

PHA5560 Pathophysiology and Patient Assessment I

Fall, 2023

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.

Teaching Partnership Leaders

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.

See Appendix A. for Course Directory of Faculty and Staff Contact Information.

Entrustable Professional Activities

This course will prepare you to perform the following activities which the public entrusts a pharmacist to perform:

1. EPA A1. Gather patient information (subjective and objective data).
2. EPA A2. Interpret patient data and identify medication-related problems and develop a prioritized problem list.

Course-Level Objectives

Upon completion of this course, the student will be able to:

1. Discuss the primary tenets of cell theory, ion channels, equilibrium potentials, and the resting membrane potential.
2. Explain the ionic basis of the action potential in various types of excitable cells.
3. Explain primary neuromuscular functions and related diseases.
4. Cover basic anatomy and physiology of the autonomic nervous system.
5. Describe the pathophysiology of the neurological system including the following: excitatory and inhibitory amino acids, neurotransmitters, and sensory processing.
6. Understand the neurocircuitry for movement regulation and the pathophysiology related to movement disorders
7. Describe the brain blood supply system and the pathophysiology related to stroke development.
8. Explain neural, endocrine, and local mechanisms involved in regulation of cardiac and vascular function.

9. Explain relationship of cardiovascular disease to underlying pathophysiology of valves, cardiac conduction, cardiac performance, or vascular dysfunction.
10. Differentiate between the mediators for innate and adaptive immunity and describe their involvement in immune responses.
11. Understand the roles of various mediators in the inflammatory responses.
12. Interpret and evaluate patient assessment findings related to the following body systems:
 - a. Plasma/cell-membrane
 - b. Neurological
 - c. Cardiovascular
 - d. Immunological
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.

Course Pre-requisites

1. Principles of Patient-Centered Care

Course Co-requisites

1. There are no co-requisites for this course.

Required Textbooks/Readings

1. Text 1: Nemire RE, Assa-Eley M. eds. Pharmacy Student Survival Guide, 4e. McGraw Hill; 2023. ISBN: 978-1-264-27856-5). Available via Access Pharmacy: <https://accesspharmacy.mhmedical.com/book.aspx?bookid=3269>
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

Student Evaluation & Grading

Evaluation Methods and How Grades are calculated.

[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%

Table 1.1 Evaluation and Grading Above

Table 1.2 grading scale

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

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 Use

The use of artificial intelligence (AI) text generators such as ChatGPT on assignments, projects, quizzes, and exams is prohibited in this course. Use of AI text generators is considered evidence of academic dishonesty. 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.

Pharm.D. Course Policies

The Policies in the following link apply to this course. Review the General [Pharm.D. Course Policies](http://curriculum.pharmacy.ufl.edu/current-students/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. A student who misses greater than 2 sessions for this course (greater than 25% of the required active learning sessions) 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

Accessibility and Belonging Statement

The University of Florida College of Pharmacy strives to stimulate a culture that promotes diversity and inclusion within an exceptional community of students, faculty, and staff. It is our intent that students from all diverse backgrounds and perspectives be well served by this course, that students' learning needs be addressed both in and out of class, and that the diversity that students bring to this class be viewed as a resource, strength, and benefit.

We intend to present materials and activities that are respectful of diversity: gender, sexuality, disability, age, socioeconomic status, ethnicity, race, and culture. Your suggestions are encouraged and appreciated. Please let us know ways to improve the course's effectiveness for you personally or for other students or student groups.

If any of our class meetings conflict with any of your religious events, an excused absence will be provided when requested using the standard UF COP process as detailed in the [UF COP Course policies](#).

If you feel that you have experienced or witnessed any bias/treatment that falls short of these expectations, you may submit a report through the UF [COP Student Mistreatment Report](#).

