

# PHM 480D: *Physiology, Pathophysiology and Drug Targets*

## Spring 2017 Syllabus

**LECTURE TIME:** Tuesday and Thursday 9am-10:50am

**LOCATION:** PHR 2.110

### **FACULTY**

#### ***Course Director***

Carla Van Den Berg, Pharm.D., Division of Pharmacology and Toxicology

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#### ***Lecturers***

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Somshuvra Mukhopadhyay, Division of Pharmacology and Toxicology

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### **TEACHING ASSISTANT**

TBD

### **REQUIRED COURSE TEXTS**

*Required reading assignments will be communicated by the lecturing Professor*

**Human Physiology: From Cells to Systems**, 8th Edition, by Sherwood Publisher: Brooks/Cole,

Cengage Learning. Copyright Year: 2013

Print ISBN-10: 1111577439 Print ISBN-13: 9781111577438

**Pathophysiology of Disease: An Introduction to Clinical Medicine**, 6th Edition, by The McGraw-

Hill Publisher. Copyright Year: 2010

ISBN 978-0-07-162167-0 ISSN 1079-6185

<http://accesspharmacy.mhmedical.com/content.aspx?bookid=339&sectionid=42811298>

## **COURSE OBJECTIVES:**

- Describe the fundamental structure and function of cells, tissues, organs, and organ systems in the human body.
- Understand the individual contribution of an organ/tissue and its interrelationship with other organ systems to maintain homeostasis.
- Apply functional physiological concepts to explain the pathophysiology of underlying common diseases encountered in the clinical setting.
- Recognize how pharmacologically targeting cellular, tissue or organ system abnormalities can influence human health or disease.

## **UT CANVAS WEBSITE, ELECTRONIC RESOURCES AND PRACTICES**

1. Canvas will be your link to all course materials, grades and communications associated with this course. Therefore, it is mandatory that you visit the Canvas website and/or check your email a minimum of every other day. Canvas can be accessed from the UT homepage under the *Resources* section. There is no excuse for not checking these on-line or email resources regularly for communications.
2. You may also contact faculty members directly via phone or email for questions regarding lecture content. Their contact information is listed above.
3. Prior to exams, some faculty will answer questions emailed by posting to the Canvas discussion board. This enables all students to ask follow-up questions on a particular topic in an organized manner. Be aware that any message posted to the discussion board is available to all enrolled students and faculty.

## **COURSE POLICIES**

1. Daily class attendance is expected. While the lectures are typically available on-line (more info on this later). Be aware that technical difficulties may occur, and there is no way of guaranteeing that all lectures will be available through this mode.
2. Please arrive early to class and be prepared to take the weekly quiz. Quizzes will start promptly at the beginning of class and will not be lengthened for those who are tardy.
3. Please be quiet during the lecture, but don't hesitate to ask questions especially if something is unclear (if you don't get it, many others probably don't either). The faculty encourage an interactive learning environment.
4. Please turn off your cell phone! Sleeping, playing computer games or web-surfing etc during class is distracting to your classmates and professors and will not be tolerated. You may use your laptop or tablet to follow lectures or answer quiz questions but not for any activities unrelated to class.
5. Your performance in this course will be improved by keeping up with the material. The knowledge you gain in this course will be critical, and non-redundant, for your success in subsequent courses, especially Pharmacotherapy.
6. Review sessions and Office hours: Students have the liberty to request a meeting with faculty on an individual basis. Please contact the professor to arrange a mutually convenient time. A few days prior to an exam, faculty also offer review sessions at his/her discretion. During these sessions, students are welcome to ask questions. In either case, students are expected to have familiarized themselves with the material before attending. If a student experiences difficulty with basic concepts or study habits then tutors are available for free from Greg Caldera in the Student Affairs Office.
7. Religious Holidays: By UT Austin policy, you must notify the instructor of your pending absence at least 14 days prior to the date of observance of religious holy day. If you must miss a class, an

examination, or quiz in order to observe a religious holy day, you will be given an opportunity to complete the missed work with a reasonable time after said absence.

