

Pharmaceutics I—PHM 388M
Spring 2017

Course Description:

Pharmaceutics is the discipline of pharmacy that deals with the process of turning a new chemical entity (NCE) into a medication to be used safely and effectively by patients. It is also called the science of dosage form design. There are many chemicals with pharmacological properties, but need special measures to help them achieve therapeutically relevant amounts at their sites of action. Pharmaceutics helps relate the formulation of drugs to their delivery and disposition in the body. Pharmaceutics deals with the formulation of a pure drug substance into a dosage form.

Classroom Expectations:

This course is designed and structured to provide you with the BEST training in pharmaceutics in the country. We are a nationally and internationally recognized program, and we are ensuring that you get the best education to reflect this standard of excellence.

You will be asked to take responsibility to **acquire information** (facts, principles, concepts) by reading independently as homework. Then, you will **actively do things in class; work harder in class** in a learning-centered classroom. We are asking you to **construct deeper meaning** at an application/problem-solving level.

Classroom Protocol:

This class is run using the protocol of a project team meeting or board meeting. This means full respect for people's input, while still challenging people in a professional manner. This also means if you have the floor, you are concise, you present new or compelling material, and you back your position up with facts, not opinions.

Participating in a project team meeting or board meeting means arriving on time, being fully engaged, no cell phone interruptions, and expectations of being asked to participate at any time.

Teams are not allowed to collaborate and share information in any way during class time. Teams are not allowed to use any case study materials from other students who took the course in past semesters.

Course Logistics:

Class: Friday 8:00 - 11:00 a.m.
Sanchez 104
Unique No. 60550

Tutor Sessions: May be arranged

Classroom Requirement: Each student is allowed ONE wireless connection so all phones must be placed in “Airplane” mode or turned “Off”.

Faculty: Robert O. (Bill) Williams III, Ph.D.
Bill.Williams@austin.utexas.edu

Hugh D. C. Smyth, Ph.D.
Hugh.Smyth@austin.utexas.edu

Teaching Assistant(s): Will be announced on first class day

**Office Hours
by Appointment:** Dr. Williams - PHR 4.214
Dr. Smyth – PHR 4.214

Pre-class Focused Readings: Focused readings covering the week’s module topic will be assigned prior to class. These focused readings are **critical** to prepare you for 1.) the readiness test that will be taken at the beginning of each class period, 2.) the team-based “case studies” that will be completed during the class period, and 3.) the midterm and final exams. Reading assignments and study guides will be posted on the Canvas course website one week prior to class.

Reading assignments must be completed before coming to class on the date they are listed.

Required Textbook: No textbook is required for this course, all reading materials will be provided.

Search Databases:

Reference literature will be obtained through the following link to the University of Texas at Austin library (see, “Pharmaceutics 388M/188P” tab).

<http://guides.lib.utexas.edu/c.php?g=527224&p=3650118>

Required Electronics:

A device that can communicate with the internet and access Canvas to allow writing a report using word processing and data entry. (Suggested: PC or Mac based laptop; Wireless internet capability; Battery life to support 3+ hours of usage; iPad or tablet to support 3+ hours of usage. Assume that there are NO power outlets in our classroom to use.

NOTE: Students should purchase additional bandwidth allocation BEFORE the first class day. (<http://www.utexas.edu/its/help/network/403>) We recommend “Tier 1”; 10 GB per week for the semester; or the equivalent currently offered by the university.

Class Format:

Before class – Reading assignments to prepare for readiness assessment test.

During class -

Start Time	Finish Time	Activity
8:00	8:15	Individual Readiness Assessment on Day's Topic
8:15	8:35	Module Introduction and Integration
8:35	9:35	Case Study: Drug Product Design Assignment 1
9:35	9:45	Class Comparison
9:45	9:50	Module Introduction and Integration
9:50	10:50	Case Study: Drug Product Design Assignment 2
10:50	11:00	Class Comparison

In-class Absences: Students with an **excused** absence arranged with either Drs. Smyth or Williams **BEFORE** the start of the class period may participate in the team-based case studies during class by an approved remote electronic conferencing method (i.e., Facetime, Skype, or other electronic conferencing methods). Participation in the team-based activities during the entire class period is a requirement for obtaining a grade for the team-based activities (i.e., you must be visible to the instructors and actively participating for the entire class period).

