Physiology and Pathophysiology with Pharmacotherapy Correlates
PHAR 7301
Fall Semester 2025

Course Description
This course builds on the students' prior knowledge of physiology while introducing the pathophysiology of specific disease states in preparation for exploring the pharmacology and pharmacotherapy in subsequent courses.

Additional Course Information
None

Course Credit
3 credit hours

Pre-Requisites
None

Co-Requisites
None

Class Meeting Days, Time & Location
Tuesday and Thursday 2:00 - 3:30 p.m.
W.T. Brookshire Hall P1 Classroom (WTB 133)

Course Coordinator
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Instructor
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Office hours:
Course coordinator and Instructors are available for office hours every Tuesdays and Thursdays from 12:00 -1:00 PM at their offices without appointment and at other times by appointment.

Supplemental Instructions:
Tuesdays 3:30 - 5:00 PM (P1 Classroom WTB 133)

Fisch College of Pharmacy (FCOP) and UT Tyler Policies
This is Part 1 of the syllabus. Part 2 contains UT Tyler and the FCOP policies and procedures. 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.

Recommended Reference Materials:

Rodney A. Rhoades, David R. Bell. *Medical Physiology: Principles for Clinical Medicine, 6e*
Available via Muntz Library: https://integratedpharmacy.lwwhealthlibrary.com/book.aspx?bookid=3211

Kim E. Barrett, Susan M. Barman, Heddwen L. Brooks, Jason X.-J. Yuan. *Ganong's Review of Medical Physiology, 27e*
Available via Muntz Library: https://accesspharmacy.mhmedical.com/Book.aspx?bookid=3564

Norris TL. *Essentials of Pathophysiology.* 5th ed. Philadelphia, PA: Wolters Kluwer; 2020
Available via Muntz Library: https://integratedpharmacy.lwwhealthlibrary.com/book.aspx?bookid=2938

Golan DE, Armstrong EJ, and Armstrong AW. *Principles of Pharmacology the Pathophysiologic Basis of Drug Therapy.* 4th ed. Philadelphia, PA: Wolters Kluwer; 2017.
Available via Muntz Library: https://integratedpharmacy.lwwhealthlibrary.com/book.aspx?bookid=1765

Course Format
The course includes, but is not limited to, the following Team-based learning, active learning strategies:

- Independent study of selected readings
- Individual readiness assessment tests (iRATs)
- Team readiness assessment tests (tRATs)
- Team application of content and concepts

Course Learning Outcomes (CLOs)

CLOs	PLO(s) (1-12)	ACPE Appendix 1	ACCP Didactic Toolkit	NAPLEX (1.A1-5.D)	Assessment Methods (1-13)
1. Apply foundational concepts of physiology and pathophysiology to illustrate and explain major organs functions and major disease states.	1	Human physiology, Pathophysiology	Insomnia. Anxiety disorder. Depressive disorders. Bipolar disorder. Epilepsy. Neurocognitive disorders (e.g., Alzheimer disease). Parkinson disease. Schizophrenia. Antidepressant overdose (serotonin syndrome). Hypertension, Heart failure, Arrhythmias, Dyslipidemia, Constipation, Diarrhea, Electrolyte disorders, Acid-base disturbances, Sodium & water disorders, Asthma, COPD, Diabetes mellitus, Hypothyroidism		1-2
2. Contrast mechanisms that govern normal physiological functions with pathophysiological processes underlying disease state.	1	Human physiology, Pathophysiology			1-2
3. Predict and formulate potential therapeutic interventions to halt or reverse pathophysiological conditions.	1	Pathophysiology, Pharmacology		1.A.1, 1.A.2	1-2
4. Assess and evaluate the potential effects of endogenous and exogenous compounds on normal physiological processes.	1	Pathophysiology, Pharmacology, Toxicology		1.A.1, 1.A.2	1-2
5. Recognize the contributions of pharmacogenomic factors in interindividual variabilities in pathophysiological processes and drug effects.	1	Pharmacogenomic		1.A.1, 1.A.2	1-2

Course Summative Assessment Methods:

	Assessment Method	Description
1	Exam Multiple Choice Questions (MCQs)	Standard select best answer and match questions.
2	Exam Open Ended Question(s)	Short answer and/or fill-in-the blank questions.

Grading Policy & Grade Calculation:

Grades will be determined based on evaluation of assignments, formative assessments (for learning), and summative assessments (for mastery). For all intents and purposes, final examinations are synonymous with summative assessments. Assessments may consist of, but are not limited to, multiple-choice, true/false, fill in the blank, short-answer, essay, and problem-based questions. They may also include a variety of formats beyond the traditional question-based written examination, as each CLO may require different methods to determine student achievement.

Assignments, formative, and summative assessments may be **cumulative.** Students are responsible for material presented during 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 Part 2 of the syllabus.

During the time the course is in progress, students who obtain less than 75% on any summative assessment or a total course grade of less than 75% during a particular semester will receive an academic alert from the course coordinator and the Office of Academic Affairs and be subject to weekly in-course remediation with the course instructor(s).