8. **“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>."
9. **Emergency Preparedness:** TBD

### **QUIZZES and EXAMINATIONS**

1. **Quizzes:** A short quiz will be administered weekly at the beginning of the class period, beginning on the second week of the semester. You will be required to use your dedicated laptop, tablet or smartphone to log into Canvas to answer quiz questions. Quizzes will cover lecture material from the previous week. There will be no make-up quizzes for students absent or late to class. Students are expected to be present in the classroom to take the quiz. At the end of the semester the three lowest scores will be dropped. Quiz questions will not be subject to reconsideration requests. The average of the remaining scores will account for 16.6% of the semester course grade.
2. **Examination Time, Location and NOISE:** Semester exams will begin promptly at the designated hour and will last for 2 hours; the final examination will last 3 hours. Semester exams will be given 7-9 pm on the day listed in the syllabus. The exam location may change during the semester so be sure you know the correct location! Students must arrive on time for examinations. During the exams, students are required to place their bags and other belongings in the front or side of the classroom. Therefore, this environment MAY NOT be conducive to carrying a concealed weapon (<https://campuscarry.utexas.edu/>). Please be advised that it is the licensed carrier’s responsibility to be compliant with the University’s policies. Furthermore, students will not be allowed to take the exam if they arrive after any other student has completed the exam and left the room. In such cases, the student’s exam grade will be “0%”. It is not acceptable to discuss any questions in detail in the area outside the classrooms while the exams are still ongoing **WHETHER OR NOT YOU HAVE COMPLETED THE EXAM.**
3. **Advance requests for absences from examinations:** Under EXCEPTIONAL circumstances, you may request another exam time by contacting Dr. Van Den Berg **PRIOR** to the exam, and you must complete the College Form titled “Student Request for Alternate Exam Time” for consideration and final approval by Dr. Van Den Berg at least 24 hrs PRIOR to the exam day – preferably as soon in the semester that you know you need to request exam re-scheduling. If permission is granted, the nature of the make-up exam will be at the discretion of the course director (oral, written, increased weighting on the final, etc.).
3. **Sickness and exam absences:** If you suddenly are unable to attend the exam, you should immediately notify Dr. Van Den Berg by email. In such a case, your grade for the cumulative FINAL exam will carry double the weight. If two or more exams are missed then you will not pass this course.
4. **Grading of Exams; Posting Class Scores & Keys:** Each exam will have an HONOR CODE that states, "I have neither participated in nor witnessed any acts of academic dishonesty pertaining to this assignment." If students are unable to sign this form in good consciousness, the course director will follow up to determine the reason(s). It is of utmost importance to maintain academic integrity amongst our student body.

The grading of exam questions will be based upon the scantron sheets and not on answers written on your exam papers. No re-grades based upon miskeying answers from the exam to the scantron will be allowed – therefore check and recheck your answers keyed onto your scantrons. Two points will be deducted if your student information is missing or incorrect, including student name, signature, and UT EID. You must turn in your scantron and your exam with your signed (or intentionally unsigned) honor pledge prior to leaving the exam. Your scantron will be later photocopied and that photocopy will be available from the LRC desk (PHR 3.114) in 1-2 days. Once scantron copies are made available to you, the key will be posted and an announcement will be made on Canvas. Within 3-5 days of the exam, your exam grade will be posted on the Canvas gradebook and you will be notified that grades are posted.

5. **Post-Exam Remarks and Reconsideration Requests:** Only if there is a disagreement over the answer to a specific question, the student may present his/her exam plus a written explanation (with appropriate documentation) to the instructor within 72 hours of the listserv announcement of posting of the exam results & key as described above. Documentation may include statements from textbooks, handouts, packets, or current scientific reprints; lecture notes are not authoritative documentation. In your reconsideration request please restate the question and correct answer. The explanation must be clear, rational, and concise. Each student will receive one opportunity to justify his/her answer. (This policy does not apply to addition or other grading errors). See below for Dr. Davis's essay on reconsideration requests.

6. **Final Exam Re-Examination Policy:**

There is no final exam re-examination allowed in this course.

