

FLORIDA STATE UNIVERSITY

COLLEGE OF MEDICINE

BIOMEDICAL SCIENCES 6402

SYSTEMIC MEDICAL PHARMACOLOGY

Spring Semester, 2008-2009

Course Director:

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Faculty in BMS 6402

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Description:

Building upon the principles learned in General Medical Pharmacology, students study in detail the pharmacologic agents used in treating disorders of organ systems. Drug classes, interactions, and specific usages with functional and clinical applications are presented with relevant clinical examples, including the use of therapeutic drug monitoring. Groups of drugs specifically considered include cardiovascular, pulmonary, renal, gastrointestinal, hormonal, hematologic, analgesic, local anesthetic, central nervous system, ophthalmic, and dermatologic agents.

The course consists of 47 lecture hours, 6 one-hour clinical discussion-tutorial sessions, 2 two-hour team based learning sessions. The examinations for the course are incorporated into the 5 integrated examinations and the final comprehensive examination. In addition, 5 announced quizzes are graded and in 2008-9 self-directed exercises will be introduced and graded.

Course Director:

Gail T Galasko, Ph.D., Professor and Faculty Scholar in Pharmacology (e-mail: ggalasko@med.fsu.edu)

Objectives: The student should exhibit the following knowledge, skills, and behaviors:

Knowledge:

1. Demonstrate knowledge concerning each major drug class discussed in the course, including:
 - a. Mechanism(s) of action,
 - b. Therapeutic uses
 - c. Major adverse effects
 - d. Important drug interactions
 - e. Prototype drug(s),
2. Demonstrate knowledge of the variations in drug response between individual patients, based upon disease, or other innate characteristics
3. Demonstrate knowledge of the effect of age on pharmacokinetics, and responses to therapy, with emphasis on geriatric patients

4. Develop an adequate basis of knowledge in pharmacology on which to build as the student advances through the clinical clerkship rotations
5. Develop a knowledge of drug classes and mechanisms into which additional drugs can be incorporated, compared, and contrasted as new drugs become available and as the practice of medicine dictates.

Skills:

1. Demonstrate an understanding of the general types and clinical usage of drugs for treating diseases of each organ system
2. Demonstrate the ability to recognize and understand the physicochemical and physiological factors that affect the absorption, distribution, metabolism, and elimination of drugs
3. Demonstrate an understanding of drug-receptor interactions and allied molecular phenomena at a basic level
4. Demonstrate an ability to interpret and analyze literature related to drugs

Attitudes and Behaviors:

1. Demonstrate professional behavior during activities in the course by being in attendance, on time, attentive, and a considerate and active participant in discussions.

Integration with COM Goals and Objectives:**Knowledge**

- * Demonstrate the application of the scientific bases of health, disease, and medicine to common and high impact medical conditions in contemporary society.
- * Recognize and discuss the implications of altered structure and function (pathology and pathophysiology) of the body and its major organ systems that are seen in various diseases and conditions.
- * Identify changes in the structure and function of the human body associated with the aging process and be able to distinguish normal changes associated with aging from those that denote disease.
- * Describe the molecular basis of diseases and maladies and the way in which they affect the body (pathogenesis).
- * Demonstrate the ability to use basic biobehavioral and clinical science principles to analyze and solve problems related to the diagnosis, treatment, and prevention of disease.
- * Demonstrate the ability to employ a comprehensive, multidisciplinary approach to the care of patients that integrates biomedical and psychosocial considerations.
- * Recognize the implications of cultural, social, economic, legal, and historical contexts for patient care.

- * Describe strategies to support life long learning via both print and electronic sources to assist in making diagnostic and treatment decisions (e.g., practice guidelines) and to remain current with advances in medical knowledge and practice (e.g., medical information data bases).

Skills

- * Demonstrate the ability to evaluate the patient's medical problems and to formulate accurate hypotheses to serve as the basis for making diagnostic and treatment decisions.
- * Demonstrate the effective use of pharmacotherapeutic agents and other therapeutic modalities, while teaching patients the importance of preventative medicine, health promotion, and wellness.
- * Demonstrate the ability to acquire new information and data and to critically appraise its validity and applicability to one's professional decisions, including the application of information systems technologies for support of clinical decision-making.
- * Demonstrate the ability to organize, record, research, present, critique, and manage clinical information.

Attitudes/Behaviors

- * Demonstrate awareness of the health care needs of aging patients and a willingness to care for the elderly.
- * Demonstrate awareness of the unique health care needs of ethnically diverse populations and communities.

