



**School of Pharmacy
Semester- P1 Spring
Course# PHAR 6404
Pharmaceutics IB: Dosage Forms and Non-Sterile Compounding**

Course dates:

Didactic:

Tuesday 8:00 – 10:00 am
Lecture: In person at CMBL 211

Labs:

Wednesday 1 pm – 3:50 pm
Thursday 9 am – 11:50 am
Thursday 1 pm – 3:50 pm
Laboratory: CMBL 610

Course Coordinator:

Md Nurunnabi, Ph.D.

Assistant Professor of Pharmaceutics

Campbell, Room # 507

O. Phone: (915) 747-8335 / Email: mnurunnabi@utep.edu

Office Hours: *Students are requested to contact via email to schedule an appointment with the facilitator.*

Course Coordinator:

Iqbal Bhuiyan, Ph.D.

Assistant Professor of Pharmaceutics

Campbell, Room # 509

O. Phone: (915) 747-8530 / Email: mbhuiyan2@utep.edu

Office Hours: *Students are requested to contact via email to schedule an appointment with the facilitator.*

Other Instructors:

Dr. Zehedina Khatun, Ph.D.

Course Teaching Assistants:

TBD

Course Description:

This course integrates physical, chemical and biological principles underlying the design, preparation and manufacture of pharmaceutical dosage forms and drug delivery systems. Topics covered include extended release dosage forms, liquid dosage forms, disperse systems and semisolids, transdermal drug delivery systems, parenteral dosage forms, ophthalmic dosage forms, pulmonary and nasal drug delivery systems, pharmaceutical inserts, prodrugs, and products of biotechnology.

This laboratory course will focus on application of physicochemical properties of drugs and excipients, including appropriate pharmaceutical calculations, relevant to extemporaneous preparation and compounding of conventional and specialized non-sterile drug preparations, typically encountered by practicing pharmacists in compounding pharmacy settings. Students will compound, package, and appropriately label their individually prepared drug products: solutions, gels, suspensions, emulsions, ointments, creams, pastes, lotions, suppositories, troches, lollipops, capsules, and effervescent powders. Flavoring, coloring, and taste-masking strategies to achieve patient compliance will also be incorporated during compounding techniques. <http://pharmacylibrary.com/doi/book/10.21019/9781582122564>

Pharmacists' Patient Care Process: This course will assist students in enhancing knowledge required for understanding the process of manufacturing dosage forms and problem-solving skills required for compounding non-sterile products. Mastering the principles of drug delivery and hands on experience in compounding non-sterile dosage forms will help students to master compounding technique required meet the unique needs of the patient (customized medication) to develop an individualized plan in the Pharmacists' Patient Care Process.

Course Cancellation:

In a major disruption (e.g., Covid-19 pandemic, H1N1 epidemic, subzero weather), be prepared to maintain course progress via our Blackboard course shell and check your email (especially your UTEP miners account) regularly.

Online Platform/Blackboard:

Accessing Course Content on Blackboard: All lectures, handouts, and course material will be located in Blackboard. Log into My UTEP.edu and click on the Blackboard link to access the online course for PHAR 6404. The course is individualized and students may access lectures/handouts as they are made available by course instructors. Except in cases of a UTEP network being "down" or "offline" you are ultimately responsible to ensure that your computer is connected to the internet and that any issues are addressed prior to class and/or assessments. **The scheduled lecture will be conducted live/synchronized on every Tuesday (8:30-10:50am). Students are encouraged to attend the live session however, individual can access to the lecture anytime as the lecture will be recorded and saved through Blackboard. The compounding lab will be recorded conducted by the course coordinator and teaching assistants and be uploaded in Blackboard prior to the scheduled day.**

Online Assessment Requirements:

This course requires the use of ExamSoft® (or CORE ELMS®). Students are responsible for creating their online login within the first week of class. If you cannot access your online account, please contact Dr. Jessica Shenberger (jmshenberger@utep.edu) to resolve this issue. Students are

responsible for ensuring they have access to the online assessment system. Assessments (e.g., assignments, quizzes, and exams) may be disseminated before the due date. This requires students to download the assessment using an internet connection. It is the student's responsibility to maintain access to a reliable internet connection (with the rare exception of when UTEP's systems are down).