7. **Academic Dishonesty:** The "Statement on Scholastic Dishonesty 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 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 independently complete all examinations. All cases of cheating on examinations or quizzes will be immediately reported to the Dean of the College of Pharmacy and to the Dean of Students, as per University regulations. Administration of formal disciplinary actions will proceed by university guidelines and the course faculty will generally recommend a score of "0%" for that examination as penalty for cheating. As per university guidelines, this penalty may be modified by the Office of Student Judicial Services.

8. **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 with Dr. Van Den Berg (Course Director)**. Please submit your accommodation paperwork to Dr. Van Den Berg at the beginning of the semester. In the absence of such **prearrangement**, the student 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.

### Oath of a Pharmacist<sup>1</sup>

“At this time, I vow to devote my professional life to the service of all humankind through the profession of pharmacy.

I will consider the welfare of humanity and relief of human suffering my primary concerns.

I will apply my knowledge, experience, and skills to the best of my ability to assure optimal drug therapy outcomes for the patients I serve.

I will keep abreast of developments and maintain professional competency in my profession of pharmacy.

I will maintain the highest principles of moral, ethical, and legal conduct.

I will embrace and advocate change in the profession of pharmacy that improves patient care.

I take these vows voluntarily with the full realization of the responsibility with which I am entrusted by the public.”

<b>COURSE GRADING AND</b>		<b>EXAM MATERIAL</b>	<b>DATES</b>
First exam	16.8%	Lecture 1-12	Wednesday, Feb 8, 2017
Second exam	16.8%	Lecture 14-25	Wednesday, Mar 1, 2017
Third exam	16.8%	Lecture 27-38	Wednesday, Apr 5, 2017
Fourth exam	16.8%	Lecture 39-51	Friday, Apr 28, 2017
Quiz grade average	16%	Each Tuesday Class	
Comprehensive final exam	16.8%	Lecture 52-60 & Comprehen. TBA	
Total	100%		

The following grade ranges will be used:

A = 93–100 %

A- = 90-92%

B+ = 87-89 %

B = 83-86 %

B- = 80-82 %

C+ = 77-79 %

C = 73-76 %

C- = 70-72 %

D+ = 67- 69 %

D = 65 - 66%

F = Below 65%

<sup>1</sup> Developed by the American Pharmaceutical Association Academy of Students of Pharmacy/American Association of Colleges of Pharmacy Council of Deans (APhA-ASP/AACP-COD) Task Force on Professionalism; June 26, 1994 American Association of Colleges of Pharmacy 1426 Prince St. Alexandria, VA 22314 Phone: (703) 739-2330 Fax: (703) 836-8982  
Email AACP

# An Essay on Submitting Grade Reconsideration Requests

By Prof. Patrick J. Davis, Associate Dean

5/18/03

**Definition:** You are *requesting* that a faculty member *reconsider* your answer to a specific question(s) based upon additional documentation or explanation. Therefore, these are neither *challenges* nor contesting of the question; they are reconsideration *requests!*

**The Approach:** Since these are *requests for re-grade*, not *challenges*, it would be in your best interests to start your email professionally and with courtesy, for example:

- “I am submitting question #3 for reconsideration based upon...Thanks you for your consideration.”  
-or-
- “I am writing to ask that you reconsider my answer for question #3 based upon...”      -but not-
- “I thought this was a dumb question!”      -or-
- “I am contesting question #3. I felt that this question was not testing our knowledge of the material but our ability to memorize odd facts. I studied extremely hard for this exam and felt like I knew the material, but I did not memorize how many amino acids were in each hormone.” [anonymous quote, 2003]

**The Justification:** As indicated in the first-day handout, any submission for reconsideration needs to include appropriate, written justification to support your request. This could include your interpretation of the material and/or information from the textbook, primary references, the faculty member’s handout, etc.

1. If you believe there is a discrepancy between what two faculty members present in class (or differences between classes), this would obviously come up when the information is presented in class or when you are studying. Therefore, your concerns or confusion should be ironed out with the faculty *before* the test, *not* used as a post exam justification.

