Pharmaceutics Laboratory PHM188P, Spring 2017
Syllabus/First Day Handout

Course Description: This course will introduce the student to the knowledge and skills of fundamental mathematical calculations utilized in pharmacy practice and the practice of pharmacy compounding and pharmaceutical products.

The 1 hour lecture each week focuses on calculations. The 3 hours laboratory integrates these calculations into the science and practice of pharmaceutical compounding and pharmaceutical products.

Lecture:	PHR 2.108 M 2:00–3:00 p.m.
Compounding Lab:	PHR 3.108 M, T, Th 3:00 – 6:00 pm; Wed: 1:00-4:00 & 4:30-7:30 pm
Faculty:	Feng Zhang Office PHR4.214E; feng.zhang@austin.utexas.edu
Course Text:	Pharmaceutical Calculations, 13th edition – Ansel & Stoklosa but other editions are also satisfactory. An electronic copy of the textbook is saved on CANVAS®

Office hours: Friday 1:00-2:30 pm

EXAM AND QUIZ
Compound Lab Preparation
11 lab sessions for a total of 11 prescriptions

Compound Lab Exam
Given during compounding lab
Midterm & final compounding lab exam, compounding law quiz

Calculation Exam:
90 minutes exam
15-20 calculation questions

HOMEWORK
Homework is not mandatory. But, we strongly suggest you to work on those questions.

GRADING:

11 prescriptions x 20 pts/each	220 pts
10 product concept experiments x 10 pts/each	100 pts
Compounding lab exam (midterm)	80 pts
Compounding lab exam (final)	80 pts
Compounding law	20 pts
2 calculations exams x 100 pts/exam	200 pts
TOTAL	700 pts

1) To pass this class, you score a minimum of 60 points (60%) on both exams. The grade assignment will follow the matrix below,
   A: 100-93; A-: 92-90
   B+: 89-87; B: 86-83; B-: 82-80
   C+: 79-77; C: 76-73; C-: 72-70
   D+: 69-67; D: 66-63; D-: 62-60

   If you score below 60 point in any one calculation exam, you will have to take a challenge exam at the end of the semester.

2) The challenge exam will be comprehensive.

   2.1 You must score a minimum of 60 points out of 100 to pass the challenge exam. Your final grade will be calculated using your original scores in the calculation exam and follow the matrix listed in the section above.

   2.2 If you fail the challenge exam, you fail this class.

Lecture Schedule

Date	Lecture/ Exam #	Topics Discussed	Chapters
Jan 23	Lecture 1	Introduction, Compounding Law	Materials on CANVAS
Jan 30	Lecture 2	Interpretation of prescription	4
		Reducing and enlarging formulas	16
Feb 6	Lecture 3	Aliquot	N/A
Feb 13	Lecture 4	"Pharmacy Compounding" Presented by PCCA Institute	N/A
Feb 20	Lecture 5	Fundamentals of pharmaceutical calculations	1
		International system of units	2
		Pharmaceutical measurement	3
Feb 27	Lecture 6	Density, specific gravity and specific volume	5
		Percentage, ratio strength, and other expressions of concentration	6
Mar 6	Lecture 7	Review session	N/A
		Midterm exam - calculation	
Mar 14	N/A	Spring Break, No Lecture	N/A
Mar 20	Lecture 9	Calculations using other potency units	9
		Calculation of active drug moiety	20
		Calculations in contemporary compounding	17
Mar 27	Lecture 10	Calculation of doses: general consideration	7
		Calculation of doses: patient parameters	8
Apr 3	Lecture 11	Isotonic and buffer Solutions	11
Apr 10	Lecture 12	Electrolyte solutions: mEq. mMol, mOsmol	12
Apr 17	Lecture 13	Dilution, concentration, alligation	15
Apr 24	Lecture 14	IV Infusions, enteral & parenteral Nutrition	13, 14
Apr 31	Lecture 15	Review session	N/A
		Final exam - calculation	

Lab Schedule

Week	Compounding Prescription	Pharmaceutical product concept lab
Jan 23	• Intro to Compounding • Powder Preparation (concept of homogeneity)	**Amorphous solid dispersion** Amorphous drug to improve solubility and absorption (Onmel™/itraconazole) • Demonstration of spray drying • Demonstration of melt extrusion • Comparison of solubility between physical mixture of itraconazole/hypromellose and melt extruded amorphous solid
Jan 30	**Solids and Capsules** Acetaminophen/pseudoephedrine capsules • Solid-solid aliquot • Calculation based on weight unit	**Capsules** • Demo various capsules samples **Immediate-release acetaminophen tablets** • Prepare acetaminophen blends and tablets (Carver press) • Test hardness, friability and disintegration
Feb 6	**Liquid I** Phenobarbital solution • Solubility • Calculation based on concentration unit • Concept of overage • Use of stock solution	**Modified-release matrix tablets 1 of 3 (matrix system)** • Prepare sustained release theophylline tablets • Conduct dissolution testing • Analyze samples (UV) and plot dissolution profiles

Week	Compounding Prescription	Pharmaceutical product concept lab
Feb 13	**Liquid II** Cold sore liquid • Cosolvent to solubilize drug	**Modified-release matrix tablets 2 of 3 (coated system)** • Prepare dye-containing film using immediate release, enteric, colonic, and water-insoluble coating • Enteric release naproxen tablets (disintegration testing) • Examination of cross section of a coated beads
Feb 20	**Gel** Capsaicin gel • Levigation/wetting of particles • Solid-liquid aliquot	**Modified-release matrix tablets 3 of 3 (other systems)** • Compare HPMC matrix vs. PEO matrix (abuse deterrence) • Demo of osmotic pump delivery • Alcohol induced dose dumping
Feb 27	**Nasal Spray** Dihydroergotamine mesylate nasal spray • Sterile filtration • Priming pump	**Nasal solution** • Spray pattern • Effect of solution viscosity on spray patter
Mar 6	**Midterm Compounding Lab Exam**	**No experiment**
Mar 13	Spring Break, No Lab	

Week	Compounding Prescription	Pharmaceutical product concept lab
Mar 20	**Suppository I** Trimethobenzamide HCl suppository • Natural glyceride base	**Drug solubilization** • Drug-Cyclodextrine complexation • Cosolvent
Mar 27	**Suppository II** Metronidazole suppository • Water-soluble PEG base	**Inhalation** • Ultrasonic, mesh screen and jet nebulizers
Apr 3	**Emulsion I** Emmolient hand cream • Emulsion	**Lyophilization** • Lyophilization of mannitol solution
Apr 10	**Suspension** Clonazepam suspension • Suspension vehicle	**Inhalation** • Dry powder inhaler and pressurized meter-dose inhaler
Apr 17	**Ointment** Hydrocortisone ointment	
Apr 24	**Final Compounding Lab Exam**	