Pharmaceutics IB – Dosage Forms Course Objectives	CAPE (All: 1-Intro)	PCOA	Learning Activities	Outcome Measures
Objective 1 Define major types of pharmaceutical excipients and their roles in dosage forms.	1.1, 3.1	2.4.2	Reading assignments, discussions, and class activities (classroom, outside classroom, and/or online environments) of learning	Quiz, Mid-Term & Final
Objective 2 Explain the characteristics, advantages, and disadvantages of different liquid dosage forms.	1.1,2.1, 3.1	2.4.1	Reading assignments , lectures, discussions, and class activities (classroom, outside classroom, and/or online environments)	Mid-Term & Final
Objective 3 Describe various rectal and vaginal suppositories and inserts, including their advantages and disadvantages.	1.1,2.1, 3.1	2.4.1	Readings assignemnts , discussions, and class activities (classroom, outside classroom, and/or online environments)	Mid-Term & Final
Objective 4 Discuss the characteristics of dosage forms that are applied on the skin for the treatment of local and systemic disorders.	1.1,2.1, 3.1	2.4.1	Readings assignemnts , discussions, and class activities (classroom, outside classroom, and/or online environments)	Quiz, Mid-Term & Final
Objective 5 Describe the applications of powders and granules as solid dosage forms.	1.1,2.1, 3.1	2.4.1	Readings assignemnts , discussions, and class activities (classroom, outside classroom, and/or online environments)	Quiz, Mid-Term & Final
Objective 6,7,8 6. Discuss various types of extended release dosage forms, and characteristics of drugs suitable for delivery via such dosage forms. 7. Explain pulmonary, nasal, oral transmucosal, injectable and ophthalmic dosage forms, including their routes of administration and unique formulative considerations. 8. Discuss dosage forms of plant-derived dietary supplements and the importance of their standardization.	1.1,2.1, 3.1	2.4.1 2.4.3 2.4.4	Readings assignemnts , discussions, and class activities (classroom, outside classroom, and/or online environments)	Quiz, Mid-Term & Final

CAPE Educational Outcomes

CAPE has defined educational outcomes to guide the PharmD curriculum. The content of this course will cover the following CAPE educational outcomes. **Level of Assessment:** 1–Introduce, 2–Reinforce, 3–Apply

Compounding Course Objectives	CAPE (All: 1-Intro, 2- reinforce)	PCOA	Learning Activities	Outcome Measures
Objectives 1, 2 ,3 and 4 1. Recognize common systems of measurement, convert to and complete all calculations in the metric system 2. Identify and acceptably translate the common Latin/English abbreviations used in prescription writing 3. Calculate how to accurately compound dosage forms as prescribed 4. Correctly reduce and enlarge formulas	1.1 2.1 3.1	2.7.2 2.7.3	Calculation assignments, discussions, Video tutorials and Hands on experience in making dosage forms, Interpretation and filling prescription as needed by the provider	Quiz, Mid-Term & Final
Objectives 5,6,7 and 8 5. Comprehend various pharmaceutical concentration expressions and convert between them 6. Properly calculate ingredients necessary to dilute a mixture 7. Properly calculate dilutions that occur when mixtures of ingredients are prepared 8. Calculate aliquots to obtain small drug amounts	1.1 2.1 3.1	2.7.2 2.7.3	Calculation assignments, discussions, Video tutorials and Hands on experience in making dosage forms, Interpretation and filling prescription as needed by the provider	Exercise, Mid-Term & Final
Objectives 9,10,11 and 12 9. Describe formulation strategies to optimize drug activity, dosage stability, targeted delivery, and patient compliance 10. Perform the steps necessary to properly prepare a drug product for dispensing pursuant to a prescription order 11. Compound a drug product using the proper techniques to ensure accuracy and safety of the finished product	1.1 2.1 2.2 3.1	2.7.1 2.7.2 2.7.3	Calculation assignments, discussions, Video tutorials and Hands on experience in making dosage forms, Interpretation and filling prescription as needed by the provider	Mid-Term & Final

