PHRD 510 Cardiovascular Disease Integrated Module

I. Contact Information

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II. Course Prerequisites/Co-requisites

Third year standing

III. Course Description

a. **Catalogue Description**

PHRD510. Cardiovascular Disease Integrated Module. 6 Cr. Selection of appropriate therapy for acute and chronic cardiovascular disease states based on treatment guidelines, disease pathophysiology, and the pharmacologic and physiochemical properties of medications. Prerequisites: Third year standing

b. **Course Description and Rationale**

Cardiovasuclar disease is one of the largest causes of mortality in the U.S. This course will provide students with the appropriate pharmacologic, medicinal chemistry, pharmacokinetic, and therapeutic background to appropriately select and monitor medication therapy in cardiovascular disease.

IV. Course Objectives and Outcomes

a. **This course will directly address the following College of Pharmacy competencies:**

1. **Provide Comprehensive Patient Specific Pharmaceutical Care. (1)**
   - **a.** Evaluate the appropriateness of a given prescription or medication order based on patient and disease-specific factors. (1.A)
   - **b.** Analyze the prescription regarding the medication, dose, delivery form, and duration of use as being appropriate for the patient and disease state. (1.A.i.)

c. Collect patient-specific data regarding demographics, medical history, diagnosis, physical assessment, and medication history. (1.A.i.a.)
d. Identify and collect pertinent information from the medical chart, database, and/or the patient/caregiver interview. (1.A.i.a.2)
e. Recognize appropriate patient- and drug-specific factors that will impact the drug regimen. (1.A.i.a.2.a)
f. Analyze and interpret information gathered to identify any drug-related problem. (1.A.i.b.)
g. Assess the prescription for interaction potential, including interactions with other medications (both prescription and non-prescription), disease states, foods, and herbals. (1.A.i.b.1)
h. Identify appropriate duration of therapy for that disease state. (1.A.i.b.2)
i. Develop and implement an evidence-based care plan. (1.C)
j. Identify goals of therapy that are individualized to the patient. (1.C.i)
k. Develop a plan of care that includes interventions to resolve drug therapy problems, achieve the goals of therapy, and prevent drug therapy problems. (1.C.ii)
l. Develop a schedule to follow-up and evaluate the effectiveness of outcomes from drug therapies and assess any adverse events experienced by the patient. (1.C.iii)
m. Evaluate patient outcomes with respect to the achievement of goals of therapy, patient adherence, patient safety, and the development of new drug therapy problems. (1.C.iv)

2. **Demonstrate Appropriate Interpersonal, Professional, and Ethical Behaviors. (7)**
   a. Maintain professional competence. (7.A)
   b. Continually strive to maintain knowledge and maintain professional competence. (7.A.i)
   c. Continually assess his or her learning needs and develop the ability to respond appropriately. (7.a.ii)

b. **This course will indirectly address the following College of Pharmacy competencies:**
   1. Collaborate with other healthcare providers. (1.A.i.a.4)
   2. **Appropriately Manage and Use Resources of the Health Care System (3)**
      a. Apply patient and population specific data, quality assurance strategies, and research processes develop disease-specific treatment algorithms/pathways for a health care system. (3.b.i)
   3. **Appropriately Manage and Use Resources of the Health Care System (3)**
      a. Apply patient and population specific data, quality assurance strategies, and research processes develop disease-specific treatment algorithms/pathways for a health care system. (3.b.i)
   4. **Think Critically. (6)**

a. Identify, retrieve, understand, analyze, synthesize, and evaluate information needed to make informed, rational, and ethical decisions. (6.A)
b. Systematically gather, organize, and extract relevant information using a variety of methods and research tools. (6.A.i)
c. Analyze information within appropriate scientific, social, and clinical contexts. (6.A.ii)
d. Identify principles of organization and the logic of arguments. (6.A.ii.a)
e. Identify and test assumptions, biases, and prejudices implicit in arguments. (6.A.ii.b)
f. Employ appropriate mathematical and statistical tools and electronic technology to analyze information. (6.A.ii. c)
g. Assess accuracy, soundness, fairness, significance, relevance, completeness, and persuasiveness of information, arguments, and sources. (consider difference between information & the information source) (6.A.ii.d)
h. Synthesize information in order to draw conclusions, hypothesize, conjecture alternatives, or plan a course of action. (6.A.iii)
i. Evaluate conclusions and solutions according to appropriate criteria, and revise as necessary. (6.A.iv)
j. Provide support for rationale, solutions, and results. (6.A.v)
k. Solve complex problems that require an integration of one's ideas and values within a context of scientific, social, cultural, legal, clinical, and ethical issues. (6.B)
l. Interpret problems within appropriate contexts. (6.B.i)
m. Prioritize problems based on identifiable criteria and standards. (6.B.ii)
n. Apply systematic problem-solving strategies. (6.B.iii)
o. Articulate and implement a defensible solution and apply appropriate criteria to monitor outcomes. (6.B.iv)
p. Implement modifications based on monitoring data. (6.B.v)
q. Display habits, attitudes, and values associated with mature critical thinking. (6.C)
r. Evaluate personal assumptions, biases, prejudices, and opinions. (6.C.i)
s. Display an openness to new ideas and a tolerance for ambiguity. (6.C.ii)
t. Display inquisitiveness and commitment to the pursuit of truth. (6.C.iii)
u. Adopt multiple perspectives in personal thinking to avoid ethno-centricity and intolerance. (6.C.iv)

