PHA 452 A

Extemporaneous Compounding

3 Credit Hours

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Instructor:	Harvey Jacobs, Ph.D.
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Office hours;	M, T, W, R, F 2:00 PM – 3 PM

Required Text:

A Practical Guide to Contemporary Pharmacy Practice, Judith E. Thompson, Williams & Wilkins, 1998

Reference Text:

The Art, Science, and Technology of Pharmaceutical Compounding, Lloyd V. Allen, Jr., APhA Publishing, 1997

Class times:

Laboratory: Tuesday & Thursday 9:30 am – 10:45 am - dispensing lab

Course Summary:

The focus of this course will be to provide students with basic and advanced skills in compounding pharmaceutical dosage forms. This niche market will provide individualized patient therapy, replace a lack of commercially available products, and enhance therapeutic problem solving between the pharmacist and physician to enhance patient compliance.

The class time will be divided into three segments. The beginning of each week will involve a lecture/discussion on the current dosage form (see syllabus); the students will provide information on literature research the topic to discuss different formulae presented in the literature for the dosage form. The discussion will center around the suitability of ingredients for a specific dosage form and suggestions for new ingredients to improve on an existing formulation. The third segment will be formulation of selected dosage forms in the lab and comparing their physical properties. Students will work independently on research assignments and compounding preparations.

Objectives:

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

1. Apply principles of Physical Pharmacy to the development of unique dosage forms for individual patients;
2. Understand (compare and contrast) basic pharmaceutical compounded formulations;
3. Accurately calculate weights and volumes for compounded formulations;
4. Evaluate formulation changes for appropriateness or usefulness;
5. Evaluate and change formulations to enhance patient compliance;
6. Identify factors that must be considered in the designing of extemporaneous dosage forms.
7. Complete the following terminal outcomes as stated in the School of Pharmacy's Student Outcomes Document (Professional Outcomes 1A 5, 6, & 7; IC 1; IE 1, 2, & 3; II A, 4 and General Outcomes A, B, & E.).

Grading:

The academic performance of students in Extemporaneous Compounding will be assessed by examinations, class participation, and compounded formulations / preparations.

Exams will be of mixed format, including specific problem solving exercises, short-answer essays, and multiple-choice questions.

The 12 (twelve) compounded formulations / preparations will be evaluated based on accuracy of ingredient calculations (1 pt), rational for incorporation of new ingredients (1 pt.), rational for order of mixing of ingredients (1 pt), neatness of preparation (1 pt), and pharmaceutical elegance (feel/texture of preparation) (1 pt), for a total of 5 pts each.

Lab Practical/Exam # 1	20 pts
Final Lab Practical/Exam # 2	30 pts
Calculation Quizzes	30 pts
Laboratory preps (10 preps, 5 pts each)	20 pts

Grades will be based on the following criteria:

92.0 - 100%	4.0
87.0 - 91.9 %	3.5
80.0 - 86.9 %	3.0
75.0 -79.9 %	2.5
70.0 - 74.9%	2.0
65.0 - 69.9%	1.5
60.0 - 64.9%	1.0
<59.9	0.0

Remediation policy:

Examinations: Students will be allowed to remediate examination grades less than 70% one time only. The remediated grade will be averaged with original grade and the student will receive the average grade, up to a maximum of 70%.

Laboratory: Students must do all labs independently, unless otherwise directed. Students caught double-batching or preparing extra doses for others will fail the lab.

Quizzes:

Calculation quizzes and quizzes on the preparation of products for the week will given each Monday.

Attendance and student responsibilities:

Attendance at all lectures, discussion groups, and compounding laboratories is mandatory. Make up exams and laboratories will be provided only in exceptional cases and at the discretion of the instructor.

Academic dishonesty of any form or to any extent will not be tolerated. Appropriate academic/disciplinary actions will be taken as described in the 2006 School of Pharmacy Student Handbook.

Laboratory Policy:

Students must come to lab prepared to formulate the specific medication. Lack of preparation will result in dismissal from the lab and failure of the lab assignment.

Due to the presence of hazardous or caustic chemicals, fragile glassware, and other laboratory instruments, both men and women will be required to wear lab jackets and protective eye wear while in the compounding lab. Open-toed shoes, sandals or shorts will not be permitted in the laboratory. Students will supply their own lab jackets and safety glasses. Eating, drinking, and smoking will not be permitted in the lab.

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(R= recitation, D= discussion; L= laboratory)

Date	Week	Topic	Chapter in Thompson
Week	1-R	Introduction to Extemporaneous Compounding	Part 1-3
Of	1-D	Introduction to references and sources for compounded Rx, Torsion Balance, Lab check in	
1/13	1-L		handouts
Week	2-R	Research on Powders/Capsules/tablets	Ch 24 & 25
Of	2-D	Preparation of Powders/Capsules/tablets	
1/20	2-L	Preparation of Powders/Capsules/tablets; evaluation of mixing techniques	
Week	3-R	Research on hand made tablets	Ch 32,33
Of	3-D	Preparation of hand made tablets	
1/27	3-L	Preparation of hand made tablets	
Week	4-R	Research on Suppositories	Ch 23 & 31
Of	4-D	Preparation of Suppositories, comparison of suppository bases and vehicles	
2/3	4-L	Preparation of Suppositories, comparison of suppository bases and vehicles	
Week	5-R	Research on Cosmetic/ Medication Sticks	Ch 15, 16, 22 &30
Of	5-D	Preparation of soft, opaque or hard medication sticks and evaluation of base material for sticks	Handout
2/10	5-L	Preparation of soft, opaque or hard medication sticks and evaluation of base material for sticks	
Week	6-R	Research on Suspensions	Ch 18, 20, 28
Of	6-D	Preparation of Suspensions/evaluation of suspending agents	
2/17	6-L	Preparation of Suspensions/evaluation of suspending agents	
Week	7-R	**Exam I**	
Of	7-D	**Lab practical (2/26)**	
2/24	7-L	**Lab practical (2/28)**	

Week Of 3/3	8-R 8-D 8-L	Spring Break	
Week	9-R	Research on Gels/ointments/creams/pastes	Ch 22, 30
Of	9-D	Preparation of oil based and water based ointments	
3/10	9-L	Preparation of oil based and water based ointments	
Week	10-R	Research on solutions/emulsions	Ch 14, 15, 16, 19, 20,21,26, 29
Of	10-D	Research on solutions/emulsions	
3/17	10-L	Preparation of solutions/emulsions	
Week	11-R	Research on ophthalmic, otic, nasal preps	
Of	11-D	Preparation of ophthalmic, otic, nasal preps	
3/24	11-L	Preparation of ophthalmic, otic, nasal preps	
Week	12-R	Research of tablets Demonstration of tablet making in BSPS (4/9)	Ch 10, 17, 18, 27
Of	12-D	Preparation of tablets	
3/31	12-L	Discussion of control release formulations	
Week	13-R	Preparation of controlled release formulations	Ch. 32,33, Handout
Of	13-D	Preparation of controlled release formulations	
4/7	13-L	**Preparation of IV formulations**	
Week	14-R	**Preparation of IV formulations (4/15)**	
Of	14-D	Holiday Break (4/17)	Handout
4/14	14-D		
Week	15-R	**Final Practical Exam (4/22)**	
Of	15-D	**Final Exam written, compounding (4/24)**	
4/21	15-D		