It may be that two faculty members are presenting information differently for a reason. For example, the clinician may stress that Pen G is not useful against *Staph*. From a clinical standpoint, since the *vast* majority of *Staph* strains are resistant to Pen G, then this is a very reasonable summary statement. The medicinal chemist/pharmacologist may stress that 95% are resistant, but 5% are still sensitive during the discussion of resistance development over time, *specifically to emphasize* where we’re at in the development of penicillin resistance with this organism. *Both* of these perspectives are clearly valid in the context of what is being taught, and are not contradictory statements.

2. Rarely will you be successful in using old exams as your justification.
  - “This question was very similar to question #17 from the 1999 exam, and the answer was ‘D’ (which is what I put).” [anonymous quote, 2003]

It could be that the question on the previous exam was thrown out because of poor statistics, and so the old exam copy you have has a ‘wrong’ answer for which all students were given credit. That doesn’t make it correct. This is one reason why in Pharmacotherapy IIa-IIc, we post previous exams in an ‘unanswered’ form (for you to use for self-evaluation) and then post the keys separately.

In relying on old exams, you should also understand that the information may have changed! Consider the following question:

- “Strains of *Staphylococcus* have emerged which are clinically resistant to vancomycin.”

On the 2001 exam, this statement was *false*; on the 2002 exam it was *true*. Clearly, therapeutic guidelines change as well, which may make old exam questions equivocal or simply incorrect.

3. You may want to have a colleague read your statement for feedback before you submit it for faculty consideration. Examples:

- “In lecture, you said that side-effects included agranulocytosis, thrombocytopenia, hypoprothrombinemia, and aplastic anemia. But on the test you said blood dyscrasias so I marked it false! You never once mentioned blood dyscrasias! [anonymous quote, 2003]
- “You said ‘drug of choice’ in the question, but you didn’t ask which one is primarily the best, so I thought any drug on the list used for treatment was appropriate.” [anonymous quote, 2003]
- “On slide 17 you said ‘most hormones circulate in the blood, coming into contact with essentially all cells,’ but on the test you said ‘most hormones come into contact with all cells.’ Since the question didn’t say anything about blood, I marked it false.” [anonymous quote, 2003]

This is an interesting one. Can you imagine the uproar if this was reversed; i.e., if the faculty member counted this *wrong* for those students who marked it *true* simply because in lecture he mentioned *via the blood*, whereas on the exam, he didn’t mention blood? *The big picture* issue here is that selectivity in hormonal response is not based on cell exposure since essentially all cells are exposed to the hormone via the blood. Rather, selectivity is based on cell-specific recognition of the hormone. Apparently, the student missed this important concept.

4. Never, never, never use as your justification “I need the points”.

The decision on a reconsideration request belongs to the faculty member authoring the question, but all Course Coordinators caution their faculty to *not* consider this “justification” in *any way* in their deliberations. This is *never* an appropriate justification for awarding points, and it simply isn’t fair to the other students to make it a basis for awarding points. Should a student 1-pt from a “C” be given the points for a “B” *just because they asked for them*, while another student with the same score be assigned (and accept) a “C”? What is that faculty member to do when the second student finds out the first was awarded the points just for asking?

5. Just because you can find an article supporting your position doesn’t *automatically* mean that it is correct or that you should be given credit.

Part of the faculty member’s responsibility is to stay current with their field, which involves reading, reviewing, and distilling the often-time copious & conflicting material relevant to their field to create their learning environment and define the content they present to you in class. The faculty member will make their decision on the article/text you cite in the context of their full knowledge of the field and what they present to you in class.

6. If you feel that your reconsideration request has not been fairly considered, you have the right to appeal the decision to the Course Coordinator (consistent with the College Grievance Policy in your Student Handbook). However, you need to *fully justify* your appeal, not just forward a message to the Course Coordinator that “*You have all the emails I sent, and as you can see, the Professor did not give me the points.*”

**Conclusion:** Not all courses allow for the submission of reconsideration requests; the decision as to whether to do so rests with the faculty. Clearly, if this is allowed, the faculty member is committed to fully and fairly assessing your submission prior to making a decision based on the information you provide. Therefore, your submission should be well thought-out and presented in a professional manner, *and you have every right to expect* the faculty member to respond in a like manner.

