HEMATOLOGY ONCOLOGY MODULE: PHRD 5035, CRN 62145

I. Contact Information

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II. Course Pre-requisites/Co-requisites
Pre-requisites PHRD 4027, PHRD 4035, PHRD 4056, PHRD 4074, PHRD 4081, and PHRD 4083

III. Course Description

A. Catalogue Description
PHRD 5035. Hematology/Oncology Integrated Module. 3 Credit Hours. Principles of pathophysiology, pharmacology, medicinal chemistry, clinical pharmacokinetics, and pharmacotherapy (including both prescription and non-prescription medications) as they apply to hematology and oncology drug therapy management.

B. Course Description and Rationale
This course will cover the chemical composition and pharmacology of the different classes of chemotherapeutic agents as well as biological agents used in targeted therapy and supportive care including anemia. The students will then be able to discuss the basic principles of cancer treatment with regard to the following: etiology, diagnosis, staging, prognosis, and treatment types for the most common cancer types; structure of anticancer agents and their chemistry and discuss supportive and palliative care issues. In addition the course will address the indications, methodology, and complications of hematopoietic stem cell

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transplant. The course will also cover diseases related to anemia with chemistry and pharmacology related to those states.

IV. Curricular Objectives and Outcomes

This course will directly address the following College of Pharmacy competencies (with specific numbering)

A. Provide Comprehensive Patient Specific Pharmaceutical Care.
   1. Evaluate the appropriateness of a given prescription or medication order based on patient and disease-specific factors.
   3. Develop and implement an evidence-based care plan. (pharmacology, medicinal chemistry, physiology, pathology, etc.)
   5. Document all activities involved with the provision of comprehensive patient specific pharmaceutical care.

   20. Draw appropriate conclusions from research results.
   21. Assess the potential impact and implication of published information on current practices.

C. Think Critically.
   24. Identify, retrieve, understand, analyze, synthesize, and evaluate information needed to make informed, rational, and ethical decisions.
   25. 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.
   26. Display habits, attitudes, and values associated with mature critical thinking

D. Demonstrate Appropriate Interpersonal, Professional, and Ethical Behaviors.
   27. Maintain professional competence.
   29. Identify, analyze, and resolve ethical problems involved in pharmacy practice.
   34. Demonstrate appropriate interpersonal, intergroup, and cross-cultural behaviors that promote respect and trust from peers, patients, and community members.

V. Course Specific Objectives and Outcomes

A. Demonstrate knowledge of the medical chemistry and pharmacology related to chemotherapy and other medications used in the treatment of cancer and anemia.
B. Identify the basic epidemiology, etiology, and patient presentation of the various cancers and anemias.
C. Discuss common modalities used for the treatment of cancer and anemia including but not limited to: surgery, radiation, chemotherapy, medication, and other medical procedures.
D. Given a patient case, develop a treatment plan for a patient with cancer as well as addressing any supportive care needs.
E. Interpret the necessary laboratory values and chose an appropriate treatment for a patient diagnosed with anemia.
F. Identify the signs and symptoms of an oncologic emergency and describe appropriate treatment.
G. Define bone marrow transplant and potential risks and benefits associated with this therapy.
H. Explain the pharmacokinetics principles of methotrexate, cyclosporine, and tacrolimus.

VI. Course Topics

A. Cancer chemotherapy/Introduction to Antineoplastics
   1. Alkylating agents
   2. Antimetabolites/Nucleoside analogs
   3. Antitumor Antibiotics
   4. Antimitotic/Natural products/Hormonal therapy
   5. Angiogenesis inhibitors/Antibody-cancer immunotherapy
   6. Targeted therapy
B. General Principles of Cancer Treatment
   1. Breast Cancer
   2. Lung Cancer
   3. Colorectal Cancer
   4. Prostate Cancer
   5. Lymphomas
6. Gynecologic Cancers
7. Acute and Chronic Leukemias
8. Melanoma
9. Myeloma
10. Supportive Care: chemotherapy induced nausea and vomiting, growth factors, palliative care
11. Oncologic Emergencies: spinal cord compression, superior vena cava syndrome, tumor lysis syndrome,
12. Bone Marrow Transplant including calcineurin inhibitor and methotrexate pharmacokinetics
C. Anemia: iron deficiency, B12 deficiency, folic acid deficiency, chronic disease, hemolytic, and sickle cell