Standard Grade Calculation*	
iRATs/Other Individual Activities	10%
Midterm Exams	50%
Final Exam	35%
tRAT and Team Applications	5%
Total	**100%**

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

A	90 - 100 %
B	80 - 89.99$\overline{9}$ %
C	70 - 79.99$\overline{9}$ %
D	65.0 - 69.99$\overline{9}$ %
F	< 65.0 %

Appropriate Use of Artificial Intelligence: AI is not permitted in this course at all.
To best support your learning, you must complete all graded assignments by yourself to assist in your learning. This exclusion of other resources to help complete assignments includes artificial intelligence (AI). Refrain from using AI tools to generate any course context (e.g., text, video, audio, images, code, etc.) for an assignment or classroom assignment.

PHAR 7301 Course Schedule

Wk	Date	Topic	Instructor	CLO
1	Tu: 08/26	Introduction to Neurophysiology & Neuropsychiatric Disorders. • *Molecular, Cellular, Neurological, and Behavioral connections.* • *Functional compartmentalization, soluble mediators, functional proteins.* • *Neurons and Neuroglia* • *Neural processes, functional organization, coordination of complex functions.* • *Physiopathological processes underlying neurological and mental disorders.*	Hamouda	1
	Th: 08/28	Cellular Excitability • *Chemical and electrical disequilibrium across cellular membranes.* • *Membrane potential: resting, graded, and action potentials.* • *Membrane proteins/receptors: voltage-gated ion channels, ligand-gated ion channels, transporters, G-protein coupled receptors, enzyme-linked receptors.*	Hamouda	2-4
2	Tu: 09/2	Cell-to-Cell Communication • *Endocrine, Paracrine, Exocrine, Autocrine* • *Electrical and Chemical synapses* • Small molecule neurotransmitters • Neuropeptides and neuromodulators.	Hamouda	2-4
	Th: 9/4	Peripheral Nervous System • *Somatic motor (efferent) control of skeletal muscles.* • *Somatic sensory (efferent) inputs from the body (e.g. nociception)*	Hamouda	1-4
3	Tu: 09/09	Autonomic Nervous System • *Sympathetic and Parasympathetic control of heart, blood vessels, lung, eye, digestive tract, and urinary bladder.*	Hamouda	1-4
	Th: 09/11	Central Nervous System • *Major brain structures and their general functions: cerebral cortex, basal nuclei, thalamus, hypothalamus, cerebellum, and brain stem.* • *Origins and projections of the major cholinergic, adrenergic, dopaminergic, and serotonergic systems in the brain.*	Hamouda	1-4
4	Tu: 09/16	Neuroendocrinology • *The Hypothalamic-Pituitary-Adrenal HPA) Axis* • *HPA axis control of stress and involvement in neuropsychiatric conditions.* .	Hamouda	1
	Th: 09/18	Neuropsychiatric Disorders-1 • *Epilepsy* • *Alzheimer's Disease* • *Parkinson's Disease*	Hamouda	1-4
5	Tu: 09/23	Neuropsychiatric Disorders-2 • *Insomnia* • *Anxiety Disorders*	Hamouda	1-4
	Th: 09/25	Neuropsychiatric Disorders-3 • *Major Depressive and Bipolar Disorders* • *Schizophrenia.*	Hamouda	1-4

6	Tu: 9/30	**Examination 1 (weeks 1-5)**	Hamouda	
	Th: 10/2	Cardiovascular Physiology -*The Heart & Systemic Circulation*	Brazill	1-5
7	Tu: 10/7	Cardiovascular Physiology -*The Regulation of Blood Flow and Vascular Physiology*	Brazill	1-5
	Th: 10/9	Cardiovascular Physiology -*Neurohumoral Regulation & Blood Pressure Control*	Brazill	1-5
8	Tu: 10/14	Cardiovascular Physiology -*Heart Failure*	Brazill	1-5
	Th: 10/16	Respiratory Physiology -*Mechanics of Breathing and Ventilation & Perfusion*	Brazill	1-4
9	Tu: 10/21	Respiratory Physiology -*Control of Breathing & Chronic Obstructive Pulmonary Disease (COPD)*	Brazill	1-5
	Th: 10/23	Renal Physiology -*Kidney Function & Regulation of Fluid and Electrolyte Balance*	Brazill	1-5
10	Tu: 10/28	Integrative Respiratory & Renal Physiology- *Acid-Base Homeostasis*	Brazill	1-4
	Th: 10/30	**Examination 2 (weeks 6-9)**	Brazill	
11	Tu: 11/4	Gastrointestinal Physiology - *Motility, Secretory Functions, and Digestion*	Brazill	1-4
	Th: 11/6	Gastrointestinal Physiology - *Liver Function and Exobiotic & Xenobiotic Metabolism*	Brazill	1-5
12	Tu: 11/11	Endocrine Physiology -*Thyroid and Adrenal Gland*	Brazill	1-4
	Th: 11/13	Endocrine Physiology -*The Endocrine Pancreas*	Brazill	1-4
13	Tu: 11/18	Endocrine Physiology -*Obesity*	Brazill	1-4
	Th: 11/20	Endocrine Physiology -*Diabetes*	Brazill	1-5
		Thanksgiving Break		
14	Tu: 12/02	Integrated Applications/Pharmacotherapy Correlates I	Hamouda/ Brazil	1-5
	Th: 12/04	Integrated Applications/Pharmacotherapy Correlates II	Hamouda/ Brazil	1-5
15	**FRI 12/12**	**Comprehensive Final Exam**	Hamouda/ Brazil	

The course coordinator reserves the right to change the schedule topics with 48 hours notice.