UF College of Pharmacy UNIVERSITY of FLORIDA

PHA5560 Pathophysiology and Patient Assessment I
Fall 2025 | 3 *Credit Hours – [A-E Grading]*

Pathophysiology and Patient Assessment I course is the first of a two-course sequence that provides students with an integrated knowledge base in the physiological functions of the human body to prepare students for the understanding of pathological changes pertinent to the development and progression of various diseases.
Key concepts will be reinforced through the application of learned knowledge to problem solving in the simulated patient assessment modules built into the course sequence. Interpretation of pathophysiology and patient assessment data is a critical step in the patient care process. It is prerequisite to identifying medication-related problems and developing a prioritized problem list and this will be learned in depth in future courses.
Course Prerequisites: -- Principles of Patient-Centered Care
***Course Corequisites*:** --There are no co-requisites for this course.

Course Faculty and Staff	
Course Director	**Instructional Designer**
Lihui Yuan, Pharm.D., Ph.D. • Email: yuanlh@cop.ufl.edu • Office: P2-33 • Phone: 352-294-8594 Office Hours: Please see the Canvas course site for posted office hours.	Holly Fremen, M.S. Email: holly.fremen@cop.ufl.edu Phone: 352-273-5558
Academic Coordinators	
Ashleigh Langford (GNV) Email: lynn8597@cop.ufl.edu	Jessica Linares (ORL) Email: Jnoriegalinares@ufl.edu
Jaime Welsh (JAX) Email: jaimewelsh@ufl.edu	Nadja Rivera (ORL) Email: nl.riverarivera@ufl.edu
Teaching Faculty	
Erin Bruce, Ph.D. • Email: ebruce5@ufl.edu • Phone: 352-273-7891	Brandon Warren, Ph.D. • Email: brandon.warren@ufl.edu • Phone: 407-313-7054
Jason Frazier, Ph.D. • Email: frazier@cop.ufl.edu • Phone: 352-273-7686	

Faculty and Staff: Who to Contact and Questions to Ask

Office Hours: Please see the Canvas course site for posted office hours.

Faculty Locations:

Gainesville	CSP: MSB P1-20

Course Objectives and Educational Outcomes	
Course Objectives	**Linked Educational Outcome**
1. Discuss the primary tenets of cell theory, ion channels, equilibrium potentials, and the resting membrane potential.	Learner
2. Explain the ionic basis of the action potential in various types of excitable cells.	Learner
3. Explain primary neuromuscular functions and related diseases.	Learner
4. Cover basic anatomy and physiology of the autonomic nervous system.	Learner
5. Describe the pathophysiology of the neurological system including the following: excitatory and inhibitory amino acids, neurotransmitters, and sensory processing.	Learner
6. Understand the neurocircuitry for movement regulation and the pathophysiology related to movement disorders	Learner
7. Describe the brain blood supply system and the pathophysiology related to stroke development.	Learner
8. Explain neural, endocrine, and local mechanisms involved in regulation of cardiac and vascular function.	Learner
9. Explain relationship of cardiovascular disease to underlying pathophysiology of valves, cardiac conduction, cardiac performance, or vascular dysfunction.	Learner
10. Differentiate between the mediators for innate and adaptive immunity and describe their involvement in immune responses.	Learner
11. Understand the roles of various mediators in the inflammatory responses.	Learner
12. Interpret and evaluate patient assessment findings related to the following body systems: a. Plasma/cell-membrane b. Neurological c. Cardiovascular d. Immunological	Provider
13. Collaborate as a team member and solve a problem/case that requires interpretation of pathophysiological findings including lab values, patient assessment findings, and diagnostic procedure results.	Provider

Course Resources and Fees
Course Outline
See Appendix A. Please routinely check your Google campus calendar and the Canvas course site for any messages about changes in the schedule including meeting dates/times, deadlines, and room changes.
Required Textbooks/Readings
Nemire RE, Assa-Eley M. eds. Pharmacy Student Survival Guide, 4e. McGraw Hill; 2023. ISBN: 978-1-264-27856-5). Available via Access Pharmacy Use UF VPN to access UF Libraries Resources when off-campus. The UF HSC library staff can assist you with questions or issues related to accessing online library materials. For assistance contact your College of Pharmacy librarian or visit the HSC Library Website at this URL:http://www.library.health.ufl.edu/
Suggested Textbooks/Readings
Suggested readings will be posted on Canvas.

Other Required Learning Resources
N/A
Materials & Supplies Fees
None

Evaluation and Grading

Student Evaluation & Grading

The Canvas© gradebook will be set-up using the percentages below to compute the grade.