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 via GatorEvals. Guidance on how to give feedback in a professional and respectful manner is available at <https://gatorevals.aa.ufl.edu/students/>. Students will be notified when the evaluation period opens and can complete evaluations through the email they receive from GatorEvals, in their Canvas course menu under

GatorEvals, or via <https://ufl.bluera.com/ufl/>. Summaries of course evaluation results are available to students at <https://gatorevals.aa.ufl.edu/public-results/>.

Appendix A. Course Directory

Teaching Partnership Leader/Course Director(s):

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.

Questions to Ask:

- Concerns about performance
- Guidance when there are performance problems (failing grades)
- General questions about content

Other Teaching Partnership Faculty Members:

Jason Frazier, Ph.D.

- Email: frazier@cop.ufl.edu
- Office: MSB P2-29
- Phone: 352-273-7686

Bin Liu, Ph.D.

- Email: liu@cop.ufl.edu
- Office: MSB P2-31
- Phone: 352-273-7747

Brandon Warren, Ph.D.

- Email: brandon.warren@ufl.edu
- Office: MSB
- Phone: 407-313-7054

Instructional Designer:

Name: Kimberly Heal

- Email: kheal@ufl.edu

Academic Coordinator Gainesville Campus:

Name: Ashley C. Williams

- Email: acwilliams@ufl.edu
- Office: HPNP 4309
- Phone: 352-273-9951

Absence/Tardy Email: (Visit the [course policy site](#) for further instructions)

Educational Coordinators

Name: Katie Orben

- Email: orben06@ufl.edu
- Office: Jacksonville Campus
- Phone: 904-244-9590

Name: Jessica Linares

- Email: jnoriegalinares@ufl.edu
- Office: Orlando Campus
- Phone: 407-313-4087

Questions to Ask:

- Issues related to course policies (absences, make up exams, missed attendance)
- Absence/tardy requests (Only the Academic Coordinator handles absence requests)
- Questions about dates, deadlines, meeting place
- Availability of handouts and other course materials
- Assignment directions
- Questions about grade entries in gradebook (missing grades, incorrect grade)
- Assistance with ExamSoft® (Distance campus students may contact the Educational
- Coordinator for use of Examplify and assistance during exams. The Academic Coordinator is the contact person for issues related to grading and posting of ExamSoft grades.

Course Outline

Date / Time [Recommended for Independent Study]	Mod#	Activity	Activity Title	Objectives	Contact Time (hr)	Responsible
09/25/23	1A	Module	Module 1A: Introduction to the Course; Review of Cell Function and Membrane Structure	1, 2, 12		Charles Jason Frazier, Lihui Yuan
09/25/23		Lecture Video	Introduction to PPAI Course		0.5	Lihui Yuan
09/25/23		Quiz- Self- Assessment	Course Introduction Quiz			Lihui Yuan
09/25/23		Lecture Video	An Introduction to Patient Assessment		0.5	Lihui Yuan
09/26/23	Lecture A Series	Lecture Video	Cell Membranes		2	Charles Jason Frazier
09/27/23	Lecture B Series	Lecture Video	Receptors and 2nd Messengers		1.5	Charles Jason Frazier
09/28/23	Lecture C Series	Lecture Video	Resting Membrane Potential & Action Potential		2	Charles Jason Frazier
09/29/23	1B	Module	Module 1B: Autonomic Nervous System, Muscle Function & Pathophysiology	1,2,3,4		Charles Jason Frazier, Lihui Yuan
09/29/23	Lecture D Series	Lecture Video	Autonomic Nervous System		1.5	Charles Jason Frazier
10/02/23	Lecture E Series	Lecture Video	Skeletal Muscle		1.5	Charles Jason Frazier
10/03/23	Lecture F Series	Lecture Video	Smooth and Cardiac Muscle		1	Charles Jason Frazier
10/04/23	Lecture G Series	Lecture Video	Muscle Pathophysiology		0.5	Charles Jason Frazier