Relationship of Course Objectives to the "Six Principles" of the Curriculum:

1. The course is student-centered in providing a supportive, respectful environment in which to learn, while requiring that students be active and critical learners.
2. The course provides information that can be applied within a clinical context. Case-based learning and clinical situations are used to present and to reinforce knowledge and analysis.
3. The course is integrated with other courses in the year. Cases and examination questions integrate information from other disciplines, from the prerequisite biomedical sciences, and from clinical situations.
4. The course reinforces professional behavior in the classroom. Ethical issues in relation to drug therapy or other drug usage are discussed. Application of biomedical science to patient care, in the form of pharmacotherapy, is a major emphasis of the course. Problem solving and critical thinking are promoted by classroom discussions, case discussions, and examination questions. Lifelong learning skills and management of information are promoted by the requirement for using online and library sources and by the application of information to novel situations.

5. Scholarship is encouraged primarily through an emphasis on the necessity of evidence-based utilization of drug therapy, e.g. evaluation of drug safety and efficacy, appropriateness of off-label usage of drugs, and post-marketing surveillance of drug effects.
6. Information is included in the course which deals with drug effects in specific populations such as women, geriatric patients, pediatric patients, and patients belonging to specific ethnic groups.

Evaluation of Student Performance and Grading:

Questions pertaining to Pharmacology 6402 (25-31 per examination) will be included in five integrated examinations and in the final comprehensive examination (50 questions in pharmacology) for the second year. Five short, announced quizzes (5 questions each) will also be given in the course. Each student will also participate in self-directed exercises. The types of questions may include computer-graded formats (multiple choice, matching) and open-ended, short answer questions. The grade which the student will earn is based upon the percentage of the questions answered correctly, according to the following scale:

A = ≥ 90 % correct
B+ = 87 – 89.9 % correct
B = 80 – 86.9 % correct
C+ = 77 – 79.9 % correct
C = 70 – 76.9 % correct
D = 65 – 69.9 % correct
F = < 64.9 % correct.

The following Attendance, Remediation, Honor Code, and ADA policies have been adopted by the Florida State University College of Medicine for all courses:

FSU COM ATTENDANCE POLICY

COM Philosophy

We believe that:

Professionalism is a major component of our medical curriculum. We believe students should conduct themselves appropriately in the various educational activities of the curriculum. This conduct includes coming to educational activities on-time, using the laptop computers only for course work during the educational activity, and not disrupting the class if late. The faculty should also demonstrate professionalism, by starting and ending all scheduled educational activities on time and providing a course schedule with clearly explained course policies in the course syllabus. Any changes in the schedule should be given to the students in a timely manner.

Students will be accountable and personally responsible for attending all educational activities (small groups, labs, clinical experiences, examinations, lectures, computer sessions, etc.).

Unexcused absences reflect negatively on the goals and objectives of the medical curriculum and demonstrate unprofessional behavior by the respective student.

We owe it to our state legislature and the citizens of the State of Florida to provide a quality educational program that meets the needs of our students in preparing them for the M.D. degree.

Attendance Policy

Students are expected to attend all scheduled activities. Students are expected to be on time. Being on time is defined as being *ready to start* at the assigned time. If a student has an emergency that prevents her/him from attending a scheduled activity, s/he is to call and notify the Office of Student Affairs (Year 1/2) or the Regional Campus Dean (Year 3/4) and request that they inform the supervisors/professors/clerkship faculty/education director for that activity. If at all possible, the student should also call and at a minimum, leave a message with one of the course/clerkship directors. *It is important that students realize that their absence or tardiness negatively impacts a number of other people.* Attendance, including tardiness, is part of the student's evaluation for professionalism. Negative evaluations may result in decreased grades and in severe cases, referral to the Student Evaluation and Promotion Committee.

Procedure for Notification of Absence

Year 1/2

If the student knows in advance of an upcoming legitimate absence, the "Advance Notification of Absence from Educational Activity(ies)" form should be completed with signatures from the student, the Assistant Dean for Student Affairs, the course faculty member and the Course Director. The form will be filed in the Office of Student Affairs. The implications for the absence (e.g., remediation, course grade adjustment, make-up exam, etc.) will be given to the student by the course director and final decisions regarding these actions shall rest with the course director.

If the absence occurs due to an unforeseen emergency, the student should contact the course director and the Assistant Dean for Student Affairs immediately to report the absence including the reason for the absence. The implications for the absence (e.g., remediation, course grade adjustment, make-up exam, etc.) will be given to the student by the course director and final decisions regarding these actions shall rest with the course director.