5. **Demonstrate Appropriate Interpersonal, Professional, and Ethical Behaviors. (7)**
   a. Collaborate proactively with other health care professionals. (7.E)

b. Accept the responsibilities embodied in the principles of pharmaceutical care. (7.G)

V. Course Topics

Cardiovascular Physiology Cardiovascular Monitoring
Hypertensive Urgencies and Emergencies
Acute Coronary Syndrome (including unstable angina)
Acute Myocardial Infarction
Decompensated Heart Failure
Shock
Advanced Cardiac Life Support and Dysrrhythmias
Acute Deep Vein Thrombosis and Pulmonary Embolism
Hypertension
Dyslipidemia
Peripheral Artery Disease
Stable Angina
Heart Failure
Drug-Induced Cardiovascular Disease
Anticoagulation

VI. Evaluation and Grade Assignment

Grading Scale:

90.0 – 100%	A
80.0 – 89.9%	B
70.0 - 79.9%	C
60.0 – 69.9%	D
<60.0%	F

VII. 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. Textbook(s) and Materials: (Include required and recommended items)

1. Required

a. Joseph Dipiro, Robert Talbert, Gary Yee, Gary Matzke, Barbara Wells, L. Michael Posey. *Pharmacotherapy: A Pathophysiologic Approach*. McGraw-Hill.

b. Thomas Nogrady, Donald F. Weaver. *Medicinal Chemistry: A Moleculary and Biochemical Approach*. Oxford University Press.

c. Goodman, Gillman. *The Pharmacological Basis of Therapeutics.* McGraw-Hill.

B. **Attendance Policy**:

Class attendance is required. 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: (1) may prevent access to the classroom during regularly scheduled times; (2) may jeopardize a student's scholastic standing; and (3) may lead to suspension from the college or University. Students shall submit excuses for all class absences to professor 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 this information to the faculty. 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:**

Excused make-ups will be within one week of the student's return to class at the convenience of the instructor. Excused absences will be determined using the guidelines stated in the University Catalog.

D. Academic Integrity:

Faculty and students must observe the ULM published policy on Academic Dishonesty (see Page 4, ULM *Student Policy Manual* http://www.ulm.edu/studentpolicy/).

Cheating, plagiarism, or other inappropriate conduct will not be tolerated. Academic cheating includes but is not limited to the accomplishment or attempted accomplishment of the following:

1. Copying or obtaining information from another student's test paper.*
2. Using, during a test, materials not authorized by the person giving the test.**
3. Collaborating, conspiring, or cooperating during an in-class or take-home test with any other person by giving or receiving information without authority.
4. Stealing, buying, or otherwise obtaining all or part of an unadministered test.
5. Selling or giving away all or part of an unadministered test or any information concerning specific questions and items on an unadministered test.
6. Requesting, bribing, blackmailing, or in any other way causing any other person to obtain an unadministered test or information about an unadministered test or a test in the process of being administered.
7. Substituting for another student, or permitting any other person to substitute for oneself to take a test.

8. Submitting as one's own, in fulfillment of academic requirements, any work prepared totally or in part by another person.
9. Any selling, giving, or otherwise supplying to another student for use in fulfilling academic requirement any work.
10. Submitting artificially produced data or information in the place of descriptive, experimental, or survey results.
11. Any other devious means of securing an unearned grade in a non-credit course or in a course offered for credit.
12. Using, during a test, any electronic storage device, wireless and/or internet-based technology, or any other means that provides information not authorized for use during the testing period.

*A student looking on another student's paper is considered cheating.

**The presence on one's person (or in close proximity thereto) of a condensation of test information which could be regarded as a "cheat sheet" will be considered adequate evidence to establish cheating.

Plagiarism is the use of any other person's work (such work need not be copyrighted) and the unacknowledged incorporation of that work in one's own work offered for credit.

Censures (Penalties)

Academic dishonesty will result in a referral to Committee on Ethical and Professional Standards with a recommendation for a grade of "F" for the course and expulsion from the College. 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 an answer to the question.

E. Course Evaluation Policy:

At a minimum, students are expected to complete the on-line course evaluation. (Also, include any additional course-specific policies related to evaluation of the course.)

