

**PHAR 4037-01****MEDICAL MICROBIOLOGY****Contact Information**

**PROFESSOR:** Benny L. Blaylock, Ph.D.

**OFFICE:** Bienville 102B

**TELEPHONE:** 342-1600

**E-MAIL:** blaylock@ulm.edu

**OFFICE HOURS:** Monday through Friday from 7:30 A.M. to 5:00 P.M. except during class and/or lab instruction time. It is best to make an appointment through the Dean's office Administrative Assistant or directly with me, but feel free to stop by at your convenience.

**Course Prerequisites/Corequisites**

**Prerequisite** – P1 Standing

**Course Description**

**Microbiology** - Discussion of bacterial, viral, fungal and parasitic pathogens and the diseases they cause. Topics include microbial structure, physiology and genetics, virulence factors, mechanisms of tissue damage and antimicrobial therapies.

**Immunology** - Discussion of the stimulation, production and role of innate and acquired immune responses, health outcomes in immunopathological conditions and the modulation of immune function using vaccines and other biotechnology products.

**Course Objectives and Outcomes**

The objectives of this course are:

- a. Introduce the pharmacy student to the concepts of medical microbiology.

- b. Describe the organisms responsible for infectious disease and their virulence mechanisms
- c. Develop an understanding of infectious disease pathogenesis and potential antibiotic treatment and preventions.
- d. Introduce the pharmacy student to the anatomy of the immune system.
- e. Describe the cells and molecules of the immune system and develop concepts concerning their interrelated mechanisms in providing defenses against infectious diseases and neoplasia.
- f. Develop an understanding of the diseases of immune origin including immunodeficiency diseases, hypersensitivities and autoimmunity.
- g. Develop concepts concerning pharmacological manipulation of the immune system in the areas of transplantation, vaccines and biotechnology advances.

### **Curricular Objectives and Outcomes**

#### Provide Comprehensive Patient Specific Pharmaceutical Care

- a. Evaluate the appropriateness of a given prescription or medication order based on patient and disease-specific factors
- b. Develop and implement an evidence-based care plan (pharmacology, medicinal chemistry, physiology, pathology, etc.)

#### Promote Health Improvement and Self-Care

- a. Promote/participate in effective health and disease prevention services as part of patient or population specific care

#### Think Critically

- a. Identify, retrieve, understand, analyze, synthesize and evaluate information needed to make informed, rational and ethical decisions

### **Course Topics**

Bacterial Classification, Morphology and Cell Structure

Bacterial Metabolism

Bacterial Genetics

Mechanisms of Bacterial Pathogenesis

The Gram-Positive Cocci

The Gram-Positive Bacilli

The Gram-Negative Cocci and Anaerobic Bacilli

The Gram-Negative Aerobic Bacilli

Actinomyces, Mycobacteria and Mycoplasmas

Spirochete, Rickettsial and Chlamydial Pathogens

Antimicrobial Agents

Transmission of Infectious Microbial Diseases

Mechanisms of Viral Pathogenesis

Pspillomviruses, Polyomaviruses, Adenoviruses and Poxviruses

Herpesviruses and Picornaviruses

Parvoviruses, Paramyxoviruses, Orthoviruses and Reoviruses

Rhabdoviruses, Togaviruses and Bunyaviruses

Hepatitis Viruses, Retroviruses, Miscellaneous Viruses and Prions

Superficial, Cutaneous and Subcutaneous Mycoses

Systemic and Opportunistic Mycoses

Basic Biology of Parasites

Protozoan Parasites

Helminth Parasites

Concepts of the Immune System

Cells involved in the Immune Response

Lymphoid Organs and Tissues

Inflammation

Complement

Immunoglobulin Structure and Function

Immunogenetics

Major Histocompatibility Complex

Antigen Recognition

Humoral Immunity

Cell-Mediated Immunity

Cytokines

Tumor Immunology

Immunodeficiency

Hypersensitivity/Allergy

Autoimmunity and Autoimmune Disease

Transplantation and Rejection

Biotechnology- Vaccines

Monoclonal Antibody Production

Recombinant DNA Technology

## **Instructional Methods and Activities**

All lectures will be in the PowerPoint presentation format. Not all pictures, illustrations, etc. are from your textbook. I reserve the right to use any of the above from any source to enhance a point in the lecture. If a picture, illustration, etc. is used on an exam, the student will be able to access it either in the text or online through Moodle. A PowerPoint presentation of each lecture will be placed on the ULM Moodle website. Moodle may be accessed by going to the ULM homepage ([www.ulm.edu](http://www.ulm.edu)) and clicking on Moodle. If you are enrolled in a course on Moodle, you have access to that course.