Remediation Policy for Absences from Examinations, Quizzes, Small Group Sessions, Laboratory Sessions, Clinical Learning Center Sessions, Preceptor visits, and Clerkship Call

The remediation policies for absences from examinations, quizzes, small group sessions, laboratory sessions and clerkship call are:

1. **POLICY ON MISSED EXAMINATIONS:** Students are required to take major in-term and final examinations. According to the curriculum committee a student can only be excused from an examination by a course/education director decision based on the personal situation of the student. The course/education director will determine the time of the exam make-up session. Also, according to the curriculum committee decision and the existence of the FSU-COM honor code, the student will be given the same examination given to the other students.
2. **POLICY ON MISSED QUIZZES:** Students are required to take scheduled and unscheduled quizzes in the courses. A student can only be excused from a quiz by a course director decision based on the personal situation of the student. The student must make arrangements with the course/education director to make up a missed quiz. Also, according to the curriculum committee decision and the existence of the FSU-COM honor code, the student will be given the same quiz given to the other students.
3. **POLICY ON MISSED SMALL GROUP SESSIONS, LABORATORY SESSIONS, CLINICAL LEARNING CENTER SESSIONS, PRECEPTOR VISITS, AND CLERKSHIP CALL:** The student should contact the course director, small group leader or education director for instructions on remediation of the missed session and material covered. Any missed small group must be made up within one week of the student's return to classes. Small group work will be made up by turning in written answers to the questions included in the small group assignment along with a 1 page description of the material covered in the small group session.

Remediation Policy for Students Who Receive an Unsatisfactory Grade in a Course

Remediation of courses/clerkships will be planned and implemented by a combined decision of the Evaluation and Promotion Committee in collaboration with the course/education director.

Unexcused Absences

It will be the responsibility of the course/education directors to clearly state in their respective course/clerkship syllabi the implications for having an unexcused absence from a scheduled educational or examination activity in a course or clerkship.

For BMS 6402: Unexcused absence from a scheduled examination or quiz may result in a grade of zero (0 %) being assigned for that examination or quiz.

Academic Honor Code:

The Florida State University Academic Honor Policy outlines the University's expectations for the integrity of students' academic work, the procedures for resolving alleged violations of those expectations, and the rights and responsibilities of students and faculty members throughout the process. Students are responsible for reading the Academic Honor Policy and for living up to their pledge to "... be honest and truthful and ... [to] strive for personal and institutional

integrity at Florida State University.” (Florida State University Academic Honor Policy, found at <http://www.fsu.edu/~dof/honorpolicy.htm>).

Students with Disabilities (ADA Statement):

Students with disabilities needing academic accommodations should:

1. Register with and provide documentation to the student disability Resource Center (SDRC);
2. Bring a letter to the Year Director from the SDRC indicating the need for academic accommodations. This should be done within the first week of the course. Specific arrangements should be made with the Year Director 5 working days prior to each exam for which accommodations are being requested.

Recommended or required learning materials:

Required textbook:

Basic and Clinical Pharmacology, 10th Ed. (2007), B.G. Katzung, ed. (Available online at COM Medical Library webpage under “E-Books”, then scroll down to “Pharmacology” listing)

Recommended textbooks:

Goodman and Gilman’s The Pharmacological Basis of Therapeutics, 11th Ed., L.L. Brunton et al., eds., 2006. (Available online at COM Medical Library webpage under “E-Books”, in the “Pharmacology” listing)

Recommended review books:

Katzung & Trevor’s Pharmacology Examination and Board Review, 7th ed., A.J. Trevor et al. eds., 2005 (An extensive review)

USMLE Road Map: Pharmacology, 2nd ed. (2006), B.G. Katzung and A.J. Trevor, eds. (An abbreviated review)

Required Website (on Medical Library webpage under “Drug Information”)

The Medical Letter on Drugs and Therapeutics (**required**, subject to examination), and Therapeutic Guidelines (recommended)

Recommended Websites (available through COM Medical Library website):

eFacts (available on COM Medical Library website under Drug Information)

e-Pocrates (available on COM Medical Library website and on Axim handheld devices)

Faculty and Course Evaluation:

Students will have the opportunity to evaluate each faculty member who teaches a major portion of the course, using a standard evaluation questionnaire. Students will also have the opportunity to evaluate the course at its conclusion. Suggestions and comments concerning the course, its material and conduct, are welcomed and may be made to the Course Director at any time.