12. Prepare to specification a number of commonly compounded preparations				
Objectives 13,14,15 and 16 13. Identify pharmaceutical dosage forms and drug delivery systems which are used to deliver drugs via different routes of administration 14. Identify common situations in which an extemporaneous compound may be recommended over a standard or unit dose preparation 15. Interpret the prescription and prepare the compounded product 16. Identify materials, ingredients and formulation procedures used in preparation of various dosage forms	1.1 2.1 2.2 3.1	2.7.1 2.7.2 2.7.3	Calculation assignments, discussions, Video tutorials and Hands on experience in making dosage forms, Interpretation and filling prescription as needed by the provider	Quiz, Mid-Term & Final
Objectives 17,18,19 and 20 17. Recognize and understand advantages, disadvantages and uses of various dosage forms and drug delivery systems 18. Perform accurate calculations required to accurately compound prescription orders in formulating and adjusting strength of dosage forms 19. Calculate how to accurately compound dosage forms using commercially prepared products 20. Identify differences between well-prepared and poorly-made products	1.1 2.1 2.2 3.1	2.7.1 2.7.2 2.7.3	Calculation assignments, discussions, Video tutorials and Hands on experience in making dosage forms, Interpretation and filling prescription as needed by the provider	Quiz, Mid-Term & Final
Objective 21 and 22 21. Develop basic laboratory skills unique to the practice of pharmacy, including, use of pharmaceutical laboratory equipment and basic compounding skills for a variety of dosage forms 22. Gather basic skills-set required for subsequent coursework in the pharmacy curriculum.	1.1 2.1 2.2 3.1	2.7.1 2.7.2 2.7.3	Calculation assignments, discussions, Video tutorials and Hands on experience in making dosage forms, Interpretation and filling prescription as needed by the provider	Quiz, Mid-Term & Final

CAPE: 1.1 Learner, 2.1 Patient-center Care, 3.1 Problem-Solver

PCOA:

- 2.4.1 Biopharmaceutical principles of drug delivery to the body via dosage forms: liquid, solid, semisolid, controlled release, patches, implants
- 2.4.2 Materials and methods used in preparation of drug forms
- 2.4.3 Physicochemical properties relating to drug entities and dosage forms
- 2.4.4 Principles of drug and dosage form stability, including chemical degradation and physical instability
- 2.7.1 United States Pharmacopeia guidelines on sterile and nonsterile compounding, hazardous drugs, and FDA regulation of compounding

2.7.2 Techniques and principles used to prepare and dispense individual extemporaneous prescriptions, including dating of compounded dosage forms

2.7.3 Dosage form preparation calculations

Expectations of Students During Course

Students are encouraged to attend the synchronized class if possible.

Methods of Instruction/Learning

Active learning via in person class lecture and activities in the lab through preparing various dosage formulations. However, the class and lab may move to online platform if such situation arise due to ongoing pandemic and etc.

The learning outcomes in this course will be achieved via:

1. **Outside Preparation**
 2. **In-class Lectures**
 3. **Team Assignment/Activity**
 4. **Video Tutorials**
 5. **Pre labs**
 6. **Exams/Quizzes** – allows students to demonstrate the course ability outcomes and instructors to provide necessary feedback.
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Course Technology/Tools/Needs

Recommended Textbooks:

Ansel's Pharmaceutical Dosage Forms and Drug Delivery Systems, 10th edition, 2014, by LV Allen, Jr. and HC Ansel, Lippincott Williams and Wilkins

ISBN: 978-1451188769

Aulton's Pharmaceutics: The Design and Manufacture of Medicines, 4th edition, 2013, Ed. ME Aulton, Churchill Livingstone

ISBN: 978-0-7020-4290-4

Recommended online resource

The Lippincott Williams & Wilkins online resources associated with each textbook are available at the Point: <http://thePoint.lww.com> (for access information, see details in inside front cover of the above listed, textbooks).