F. Student Services:

Information about ULM student services, such as Student Success Center (http://ulm.edu/cass/), Counseling Center (http://ulm.edu/counselingcenter/), Special Needs (http://ulm.edu/counselingcenter/special.htm) and Student Health Services, is available at the following Student Services web site http://ulm.edu/studentaffairs/

G. Emergency Procedures: (Include appropriate emergency information)

Please review the emergency escape plan in the classrooms and hallways of Sugar Hall. Move quickly and orderly to the appropriate stairwell and exit the building. The meeting place for this class will be at the College of Pharmacy sign at the edge of the front (West) parking lot in the front of the College of Pharmacy Building across the street from Sugar Hall. 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.

VIII. Tentative Course Schedule

Topic	Lecturer	Time
Review of Cardiac Physiology	K. Jackson	
Cardiovascular Monitoring in Acute and Ambulatory Care Settings	S. Sirmans	
Pharmacology	K. Jackson	
Catacholamine Pharmacology (epinephrine, norepinephrine)		
Anticholinergic Pharmacology (atropine)	K. Jackson	
Adrenergic Inhibitor Pharmacolgy (beta blocker, alpha1 blocker, alpha2 agonist)	K. Jackson	
Calcium Channel Blocker Pharmacology	K. Jackson	
Renin Antagonist/ACE Inhibitors and Angiotensin Blocker Pharmacolgy	K. Jackson	
Loop Diuretics	K. Jackson	
Vasodilator Pharmacolgy (nitroprussinde, hydralazine, nitrates, fenoldopam, Neseritide) pharmacology	K. Jackson	
Antiplatlet agents (aspirin, P2Y1 receptor blockers, Glycoprotein IIB/IIIA inhibitors) pharmacology	K. Jackson	
Phosphodiesterase inhibitors (pentoxyphylline)	K. Jackson	
Organic Nitrates (SL nitroglycerine, isosorbide dinitrate)	K. Jackson	
Antihyperlipidemia Agents (HGM-CoA reductase inhibitors, fenofibrates, nicotinic acid derivatives, bile acid sequestrants)		
Anticoagulants (Warfarin, Unfractionated heparin, low molecular weight Heparin, direct thrombin Inhibitors, include vitamin K and Protamine)	K. Jackson	
Fibrinolytics/Thrombolytics	K. Jackson	
Inotropes (Dobutamine, Dopamine, Milrinone)	K. Jackson	
Aldosterone Antagonists (Spironolactone, Eplerenone)	K. Jackson	
Cardiac Glycosides (Digoxin)	K. Jackson	
Antiarrythmics	K. Jackson	
Vasopressin and vasopressin analogues	K. Jackson	
Adenosine	K. Jackson	
Medicinal Chemistry	R. Hill	
Anticholinergic Pharmacology (atropine)	R. Hill	
Adrenergic Inhibitor Pharmacolgy (beta blocker, alpha1 blocker, alpha2 agonist)	R. Hill	
Calcium Channel Blocker Pharmacology	R. Hill	
Renin Antagonist/ACE Inhibitors and Angiotensin Blocker Pharmacolgy	R. Hill	
Loop Diuretics	R. Hill	
Vasodilator Pharmacolgy (nitroprussinde, hydralazine, nitrates, fenoldopam, Neseritide) pharmacology	R. Hill	
Antiplatlet agents (aspirin, P2Y1 receptor blockers, Glycoprotein IIB/IIIA inhibitors) pharmacology	R. Hill	
Anticoagulants (Warfarin, Unfractionated heparin, low molecular weight Heparin, direct thrombin Inhibitors)	R. Hill	
Antihyperlipidemia Agents (HGM-CoA reductase inhibitors, fenofibrates, nicotinic acid derivatives, bile acid sequestrants)		
Fibrinolytics/Thrombolytics	R. Hill	
Inotropes (Dobutamine, Dopamine, Milrinone)	R. Hill	
Aldosterone Antagonists (Spironolactone, Eplerenone)	R. Hill	
Cardiac Glycosides (Digoxin)	R. Hill	
Antiarrythmics	R. Hill	
Vasopressin and vasopressin analogues	R. Hill	
Adenosine	R. Hill	

Therapeutics	R. Hill	
Hypertensive Urgencies and Emergencies	S. Sirmans	
Acute Coronary Syndrome (including unstable angina)	L. Pritchard	
Acute Myocardial Infarction	L. Pritchard	
Decompensated Heart Failure	B. Wilbert	
Shock syndrome (include all shock)	K. Sorrels	
Advanced Cardiac Life Support and Dysrythmias	B. Wilbert/K.Sorrels	
Acute Deep Vein Thrombosis and Pulmonary Embolism	B. Wilbert	
Hypertension	S. Sirmans	
Heart Failure	B. Wilbert	
Anticoagulation	B. Wilbert	
Peripheral Artery Disease		
Chronic Coronary Artery Disease/Stable Angina		
Dyslipidemia		
Pharmacokinetics	S. Sirmans	
Digoxin Pharmacokinetics	S. Sirmans	
Antiarrhythmic Pharmacokinetics		
Theophylline Pharmacokinetics		

The instructor reserves the right to adjust the schedule as needed.