VII. Instructional Methods and Activities
Lectures and case discussions with assigned outside reading.

VIII. Evaluation and Grade Assignments
There will be three exams and a final exam, one for Medicinal Chemistry, one for Pharmacology and two for Therapeutics. Exams II and III may be comprehensive in nature and the final exam will consist of both new and comprehensive material.

There may be quizzes at the discretion of the faculty member.

The final grade will be determined on percentage of total points available for the entire course.

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

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. Textbook(s) and Materials: (Include required and recommended items)
   4. Review articles which will be supplied during that semester
   5. Texts used in previous courses may be required for review

B. Attendance Policy
The professional educational experience in the College of Pharmacy involves many multifaceted learning objectives, including professional interactions with faculty and peers that do not lend themselves to traditional testing modalities and assignment of letter grades. As a result, class attendance is mandatory in all pharmacy courses. Students reported for accumulating more than three unexcused absences in a course during an academic semester will be administratively dropped from the course with a “W” grade. In accordance with College of Pharmacy policy and procedure, a grade of “W” will be counted as an “F” grade with respect to academic standards.

The College Excused Absence Policy will be adhered to and may be found on the College website: (http://rxweb.ulm.edu/pharmacy/student/excusedabsence.pdf)
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/pharmacy/documents/ospa/codeofconductv82011.pdf).

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.

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 College's technical standards and policies concerning students with special needs (http://www.ulm.edu/studentpolicy/studentpolicy.pdf). ULM student services, such as Student Success Center (http://ulm.edu/cass), Counseling Center (http://ulm.edu/counselingcenter), and Student Health Services, is available at the following Student Services web site http://ulm.edu/studentaffairs/

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 orderly 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 front of the College of Pharmacy Building. 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.

H. Discipline/Course Specific Policies
Any student earning a non-passing grade of “D” or “F” on an exam will be required to participate in mandatory tutoring sessions offered by the course instructor(s) until such a time that they obtain a passing average in the course.
I. Early Intervention/Remediation Policy

“Students scoring <70% on any exam and an overall exam average <70% (excludes quizzes, assignments, bonus, etc.) will be required to submit to the coordinator written, narrative responses to select lecture objectives that will be provided within 24 hours of the posting of their exam grade to Moodle. These objectives will be in the form of a Moodle assignment and represent unit- or lecture-level objectives to be tested upon in the next scheduled course exam.

Written responses must be submitted no later than one calendar week before the next scheduled exam. Responses must be written in complete sentences and may not be copied or pasted from any source, including class notes, treatment guidelines, textbooks, or any internet site. Submissions found to contain responses that have not been written in a student’s own words will be considered a failure to submit.

In addition, students will be required to review each failed exam’s ExamSoft-generated missed item report with the instructor responsible for each section of material. The discussion should include the student’s reasoning for the incorrect answer as well as the reason for the correct answer.

In addition to answering objectives as described above and reviewing missed item reports, first professional year students scoring <70% on any exam and having an overall exam average <70% (excludes quizzes, assignments, bonus, etc.) will meet with the Director of Professional Affairs. Failure to submit this required assignment will result in ineligibility to remediate.”
## X. Tentative Course Schedule

