

PHA5560 Pathophysiology and Patient Assessment I

Fall, 2022

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 R, Kier K, Assa-Eley MT. Pharmacy Student Survival Guide. 3rd Edition. McGraw-Hill, (Chapter 11 – Interpretation of Clinical Laboratory Data).
 - Available via Access Pharmacy:
<https://accesspharmacy.mhmedical.com/Book.aspx?bookid=1593>

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](http://curriculum.pharmacy.ufl.edu/current-students/technical-help/) at this URL: <http://curriculum.pharmacy.ufl.edu/current-students/technical-help/>

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/>

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

Respect for Diversity

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.bluer.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

Maureen Keller-Wood, Ph.D.

- Email: kellerwd@cop.ufl.edu
- Office: HPNP 4332, Room A
- Phone: 352-273-7687

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: Holly Fremen

- Email: holly.fremen@cop.ufl.edu
- Office: HPNP 4309
- Phone: 352-273-5558

Academic Coordinator Gainesville Campus:

Name: TBD

- Email: [TBD](#)
- Office: HPNP 4312
- Phone: 352-273-5617

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

Educational Coordinators

Name: Katie Orben

- Email: orben06@ufl.edu
- Office: Jacksonville Campus

Name: Andrea Arredondo

- Email: aarredondo1@cop.ufl.edu
- Office: Orlando Campus

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 Exemplify 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
09/26/22	1A	Module	Module 1A: Introduction to the Course; Review of Cell Function and Membrane Structure	1, 2, 12		Charles Jason Frazier, Lihui Yuan
09/26/22		Lecture Video	Watch: Introduction to PPAI Course		0.5	Lihui Yuan
09/26/22		Quiz (Self- Assessment)	Course Introduction Quiz			Lihui Yuan
09/26/22		Lecture Video	Watch: An Introduction to Patient Assessment		0.5	Lihui Yuan
09/26/22	Lecture A Series	Lecture Video	Watch: Cell Membranes		2	Charles Jason Frazier
09/27/22	Lecture B Series	Lecture Video	Watch: Receptors and 2nd Messengers		1.5	Charles Jason Frazier
09/27/22	Lecture C Series	Lecture Video	Watch: Resting Membrane Potential & Action Potential		2	Charles Jason Frazier
09/28/22	1B	Module	Module 1B: Autonomic Nervous System, Muscle Function & Pathophysiology	1,2,3,4		Charles Jason Frazier, Lihui Yuan
09/28/22	Lecture D Series	Lecture Video	Watch: Autonomic Nervous System		1.5	Charles Jason Frazier
09/28/22	Lecture E Series	Lecture Video	Watch: Skeletal Muscle		1.5	Charles Jason Frazier
09/29/22	Lecture F Series	Lecture Video	Watch: Smooth and Cardiac Muscle		1	Charles Jason Frazier
09/29/22	Lecture G Series	Lecture Video	Watch: Muscle Pathophysiology		0.5	Charles Jason Frazier

09/29/22	Prep for ALS	Lecture Video	Watch: Interpretation of Clinical Laboratory Data: Electrolytes and Blood Chemistry		0.5	Lihui Yuan
9/30/22 at 8:30am - 10:25am	1	Active Learning Session	Active Learning Session 1: The Pathophysiology of Cell Function & Electrolytes in Patient Assessment -Module 1A/1B iRAT and tRAT -TBL	13	2	Charles Jason Frazier, Lihui Yuan
09/30/22		Quiz (iRAT/tRAT)	iRAT and tRAT 1			Charles Jason Frazier, Lihui Yuan
10/04/22 at 9:00am - 10:00am	1	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
10/11/22 at 2:00pm - 4:00pm	1A - 1B	Exam	Exam 1: Module 1		2	Charles Jason Frazier, Lihui Yuan
10/11/22	2	Module	Module 2: Neurological System	5,6,7,12		Brandon Warren, Lihui Yuan
10/11/22	Lecture 2.1	Lecture Video	Watch: Sensation		0.5	Brandon Warren
10/12/22	Lecture 2.2	Lecture Video	Watch: Pain		0.5	Brandon Warren
10/12/22	Lecture 2.3	Lecture Video	Watch: Excitatory Amino Acid Neurotransmitters		0.5	Brandon Warren
10/13/22	Lecture 2.4	Lecture Video	Watch: Inhibitory Amino Acid Neurotransmitters		0.5	Brandon Warren
10/13/22	Lecture 2.5	Lecture Video	Watch: Dopamine		0.5	Brandon Warren
10/14/22	Lecture 2.6	Lecture Video	Watch: Catecholamines:		0.5	Brandon Warren