It is highly recommended that students access this information prior to coming to each lecture. Each PowerPoint presentation is essentially an exact duplicate of the lecture presentation. Time will not be allotted for transcription of the slides to notes during class.

## **Evaluation and Grade Assignment**

There are eight (8) major exams plus the final exam planned for this course. At the discretion of the professor, there may also be smaller, unannounced “pop” quizzes. Exam format will be ExamSoft. Questions will generally be multiple choice. During the exam, students may not leave the room. Other than your computer, items such as cell phones, notes or anything not specifically provided by the professor **cannot** be on the desk or used in any way during the exam.

I will be happy to review exam performance with any student. In this way, the student not only learns the correct answer to a question but the reason why the question was incorrectly answered. Hopefully, this will be a learning experience. Exams will be graded within one week of the exam date and scores posted on Moodle. Exam scores on Moodle are for student access only and are not considered the official grades. The official grades reside on Dr. Blaylock's computer in an Excel spreadsheet. Students wishing to review an exam will have a maximum of two weeks in which to come to the professor's office and review the exam. The

two-week review period starts the day after the exam. During a review session, students may not make copies or transcribe any information from the exams.

The first eight major exams will vary in number of points depending on the amount of material covered (usually 50-70). The final examination will be comprehensive over major points covered during the semester. Question format for all exams and quizzes may be multiple choice, short answer (fill in the blank), true or false, short discussion or a combination of these question types. I reserve the right to use any question format that fits the exam needs.

The grading scale is as follows:

A = 90 - 100%

B = 80 - 89%

C = 70 - 79%

D = 60 - 69%

F = <60%

Scores are rounded up (example - 89.5 = 90; 89.4 = 89)

Only one (1) decimal place is used. There is **no curve**. I will be more than happy to give all "A's".

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.

## **Class Policies and Procedures**

**TEXTBOOK:** Medical Microbiology, 6<sup>th</sup> edition (Murray, P.R., Tenover, M.A. and Tenover, K.S., eds.). The textbook is a requirement for the course. Students will be responsible for material in the text assigned by the professor. For exams, quizzes and papers, students are responsible for material contained in all required reading, handout and lecture materials and homework. Students are responsible for all assigned reading materials whether or not they are covered in lecture.

### **ATTENDANCE POLICY:**

Class attendance is required and encouraged. Attending Pharmacy School is a privilege and should be treated as invaluable training for the student's future career.

Students disruptive to the classroom environment will be asked to leave the class, and their behavior will be reported to The Vice President of Student Affairs for the University of Louisiana at Monroe.

Cell phones **must** be turned off and stored during class and exams.

If a student cannot attend an exam, **ADVANCE NOTICE MUST BE GIVEN** to the instructor. If the student has a University approved excuse for missing the exam, one opportunity will be given for a **make-up exam** (scheduled on the day the student returns to class). Failure to attend a scheduled make-up will result in a grade of zero (0) for that exam. Make-up exams will be prepared at a similar level of difficulty and may be given as a written exam (not necessarily the same format as the original) or an oral exam.

Quizzes will be given during the first 10 minutes of class. Tardy students will not be given extra time to complete the quizzes. Students not returning quizzes immediately after being requested to do so will be given a grade of zero (0) for that quiz (i.e. late quizzes will be given a grade of zero (0)).

No make-up exams will be given after final exams start (May 5, 2012).

**ACADEMIC INTEGRITY:** Students must observe the ULM published policy on Academic dishonesty (See Page 4 in the *ULM Student Policy Manual*: <http://www.ulm.edu/studentpolicy/>).