NOTE: We cannot guarantee the technical capabilities of Sanchez 104 connections to allow web-based conferencing. In the event of connection difficulties, the student may not be able to participate remotely and will receive a grade of ZERO for that case study.

NOTE: Missed Readiness Assessment Quizzes cannot be made up.

PHM 388M Teams

Teams:

Teams will be assigned beforehand by the instructors and announced on or before the first class day. Each team will be composed of up to 5 students; and each team will be permanent throughout the semester. Changing teams is not permitted. Each team will be assigned by team number to a specific seating area in the classroom, and this may change from week to week.

Peer Evaluation:

Team members will evaluate each other via an anonymous survey one time during the semester. Each team member will rate the other team members and themselves as to the following attributes: Motivation, communication, accountability, contribution and quality of work (See, "Peer Evaluation Rubric").

How to Succeed as a Team:

Success in the professional world is influenced by three things: your own effort, the effort of the people you depend upon, and the way you work together. The same is true in this class. Based on observations of the behaviors of high- and low-performing teams in other courses, we offer these suggestions:

1. Sit close at the assigned seating area. This enables easy communication and eye contact, which is very important to team performance.
2. Do your part. Before coming to class, read and write as assigned. Bring your books, computer, calculator and readings, complete with your underlining, marginalia, and other notes.
3. For the team test and team based assignments, prepare to share three things with your teammates:
 - What answer you chose as an individual,
 - Why you chose that answer,
 - How confident you are about it.
4. Deliberate as long as time permits. It has been found that teams that deliberate longer (especially at the beginning of the semester) do better in team activities.
5. Keep an open mind and a willing attitude. Each of you (individually) are responsible for the success of the entire team.

6. Team-work will be done only during class time. Lectures, readings and team assignments complement and inform each other. One is not a substitute for the other.
7. Teams are not expected to meet outside of class time.
8. A significant proportion of the grade in this class is determined by team activities.
9. Teams cannot discuss (either verbally or via any digital form of messaging) their work with other teams until the class comparison in order to ensure a diversity of answers and outcomes.
10. Teams will be called upon to answer questions regarding their drug product design assignments in front of the class. Team member will answer a question. The purpose is to provide opportunities to practice communication skills before their peer group.

Grading and Assessment:

Components of Final Grade:

Midterm Exam (Date will be announced as soon as available)	23.5%
Final Exam (Held according to college/university schedule)	23.5%
Readiness Tests	20% (13 Readiness Tests; dropping the lowest two)
Team-based Case Studies	30% (25 case studies over 13 modules)
Peer Evaluation of Team Members	3% (1 peer evaluation during the semester)*

Total % = 100%

Bonus Points

Bonus points may be given at the discretion of the instructors within the team-based case studies and/or the exams.

*for Teams of less than 5, the total points for each person will be calculated by taking the average of the peer scores for each team member multiplied by 5.

Readiness Assessment Test (Grade Based on Individual Effort) - You will be given up to a 20-question, multiple-choice or True/False quiz over the assigned readings at the beginning of the class. The purpose of the Readiness Assessment Test is to evaluate the student's readiness for working in a productive team to apply the knowledge to solve the "case study" assignment. It will also ensure that the student is prepared for the midterm exam and final exam.

Team-based Case Study (Grade Based on Team's Activity) – The purpose of the Team-based Case Study is to apply the knowledge learned from the assigned reading material to solve real-life pharmaceuticals related problems. Each team will complete and submit a structured worksheet for each of the two critical thinking "case studies" related to the pharmaceuticals of contemporary pharmaceutical products assigned that day. Each "case study" will give the team the chance to demonstrate their problem solving ability and knowledge of pharmaceutical dosage form design, while analyzing the "case study" in terms of the literature. A grading rubric will be used for grading of the "case studies."