BIOMEDICAL SCIENCES 6402
SYSTEMIC MEDICAL PHARMACOLOGY

Second Semester, 2008-2009
Schedule of Course Meetings

<u>Date</u>	<u>Day</u>	<u>Time (am)</u>	<u>Topic</u>	<u>Faculty</u>
11/03	Mon.	8:00-8:50	Introduction	G. Galasko
11/04	Tues.	9:00-9:50	Anti-Anginal Drugs (Nitrites, beta blockers, calcium channel blockers)	G. Patrick
11/04	Tues.	11:00-11:50	Lipid-lowering Drugs (Statins, niacin, absorption inhibitors, resins)	A. Johnston
11/07	Fri.	10:00-10:50	Cardiac Stimulants; CHF (Digitalis glycosides, diuretics, ACE inhibitors)	G. Patrick
11/12	Wed.	8:00 - 8:50	Antiarrhythmic Agents (Calcium channel blockers, amiodarone)	M. Overton
11/12	Wed.	9:00 - 9:50	Antiarrhythmic Agents (Sodium channel blockers, beta blockers)	M. Overton
11/13	Thurs.	10:00-10:50	Antihypertensive Agents (Beta blockers, diuretics, alpha-1 blockers, alpha-2 agonists)	A. Johnston
11/13	Thurs.	11:00-11:50	Antihypertensive Agents (ACE inhibitors, ARBs, direct vasodilators)	A. Johnston
11/17	Mon.	10:00-10:50	Drugs for Asthma (Beta-2 agonists, corticosteroids, leukotriene blockers, mast cell stabilizers, theophylline, anticholinergics)	G. Galasko
11/19	Wed.	8:00-8:50	Miscellaneous Pulmonary Drugs (Cough suppressants, antihistamines, expectorants)	G. Patrick
11/20	Thurs.	10:00-10:50	Clinical Discussion: Pulmonary Antimicrobial Therapy	G. Patrick/ G. Galasko
12/02	Tues.	8:00-9:50	<i>Cardiovascular and Pulmonary Quiz with Physiology Small Group Cases</i>	

12/05	Fri.	8:00-12:00	EXAMINATION 4	
1/06	Tues.	10:00-10:50	Top 100 Drugs	G. Galasko
1/09	Fri.	8:00-8:50	Diuretics (Carbonic anhydrase inhibitors, loop diuretics, thiazide diuretics, potassium sparing diuretics)	A. Johnston
1/09	Fri.	9:00-9:50	Pharmacology Discussion	G. Galasko/ G. Patrick
1/13	Tues.	10:00-10:50	Drugs for Urinary Tract Infection (Cystitis, pyelonephritis)	G. Patrick
1/16	Fri.	10:00-10:50	Renal Disease and Drugs (Tubular necrosis, papillary necrosis)	G. Patrick
1/16	Fri.	11:00-11:50	Clinical Cases: Renal Drugs	G. Galasko/ G. Patrick
1/27	Tues.	10:00-10:50	Laxatives, Prokinetic Agents, and Drugs for Hepatitis (Stimulant and bulk laxatives, serotonergic agents)	G. Patrick
1/27	Tues.	11:00-11:50	Antidiarrheal Agents; Malabsorption (Adsorbents, opioids, 5-ASA analogs, IBD)	G. Patrick
1/29	Thurs.	8:00-8:50	Drugs for Peptic Ulcer and GERD (Proton pump inhibitors, H2 blockers, antacids, H. pylori)	G. Galasko
1/29	Thurs.	9:00-9:50	Anti-emetic Agents (Serotonin blockers, dopamine blockers, motion sickness)	G. Patrick
2/04	Wed	8:00-9:50	<i>TBL – Case Studies</i>	<i>Faculty</i>
2/06	Fri.	8:00-12:00	EXAMINATION 5	
2/12	Thurs.	9:00-9:50	Hormonal Contraceptives (Oral contraceptives, topical and other methods)	M. Manting
2/13	Fri.	10:00-10:50	Hormonal Therapy (Estrogens, progestins, SERMs)	M.Manting
2/13	Fri.	11:00-11:50	Androgens, drugs for BPH	G Galasko