Required:

Students are expected to be in class/lab on time. If an individual student is not able to attend the lecture/lab the instructor should be notified/informed early with a evidence based excuse. You are assigned to a group automatically, if you feel that the assigned group is somehow not convenient for you, please reach out to the instructor at least a week ahead to possibly switch to other group.

Laptop Computer with broadband internet connection

- Students are expected to make sure their laptop computers is connected with broadband internet. It is the responsibility of the students to make sure that the laptops are in working condition and meets the University and School of Pharmacy IT requirements. (See SOP Student Handbook). In case, an individual do not have a laptop or having software and hardware related issues, please contact UTEP SOP IT or UTEP IT to resolve the issues.

Calculator

- Students are expected to accompany a non-programmable calculator during the class and to all assessment activities.

Evaluation and Grading Policy

The format and point distribution for each session will be clearly detailed by the faculty to the Lab in advance. The faculty has full discretion in appointing credit.

Assessment	Compounding (Total-300 points)	Assessment	Pharmaceutics II/Dosage Forms (Total 300 points)
Attending the lab activities that included but not limited to arriving ontime, wearing proper lab etiquette, cleaning workstation before leaving: 16 products 5 points each	80	Quizzes: points may vary on each quiz	100
Mid-Term	100	Midterm	100
Final-Comprehensive	120	Final Exam Comprehensive	100

Grading Criteria for each Single Product that will be compounded in the lab:

Product-Each product 5 points	Percentage
Product appearance (Pharmaceutical Elegance)	50%
Compounding Procedure / Technique	10%
Compounding calculations	10%
Label accuracy and appearance	10%
Cleaning Station, equipment and glassware	10%
Behavior and professional attire	10%

Assignment of grades: Course total for 4 credit hours 600 points

A = 90 – 100%

B = 80 – 89%

C = 70 – 79%

D = 60-69%

F = < 60%

All Assessments will be administered via ExamSoft®, unless noted otherwise.

Missed Quizzes / Exams / Assignments Policy

NO make-up examinations or quizzes will be given for an UNEXCUSED ABSENCE. NO make-up pop quizzes will be given.

NO late assignments will be accepted for an UNEXCUSED ABSENCE.

Excused absences: If a quiz is missed, the points assigned to the quiz will be allocated to the next examination, e.g., percent score on exam will be used to compute the missing quiz score. Missing an examination may mean taking a make-up exam or using a process similar to missing a quiz.

Remediation Policies:

Student must participate in all assignments to be eligible for remediation. Students can do a make up lab or exam with in a week for the missed exam or lab under emergency circumstances. Other important factors are also considered. See student handbook for details.

Technical Assistance

If you are off campus, you may need to set up a Virtual Private Network (VPN) in your computer to access UTEP resources for this class (i.e. Library). The link below provides information for you to set up a VPN connection depending on your operating system. You can contact the Help Desk for assistance (See Technical Assistance information).

<http://admin.utep.edu/Default.aspx?tabid=58534>

If you are experiencing technical problems with the course, please contact the UTEP Helpdesk during: M - F: 8AM – 5PM. Calling within UTEP: 915.747.4357. Calling outside UTEP: 915.747.5257. For more information, please visit <http://helpdesk.utep.edu>.

You can also visit an on-campus lab such as the ATLAS lab located within the Undergraduate Learning Center (UGLC building) for additional technical assistance. So that UTEP can continue to provide a stable learning environment, 12:00-6:00am Mountain time on Thursdays is reserved for minor preventive maintenance. This maintenance window is scheduled during the lowest usage time for the system. Blackboard may or may not be available during this time, depending on whether maintenance is necessary. Whenever possible, this time will be utilized to perform all minor maintenance. Unscheduled outages occur rarely, but they do happen. In the event of an unscheduled outage, Course Development and Technology Support will confer with Student and Faculty Services to provide appropriate notifications to those affected including faculty, staff and students.

