turned off and left with your belongings in the front of the room.
 - Students will not be allowed to leave the room to go to the restroom during the exam, unless
 accompanied by a faculty member of the same sex, provided there is another proctor to remain in the
 room.
 - For exams given using ExamSoft, computers used for the exam must remain in the classroom until the class period is over.
 - Students who arrive to an exam after it has started will be sent to the OSPA and will not be given additional time to complete their exam. A warning will be issued and noted after the first offense. A grade of ZERO will be given for subsequent offenses. Arriving late disturbs fellow classmates and will not be tolerated.
- Problems or issues with a question should be first directed, via e-mail, to the instructor who wrote it. The course coordinator(s) should be copied on this email, but it is the responsibility of the question's author to address the concern(s). If the student is unsure which faculty member wrote a specific question, then he or she may ask the course coordinator. In the written challenge, the student is expected to include references or rationale to support their challenge of the question. The challenge will be reviewed by the faculty member, and his or her decision will be shared with the course coordinator(s). Discussion of a dispute will occur only after the written query is submitted. Challenges of test questions for the first 4 exams will only be considered within 2 weeks of when the test scores are posted. For the final examination, challenges of test questions will only be considered within 1 week of the time that the scores are posted or prior to the final grade due date.
- If there is an issue with a particular test question, adjustments to scores will be made based on discussions between the test question writer and the course coordinator. Thus, after the exams have been graded and an

- item analysis performed, questions may be discarded or otherwise adjusted at the discretion of the Course Coordinator(s) in consultation with the faculty before arriving at final grades.
- The use of programmable calculators and electronic devices capable of storing, receiving, or transmitting data are prohibited during an exam or quiz unless expressly authorized by the course instructor. Such devices must be turned off and left with your belongings in the front of the room or not within reach if an exam must be taken outside the classroom due to mandatory self-isolation or illness.
- Mid-term grades will be posted on-line for students to view via Banner. Mid-term grades indicate a student's status at mid-semester only and do not indicate the final performance outcome of a student.

Grading Scale (based upon total number of points for semester):

89.5 - 100% A 79.5 - 89.49% B 69.5 - 79.49% C 59.5 - 69.49% D $\leq 59.49\%$ F

Student Success Policy: http://www.ulm.edu/pharmacy/currents.html

Remediation Policy: http://www.ulm.edu/pharmacy/currents.html

Early Intervention Policy: http://www.ulm.edu/pharmacy/currents.html

IX. Class Policies and Procedures

At a minimum, all policies stated in the current ULM *Student Policy Manual & Organizational Handbook* should be followed (see http://www.ulm.edu/studentpolicy/). Additional class policies include:

a. Textbooks (required):

- 1. Chisholm-Burns M, Schwinghammer TL, Wells BG, Malone PM, Kolesar JM, DiPiro JT, eds. *Pharmacotherapy: Principles and Practice*. 5th ed, New York, McGraw-Hill, Inc., 2019. *(available via AccessPharmacy)*
- 2. Brunton LL, Lazo JS, Parker KL, eds. *Goodman and Gilman's, The Pharmacological Basis of Therapeutics*, 13th ed, McGraw-Hill, 2016. (available via AccessPharmacy)
- **3.** Lemke, Williams, Roche, Zito, eds. *Foyes Principles of Medicinal Chemistry 8th ed.,* Walters Kluwer/Lippincott Willams & Wilkins, 2020. (available via LW&W Health Library collection)
- **4.** DiPiro JT, Yee, GC, Posey LM, Haines ST, Nolin TD, Ellingrod VL, eds. *DiPiro: Pharmacotherapy A Pathophysiologic Approach*, 12th ed, McGraw-Hill, 2021. (*Available via AccessPharmacy*)
- 5. Additional REQUIRED reading materials will be posted on Moodle by course faculty.
- b. Attendance Policy: Class attendance is regarded as an obligation as well as a privilege, and students are expected to know attendance regulations and to attend regularly and punctually at classes in which they are enrolled. Failure to do so may: (1) prevent access to the classroom during regularly scheduled times; (2) jeopardize a student's scholastic standing; and (3) lead to suspension from the College or University. Students must submit excuses for class absences to course coordinators within three class days after returning to classes.