2/19	Thurs.	10:00-10:50	Drugs for Diabetes Mellitus (Insulins, sulfonylureas, “glitazones”, metformin)	G. Galasko
2/19	Thurs.	11:00-11:50	Drugs for Diabetes Mellitus (Insulins, sulfonylureas, “glitazones”, metformin)	G. Galasko
2/24	Tues.	10:00-10:50	Thyroid Medications (Replacement therapy, thyroid suppression)	G. Galasko
2/24	Tues.	11:00-11:50	Corticosteroid Hormones (Hydrocortisone, synthetic corticosteroids)	G. Galasko
2/26	Thurs.	10:00-10:50	Clinical Case Discussions: Endocrine Drugs (Quiz)	G. Galasko/ G. Patrick
2/26	Thurs.	11:00-11:50	Clinical Cases: Endocrine Drugs	G. Galasko / G.Patrick
3/06	Fri.	8:00-12:00	EXAMINATION 6	
3/16	Mon.	10:00-10:50	Drugs and Anemia (Iron supplements, vitamin B12, folic acid)	G. Patrick
3/24	Tues.	10:00-10:50	Anticoagulants and Fibrinolytics (Coumarins, heparin, antiplatelet agents, TPA)	P. Treadwell
3/27	Fri.	10:00-10:50	Chemotherapy and Leukemia	G. Patrick
3/30	Mon.	8:00-8:50	Calcium regulation, drugs affecting bone (PTH, calcitonin, vitamin D, biphosphonates, anabolic agents)	G. Galasko
3/31	Tues.	10:00-10:50	Pain Medications (Opioids and analogs)	G. Patrick
3/31	Tues.	11:00-11:50	Pain Medication (Opioids and analogs)	G. Patrick
4/01	Wed.	9:00-9:50	Headache Management	A. Johnston
4/02	Thurs.	10:00-10:50	PGs, acetaminophen, NSAIDs	G. Galasko
4/02	Thurs.	11:00-11:50	Drugs used in treating neuropathic pain	G Galasko

4/07	Tues.	10:00-10:50	Medications for Arthritis and Gout (NSAIDs, DMARDs, corticosteroids, TNF-alpha: xanthine oxidase inhibitors, colchicine, uricosuric agents)	G. Galasko
4/08	Wed.	8:00-9:50	<i>Quiz</i> <i>TBL – Case Study</i>	<i>Faculty</i>
4/10	Fri.	8:00-12:00	EXAMINATION 7	
4/13	Mon.	10:00-10:50	Local Anesthetic Agents (Esters, amides, lidocaine, cocaine)	G. Galasko
4/14	Tues.	10:00-11:50	CNS Neurotransmitters	G. Patrick
4/15	Wed.	8:00 – 8:50	General Anesthetic Agents (Inhalation anesthetics, IV anesthetics)	G. Patrick
4/15	Wed.	9:00-9:50	Sedative and Antianxiety Agents (Benzodiazepines, barbiturates)	G. Galasko
4/16	Thurs.	8:00-8:50	Alcohols	G. Patrick
4/16	Thurs.	9:00-9:50	Stimulants and Hallucinogens (Methylxanthines, psychomotor stimulants, LSD, cannabinoids, “designer drugs”)	G. Patrick
4/17	Fri.	11:00-11:50	CNS Infections	G. Patrick
4/24	Fri.	10:00-10:50	Drugs for Depression	TBA
4/24	Fri.	11:00-11:50	Antipsychotic Drugs	TBA
4/28	Tues.	10:00-10:50	Drugs for Epilepsy (Generalized seizures, partial seizures, absence)	G. Patrick
4/28	Tues.	11:00-11:50	Drugs for Chronic CNS Diseases (Drugs for Parkinson’s disease, tremor)	G. Maitland
4/29	Wed.	8:00-8:50	(Quiz –CNS) Drugs for Ophthalmic Conditions (Drugs for glaucoma, conjunctivitis)	G. Patrick
4/29	Wed.	9:00-9:50	Clinical Cases: CNS	G. Galasko/ G. Patrick

5/04	Mon.	8:00-8:50	Drugs for Dermatologic Conditions (Drugs for psoriasis and acne, retinoids)	G. Patrick
5/04	Mon.	9:00-9:50	Drugs for Dermatologic Conditions (Suncscreens, insect repellants, topical antiparasitic agents)	G. Patrick
5/05	Tues.	8:00-8:50	Clinical Discussion: Top 100 Prescription Drugs (Quiz)	G. Galasko/ G. Patrick
5/05	Tues.	9:00-9:50	Clinical Cases: CNS, Ophthalmic, and Dermatologic Drugs (SUSSAI)	G. Galasko/ G.Patrick
5/08	Fri.	8:00-12:00	EXAMINATION 8	
5/22	Fri.	8:00-12:00 1:00-3:00pm	COMPREHENSIVE EXAMINATION	