Instructions for writing up the Team Drug Product Design Assignment:

1. Each “assignment” will be typed in the template available in the Canvas folder, and the completed worksheet will be electronically uploaded as a “.PDF” in final form at completion of the respective “case study”.
2. Response word limit per question – **200 words (excluding citations) for the entire question (including any and all subparts)**
3. References/citations of any of the following types **must** be used to support your answers:
 - a. Peer-reviewed primary resources: published works of original research and new discoveries that introduce new knowledge or enhance existing knowledge (e.g., clinical trials)
 - i. NOT all journal articles are primary literature (e.g., review articles, policy statements, position papers)
 - b. Secondary resources: bibliographic services designed to help retrieve primary literature (e.g., MEDLINE, IPA, Pubmed)
 - c. Tertiary resources: resources that collect and evaluate/interpret primary literature from multiple sources into a more concise, and frequently more usable or practical format (e.g., textbooks, compendia, review articles, full-text computer databases such as lexicomp)
4. **Citation format: See ICMJE Recommendations for citation format (Vancouver Style) on PHM 388M Web Portal.**
5. General Style - You, as future professional healthcare workers, are asked to take into account a diverse audience. Some specific points on style follow:
 - a. Authors should write in clear, concise US English. Language and grammar should be consistent with Fowler's English Usage; spelling and meaning of words should conform to Webster's Dictionary. If English is not your native language please ensure other team members have reviewed it.
 - b. Latin terminology, including microbiological and species nomenclature, should be *italicized*.
 - c. Use standard convention for human and animal genes and proteins: italics for genes and regular font for proteins, and upper case for human products and lower case for animal products.
 - d. “US” is preferred to “American”, “USA” to “United States”, and “UK” to “United Kingdom”.
 - e. Double quotation marks rather than single are used unless the “quotation is ‘within’ another”.
 - f. Punctuation of common abbreviations should adhere to the following conventions: “e.g.”; “i.e.”; “cf.”. Note that such abbreviations should not generally be followed by a comma or a (double) point/period.
 - g. Upper case characters in headings and references should be used sparingly, e.g. only the first word of paper titles, subheadings and any proper nouns begin upper case; similarly for the titles of papers from journals in the references and elsewhere.

- h. Apostrophes should be used sparingly. Thus, decades should be referred to as follows: “The 1980s [not the 1980’s] saw ...”. Possessives associated with acronyms (e.g. FDA), should be written as follows: “The FDA’s findings that ...” but note that the plural is “FDAs”.
- i. All acronyms for national agencies, examinations, etc., should be spelled out the first time they are introduced in text or references. Thereafter the acronym can be used if appropriate, e.g. “The work of the Food & Drug Administration (FDA) in the early 1980s ...” and subsequently, “The FDA studies drug efficacy ...”, in a reference “(Department of Education and Science [DES] 1989a)”.
- j. Material to be emphasized by italicization in the printed version should be italicized in the typescript rather than underlined. Please use such emphasis sparingly.
- k. Numbers in text should take the following forms: 300, 3000, 30000 or 30 000 (not 30,000). Spell out numbers under 10 unless used with a unit of measure, e.g. nine pupils but 9 mm (do not use full stops (periods) within units). For decimals, use the form 0.05 (not .05, Å~05 or 0Å~05). “%” (not “per cent”) should be used in typescripts.

Peer Evaluation - It is important to provide positive feedback to people who truly work hard for the good of the team and to make suggestions to those you perceive could be working more effectively on team tasks. During the semester, you will assess each of your team members in the areas of motivation, communication, accountability, contribution and quality of work. You will also assess yourself. Instructions will be provided electronically at the time of conducting this peer evaluation.