Attendance and Classroom Behavior

It is expected that students should demonstrate their commitment to the profession and respect for faculty, guest speakers, and colleagues by attending all classes and arriving to class on time prepared for the day's lesson(s). Although attendance will not be taken, students are responsible for the information covered during the live sessions, which may be included on quizzes and exams.

If you have an excused absence, you should immediately notify the course coordinator and instructor. The doctor's note or any other form in support of the excused absence should be provided to the course coordinator as soon as possible.

Who to contact/how document absence: Dr. Renukuntla or her TA will monitor and document absences.

Exam Day Policy

Student expectations prior and during examination

1. Exams

- a. Electronic exams need to be downloaded at a minimum 2 hours prior to the examination to avoid a grade penalty as dictated in the syllabus. Repeated instances (> 1 time) of not downloading electronic exams will result in a professionalism referral to the SOP Progression Committee.
- b. Students are responsible for having a computer for electronic exams. Computers are available to check-out as a loan for exams from the ILC, and students should make early arrangements for securing computers. Students who show up without a computer to take an electronic exam will (1) be provided a paper exam, (2) may receive a grade deduction as stipulated in the course syllabus, and (3) will receive a professionalism referral to the SOP Progression Committee.

2. Availability of items during exam

- a. Students can use scratch paper and electronic calculator for examinations, if needed. However, no other electronic gadget such as additional computer, smart phone, and smart watches are not allowed during the exam.
- b. No electronic devices (for example: watches, phones, calculators, etc.) are not permitted on the student during an examination unless approved by the instructor prior to the examination or inspected upon entry into the exam room for approval. However, students are allowed to use any non-rpogramable calculator if and when needed.
- c. Disruption of examination time due to an electronic device can result in a grade penalty as stipulated in the syllabus.
- d. Bathroom break: No bathroom breaks permitted during examinations unless a prior accommodation is made. No additional time will be provided for examinations when restroom breaks occur.

UTEP and SOP Policy for Academic Integrity

Any student who commits an act of academic dishonesty is subject to discipline. The instructor is required to report all suspected academic dishonesty to the UTEP Office of Student Conduct and Conflict Resolution. Please refer to the Student Handbook for SOP guidance on academic integrity (*see Table of Contents for Curriculum and Classroom Policies: Academic Integrity*).

Academic dishonesty includes, but is not limited to, cheating, plagiarism, collusion, the submission for credit of any work or materials that are attributable in whole or in part to another person, taking an examination for another person, and any act designed to give unfair advantage to a student or the attempt to commit such acts.

Proven violations of the detailed regulations, as printed in the Handbook of Operating Procedures (HOP), and available in the Office of the Dean of Students and on the homepage of the Dean of Students at www.utep.edu/dos, may result in sanctions ranging from disciplinary probation, to a failing grade on the work in question, to a failing grade in the course, to suspension or dismissal, among others. (For more information, see: <http://sa.utep.edu/osccr/academic-integrity/>)

Professionalism and Professional Conduct

- While enrolled at the University, a student neither loses the rights nor escapes the responsibilities of citizenship. Thus, UTEP and the SOP value professionalism and expect all students to not only acquire but also maintain the highest standards of professional attitudes and behaviors in their interactions with their fellow classmates, staff, faculty, colleagues and their patients, as described in the Student Handbook and as per UTEP's student conduct policies (see <http://sa.utep.edu/osccr/student-conduct/> & <http://admin.utep.edu/Default.aspx?tabid=73922> for further information). Any student who engages in conduct that is prohibited by the Board of Regents' Rules and Regulations, University or SOP rules or by federal, state, or local law is subject to discipline whether such conduct takes place on or off campus or whether civil or criminal penalties are also imposed for such conduct. Please refer to the Student Handbook for specific expectations regarding professional conduct in the SOP (*see Table of Contents for Academic Progression: Good Standing: Professional*).
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UTEP and SOP Policy for Special Accommodations (ADA)

“If you have or suspect a disability and need classroom accommodations, you should contact the Center for Accommodations and Support Services (CASS) at 747-5148.” You can also e-mail the office at cass@utep.edu or go by their office in Union Building East (Room 106). For additional information, visit the CASS website at <http://sa.utep.edu/cass/>

General Statement About Course Policy

The syllabus is subject to change to meet course needs, especially if there are unexpected disruptions or changes in class size, resources, etc. The most updated syllabus can be found on the course Blackboard shell. It is your responsibility to review the syllabus periodically for updates.