In addition, students must observe the ULM School of Pharmacy Code of Ethical and Professional Conduct (<http://rxweb.ulm.edu/pharmacy/policies/copcodeofconduct.pdf>) and the Dress Code (<http://rxweb.ulm.edu/pharmacy/studentinfo/default.htm>)

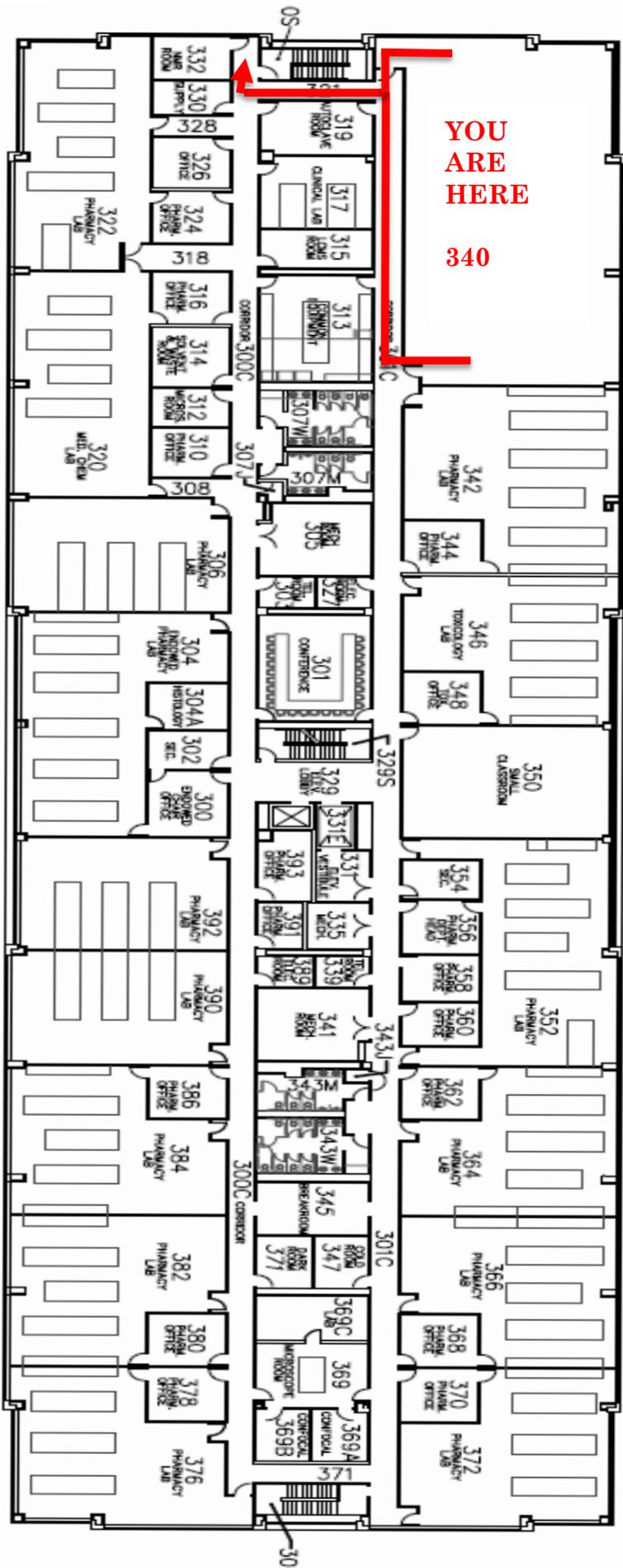
**COURSE EVALUATION POLICY:** At a minimum, students are expected to complete the on-line course evaluation as well as any evaluation administered in class by the School of Pharmacy.

**STUDENT SERVICES:** Information concerning student services in the School of Pharmacy can be found in the School of Pharmacy Student Handbook. In particular, students should pay special attention to the School's technical standards and policies concerning students with special needs (<http://www.ulm.edu/studentpolicy/studentpolicy.pdf>). 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/>.

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

- a. ULM Counseling Center: 342-5220
- b. Marriage and Family Therapy Clinic: 342-5678
- c. Community Counseling Center: 342-1263

**FIRE EMERGENCY PLAN:** Please review the emergency escape plan in the classrooms and hallways of the Bienville building. Move quickly and orderly to the appropriate stair well and exit outside the building. The meeting place for this class will be the far end of the north parking lot between Bienville and Broadmore Blvd. **Under no circumstance is the elevator to be used for emergency fire evacuation.** Any student needing assistance with the stairs should notify the professor. For emergencies, to contact University Police, call 1-911 from landlines within a university building or 342-5350 from cell phones.



