I. Contact Information

Course Coordinator:  Sami Nazzal, Ph.D.
Associate Professor of Pharmaceutics
Office:  Bienville 378
Phone:  318-342-1726
Email:  nazzal@ulm.edu
*Office Hours: M-Th 2-4 pm; Fri by appointment

Course Instructors:
Jessica Brady, Pharm.D., BCPS
Office: Bienville office 115
Phone: 342-1697
Email: Brady@ulm.edu (preferred method of contact)
*Office hours: M-Th 1:00-4:00 pm

Savannah Posey, PharmD, BCPS
Office: Bienville 123
Phone: 318-342-3176
Email: posey@ulm.edu (preferred method of contact)
*Office hours: M-Th 8:00 – 11:00 am

Courtney Robertson, PharmD
Office: Bienville 209
Phone: 318-342-1171
Email: corobertson@ulm.edu (preferred method of contact)
*Office Hours:  Mon 1-5 PM; Tues/Thurs 8-11 AM

II. Course Prerequisites/Co-requisites

PHRD 4008 Pharmaceutics I

III. Course Description

Fundamentals of drug delivery systems. 3 Cr.

IV. Curricular Objectives and Outcomes

Provide Comprehensive Patient Specific Pharmaceutical Care.
1. Evaluate the appropriateness of a given prescription or medication order based on patient and disease-specific factors.
4. Compound and/or dispense the most optimal formulation for drug delivery consistent with the patient needs and in harmony with the law.

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.

Demonstrate Appropriate Interpersonal, Professional, and Ethical Behaviors.
27. Maintain professional competence.
28. Represent the profession in an ethical manner.
31. Collaborate proactively with other health care professionals.
32. Practice in a manner that is consistent with state and federal laws and regulations.
V. Course Specific Objectives and Outcomes

Upon completion of this course the student will be able to:

- Compare and contrast the various types of medicated powders (e.g. bulk and divided)
- Distinguish tablet types
- Discuss tablet ingredients and their effect on dissolution and absorption
- Elaborate on tablet manufacture
- Discuss tablet testing
- Discuss the value of tablet coatings
- Distinguish between soft and hard gelatin capsules
- Discuss modified release dosage forms
- Evaluate semisolids on the basis of their ingredients
- List criteria for selection of an ointment base
- Evaluate suppositories on the basis of composition
- Discuss the advantages and disadvantages of drug administration in suppository form
- Discuss the rational for drug inclusion in various suppository bases
- Understand aerosol composition and function
- Discuss metered dose inhalers
- Understand aerosol evaluation

VI. Course Topics

Oral Drug Delivery
  a) Powders
  b) Tablets
  c) Capsules

Topical and Transdermal Delivery Systems
Rectal, Vaginal, and Urethral Delivery

VII. Instructional Methods and Activities

Lectures accentuated with visual presentation

VIII. Evaluation and Grade Assignment

In order to assess each student’s performance three tests, of approximately 50 minutes in duration, and a final examination will be given. Each exam is “closed-book”. No informational resources or personal electronics of any kind are to be used during an examination, unless authorized by the course coordinator. Exams may be multiple-choice, fill in the blank, short-answer, essay, or any other format deemed necessary.

Unless otherwise specified, exams will be administered in electronic format by use of ExamSoft. Each student will be required to present to the exam with a working computer on which the exam has been downloaded. Scratch paper will be provided and must be returned prior to exiting the classroom following the exam.