Appeals for Contesting Readiness Assessment Quiz - If you feel strongly about the correctness of an answer that was counted wrong on the Readiness Assessment Quiz, you may submit a written appeal to Drs. Smyth and Williams by email. This appeal process must occur *during or immediately following (i.e., by 5:00pm that same day)* the class period. A successful appeal will raise grades on individual quizzes that reflect the “new” answer.

Appeals for Contesting Team-based Case Studies - If you feel strongly about the correctness of an answer that was counted wrong on the Team-based Case Studies, your team may submit a written appeal to Drs. Smyth and Williams by email. This appeal process must occur *by 5:00pm on the day after the graded case study in question has been released*. A successful appeal will raise the grade on the team’s case study as limited to the scope of the written appeal.

Appeals are not simply a chance to dig for more points. They are an opportunity for

individuals and teams to make scholarly arguments for their position. All arguments must be supported by evidence from the references. The decision to grant or refuse an appeal will be made by the instructors. The decision is final.

Bonus Points – There may be opportunities for bonus points throughout the semester to enhance team activities and interactions.

Overall Course Grading:

90-92 A-	80-82 B-	70-72 C-	60-62 D-
93-100 A	83-86 B	73-76 C	63-65 D
	87-89 B+	77-79 C+	66-69 D+

Student Learning Outcomes:

Concept: Critical Thinking and Problem Solving

Outcome #1: Methodically identify, describe, analyze and solve pharmaceuticals-related problems.

Performance Criteria (characteristics, skills, knowledge, attitudes and/or values the student will exhibit)--- these will help in mapping course objectives):

1) Recognize a problem; 2) Analyze a problem; 3) Find and evaluate potential solutions; 4) Choose optimal solution; 5) Evaluate outcome

In this course, we are accomplishing this by incorporating active learning to solve real-life case studies about drug products using the knowledge gained in the reading materials.

Concept: Interpersonal / Collaboration Skills

Outcome #2: Function effectively in groups to accomplish objectives.

Performance Criteria: 1) Participate effectively and work cooperatively with others, including healthcare providers and patients; 2) Recognize, respect, and encourage diverse views; 3) Recognize and manage conflict; 4) Lead as the need arises to accomplish the group's objectives; 5) Evaluate and motivate others to improve performance as necessary.

In this course, we are accomplishing this by establishing teams of students to effectively communicate, both written and verbally, to solve problems.

Concept: Knowledge

Outcome #3: Demonstrate the pharmaceuticals body of knowledge as specified in pharmaceuticals' outcomes below that encompasses the discipline of pharmaceuticals.

Performance Criteria: 1) Demonstrate appropriate depth and breadth of knowledge in the pharmaceutical sciences; 2) Demonstrate mastery of integration of pharmaceutical sciences; 3) Demonstrate application of knowledge in the pharmaceutical sciences and in the resolution of pharmaceuticals-related problems; 4) Contribute to the development

of knowledge

In this course, we are accomplishing this by assigning the reading materials that will be mastered before class, testing each individual on the content of the reading materials, and applying the knowledge learned from the reading materials to solve the problems posed to the teams. Students will also be tested on this knowledge in a midterm and final exam.

Concept: Self-Directed Learning

Outcome #4: Demonstrate responsibility for own learning and professional competence.

Performance Criteria: □ 1) Independently acquire new knowledge and skills; □ 2) Evaluate new information critically; 3) Incorporate new knowledge and recommendations into the practice of pharmacy and the management of medication use systems □; 4) Develop and enhance skills to contribute to the development of new knowledge

In this course, we are accomplishing this by assigning students activities that must be completed on their own, and then each individual must demonstrate their competence individually or working as a group.

Concept: Literature Skills

Outcome #5: Demonstrate a rational and systematic process to comprehensively assess and evaluate pharmaceuticals-related information

Performance Criteria: □ 1) Develop and document a rational and systematic search strategy to retrieve information; □ 2) Comprehend benefits and limitations of different forms of literature; □ 3) Critically evaluate basic science and clinical information with respect to appropriateness and validity of the evidence and implications of the major findings for the practice of pharmacy □; 4) Apply critically evaluated information to formulate and communicate an appropriate response

In this course, we are accomplishing this by assigning real-life problems that the students must strategically evaluate and solve using the pharmaceuticals-related knowledge acquired through their independent reading or team research conducted during class. Students must master the “Pharmaceuticals” portal and gain the skills to effectively use and cite the literature to support their answers.