### A. Contact Information: see section I

### B. Schedule

<table>
<thead>
<tr>
<th>Date</th>
<th>Topic</th>
<th>Instructor</th>
<th>Exam Pts</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jan 20</td>
<td>Overview of Hematology &amp; Oncology/Introduction/ General Principles</td>
<td>Cockerham</td>
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<tr>
<td>Jan 25</td>
<td>Alkylating agents, Anthracyclines –highlighting cyclophosphamide, melphalan, doxorubicin, etoposide</td>
<td>Jois</td>
<td></td>
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<tr>
<td>Jan 27</td>
<td>Antimetabolities, Hypomethylating Agents, Platinums- highlighting S-FU, cytarabine, methotrexate, carboplatin, cisplatin.</td>
<td>Jois</td>
<td></td>
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<tr>
<td>Feb 1</td>
<td>Taxols, Topoisomerase inhibitors, Hormonal agents- highlighting paclitaxel, docetaxel, irinotecan, etoposide, vincristine, tamoxifen, aromatase Inhibitors, LHRH Agonists. Additional reading material will be provided</td>
<td>Jois</td>
<td></td>
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<tr>
<td>Feb 3</td>
<td>Targeted therapy, Immune therapy, Other- highlighting Tyrosine Kinase Inhibitors, VEGF Inhibitor, Monoclonal Antibodies. Additional reading material will be provided</td>
<td>Jois</td>
<td>Jois-80</td>
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<td>Feb 8</td>
<td>Mardi Gras</td>
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<tr>
<td>Feb 10</td>
<td>Mardi Gras</td>
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<tr>
<td>Feb 17</td>
<td>Exam I (100 pts)</td>
<td></td>
<td>Due 02/08</td>
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<tr>
<td>Feb 17</td>
<td>Antimetabolites</td>
<td>Shah</td>
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<tr>
<td>Feb 22</td>
<td>Alkylating Compounds/Platinum Compounds</td>
<td>Shah</td>
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<td>Feb 24</td>
<td>Microtubule targeting Drugs/Natural Products/Hormonal products</td>
<td>Shah</td>
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<tr>
<td>Feb 29</td>
<td>Antitumor Antibiotics</td>
<td>Shah</td>
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<tr>
<td>Mar 2</td>
<td>Angiogenesis Inhibitors/Cancer Vaccines/ Immunotherapy/Biological Response Modifiers</td>
<td>Shah</td>
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<td>Mar 7</td>
<td>Targeted Therapies</td>
<td>Shah</td>
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<tr>
<td>Mar 9</td>
<td>Targeted Therapies</td>
<td>Shah</td>
<td>Shah-100</td>
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<tr>
<td>Mar 14</td>
<td>Exam II (100 pts)</td>
<td>Shah</td>
<td>Due 03/07</td>
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<tr>
<td>Mar 16</td>
<td>Supportive Care</td>
<td>Comeau</td>
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<td>Mar 21</td>
<td>Breast Cancer</td>
<td>Comeau</td>
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<tr>
<td>Mar 23</td>
<td>Lung Cancer</td>
<td>Comeau</td>
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<tr>
<td>Apr 4</td>
<td>Colorectal Cancer</td>
<td>Cockerham</td>
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<tr>
<td>Apr 6</td>
<td>Prostate Cancer/ Oncologic Emergencies</td>
<td>Cockerham</td>
<td>MC-34</td>
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<tr>
<td>Apr 11</td>
<td>Gynecologic Cancer/ Melanoma</td>
<td>Comeau</td>
<td>JC-66</td>
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<tr>
<td>Apr 13</td>
<td>Exam III (100 pts)</td>
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<td>Due 04/06</td>
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<td>Apr 18</td>
<td>Palliative Care</td>
<td>Comeau</td>
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<tr>
<td>Apr 20</td>
<td>Leukemia</td>
<td>Comeau</td>
<td>Jois-80ld</td>
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<tr>
<td>Apr 25</td>
<td>Lymphoma</td>
<td>Comeau</td>
<td>Shah-180ld</td>
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<td>Apr 27</td>
<td>Multiple Myeloma</td>
<td>Comeau</td>
<td>MC-60</td>
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<tr>
<td>May 2</td>
<td>Bone Marrow Transplant</td>
<td>Comeau</td>
<td>JC-50n, 80</td>
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<tr>
<td>May 4</td>
<td>Anemia</td>
<td>Comeau/??</td>
<td>JC/??-10n</td>
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<tr>
<td>May 9</td>
<td>Final Exam (100 pts)</td>
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<td>Due 05/02</td>
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The instructor reserves the right to adjust the schedule as needed.