- The exam will be made available in a time such that students will be able to download the exam PRIOR to the test time. Students will not be given extra time to take the exam to allow for the downloading of the test document.
- Students must upload the exam in a timely fashion. Failure to do so will result in a zero on that exam. In the event of an internet issue, students who have an issue uploading the exam will contact the course coordinators immediately and it will be addressed at the discretion of the coordinators.
- Students will NOT be allowed to leave the classroom with their computer PRIOR to the end of the examination period.
Each test will be comprehensive. Information acquired from previous courses in the pharmaceutics sequence and from other courses in the professional pharmacy curriculum may be needed in preparing for these examinations. **The final may include new material as well as comprehensive material.**

Students wishing to review their exams with the course instructors must do so within 2 weeks of when test scores are posted. In the event that a question is eliminated from an exam, the exam may be graded based on the remaining number of questions and adjusted to represent correct number of points. Students wishing to challenge a question on the test must provide the course coordinator with a written statement (email or hard copy) that identifies which question or questions are being challenged; and why the student feels his or her answer(s) is/are correct. Discussion of a dispute will occur only after a written query is submitted. Challenges of test questions will only be considered within 1 week of when test scores are posted. If there is a conflict between the lecture notes and the textbook or any other reference material, precedence will be given to the lecture notes.

Making the Grade:

<table>
<thead>
<tr>
<th>Description</th>
<th>Points</th>
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<tbody>
<tr>
<td>First Exam</td>
<td>100</td>
</tr>
<tr>
<td>Second Exam</td>
<td>100</td>
</tr>
<tr>
<td>Third Exam</td>
<td>100</td>
</tr>
<tr>
<td>Final Exam</td>
<td>100</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>400</strong></td>
</tr>
</tbody>
</table>

Grades will be assigned according to the following scale:

<table>
<thead>
<tr>
<th>Grade</th>
<th>Points</th>
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<tbody>
<tr>
<td>A</td>
<td>360 to 400</td>
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<tr>
<td>B</td>
<td>320 to &lt;360</td>
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<tr>
<td>C</td>
<td>280 to &lt; 320</td>
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<tr>
<td>D</td>
<td>240 to &lt; 280</td>
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<tr>
<td>F</td>
<td>Less than 240</td>
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</table>

**NOTE:** At the discretion of the course coordinator, bonus points may or may not be given to any of the above listed categories. Exceptional student participation may be reworded with bonus points as determined by the course coordinator.

There will be no curve applied to individual tests. There will be no exception to the grading scale. This ensures that everyone has an equal opportunity to earn a desired grade.

**NOTE:** **scores will NOT be rounded. Therefore, scores of 0.5 and greater will NOT be rounded upwards.**

Failure to comply with the policies listed in this syllabus will result in a score of zero (in the category in which the policy was not followed.)

Undergraduate 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.
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.

**Exam Dates:**

- First Exam: February 17
- Second Exam: March 16
- Third Exam: April 20
- Final Exam: TBD

**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/](http://www.ulm.edu/studentpolicy/)). Additional class policies include:

**A. Textbook(s) and Materials:**

- Required Textbook: None
- Other required items:
  - **TI-36X Calculator by Texas Instruments.**
  
  Note: This is the only calculator that will be allowed for use on examinations. This instrument has been approved by the Basic Pharmaceutical Sciences faculty for use in the pharmaceutics sequence which includes Pharmaceutical Calculations, Pharmaceutics I and II, and Pharmacokinetics and Biopharmaceutics courses. This instrument will perform basic logarithmic and statistical tests as well as simple linear regression. **Borrowing a calculator from someone else or using someone else's calculator during an examination will not be permitted.**

**B. Attendance Policy:** Class attendance is mandatory and will be checked according to university regulations.

**C. Make-up Policy:**

**Attendance as all tests is mandatory.** If you must miss an examination, please call the Office of Student and Professional Affairs in advance. See instructions in COP Student Manual for instructions pertaining to missed examinations and their make-up. If an examination must be missed for valid and verifiable reasons or because of an emergency, a make-up examination will be administered at the convenience of the instructor. In each instance what constitutes “valid and verifiable reasons” or an emergency will be determined by the course coordinator. Exams will not be given early. Failure to attend a scheduled make-up exam will result in a zero (0) grade for that exam. The format of the make-up exam may be written or oral. In the event that the final exam is missed, for reasons stated below, a grade of “I” will be assigned and the student will follow the University policy for moving the “I” grade. In the case that an exam is missed, the student must follow and adhere to the time frame in the College of Pharmacy's excused absence policy.