Lecture h Spring

1	Wright	17-Jan	Body defenses – Immunology
2		17-Jan	
3	Wright	19-Jan	Body defenses – Immunology
4	Duvauche	19-Jan	Acute & Chronic Inflammation, mediators, and tissue injury
5	Duvauche	24-Jan	Tissue Healing: Regeneration, Repair and Fibrosis
6	Kidane	24-Jan	Immunopathology I: The Basics
7	Kidane	26-Jan	Immunopathology II: Immune Hypersensitivities (immediate/delayed), I
8		26-Jan	
9	Kidane	31-Jan	Immunopathology III: Transplantation, Immunodeficiencies
10		31-Jan	
11	Wright	2-Feb	Urinary system: kidney function
12	Wright	2-Feb	Glomerular filtration; mechanisms for transmembrane transport
13		7-Feb	Exam 1 Review session (lectures 1-12)
14	Wright	7-Feb	Tubular reabsorption; RAA; Introduction to diuretics
15	Wright	9-Feb	Tubular secretion and plasma clearance
16	Wright	9-Feb	Countercurrent mechanism
17	Wright	14-Feb	Renal Pathology I: Glomerular Diseases
18		14-Feb	
19	Wright	16-Feb	Renal Pathology II: Interstitial Diseases
20		16-Feb	
21	Mukhopa	21-Feb	Respiration & respiratory mechanics
22	Mukhopa	21-Feb	Gas exchange, control of respiration
23	Mukhopa	23-Feb	Acid-base balance: chemical buffer systems
24	Mukhopa	23-Feb	Acid-base balance cont'd
25	Mukhopa	28-Feb	Acid-base balance: role of respiration and kidney; imbalance
26		28-Feb	Exam 2 review session (lectures 14-25)
27	Mukhopa	2-Mar	Respiratory disorders: asthma, emphysema, chronic bronchitis,
28	Mukhopa	2-Mar	ARDS and cystic fibrosis
29	Gore	7-Mar	General endocrinology
30	Gore	7-Mar	Hypothalamus and pituitary; Circadian rhythms
31	Gore	9-Mar	Energy balance and temperature regulation
32	Gore	9-Mar	Fuel metabolism and pancreatic hormones
33	Gore	21-Mar	Thyroid
34	Gore	21-Mar	Growth and Bone
35	Gore	23-Mar	Parathyroid, calcium metabolism and bone
36	Gore	23-Mar	Osteoporosis/ Osteoarthritis
37	Gore	28-Mar	Adrenal/stress (include nuclear hormone receptors & steroidogenesis)
38		28-Mar	
39	Mills	30-Mar	Pathology of nutrition: hypernutrition, diabetes, metabolic syndrome a
40		30-Mar	
41	Gore	4-Apr	Reproduction
42		4-Apr	Exam 3 review session (lectures 27-38)
43	Gore	6-Apr	Reproduction

44	Gore	6-Apr	Reproduction
45	Gore	11-Apr	Female Reproductive Issues: Infertility, HRT
46	Gore	11-Apr	Male Reproductive Issues: BPH and ED
47	Mukhopa	13-Apr	Host risk factors (immune compromised pts, environmental, lifestyle ar
48		13-Apr	
49	Mukhopa	18-Apr	Host Immune Response to Infections, Principles of vaccine developmen
50		18-Apr	
51	Mukhopa	20-Apr	Evasion of Immune System (biofilms, valves, antigenic switching, geneti
52	Van Den B	20-Apr	Intro to Cancer Biology
53	Van Den B	25-Apr	Intro to Cancer Biology
55		25-Apr	
56		27-Apr	Exam 4 review session (lectures 39-51)
57	Van Den B	27-Apr	Breast and Prostate Cancer Pathophysiology
58	Van Den B	2-May	Breast and Prostate Cancer Pathophysiology
59	Van Den B	2-May	Colon and Lung cancer pathophysiology
60	Van Den B	5-May	Colon and Lung cancer pathophysiology
61		5-May	Final Exam Review Session, Course wrap-up