CAPE Supplemental Outcomes for Pharmaceutics:

1. Identify and explain the physicochemical and formulation properties of a drug that influence its absorption and stability.
 - a. Identify and describe the factors that influence the aqueous solubility and partition coefficient of a drug. Explain the importance of appropriate aqueous solubility and partition coefficient in the formulation design and absorption of drugs.
 - b. Understand and explain the ionization of weak acidic and weak basic drugs and calculate the fraction of a drug in its ionized and un-ionized forms as a function of pH.
 - c. Describe how pKa and pH influence the observed solubility and partitioning of a drug.
 - d. Identify, evaluate, and explain the factors that affect the chemical stability of a drug under various environmental and packaging conditions.
 - e. Identify and explain the factors that control the physical and microbiological stability of a drug product under various environmental and packaging conditions.
 - f. Identify and explain the unique pharmaceutical challenges posed by contemporary biotechnology based drug products (biopharmaceuticals).
2. Identify and explain the properties of a drug that influence dosage form design and its route of administration.
 - a. Describe the various routes of administration available for drug delivery, and discuss the advantages and disadvantage of each delivery system.
 - b. Describe the characteristics of an ideal drug delivery system. Identify the various types of liquid, solid and semisolid dosage forms available.
 - c. Discuss how physicochemical properties of a drug influence the design of various dosage forms, including biotech drugs.
 - d. Explain the various formulation approaches taken to improve the in-vitro dissolution, solubility, stability and absorption of drugs from different dosage forms.
 - e. Identify physical-chemical and formulation properties that make a drug suitable for modified release/controlled release, and explain the various formulation approaches available for modifying drug release from dosage forms.
 - f. Discuss the methods/techniques used for establishing the performance and quality of dosage forms.
3. Identify and explain the dosage form features that influence therapeutic outcomes.
 - a. Describe the role and functions of inactive/inert ingredients in different types of dosage forms.
 - b. Describe the various methods of compounding and/or manufacture of different types of dosage forms.
 - c. Explain the importance of packaging and storage conditions in expiration

- dates and drug product quality and assurance.
- d. Select an appropriate packaging container based on the physicochemical properties of the drug, which meets a patient's need.
 - e. Explain principles underlying the proper use of dosage forms, and their influence on bioavailability and therapeutic outcome.
 - f. Determine the importance of selection of appropriate dosage form in drug therapy.
 - g. Explain the influence of formulation, physiological, and anatomical factors on drug absorption from dosage forms.
 - h. Discuss how compliance and adherence can be improved by appropriate dosage form selection.
 - i. Select and recommend the best route of administration and dosage form for a patient.
 - j. Identify and prevent drug interactions and incompatibilities based on presence of active and inactive pharmaceutical ingredients.
 - k. Identify, solve, and prevent drug therapy problems related to dosage form, delivery system, and route of administration.
4. Make appropriate selection decisions for multisource drug products.
 - a. Explain and understand the concepts of pharmaceutical equivalence, bioequivalence and therapeutic equivalence. Understand the basis for therapeutic equivalence or nonequivalence.
 - b. Use the Orange Book appropriately to select and recommend a drug.
 - c. Select and recommend appropriate drug product according to scientific, legal and economic guidelines where appropriate.
 5. Compound safe and effective extemporaneous pharmaceutical products.
 - a. Apply relevant standards of practice (including ethical guidelines) to prepare safe and effective dosage forms and perform in-process quality control.
 - b. Search and apply most accurate and standardized information on extemporaneous compounding.
 - c. Evaluate the suitability of an extemporaneously compounded dosage form for the administration of a drug for a patient.
 - d. Identify physical and chemical incompatibilities among active and inactive pharmaceutical ingredients of a formulation; recommend and follow approaches to avoid incompatibilities and unwanted interactions.
 - e. Calculate and measure the correct quantity of active and inactive pharmaceutical ingredients.
 - f. Use correct laboratory measuring procedures to obtain the desired quantity of all formulation ingredients.
 - g. Use good extemporaneous compounding practices in the preparation of a patient specific drug product.
 - h. Design and maintain an adequate operational facility for compounding pharmaceutical products.
 6. Preparing safe and effective sterile dosage forms and enteral nutrition products.
 - a. Apply relevant standards of practice (including ethical guidelines) to