Assessment Item	Grade Percentage
Individual Readiness Assurance Tests (4 @ 2% each)	8%
Team Readiness Assurance Tests (4 @ 3% each)	12%
Quizzes (4 @ 2.5% each)	10%
Exam 1	20%
Exam 2	20%
Exam 3 (Comprehensive)	30%
Total	**100%**

Grading Scale					
Percentage	**Letter Grade**	**Percentage**	**Letter Grade**	**Percentage**	**Letter Grade**
92.50-100%	A	79.50-82.49%	B-	66.50-69.49%	D+
89.50-92.49%	A-	76.50-79.49%	C+	62.50-66.49%	D
86.50-89.49%	B+	72.50-76.49%	C	59.50-62.49%	D-
82.50-86.49%	B	69.50-72.49%	C-	< 59.50%	E

Rounding of grades:

Final grades in Canvas will be rounded to the 2nd decimal place. If the decimal is X.495 or higher, Canvas will round the grade to X.50. The above scale depicts this policy and grades are determined accordingly. Grade assignment is made using this policy and NO EXCEPTIONS will be made in situations where a student's grade is "close."

University of Florida Honor Pledge and Academic Dishonesty

UF students are bound by The Honor Pledge which states "We, the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standards of honor and integrity by abiding by the Honor Code. On all work submitted for credit by students at the University of Florida, the following pledge is either required or implied: "On my honor, I have neither given nor received unauthorized aid in doing this assignment."
The Conduct Code specifies a number of behaviors that are in violation of this code and the possible sanctions. Expectations for Artificial Intelligence and when use constitutes academic dishonesty is outlined below.

Tendering information (giving your work to another to be copied, giving someone answers to assessment questions, informing another person in a later section about the questions that appear on an assessment that you have taken, or giving or selling a paper to another student), is considered academic dishonesty.

Students are required to report any condition that facilitates academic misconduct to appropriate personnel. Failure to report is also considered academic dishonesty. If you have any questions or concerns, please consult the course's Teaching Partnership Leader/Course Director or Assistant Dean for Curricular Affairs.

See the UF Conduct Code website for more information. If you have any questions or concerns, please consult with the

instructor or TAs in this class.

Course-Related Policies

UF Resources and Policies

University of Florida resources and policies can be found at this URL: https://go.ufl.edu/syllabuspolicies

PharmD Course Policies

The Policies in the following link apply to this course. Review the General Pharm.D. Course Policies carefully, at this URL: http://curriculum.pharmacy.ufl.edu/current-students/course-policies/

Attendance Policy

Attendance is mandatory for active learning sessions such as team-based learning sessions, case discussions, laboratory sessions, and other activities that the instructor designates as required. This course has 8 required sessions (4 active learning sessions and 4 quiz sessions. A student who misses greater than 2 session(s) for this course will receive an incomplete in the course and will retake the course during the next offering, resulting in delayed graduation.

Makeup Assignments

Makeup assignments may be required for excused absences from all Active Learning Sessions. Students will be required to complete the makeup assignment within one week of the missed session.

Late Assignments

N/A

Educational Technology Use

The following technology below will be used during the course and the student must have the appropriate technology and software.

1. ExamSoft™ Testing Platform
2. Canvas™ Learning Management System

For technical support, navigate to Educational Technology and IT Support Contact Information at this URL: http://curriculum.pharmacy.ufl.edu/current-students/technical-help/

Artificial Intelligence (AI) Use for Assessments

The use of generative AI in *assessments* is prohibited, unless explicitly allowed by the course instructor. Assessments include any submitted work, graded or ungraded, that will be evaluated. These include, but are not limited to, quizzes, exams, assignments, writing projects, etc. If a student is uncertain about the use of AI technology, it is the student's responsibility to ask the instructor prior to beginning the assignment or assessment.

When authorized by the course director/course instructors, students may use AI technologies in the completion of an assessment if they acknowledge all use by naming the technology, describing how it was employed, and adhering to any other requirement stipulated in the assessment's instructions. Failure to acknowledge the use of AI technology or disregarding instructions related to the use of AI for assessments is considered academic misconduct. Students must disclose the use of AI and AI-assisted technologies by following the instructions below.

Application of AI technology must be done with human oversight and control, and students should carefully review and edit the result, as AI can generate outputs that can be incorrect, incomplete, or biased. **Students assume full responsibility for all content, including errors and omissions, if AI is employed.** Additionally, privacy is a concern with AI-generated content. Most commercially available AI systems are not compliant with HIPAA or FERPA protections, inputting patient or student information is prohibited by federal law.

Instructions to acknowledge the use of AI:

Statement: During the preparation of this assignment I/we, [INSERT NAME/S], used [INSERT TOOL / SERVICE] in order to [INSERT REASON OR PURPOSE]. After using this tool/service, I/we reviewed and edited the content as needed and take full responsibility for the content of the submission.

