

# Principles of Physiology, Pharmacology and Pharmacogenomics

## PHAR 7301

Fall Semester 2021

### Course Description

This course introduces students to basic principles related to the body and how drugs act within it. Basic principles of physiology, pharmacology and pharmacogenomics will be presented.

### Additional Course Description

This course is an introduction to basic principles and concepts of physiology, pharmacology and pharmacogenomics. Topics covered include concepts and mechanisms of basic processes underlying disease; general principles of drug action and therapeutics, including drug receptors interactions, and the relationship between drug concentration and drug effect; and foundational concepts in pharmacogenomics.

### Course Credit

3 credit hours

### Pre-Requisites

None

### Co-Requisites

None

### Class Meeting Days, Time & Location

Fridays, 9:00 am – 12:00 pm; W.T. Brookshire Hall room 236.

### Course Coordinator

Ayman K Hamouda, BPharm, PhD

W.T. Brookshire Hall Room 369

Email: Ahamouda@uttyler.edu

### Office hours:

Wednesdays 4-7 PM (WTB 236) and by appointment/walk-in (WTB 369).

Preferred method of contact: Email

### Fisch College of Pharmacy (FCOP) and UT Tyler Policies

This is part 1 of the syllabus. Part 2 contains UT Tyler and the FCOP course policies and procedures. These are available as a PDF at <https://www.uttyler.edu/pharmacy/academic-affairs/files/fcop-syllabus-policies.pdf>. For experiential courses (i.e., IPPE and/or APPE), the Experiential Manual contains additional policies and instructions that supplement the Syllabus Part 1 and 2. Please note, the experiential manual may contain policies with different deadlines and/or instructions. The manual should be followed in these cases.

### Required Materials

Most course required materials are available through the Robert R. Muntz Library. These materials are available either online\* (<http://library.uttyler.edu/>) or on reserve.

1. Golan DE. Principles of Pharmacology: The Pathophysiologic Basis of Drug Therapy. North American 4<sup>th</sup> Edition. ISBN-13: 978-1451191004; ISBN-10: 9781451191004
2. **Other required materials will be posted on the classes' Canvas site. The site address is: [uttyler.edu/canvas](http://uttyler.edu/canvas).**

### Recommended Materials

Recommended materials are available online (<http://library.utt Tyler.edu/>) at the Robert R. Muntz Library.

1. \*Medical Physiology: Principles for Clinical Medicine, 5e. Rhoades and Bell. LWW Health Library
2. Human Physiology: An Integrated Approach, 8th Edition. Dee Unglaub Silverthorn. ISBN-13: 978-0134605197
3. \*Basic & Clinical Pharmacology, 15e. Katzung & Vanderah BG. Access Pharmacy
4. \*Principles of Pharmacology: The Pathophysiologic Basis of Drug Therapy Fourth Edition, 4e. Golan et al. LWW Health Library.

### Course Format

The course may include, but is not limited to, the following activities:

1. Independent study of selected readings
2. Individual readiness assessment tests (iRATs)
3. Team-based learning, active learning strategies:
  - a. Team readiness assessment tests (tRATs)
  - b. Team application of content and concepts

### Course Learning Outcomes (CLOs)

CLOs	Related PLO(s)	EPAs	Assessment Methods	Grading Method	PPCP Skill(s) Assessed	ACPE Std. 11 & 12
1. Describe and discuss basic principles and concepts of physiology, pharmacology and pharmacogenomics.	1	1.1	1,2	ES	N/A	N/A
2. Understand concepts and mechanisms of normal physiological processes and pathological processes underlying disease.	1	1.1	1,2	ES	N/A	N/A
3. Understand general principles of drug action, including drug receptors interactions, and the relationship between drug concentration and drug effect.	1	1.1	1,2,	ES	N/A	N/A
4. Understand the relationship between pharmacokinetic and pharmacodynamic properties of drugs and their therapeutic benefit, side effects, and clinical uses.	1, 2	1.1, 1.2	1,2	ES	N/A	N/A
5. Apply foundational concepts of physiology and pharmacology to identify and resolve medication-related problems, educate intended audience, advocate health care, and promote public health and wellness.	1, 4, 6, 7, 8	1.1, 1.2, 2.1, 4.1	1,2,6,8	ES	N/A	N/A

### Course Assessment Methods

	Assessment Method	Description
1	Exam Multiple Choice or Multiple Selection Question(s)	Standard MCQ and/or Select All that apply questions.
2	Exam Open Ended Question(s)	Short answer and/or fill-in-the blank questions.
6	Team Project	A team project/report may be added as part of the final exam or as bonus points.
8	Oral Presentation	An individual project/report may be added as part of the final exam or as bonus points.