Professors shall accept an official University excuse. With the following exceptions, professors are to determine whether absences are excused or unexcused: 1) Absences arising from authorized trips away from the University or from special duties at the University shall be excused. 2) Absences arising from a student's confinement in a hospital or other in-patient facility or doctor's excused absences shall be excused. Students are responsible for verifying providing documentation to the faculty, which will be

verified. 3) Absences arising from a death in the immediate family shall be excused. The immediate family is defined as spouse, child, step-child, mother, father, sister, brother, grandmother, grandfather, step-mother, step-father, step-brother, step-sister, aunt, uncle, mother-in-law or father-in-law.

- C. Make-up Policy: Each student is expected to attend each exam in person at the date and time specified. Students may be allowed to take the exam from home if they are in mandatory self-isolation or ill, but should follow the procedure outline in section VII above to notify the course coordinators. If a student cannot attend an exam due to valid University excuse, he/she must speak directly with the course coordinator, as soon as possible. The course coordinator must be notified prior to an examination if a student misses an exam. The ULM COP Excused Absence Policy must be followed. Please refer to the official document for details. In case of emergency, the course coordinator must be notified within 48 hours of the emergency. Failure to do so will result in a zero (0) grade for that exam. Make-up exams will be prepared at the same or higher level than the original exam. The format of the make-up exam may be written or oral. Failure to attend a scheduled make-up exam will result in a zero (0) grade for that exam. Students missing an exam due to a University approved excuse will take the make-up exam at a date and time determined by the course coordinator.

 http://www.ulm.edu/pharmacy/currents.html
- **d.** Academic Integrity: Faculty and students must observe the ULM published policy on Academic Dishonesty (see Page 4 of the ULM *Student Policy Manual* http://www.ulm.edu/studentpolicy/). All professional students will adhere to the standards set forth in the College of Pharmacy's Code of Conduct (http://www.ulm.edu/pharmacy/currents.html).

Censures (Penalties)

Academic dishonesty will result in a referral to the Academic Standards and Ethics Committee. If the student is found guilty of Ethical and Professional misconduct by the committee, they will receive a zero for the assigned points (graded assignment or test) and up to an "F" in the course from the course coordinator in addition to any disciplinary action recommended by the Academic Standards and Ethics Committee. Academic dishonesty includes, but is not limited to, the use of information taken from others' work or ideas, the provision of help to others on non-collaborative evaluations (tests, quizzes, etc.), collaboration on take home exams, or the use of unapproved information or electronic devices to assist in obtaining answers.

Artificial Intelligence (AI) use:

Conditional Use

Students will be permitted to use Artificial Intelligence (AI) in this course only for specified assignments/tasks designated by the instructor(s) and/or explicitly stated in the directions. Additionally, the instructor(s) is at liberty to indicate the specific AI tool that students can use. The goal of allowing the use of AI for specific assignments is to make space for critical engagement and practice with these tools. Please note that while we may use AI for some in-class activities, students may not use AI tools for any other assignment submissions unless explicitly stated by the instructor(s) and/or directions.

Citation: Students should also include in-text citations of any AI-informed information using guidelines approved by course instructors. For assignments where AI has been permitted, students must include the citation in the following format at the end of the document with references or works cited.

- Tool name and version, date (YYYY, MM, DD). Prompt with explanation. Company name and URL.
- Ex: (Claude 3.0. (2024, Mar 14). Please help me write research survey questions on water usage in San José with the target population of people living in working class neighborhoods. This iterative process, working with Sage's Blue Book on Interview Questions, helped me craft survey 10 questions based on the area. Anthropic, URL)

In this course, misuse of AI consists of failing to cite information provided by AI tools, failing to check for accuracy, or falsely presenting ideas or products as their own. Inaccuracies, made-up citations, or any

other false information found in an assignment is the responsibility of the student and may be classified as academic misconduct - even if the original errors are the fault of generative AI outputs.

- **e. Course Evaluation Policy:** At a minimum, students are expected to complete the online course evaluation at the end of the semester.
- f. Student Services: Information concerning student services in the College of Pharmacy can be found in the College of Pharmacy Student Handbook. In particular, students should pay special attention to the University's technical standards and policies concerning students with special needs (http://www.ulm.edu/studentpolicy/studentpolicy.pdf). ULM student services, such as the Student Success Center (http://ulm.edu/cass/), Counseling Center (http://ulm.edu/cass/), Counseling Center (http://ulm.edu/cass/), Counseling Student Services web site http://ulm.edu/studentaffairs/. Students with special needs requiring accommodations MUST follow the process described at http://rxweb.ulm.edu/pharmacy/student/specialneeds.pdf.