Penalties for unauthorized use:

Unauthorized use of AI text generators for assessments is considered evidence of academic dishonesty (see policy on academic dishonesty).

Disability Resource Center

Students with disabilities who experience learning barriers and would like to request academic accommodations should connect with the Disability Resource Center. See the Get Started with the DRC webpage on the Disability Resource Center site. It is important for students to share their accommodation letter with their instructor and discuss their access needs, as early as possible in the semester.

Course Evaluation Process

Students are expected to provide professional and respectful feedback on the quality of instruction in this course by completing course evaluations online. Students can complete evaluations in three ways:

1. The email they receive from GatorEvals,
2. Their Canvas course menu under GatorEvals, or
3. The central portal at https://my-ufl.bluera.com

Guidance on how to provide constructive feedback is available at https://gatorevals.aa.ufl.edu/students/. Students will be notified when the evaluation period opens. Summaries of course evaluation results are available to students at https://gatorevals.aa.ufl.edu/public-results/

Appendix A: Course Outline

Date / Time [Recommended for Independent Study]	Mod#	Activity	Activity Title	Contact Time (min)	Faculty
09/22/25	1A	Module	Module 1A: Introduction to the Course; Review of Cell Function and Membrane Structure (Objectives 1, 2, 12)		Frazier, Yuan
		Lecture Video	Watch: Introduction to PPAI Course	16	Yuan
		Quiz (Self-Assesment)	Course Introduction Quiz		Yuan
09/22/25		Lecture Video	Watch: An Introduction to Patient Assessment	17	Yuan
09/23/25	Lecture A Series	Lecture Video	Watch: Cell Membranes	139	Frazier
09/24/25	Lecture B Series	Lecture Video	Watch: Receptors and 2nd Messengers	106	Frazier
09/25/25	Lecture C Series	Lecture Video	Watch: Resting Membrane Potential & Action Potential	121	Frazier
	1B	Module	Module 1B: Autonomic Nervous System, Muscle Function & Pathophysiology (Objectives 1, 2, 3, 4)		Frazier, Yuan
09/26/25	Lecture D Series	Lecture Video	Watch: Autonomic Nervous System	108	Frazier
09/29/25	Lecture E Series	Lecture Video	Watch: Skeletal Muscle	94	Frazier
09/29/25	Lecture F Series	Lecture Video	Watch: Smooth and Cardiac Muscle	65	Frazier
09/29/25	Lecture G Series	Lecture Video	Watch: Muscle Pathophysiology	21	Frazier
09/30/25	Prep for ALS	Lecture Video	Watch: Interpretation of Clinical Laboratory Data: Electrolytes and Blood Chemistry	28	Yuan
10/07/2025 at 10:00am - 11:50am	**1**	**Active Learning Session**	**Active Learning Session 1: Cell function and electrolytes -Module 1A/1B iRAT and tRAT -TBL (Objective 13)**	***110***	**Frazier**
		Quiz (iRAT/tRAT)	iRAT and tRAT 1		Frazier, Yuan
10/09/2025 at 3:00pm-3:50pm	**1**	**Active Learning Session**	**Required Attendance: Quiz 1 (covers module 1) (Objectives 1, 2, 3, 4)**	**50**	**Frazier, Yuan**
		Quiz (In Class)	Quiz 1		Frazier, Yuan
10/09/25	2	Module	Module 2: Neurological System (Objectives 5, 6, 7, 12)		Warren, Bruce, Yuan
10/09/25	Lecture 2.1	Lecture Video	Watch: Sensation	22	Warren