Date / Time [Recommended for Independent Study]	Mod#	Activity	Activity Title	Objectives	Contact Time (hr)	Responsible
10/05/23	Prep for ALS	Lecture Video	Interpretation of Clinical Laboratory Data: Electrolytes and Blood Chemistry		0.5	Lihui Yuan
10/10/23 at 10:00 am - 11:50 am	1	Active Learning Session	Cell Function & Electrolytes -Module 1A/1B iRAT and tRAT	13	2	Charles Jason Frazier
10/10/23		Quiz (iRAT/tRAT)	iRAT and tRAT 1			Charles Jason Frazier, Lihui Yuan
10/13/23 at 9:00 am - 9:50 am	1A	Active Learning Session	Required Attendance: Quiz 1 (covers module 1)	1,2,3,4	1	Charles Jason Frazier, Lihui Yuan
		Quiz (In Class)	Quiz 1			Charles Jason Frazier, Lihui Yuan
10/16/23	2	Module	Module 2: Neurological System	5,6,7,12		Brandon Warren, Lihui Yuan
10/16/23	Lecture 2.1	Lecture Video	Sensation		0.25	Brandon Warren
10/16/23	Lecture 2.2	Lecture Video	Pain		0.75	Brandon Warren
10/16/23	Lecture 2.3	Lecture Video	Excitatory Amino Acid Neurotransmitters		0.75	Brandon Warren
10/17/23	Lecture 2.4	Lecture Video	Inhibitory Amino Acid Neurotransmitters		0.5	Brandon Warren
10/17/23	Lecture 2.5	Lecture Video	Dopamine		0.5	Brandon Warren
10/17/23	Lecture 2.6	Lecture Video	Catecholamines: Epinephrine and Norepinephrine		0.5	Brandon Warren
10/18/23	Lecture 2.7	Lecture Video	Acetylcholine		0.5	Brandon Warren
10/18/23	Lecture 2.8	Lecture Video	Histamine		0.25	Brandon Warren
10/18/23	Lecture 2.9	Lecture Video	Serotonin		0.5	Brandon Warren
10/19/23	Lecture 2.10	Lecture Video	Opioids		1	Brandon Warren

Date / Time [Recommended for Independent Study]	Mod#	Activity	Activity Title	Objectives	Contact Time (hr)	Responsible
10/19/23 2:00pm - 4:00pm	1	Exam	Exam 01: Module 01			Charles Jason Frazier, Lihui Yuan
10/20/23	Lecture 2.11	Lecture Video	Eicosanoids		0.5	Brandon Warren
10/20/23	Lecture 2.12	Lecture Video	Endocannabinoids		0.25	Brandon Warren
10/23/23	Lecture 2.13	Lecture Video	Movement Regulation and Disorders		1	Bin Liu
10/23/23	Lecture 2.14	Lecture Video	Stroke		1	Bin Liu
10/23/23	Prep for ALS	Lecture Video	ALS Prep: Assessment of Pain, Stroke and other common neurological signs		0.5	Lihui Yuan
10/23/23 1 pm - 1:30 pm		Exam Review	Exam 1 Review			
10/31/23 at 10:00-11:50 am	2	Active Learning Session	Active Learning Session 2: Neurological System, module 2 -iRAT and tRAT 2	13	2	Bin Liu, Brandon Warren, Lihui Yuan
10/31/23		Quiz (iRAT/tRAT)	iRAT and tRAT 2			Bin Liu, Brandon Warren, Lihui Yuan
11/03/23 at 9:00am - 10:00am	2	Active Learning Session	Required Attendance: Quiz 2 (covers module 2)		1	Bin Liu, Brandon Warren, Lihui Yuan
		Quiz (In Class)	Quiz 2			Bin Liu, Brandon Warren, Lihui Yuan
11/07/23 at 1- 3 pm	2	Exam	Exam 2: Module 2		2	Bin Liu, Brandon Warren, Lihui Yuan
	3	Module	Module 3: Cardiovascular Pathophysiology	8.9		Lihui Yuan
11/07/23	Lecture 3.1	Lecture Video	Introduction to Cardiovascular Pathophysiology		1	Lihui Yuan