**YOU  
ARE  
HERE**

**340**

**TENTATIVE COURSE SCHEDULE  
PHRD 4037**

**MEDICAL MICROBIOLOGY**

**MTWTh 11:00 – 11:50am  
Bienville 340**

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**The chapters in parenthesis for each topic are reading assignments. It is expected that the student will read each of these assignments, preferably before the topic is presented in class. In any event, the student is responsible for the material in each reading assignment.**

<b>LECTURE</b>	<b>Date</b>
1. Introduction to the course, History of Microbiology (1)	1-19
2. Bacterial Classification, Morphology and Cell Structure (2)	1-20
3. Bacterial Metabolism and Growth (3)	1-21
4. Bacterial Genetics (3)	1-25
5. Mechanisms of Bacterial Pathogenesis (18)	1-26
<b>EXAM 1</b>	<b>1-27</b>
6. Antimicrobial Agents (20)	1-28
7. Antimicrobial Agents (20)	2-1
8. <i>Streptococcus</i> , <i>Enterococcus</i> , <i>Staphylococcus</i> (21, 22, 23)	2-2
9. <i>Neisseria</i> (29)	2-3
10. <i>Clostridium</i> , <i>Bacteroides</i> and misc. anaerobes (39, 40)	2-4

**Mardi Gras Holidays** **2-8 thru 2-10**

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11. *Vibrio, Aeromonas, Campylobacter, Helicobacter* (31, 32) 2-11

**EXAM 2** **2-15**

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12. Enterobacteriaceae (30) 2-16

13. *Bacillus, Listeria, Corynebacterium, Erysipelothrix* (24-26) 2-17

14. *Hemophilus, Pasteurella* and *Bordetella* (34, 35) 2-18

15. *Pseudomonas* (33) 2-22

16. *Brucella, Legionella, Francisella* (36, 37) 2-23

17. *Mycobacterium, Nocardia,* (27, 28) 2-24

**EXAM 3** **2-25**

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18. *Chlamydia, Rickettsia, Mycoplasma* (43, 44, 46) 2-29

19. *Treponema, Borrelia, Leptospira* (42) 3-1

20. Papillomviruses, Polyomaviruses, Adenoviruses, Poxviruses (51, 52, 54) 3-2

21. Togaviruses and Flaviviruses (62) 3-3

22. Orthomyxoviruses (59) 3-7

**EXAM 4** **3-8**

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23. Parvoviruses, Paramyxoviruses, , Reoviruses (55, 58, 61) 3-9

23. Herpesviruses and Picornaviruses (53, 56) 3-10

24. Rhabdoviruses, Arenaviruses and Bunyaviruses (60, 63) 3-14

25. Hepatitis Viruses, Retroviruses, Misc. Viruses and Prions (64-66) 3-15

26. Superficial, Cutaneous and Subcutaneous Mycoses (71, 72) 3-16

27. Systemic and Opportunistic Mycoses (73, 74) 3-17

**EXAM 5** **3-21**

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28. Protozoan Parasites (81, 82) 3-22

29. Helminths (Trematodes, Cestodes and Nematodes) (83-85) 3-23

30. Concepts of the Immune System 3-24

<b>Easter &amp; Spring Break</b>	<b>3-25 thru 4-1</b>
31. Cells involved in Immune Responses	4-4
32. Lymphoid Organs and Tissues	4-5
<b>EXAM 6</b>	<b>4-6</b>
33. Inflammation and Complement	4-7
34. Immunoglobulin Structure & Function	4-11
35. Immunogenetics	4-12
36. Major Histocompatibility Complex	4-13
37. Antigen Recognition	4-14
<b>EXAM 7</b>	<b>4-18</b>
38. Humoral Immunity	4-19
39. Cell Mediated Immunity	4-20
40. Cell Mediated Immunity	4-21
41. Cytokines	4-25
42. Tumor Immunology	4-26
<b>EXAM 8</b>	<b>4-27</b>
43. Immunodeficiency	4-28
44. Hypersensitivity/Allergy	5-2
45. Autoimmunity	5-3
46. Transplantation and Rejection	5-4
47. Vaccines	5-5
48. <b>FINAL EXAM</b>	<b>TBA</b>