10/09/25	Lecture 2.2	Lecture Video	Watch: Pain	41	Warren
10/10/25	Lecture 2.3	Lecture Video	Watch: Excitatory Amino Acid Neurotransmitters	37	Warren
10/10/25	Lecture 2.4	Lecture Video	Watch: Inhibitory Amino Acid Neurotransmitters	25	Warren
10/13/25	Lecture 2.5	Lecture Video	Watch: Dopamine	25	Warren
10/13/25	Lecture 2.6	Lecture Video	Watch: Catecholamines: Epinephrine and Norepinephrine	15	Warren
10/15/25	Lecture 2.7	Lecture Video	Watch: Acetylcholine	22	Warren
10/15/25	Lecture 2.8	Lecture Video	Watch: Histamine	13	Warren
10/16/25	Lecture 2.9	Lecture Video	Watch: Serotonin	19	Warren
10/16/25	Lecture 2.10	Lecture Video	Watch: Opioids	48	Warren
10/14/2025 at 9:00am-11:00am		Exam	Exam 01: Module 01	2	Frazier, Yuan
10/17/25	Lecture 2.11	Lecture Video	Watch: Eicosanoids	21	Warren
10/20/25	Lecture 2.12	Lecture Video	Watch: Endocannabinoids	17	Warren
10/21/25	Lecture 2.13	Lecture Video	Watch: Movement Regulation and Disorders	72	Bruce
10/22/25	Lecture 2.14	Lecture Video	Watch: Stroke	33	Bruce
10/23/25	Prep for ALS	Lecture Video	Watch ALS Prep: Assessment of Pain, Stroke and other common neurological signs	21	Yuan
10/28/2025 at 10:00am-11:50am	**2**	**Active Learning Session**	**Active Learning Session 2: Neurological System, module 2 -iRAT and tRAT 2 -TBL (Objective 13)**	***110***	**Warren, Bruce, Yuan**
		Quiz (iRAT/tRAT)	iRAT and tRAT 2		**Warren, Bruce, Yuan**
10/31/2025 at 1:00pm-1:50pm	**2**	**Active Learning Session**	**Required Attendance: Quiz 2 (covers module 2)**	**50**	**Warren, Bruce, Yuan**
		Quiz (In Class)	Quiz 2		Warren, Bruce, Yuan
11/05/2025 at 9:00am - 11:00am	**2**	**Exam**	**Exam 2: Module 2**	**2**	**Warren, Bruce, Yuan**
11/06/25	3	Module	Module 3: Cardiovascular Pathophysiology (Objectives 8, 9)		Yuan

11/06/25	Lecture 3.1	Lecture Video	Watch: Introduction to Cardiovascular Pathophysiology	46	Yuan
11/06/25	Lecture 3.2-3.6	Lecture Video	Watch: 3.2: The cardiac cycle and valve disease 3.3: Heart rate 3.4: Arrhythmias 3.5: Stroke volume and contractility 3.6: Cardiomyopathy	245	Yuan
11/10/25		Lecture Video	Introduction to Cardiac Enzymes and other markers for cardiovascular health	21	
11/14/2025 at 10:00am-11:50am	**3**	**Active Learning Session**	**Active Learning Session 3: Cardiovascular Assessment, lectures 3.1-3.6 and ALS-prep video -iRAT and tRAT 3, -TBL (Objective 13)**	***110***	**Yuan**
		Quiz (In Class)	iRAT and tRAT 3		Yuan
11/14/2025 at 11:50am - 12:15pm		**Course Evaluation**	**Course evaluation**		
11/14/25		Lecture Video	Watch: 3.7: reflex control (part 1) 3.8 :reflex control (part 2) 3.9: autoregulation		Yuan
11/17/25	Lecture 3.10-3.12	Lecture Video	Watch: 3.10: Atherosclerosis 3.11: Cardiac Ischemia 3.12: Edema		Yuan
11/18/25	Lecture M	Lecture Video	Watch: 3.13: Compensations for exercise and disease	56	Yuan
11/19/2025 at 11:00am-11:50am	**3**	**Active Learning Session**	**Required Attendance: Quiz 3 (covers module 3)**	**50**	**Yuan**
		Quiz (In Class)	Quiz 3		Yuan
11/20/25	**4**	**Module**	**Immune Function and Inflammatory Response (Objectives 10, 11, 12)**		**Bruce, Yuan**
11/20/25	4.1	Lecture Video	Watch: Innate Immunity	67	Bruce
11/20/25	4.2	Lecture Video	Watch: Adaptive Immunity, Part I	32	Bruce
11/21/25	4.3	Lecture Video	Watch: Adaptive Immunity, Part II	46	Bruce
11/21/25	4.4	Lecture Video	Watch: Inflammation	24	Bruce
12/01/25	4.5	Lecture Video	Watch: Wound Healing	13	Bruce
12/01/25	4.6	Lecture Video	Watch: Hypersensitivity	20	Bruce
12/01/25	Prep for ALS	Lecture Video	Watch: Signs, symptoms, and laboratory markers of immunologic response, inflammation, and infection	31	Yuan
12/02/2025 at 10:00am - 11:50am	**4**	**Active Learning Session**	**Active Learning Session 4: Immunology, module 4 *iRAT/tRAT 4 (Objective 13)**	***110***	**Bruce, Yuan**
		Quiz (iRAT/tRAT)	iRAT and tRAT 4		Bruce, Yuan

12/04/2025 at 3:00pm - 3:50pm	**4**	**Active Learning Session**	**Required Attendance: Quiz 4 (covers module 4)**	**50**	**Bruce, Yuan**
12/10/2025 at 2-3 PM via zoom		Optional Q&A via Zoom	Cardiovascular Module Review		Yuan
		Quiz (In Class)	Quiz 4		Bruce, Yuan
12/11/2025 at 2:00pm - 4:00pm	**1-4**	**Exam**	**Exam 3: Modules 1-4**		
			Total Min:	**2391**	
			Total Contact Hours	47.82	