Acceptable excuses will include, but not be limited to:

1) Medical or dental care – validated by the attending physician or dentist. The student will present a statement from the attending health care provider indicating the date and time of treatment, the nature of the treatment and a statement that he/she was not able to take the examination at the appointed time.

2) A death in the student’s immediate family.

3) A family emergency

4) An official university function. It is the student’s responsibility to have the faculty in charge of the function notify the course coordinator prior to the function.
D. Academic Integrity:
Faculty and students must observe the ULM published policy on Academic Dishonesty (see 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/student/copcodeofconduct.pdf

E. Course Evaluation Policy: 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 Colleges technical standards and policies concerning students with special needs (http://www.ulm.edu/studentpolicy/studentpolicy.pdf, pages 21-22). 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 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 Bienville and Broadmoor Blvd. Under no circumstances is the elevator to be used for emergency evacuation. Any student needing assistance should notify the instructor immediately. For emergencies, to contact University Police, call 1-911 from landlines and 342-5350 from cell phones.

H. Discipline/Course Specific Policies: Students are responsible for all course information on Moodle and/or instructor websites. They are expected to check these sources regularly to access class materials, required readings, assignments, and other information necessary to excel in this course. Lecture notes might be posted on Moodle. Posting time; however, is at the discretion of the course coordinator. Lecture notes are not intended to be the entire content of the course. They do not take the place of class attendance, personal note-taking, and reading the assigned and/or required text. Course coordinator may revise the notes at any time during the course.
X. Tentative Course Schedule

Schedule: The instructor reserves the right to adjust the schedule as needed

<table>
<thead>
<tr>
<th>PHRD 4029, Pharmaceutics II</th>
</tr>
</thead>
<tbody>
<tr>
<td>Monday, Wednesday, and Friday 9-9:50 am</td>
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<table>
<thead>
<tr>
<th>INSTRUCTOR</th>
<th>GENERAL SUBJECT</th>
<th>SUB-TOPIC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dr. Courtney Robertson</td>
<td>Rectal Drug Delivery</td>
<td>Rectal Physiology</td>
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<tr>
<td></td>
<td></td>
<td>Delivery Systems</td>
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<tr>
<td></td>
<td>Vaginal and Urethral Drug Delivery</td>
<td>Vaginal Physiology</td>
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<tr>
<td></td>
<td></td>
<td>Delivery Systems</td>
</tr>
<tr>
<td>Conventional Oral Delivery Systems (Powders, Tablets, and Capsules)</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Dr. Savannah Posey</th>
<th>1. Powders</th>
<th>a. Preparation – divided</th>
<th>b. Preparation – bulk</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dr. Jessica Brady</td>
<td>2. Tablets</td>
<td>• Tablet types</td>
<td>• Ingredients</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Preparation</td>
<td>• Preparation</td>
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<td></td>
<td></td>
<td>• Evaluation</td>
<td>• Evaluation</td>
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<tr>
<td></td>
<td></td>
<td>• Coating</td>
<td>• Coating</td>
</tr>
<tr>
<td>Dr. Sami Nazzal</td>
<td>3. Capsules</td>
<td>• Hard gelatin</td>
<td>• Soft gelatin</td>
</tr>
</tbody>
</table>

Modified Oral Drug Delivery Systems

Topical and Transdermal Delivery Systems

<table>
<thead>
<tr>
<th>Dr. Sami Nazzal</th>
<th>1. Ocular Delivery</th>
<th>Anatomy and Physiology of the Eye</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2. Otic Delivery</td>
<td>Anatomy and Physiology of the Ear</td>
</tr>
<tr>
<td></td>
<td>3. Nasal Drug Delivery</td>
<td>Otic Drug Delivery Considerations</td>
</tr>
<tr>
<td></td>
<td>4. Pulmonary Delivery</td>
<td>Anatomy and Physiology of the Nose</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Nasal Drug Delivery Considerations</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Devices used for Pulmonary Drug Delivery</td>
</tr>
</tbody>
</table>

Please note that the information in this syllabus is subject to change.