- prepare safe and effective sterile dosage forms and perform in-process quality control.
- b. Calculate and measure the correct quantity of ingredients for preparing a sterile product.
 - c. Use proper aseptic techniques to prepare sterile products.
 - d. Identify physical and chemical incompatibilities among active and inactive components of sterile formulations; recommend and follow approaches to avoid unwanted interactions and incompatibilities.
 - e. Use sterilization methods that are appropriate for the drug and product.
 - f. Calculate the rate of drug administration based on the prescription order and the type of infusion pump used.
 - g. Determine a patient's fluid, electrolyte and nutritional needs and calculate the composition of parenteral or enteral nutrition sources to meet their needs.
 - h. Apply appropriate quality control procedures for sterile products.
 - i. Evaluate the impact of physical and chemical stability on a sterile product.
 - j. Design and maintain an adequate operational facility for compounding sterile pharmaceutical products.
7. Maintain professional competence by identifying and analyzing emerging issues in pharmaceutical dosage forms and compounding.

Examinations:

□ ***Students must arrive on time for examinations.*** All instructions and corrections will be made at the beginning of the examination period and will not be repeated. Semester exams will begin promptly at the designated hour. Students arriving after any students have completed the exam and left the room may not be allowed to sit for the exam, and may receive a score of zero for the exam.

The **two** lowest Individual Readiness Tests from the semester will not be counted. If a student has missed class due to an excused or unexcused reason, then this missed test will be scored ZERO and will count as one of the two lowest test scores to be dropped.

For circumstances OTHER THAN A DOCUMENTED AND PRE-APPROVED EXCUSED ABSENCE, if you are absent for teamwork, it **cannot** be made up. Your team depends on your participation. You will receive a grade of “zero” for missed class quizzes and Team-based Case Studies. Rare exceptional circumstances will be handled on a case-by-case basis at the sole discretion of Drs. Smyth and Williams.

No allowances will be made for the midterm or final exam being missed, other than for rare exceptional circumstances. The student must contact Drs. Smyth and Williams for confirmation ***prior to the exam.*** If permission is granted to delay the exam, it is the student’s responsibility to complete the College Form titled "Student Request for Alternate Exam Time" for final consideration and *final approval* by the Faculty member. In this event, the nature of the make-up will be at the discretion of the course coordinator (oral, written, increased weighting on the final, etc.). An unexcused absence from an exam may result in a grade of "**zero**" for that exam.

Return of Exams:

Your examination will be returned to you within a reasonable time after taking the exam.

Appeals for Contesting Mid-term and Final Exams

If there is a disagreement over the answer to a specific question, the student should present his/her exam plus a written explanation (with appropriate reference citations with evidence) to the Drs. Smyth and Williams within 24 hours from the time the graded exam is made available to the students. This policy does not apply to point addition or other grading errors). Note that faculty are instructed to not respond to reconsideration requests until the deadline has passed, so do not expect an immediate response to your request.