### Grading Policy & Grade Calculation

Grades will be determined based on evaluation of individual and team readiness assessment tests (iRATs, tRATs), individual and team cumulative assessment tests (iCATs, tCATs), midterm examinations, final written examinations, skills assessments, graded application assignments, participation in team-based projects, peer evaluations and other assessment methods that may include Objective Structured Clinical Examinations (OSCE). Examinations, RATs and CATs may consist of multiple-choice, true/false, short-answer, essay, and problem-based questions.

During the time the course is in progress, students whose cumulative course percentage falls below 70.0% may receive an academic alert and be subject to periodic course content review in special sessions with the course instructor(s). The student's faculty advisor may receive an academic alert to act upon on the student's behalf.

All examinations, tests, and assignments, including the final examination, may be **cumulative**. Students are responsible for material presented during the prior courses. The grading scale for all graded material is below. The final course grade will be assigned according to the calculated percentage and the percentages will not be rounded upward or downward. For additional information, see examination/assessment policy below.

#### Standard Grade Calculation\*

iRATs/Other Individual Activities	15%
Midterm Exam	35%
Final Exam	45%
tRAT and Team Applications	5%
<b>Total</b>	<b>100%</b>

**\*The final course letter grade will be determined according to the following grading scheme:**

A	90 - 100 %
B	80 - 89.999 %
C	70 - 79.999 %
D	65.0 - 69.999 %
F	< 65.0 %

## PHAR 7301 Course Schedule

PHAR 7301 (Physiology, Pharmacology, Pharmacogenomics) Course Schedule				
Week-Date	TOPIC	Instructor	CLO	Disease State
01-08/27/21	Pharmacodynamics #1: Receptor Theory / Introduction to Drug Actions.	Hamouda	1	S20.99
02-09/03/21	Pharmacodynamics #2: Analyses of Drug-Receptor Interactions.	Hamouda	1,3	S20.99
03-09/10/21	Introduction to Pharmacokinetics: Absorption, Distribution, Metabolism, and Excretion	Wang	1,2	S20.99
04-09/17/21	Autonomic Nervous System #1: Parasympathetic Division and Cholinergic Pharmacology	Wang	1,3	S20.99
05-09/24 /21	Autonomic Nervous System #2: Sympathetic Division and Adrenergic Pharmacology	Wang	1,3	S20.99
06-10/01/21	Peripheral Nervous System, Pharmacology of Local Anesthetics and Muscle Relaxants.	Hamouda	1,3	S20.99
07-10/08/21	<b>Exam 1</b>	<b>Hamouda</b>	-	-
08-10/15/21	Central Nervous System #1: Functional Neuroanatomy, Neurons and Neuroglia.	Hamouda	1,3	S20.99
09-10/22/21	Central Nervous System #2: Central Neurotransmission, Pharmacology of General Anesthetics.	Hamouda	1,3	S20.99
10-10/29/21	Epilepsy and Anticonvulsants #1: Pathophysiology of Epileptic Seizures	Hamouda	2-4	S05.03
11-11/05/21	Epilepsy and Anticonvulsants #2: Pharmacology of Anti-Seizure Medications.	Hamouda	2-4	S05.03
12-11/12/21	Pain & Analgesics #1: Nociception and Pathophysiology of Pain.	Hamouda	3-5	S05.06B
13-11/19/21	Pain & Analgesics #2: Pharmacology of non-opioid and opioid Analgesics.	Hamouda	3-5	S05.06B
14-11/26/21	<b>Thanksgiving</b>	-	-	-
15-12/03/21	Introduction to Toxicology and Pharmacogenomics	Wang	1,2	S20.99, S19.01, S19.09, S19.19
16-12/10/21	<b>Comprehensive Final Exam.</b>	<b>Hamouda</b>	-	-
<p><b>Expect an iRAT at the beginning of each class. The instructor may choose to omit an iRAT or administer a take-home assignment, in lieu of an iRAT.</b></p> <p><b>Please note that dates, topics, and assignments are subject to change. In the event of a change, you will be given ample notification of the change.</b></p>				