Mental Wellness on the ULM Campus

If you are having problems with emotional, social, and/or behavioral issues please call any of the mental health clinics on the ULM campus to make an appointment. All services are free to ULM students, staff, and faculty, and are strictly confidential.

COP Office of Student and Professional Affairs: 342-3800

ULM Counseling Center: 342-5220

Marriage and Family Therapy Clinic: 342-5678

Community Counseling Center: 342-1263

ULM HELPS (Helping Educators and Learners Prevent Suicide) Project Office: 342-1335

The University of Louisiana at Monroe strives to serve students with special needs through compliance with Sections 504 of the Rehabilitation Act of 1973 and the Americans with Disabilities Act. These laws mandate that postsecondary institutions provide equal access to programs and services for students with disabilities without creating changes to the essential elements of the curriculum. While students with special needs are expected to meet our institution's academic standards, they are given the opportunity to fulfill learner outcomes in alternative ways. Examples of accommodations may include, but are not limited to, testing accommodations (oral testing, extended time for exams), interpreters, relocation of inaccessible classrooms, permission to audiotape lectures, note-taking assistance, and course substitutions.

Title IX of the Education Amendments of 1972 prohibits sex discrimination against any participant in an educational program or activity that receives federal funds, including federal loans and grants. Furthermore, Title IX prohibits sex discrimination to include sexual misconduct, sexual violence, sexual harassment and retaliation. If you encounter unlawful sexual harassment or gender-based discrimination, please contact Student Services at 318-342-5230 or to file a complaint, visit www.ulm.edu/titleix.

- g. Emergency Procedures: Please review the emergency escape plan in the classrooms and hallways of the Bienville building. Move quickly and in an orderly manner to the appropriate stairwell and exit the building. The meeting place for this class will be the far end of the north parking lot between the Bienville building and Broadmoor Blvd. Under no circumstances is the elevator to be used for emergency evacuation. Any student needing assistance should notify the professor immediately. For emergencies, to contact University Police, call 1-911 from landlines and 342-5350 from cell phones. The course coordinators reserve the right to adjust the syllabus or schedule, in accordance with University and College policies and procedures.
- **h.** Federal Regulations require determination and verification of every students' physical location while enrolled in classes (where they are physically located while taking classes), regardless of the delivery

method (on campus, online). At the beginning of every semester and whenever physical location changes, students must update or verify their current location through banner https://ssb-prod.ec.ulm.edu/PROD/bwgkogad.P_SelectAtypUpdate. Students should do this by the end of the first week of classes.

requirements leads to eligibility for professional licensure and/or certification in Louisiana upon graduation. Federal Regulations require universities to provide information to students about the alignment between Louisiana's requirements and those of other states. ULM has created a web page with discipline-specific information containing hyperlinks to Licensure Boards in the United States https://www.ulm.edu/professional-licensure-disclosures/index.html. Program Directors and/or faculty will discuss this information with you during advising or other program meetings but is also available to answer questions and address any concerns you might have. It is also important to note that licensure or certification requirements are subject to change. Although ULM Program Directors annually review and update licensure information for every state, the faculty recommends that before enrolling in a program and throughout enrollment, students communicate with the applicable state board to confirm understanding and whether upon completion of ULM's program, they will meet requirements.

Course Schedule - Tentative Course Schedule Fall 2024

*subject to change at the discretion of the Course Coordinator

Class will be held Tuesday and Thursday 9:30 – 11:10am and Wednesday 1:00 – 2:40pm in B202.