			Epinephrine and Norepinephrine			
10/14/22	Lecture 2.7	Lecture Video	Watch: Acetylcholine		0.5	Brandon Warren
10/17/22	Lecture 2.8	Lecture Video	Watch: Histamine		0.5	Brandon Warren
10/17/22	Lecture 2.9	Lecture Video	Watch: Serotonin		0.5	Brandon Warren
10/18/22	Lecture 2.10	Lecture Video	Watch: Opioids		0.5	Brandon Warren
10/18/22	Lecture 2.11	Lecture Video	Watch: Eicosanoids		0.5	Brandon Warren
10/19/22	Lecture 2.12	Lecture Video	Watch: Endocannabinoids		0.5	Brandon Warren
10/19/22	Lecture 2.13	Lecture Video	Watch: Movement Regulation and Disorders		1	Bin Liu
10/20/22	Lecture 2.14	Lecture Video	Watch: Stroke		1	Bin Liu
10/20/22	Prep for ALS	Lecture Video	Watch ALS Prep: Assessment of Pain, Stroke and other common neurological signs		0.5	Lihui Yuan
10/20/22 12:45pm - 1:45pm		Exam Review	Exam 1 Review			
10/25/22 at 8:30am - 10:25am	2	Active Learning Session	Active Learning Session 2: Neurological System -iRAT and tRAT 2 -TBL	13	2	Bin Liu, Brandon Warren, Lihui Yuan
10/25/22		Quiz (iRAT/tRAT)	iRAT and tRAT 2			Bin Liu, Brandon Warren, Lihui Yuan
10/27/22 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
11/01/22 at 10:00am-12:00pm	2	Exam	Exam 2: Module 2		2	Bin Liu, Brandon Warren, Lihui Yuan

	3A	Module	Module 3A: Cardiovascular Pathophysiology	8.9		Lihui Yuan, Maureen Keller-Wood
11/02/22	Lecture A	Lecture Video	Watch: Introduction to Cardiovascular Pathophysiology		1	Maureen Keller-Wood
11/03/22	Lecture B-F	Lecture Video	Watch: Watch: Control of the Heart, Parts I-V I: The cardiac cycle and valve disease II: Heart rate III: Arrhythmias IV: Stroke volume and contractility V: Cardiomyopathy		3	Maureen Keller-Wood
11/07/22	Lecture G-I	Lecture Video	Control of the Vasculature, Parts I-III I: review of vascular tone II: reflex control (part 1) II: reflex control (part 2) III: autoregulation		1.5	Maureen Keller-Wood
11/08/22 at 2:00pm - 2:30pm		Exam Review	Exam 2 review			
	3B	Module	Module 3B: Cardiovascular Pathophysiology, Continued	8,9,12		Lihui Yuan, Maureen Keller-Wood
11/09/22	Lecture J-L	Lecture Video	Watch: Vascular, Parts IV-VI IV: Atherosclerosis V: Cardiac Ischemia VI: Edema		2	Maureen Keller-Wood
11/11/22	Lecture M	Lecture Video	Watch: Compensations for exercise and disease		0.75	Maureen Keller-Wood
11/14/22	Prep for ALS	Lecture Video	Watch: Introduction to Cardiac Enzymes and other markers of		0.5	Lihui Yuan

			cardiovascular Health			
11/15/22 at 8:30am - 10:25am	3	Active Learning Session	Active Learning Session 3: The Pathophysiology of the Cardiovascular System and Cardiovascular Markers in Patient Assessment -iRAT and tRAT 3 -TBL	13	2	Lihui Yuan, Maureen Keller-Wood
11/15/22		Quiz (In Class)	iRAT and tRAT 3			Lihui Yuan, Maureen Keller-Wood
11/16/22 9am - 10am		Active Learning Session	Required Attendance: Quiz 3 (covers module 3)		1	Lihui Yuan, Maureen Keller-Wood
		Quiz (In Class)	Quiz 3			Lihui Yuan, Maureen Keller-Wood
	4	Module	Immune Function and Inflammatory Response	10.11,12		Bin Liu, Lihui Yuan
11/15/22	4.1	Lecture Video	Watch: Innate Immunity		1	Bin Liu
11/15/22	4.2	Lecture Video	Watch: Adaptive Immunity, Part I		1	Bin Liu
11/16/22	4.3	Lecture Video	Watch: Adaptive Immunity, Part II		0.75	Bin Liu
11/16/22	4.4	Lecture Video	Watch: Inflammation		1	Bin Liu
11/17/22	4.5	Lecture Video	Watch: Wound Healing		0.5	Bin Liu
11/17/22	4.6	Lecture Video	Watch: Hypersensitivity		0.5	Bin Liu
11/18/22	4.7	Lecture Video	Watch: SARS CoV-2 and the Immune System		0.5	Bin Liu
11/18/22	Prep for ALS	Lecture Video	Watch: Signs, symptoms, and laboratory markers of immunologic response, inflammation, and infection		0.5	Lihui Yuan
11/21/22 at 10:40am - 12:35pm	4	Active Learning Session	Active Learning Session 4: Immune and	13	2	Bin Liu, Lihui Yuan

			Inflammatory Response to Microbial Infections and Tissue Injuries; Preventative and Hyperactive Immune Responses *iRAT/tRAT 4 *Patient Assessment			
11/21/22		Quiz (iRAT/tRAT)	iRAT and tRAT 4			Bin Liu, Lihui Yuan
11/29/22 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
12/01/22 at 10:30am		Course Evaluation	Course evaluation			
12/01/22 at 2-3 PM		Optional Q&A via Zoom	Cardiovascular Module Review			Maureen Keller-Wood
12/05/22 at 10:00am-12:00pm		Exam	Exam 3: Modules 1-4			
			Total Hours:		50.5	