Date / Time [Recommended for Independent Study]	Mod#	Activity	Activity Title	Objectives	Contact Time (hr)	Responsible
11/08/23	Lecture 3.2-3.6	Lecture Video	3.2: The cardiac cycle and valve disease 3.3: Heart rate 3.4: Arrhythmias 3.5: Stroke volume and contractility 3.6: Cardiomyopathy		3	Lihui Yuan
11/08/23	Prep for ALS	Lecture Video	Introduction to Cardiac Enzymes and other markers for cardiovascular health		0.5	Lihui Yuan
11/14/23 at 10 am - 11:50pm	3	Active Learning Session	Active Learning Session 3: Cardiovascular Assessment, lectures 3.1-3.6 and prep for ALS -iRAT and tRAT 3	13	2	Lihui Yuan
11/14/23		Quiz (In Class)	iRAT and tRAT 3			Lihui Yuan
11/14/23 at 9:00pm - 9:30 am		Exam Review	Exam 2 review			
11/15/23	Lecture 3.7-3.9	Lecture Video	3.7: reflex control (part1) 3.8 : reflex control (part 2) 3.9: autoregulation		1.5	Lihui Yuan
11/20/22	Lecture 3.10-3.12	Lecture Video	3.10: Atherosclerosis 3.11: Cardiac Ischemia 3.12: Edema		2	Lihui Yuan
11/21/23	Lecture 3.13	Lecture Video	3.13: Compensations		0.75	Lihui Yuan
11/28/23 8:30-9:30 AM	2A	Active Learning Session	Required Attendance: Quiz 3 (covers module 3)		1	Lihui Yuan
		Quiz (In Class)	Quiz 3			Lihui Yuan
	4	Module	Immune Function and Inflammatory Response	10.11,12		Bin Liu, Lihui Yuan
11/28/23	4.1	Lecture Video	Innate Immunity		1	Bin Liu

Date / Time [Recommended for Independent Study]	Mod#	Activity	Activity Title	Objectives	Contact Time (hr)	Responsible
11/28/23	4.2	Lecture Video	Adaptive Immunity, Part I		1	Bin Liu
11/28/23	4.3	Lecture Video	Adaptive Immunity, Part II		0.75	Bin Liu
11/29/23	4.4	Lecture Video	Inflammation		1	Bin Liu
11/29/23	4.5	Lecture Video	Wound Healing		0.5	Bin Liu
11/30/23	4.6	Lecture Video	Hypersensitivity		0.5	Bin Liu
11/30/23	4.7	Lecture Video	SARS CoV-2 and the Immune System		0.5	Bin Liu
11/30/23	Prep for ALS	Lecture Video	Signs, symptoms, and laboratory markers of immunologic response, inflammation, and infection		0.5	Lihui Yuan
12/1/23 at 8:00 - 9:50 am	4	Active Learning Session	Active Learning Session 4: Immunology, module 4 *iRAT/tRAT	13	2	Bin Liu, Lihui Yuan
12/01/23		Quiz (iRAT/tRAT)	iRAT and tRAT 4			Bin Liu, Lihui Yuan
12/05/23 at 1:00- 2:00 PM		Optional Q&A via Zoom	Cardiovascular Module Review			Lihui Yuan
12/6/23 at 9:00am - 10:00am	4	Active Learning Session	Required Attendance: Quiz 4 (covers module 4)		1	Bin Liu, Lihui Yuan
		Quiz (In Class)	Quiz 4			Bin Liu, Lihui Yuan
12/06/23 at 12:30 pm		Course Evaluation	Course evaluation			
12/08/23 at 2:00pm- 4:00pm	1-4	Exam	Exam 3: Modules 1- 4			
			Total Hours		48.75	