#	Day/Time	Date	Topic – P = Pharmacology, MC = Medicinal chemistry, T = Therapeutics	Faculty	Distance Needs	Points Per Exam (2 points per question)	In-Class Activity Points
1	T AM	8/27/24	Cardiac physiology review - P	Jackson		12 points	
2	W PM	8/28/24	Catecholiminergics and anticholinergics - P	Jackson		12 points	
3	R AM	8/29/24	Adrenergics – MC	El Sayed		12 points	
4	T AM	9/3/24	CCB & RAAS – P	Jackson		12 points	
5	W PM	9/4/24	CCB & RAAS – MC	El Sayed		12 points	
6	R AM	9/5/24	Diuretics and vasodilators – P	Jackson		12 points	
7	T AM	9/10/24	½ Diuretics and vasodilators – P½ Diuretics and vasodilators – MC	Jackson El Sayed		6 points 6 points	
8	W PM	9/11/24	Diuretics and vasodilators – MC	El Sayed		12 points	
9	R AM	9/12/24	½ Lipid lowering agents – P ½ Lipid lowering agents - MC	Jackson Bolinger		6 points 6 points	
	T AM	9/17/24	Exam 1 (Lectures 1-8) – 96 points Questions 9/10:, Faculty Review: 9/12				
10	W PM	9/18/24	Antiplatelets, anticoagulants, fibrinolytics, thrombolytics, reveral of anticoagulation - P	Jackson		12 points	
11	R AM	9/19/24	Antiplatelets, anticoagulants, fibrinolytics, thrombolytics, reversal of anticoagulation - MC	Bolinger		12 points	
12	T AM	9/24/24	 ½ Antiplatelets, anticoagulants, fibrinolytics, thrombolytics – MC ½ Inotropes, vasopressin, cardiac glycosides, antiarrhythmics – P 	Bolinger Jackson		6 points 6 points	
13	W PM	9/25/24	Inotropes, vasopressin, cardiac glycosides, antiarrhythmics – P	Jackson		12 points	
14	R AM	9/26/24	Inotropes, cardiac glycosides, antiarrhythmics – MC	Bolinger		12 points	
15	T AM	10/1/24	Primary prevention – T	Zagar		12 points	
	W PM	10/2/24	Exam 2 (Lectures 9-14) – 72 points Questions: 9/25 , Faculty Review: 9/27				
16	R AM	10/3/24	Lipid lowering – T	Rotundo	Zoom	12 points	
17	T AM	10/8/24	Lipid lowering – T	Rotundo	Zoom	12 points	5 points
18	W PM	10/9/24	Hypertensive crisis - T	Resident		12 points	
19	R AM	10/10/24	Hypertension - T	Jacobs	Zoom	12 points	
20	T AM	10/15/24	Hypertension - T	Jacobs	Zoom	12 points	
21	W PM	10/16/24	Hypertension - T	Jacobs	Zoom	12 points	
		10/17/24	FALL BREAK				
	T AM	10/22/24	Exam 3 (Lectures 15-21) – 84 points Questions: 10/16 , Faculty Review: 10/18				
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22	W PM	10/23/24	No class				

23	R AM	10/24/24	Chronic Heart Failure - T	Miller		12 points	
24	TAM	10/29/24	Chronic Heart Failure - T	Miller	Zoom	12 points	
25	W PM	10/30/24	½ Chronic Heart Failure – T ½ Acute Decompensated Heart Failure - T	Miller		6 points 6 points	5 points
26	R AM	10/31/24	Shock	McGee		12 points	
27	T AM	11/5/24	ACS/MI - T	Miller	Zoom	12 points	
28	W PM	11/6/24	ACS/MI - T	Miller		12 points	5 points
29	R AM	11/7/24	½ Peripheral arterial disease - T ½ Stable angina - T	Miller	Zoom	6 points 6 points	
30	T AM	11/12/24	Anticoagulation therapeutics and pharmacogenomics of anticoagulation and antiplatelets -T	Evans	Zoom	12 points	
	W PM	11/13/24	Exam 4 (Lectures 23-29) – 84 points Questions: 11/6, Faculty Review: 11/8				
31	R AM	11/14/24	Thromboembolic disorders (VTE)— T	Evans	Zoom	12 points	
32	T AM	11/19/24	½ Thromboembolic disorders & Valvular Heart Disease – T½ Reversal of anticoagulants, treatment of major bleeds - T	Evans	Zoom	6 points 6 points	
33	W PM	11/20/24	Arrhythmias and antiarrhythmics - T	Miller		12 points	5 points
34	R AM	11/21/24	Atrial fibrillation - T	Miller	Zoom	12 points	
35	T AM	11/26/24	Stroke (ischemic/hemorrhagic) - T	McGee		12 points	
		11/27/24	THANKSGIVING HOLIDAY				
		11/28/24	THANKSGIVING HOLIDAY				
36	T AM	12/3/24	ACLS	McGee		12 points	
		12/4/24	Student Study Day				
		12/9/24	Final Exam (Lectures 30-36) - 84 points Questions: 11/27, Faculty Review: 11/29				