Additional Information

Campus Concealed Carry:

Effective August 1, 2016.

<http://sa.utep.edu/campuscarry/>

Civility Statement:

You are expected to follow basic standards of courtesy (<http://admin.utep.edu/Default.aspx?tabid=73922>) and may be dismissed from class for blatant or sustained disruptive behavior

Cell Phone Policy (Optional for Faculty to adapt or not)

All cell phones must be turned off before the beginning of the class. If a student forgets to turn it off, he/she will have to leave the classroom and may only return with the instructor's permission.

Student Support:

UTEP provides a variety of resources for those in need (e.g., if you feel overwhelmed, stressed or dealing with a crisis):

- UTEP's Counseling Center (free counseling to all students): 747-5302, which after-hours goes to a crisis line
- Mental Health Crisis Line: 779-1800
- National Suicide Prevention Hotline: 1-800-273-8255
- Veterans Crisis Line: 1-800-273-8255
- NAMI (National Alliance Against Mental Illness) of El Paso: 534-5478
- <http://carineducators.tumblr.com/survival>

Title IX:

Title IX of the Education Amendments of 1972 (Title IX), prohibit discrimination on the basis of sex in education programs or activities operated by recipients of Federal financial assistance. Sexual harassment of students, which includes acts of sexual violence, is a form of sex discrimination prohibited by Title IX. Sexual violence refers to physical sexual acts perpetrated against a person's will or where a person is incapable of giving consent due to the victim's use of drugs or alcohol. An individual also may be unable to give consent due to an intellectual or other disability. A number of different acts fall into the category of sexual violence, including rape, sexual assault, sexual battery, sexual coercion, stalking, and relationship violence. All such acts of sexual violence are forms of sexual harassment covered under Title IX.

In accordance with Title IX of the Education Amendments of 1972, UTEP does not discriminate on the basis of sex in the operation of its educational programs and activities. This commitment to non-discrimination applies to both employments in and admission to such programs and activities. [Link to full text at <http://admin.utep.edu/Default.aspx?tabid=68750>]

Week-1	01/17/2023 <ul style="list-style-type: none"> • Course Introduction • Dosage forms Introduction • Excipients Dr. Nurunnabi	01/18/2023 – Lab 1 (Group 1)	<ul style="list-style-type: none"> • Lab Introduction • Introduction to Non-Sterile Compounding • Drug Product Stability • BUD Assigning and Labeling Instructions • Safety Training • Terminology • Record Keeping • Labelling
		01/19/2023 –Lab 1 (Group 2 and 3)	
Week-2	01/24/2023 <ul style="list-style-type: none"> • Routes of Drug Administration • Single Liquid Phase solutions Dr. Nurunnabi	01/25/2023 – Lab 2 (Group 1)	Overview of Compounded Oral Solutions <ol style="list-style-type: none"> 1. Oral Solution 2. Methocel Stock Suspension
		01/26/2023 – Lab 2 (Group 2 and 3)	
Week-3	01/31/2023 <ul style="list-style-type: none"> • Emulsions/Creams/Ointments Dr. Bhuiyan	02/01/2023 – Lab 3 (Group 1)	Overview of compounding Rapid Dissolve Tablets <ol style="list-style-type: none"> 3. Rapid Dissolve Tablets
		02/02/2023 – Lab 3 (Group 2 and 3)	
Week-4	02/07/2023 <ul style="list-style-type: none"> • Quiz 1 (In person) • Parenteral Drug Delivery & Stability Dr. Bhuiyan	02/08/2023 – Lab 4 (Group 1)	Overview of Compounded suspensions <ol style="list-style-type: none"> 4. Acetaminophen Oral Suspension 5. Fixed Oil Suspension (Vet)
		02/09/2023 – Lab 4 (Group 2 and 3)	
Week-5	02/14/2023 <ul style="list-style-type: none"> • Sterilization and Packaging • Pulmonary Drug Delivery Dr. Bhuiyan	02/15/2023– Lab 5 (Group 1)	Overview of Compounded creams and ointments –applications <ol style="list-style-type: none"> 6. Cold Cream 7. Camphor menthol ointment
		02/16/2023 – Lab 5 (Group 2 and 3)	
Week-6	02/21/2023 <ul style="list-style-type: none"> • Quiz 2 (In person) • Ocular, Nasal and Otic Drug Delivery 	02/21/2023– Lab 6 (Group 1)	Introduction to compounded Sprays <ol style="list-style-type: none"> 8. Oral Syrup (Vet-Avian)
		02/22/2023– Lab 6 (Group 2 and 3)	