Final Exam Re-Examination Policy:

The re-examination policy for this course will follow the General Information Catalog (GIC) and College of Pharmacy policies for the University, which reads as follows:

*"Only a student who has a grade average of at least a C on all class work and lab work submitted before the final exam (in this course, >70% on each exam) may request a temporary delay of the final course grade because he or she failed the final examination (i.e., <60%), which is the examination given during the final exam period as printed in the official examination schedule. If the petition is denied by the instructor, the student's final course grade will remain as originally determined. If the petition is granted by the instructor, the grade on the reexamination will be **substituted** for the grade on the original exam in determining the student's final course grade, provided the student earns at least a C on the reexamination. **If the grade on the reexamination is less than a C (in this course, <70%), a final course grade of F must be recorded."***

All students who are eligible for re-examination according to the University criteria specified above will be notified by the Course Coordinator within 24 hrs of posting the final examination scores, and **must reply within the specified time as to whether they will be taking the re-examination.** Those students who choose to take the re-examination will be awarded a course grade of "X" until the re-examination is evaluated and the final course grade computed.

Academic Integrity:

The "Statement on Scholastic Integrity of the College of Pharmacy" reads as follows: "Pharmacy practitioners enjoy a special trust and authority based upon the profession's commitment to a code of ethical behavior in its management of client affairs. The inculcation of a sense of responsible professional behavior is a critical component of professional education, and high standards of ethical conduct are expected of pharmacy students. Students who violate University rules on scholastic dishonesty are subject to disciplinary penalties, including failure of the course involved and dismissal from the college and/or the University. Since dishonesty harms the individual, fellow students, and the integrity of the University and the College of pharmacy, policies of scholastic dishonesty will be strictly enforced in this class".

Students are expected to work independently on all examinations. Any student caught cheating will be given a "zero" on the exam (minimum). Any student suspected of dishonesty will be reported to the Dean of the College of Pharmacy and to the Dean of Students, as per University regulations. Students are expected to have read and understood the current issue of the General Information Catalog published by the Registrar's Office for information about procedures and about what constitutes scholastic dishonesty.

Students with Disabilities:

The University of Texas at Austin provides upon request appropriate academic accommodations for qualified students with disabilities. All University rules concerning accommodations must be followed, including the student arranging for special accommodations *prior to each examination*. In the absence of such *prearrangement*, it will be assumed that the student is not requesting special accommodations for that exam, and will be expected to take the exam with the rest of the class at the regularly scheduled exam time. For more information, contact the Office of the Dean of Students at 471-6259, 471-4641 TTY.

Other Resources:

1. **Canvas** for this course can be accessed either through UTDirect or via <http://courses.utexas.edu>. Either access point is UTEID-protected, and provides you links to the courses in which you are currently enrolled (make sure you access the *correct* Pharmaceutics course). You are strongly encouraged to visit this site for additional resources associated with this course (your grades, powerpoint presentations, etc).□ The website will also be used for official, course-related announcements. If you encounter problems with accessing Canvas please contact the ITS helpdesk at: 512-475-9400.
2. **Taped and video-streamed recordings** will not be available for this class.

Campus Carry:

Students should familiarize themselves with the information provided by the University regarding the implementation of “Campus Carry” legislation. You will find an information sheet specifically for students (as well as sheets for parents, visitors, faculty, and staff) at <http://campuscarry.utexas.edu/info-sheets>.

Module Schedule for Spring 2017 (see, Canvas Assignments schedule for more details):

Date	Module Topic
1/20	M01: Preformulation concepts
1/27	M02: Immediate release oral dosage forms
2/3	M03: Solid oral modified release dosage forms
2/10	M04: Solid oral modified release dosage forms
2/17	M05: Solid oral modified release dosage forms
2/24	M06: Solution based drug delivery systems (e.g., oral, ophthalmic, injectable)
3/4	M07: Solution based drug delivery systems (e.g., oral, ophthalmic, injectable)
3/10	NO CLASS - Midterm Exam
3/17	NO CLASS - SPRING BREAK
3/24	M08: Dispersion systems (e.g., oral suspension, injectable suspension)
3/31	M09: Dispersion systems (e.g., oral suspension, injectable suspension)
4/7	M10: Topical and transdermal drug delivery systems

4/14	NO CLASS
4/21	M11: Suppository drug delivery systems
4/28	M12: Inhalation drug delivery systems
5/5	M13: Inhalation drug delivery systems