	Dr. Bhuiyan		
Week-7	02/28/2023	03/01/2023 – Lab 7 (Group 1)	Overview of Lipbalms and Lollipops 9. Aloe Vera Lip Balm
	<ul style="list-style-type: none"> Oral & Transmucosal dosage forms 	03/02/2023 – Lab 7 (Group 2 and 3)	
Week-8	03/07/2023	03/08/2023– Lab 8 Lab midterm (In person) (Group 1)	Overview of compounded Troches– application 10. Gelatin Troche
	<ul style="list-style-type: none"> Powder and Granules Plant Derived Dosage Forms	03/09/2023– Lab 8 (Group 2 and 3) Lab midterm (In person)	
SPRING BREAK			
Week-9	03/21/2023	03/22/2023– Lab 9 (Group 1)	Overview of compounded Transdermal creams –application 11. Gel/PLO Transdermal Cream (Lipoderm w/ Accupen)
	Midterm (Exam soft) NO CLASS	03/23/2023– Lab 9 (Group 2 and 3)	
Week-10	03/28/2023	03/29/2023 – Lab 10 (Group 1)	Overview of compounded Transdermal creams –application 12. Urea Cream
	<ul style="list-style-type: none"> Tablets and Modified Dosage Form 	03/30/2023 – Lab 10 (Group 2 and 3)	
Week-11	04/04/2023	04/05/2023 – Lab 11 (Group 1)	Overview of compounded Capsules– application 13. Capsules (100 capsules per Student)
	<ul style="list-style-type: none"> Quiz 3 (In person) Coating, Extended Dosage forms 	04/06/2023 – Lab 11 (Group 2 and 3)	
Week 12	04/11/2023	04/12/2023 Lab 11 (Group 1)	Overview of compounded Powders– application 14. Oral Flavored Powder (Vet-Equine)
	Rectal and Vaginal drug delivery	04/13/2023 Lab 11 (Group 2 and 3)	

Week-13	04/18/2023 (Reserve day) Dr. Nurunnabi		Dr. Vickie Howe, PharmD Dr. Sara Smith, PharmD – Counselling
Week-14	04/25/2023 • Capsul Dr. Nurunnabi	04/26/2023 Lab 14 (Group 1)	Overview of compounded Suppositories – application 15. Carbomer 0.5% in 50% Alcohol Topical Gel 16. Sorbitol Lollipops
		04/27/2023: Lab 14 (Group 2 and 3)	
Week-15	05/02/2023 • Viral and non-viral based vaccine Dr. Nurunnabi	05/03/2023 Lab final (In person) (Group 1)	
		05/04/2023 Lab final (In person) (Group 2, 3)	
Week-16	05/09/2023 Final exam Comprehensive (Exam soft) Drs. Nurunnabi/ Bhuiyan	8:00am-10:00am	

**Course Number PHAR 6404: Course Calendar and Topic Outline
Pharmaceutics IB: Dosage Forms & Non-Sterile Compounding
January 17th to May 9th, 2022**

**Team assignments, quizzes and exams should be bolded for easy identification.

***Include exam dates, deadlines