PHA5607 Critical Care Pharmacy
Spring 2023
2 Credit Hours – [A-E Grading]

Course Purpose: To introduce the efficacy, safety, and comparative value of drug therapy in the management of critically ill patients. Knowledge of physiology, pharmacology, toxicology, and therapeutic management is applied to disease states and conditions commonly seen but specific to critically ill patients. The approach to course delivery will emphasize team based learning, which promotes group collaboration and integration of critical care knowledge and concepts while maintaining individual accountability for the material and concepts.

Teaching Partnership Leaders
Carinda Feild, Pharm.D., FCCM
Clinical Associate Professor, Pharmacotherapy and Translational Research
- Email: cfeild@cop.ufl.edu
- Phone: 727-394-6143
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. Interpret laboratory test results.
2. Identify drug interactions.
3. Compile a prioritized health-related problem list for a patient.
4. Evaluate an existing drug therapy problem.
5. Follow an evidence-based disease management protocol.
6. Develop a treatment plan with a patient.
7. Select monitoring parameters to determine the therapeutic and adverse effects related to the treatment plan.
8. Determine the appropriate time interval(s) to collect monitoring data.
9. Write a note that documents the findings, recommendations, and plan from a patient encounter.
10. Retrieve and analyze scientific literature to answer a drug information question.

Course-Level Objectives

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

1. Apply knowledge of variable pathophysiology, pharmacology, and pharmaceutics in the critically ill patient to evaluate therapeutic options.
2. Discuss the impact of evidence-based decision-making and the role of clinical guidelines on pharmacotherapy management in critical care. (i.e., Clinical practice guidelines for the management of pain, sedation and delirium in the adult ICU; Surviving Sepsis Campaign: International guidelines for management of severe sepsis and septic shock, etc.)
3. Design patient-specific therapeutic regimens, including monitoring parameters, for critically ill patients that are consistent with pharmacokinetic principles, practice guidelines, and evidence from contemporary literature, and effectively communicate this information to health care professionals
4. Adapt therapeutic regimens based on patient-specific clinical response, transitions of care and safety monitoring based on patient case scenarios, topic discussion, and assignments.
5. Write an evidence-based response to a drug information question that pertains to the care of a patient and/or addresses a therapeutic controversy.
6. Develop professional behaviors by working in teams, identifying roles and developing appropriate professional communications.

Course Pre-requisites

1. Completion of coursework in Block 17 (year3) in the Doctor of Pharmacy Curriculum.

Course Co-requisites

1. None

Course Outline

See Appendix B. Please routinely check your 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

Students are not required to purchase any textbook for this course. The course cases and drug information questions will require the student to use the following reference materials which are available via the Health Science Library website or the course Canvas® site:

Recommended Reference Materials:

A) Faculty Assigned readings available in Canvas®

B) Primary literature pertinent to topic discussion to be recommended by the faculty or acquired by Students available via the Health Science Center library website.

C) Drug reference (LexiComp or similar) available via the Health Science Library (See: http://guides.uflib.ufl.edu/druginfo)

D) AccessPharmacy, McGraw-Hill Professional, New York, NY (This resource is available through the UF Health Science Center Library.) The following resources are recommended:

   a. Dipiro, J, Talbert R, Yee G, Matzke G, Wells B, Posey L. Pharmacotherapy – A pathophysiologic approach. McGraw-Hill Professional, New York, NY, 12th Edition. (Available in Access Pharmacy)

   b. Brunton LL, Hilal-Dandan R, Knollmann BC. eds. *Goodman & Gilman's: The Pharmacological Basis of Therapeutics, 13e*. McGraw Hill; 2017. https://accesspharmacy.mhmedical.com/content.aspx?bookid=2189&sectionid=165936845

   c. Katzung BG, Vanderah TW. eds. *Basic & Clinical Pharmacology, 15e*. McGraw Hill; 2021. https://accesspharmacy.mhmedical.com/content.aspx?bookid=2988&sectionid=250593594

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
Non-programmable calculator capable of performing routine functions and logarithms.

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.]

Evaluation Methods
Students will be assessed via quizzes, exams, case discussion follow-up questions, and a drug information question.

iRAT and tRAT
There will be daily iRATs and tRATs that will make up 20% of the total grade. These assessments will be multiple choice or true/false pertaining to the mini lecture or case preparation activity. iRATs will be delivered via Canvas.

Exams
There will be 1 examination administered during this course. The exam will be worth 40% of the grade. The exam will cover material presented in class, lecture/preparatory activity, or as required reading assignments. Questions for the exam will be prepared by module leaders and the course coordinators

and will come exclusively from the goals and objectives which accompany each module/ALS topic. The format of the exam will be case based multiple-choice.   Exams will be delivered via Examsoft.

Active Learning Assignments
Please see Appendix C for a description of active learning assignments and submission requirements.

Table 1.1 Evaluation and Grading

Assessment Item	Grade Percentage
Individual Readiness Assurance Test (iRAT) (5 total graded, session 1 ungraded survey iRat)	6%
Team Readiness Assurance Test (tRAT) (5)	14%
Case Follow-up questions	20%
DI Question (See Appendix for Rubric) •Team DI Question response submission 15% •Individual question posting re DI response 2.5% •Individual answer posting to DI response question 2.5%	20%
Final Exam	40%
Total	100%

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 <u>NO EXCEPTIONS</u> 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

Unless prior arrangements have been made, there will be a deduction for late assignments. A 10% penalty for each hour (or part thereof) late will be applied to the assignment. Assignments submitted more than 10 hours late will receive a zero.

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.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):

Carinda Feild, Pharm.D., FCCM
Clinical Associate Professor, Pharmacotherapy and Translational Research
- Email: cfeild@cop.ufl.edu
- Phone: 727-394-6143

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:

Kaitlin Alexander, PharmD
Clinical Associate Professor, Pharmacotherapy and Translational Research
- Email: kaitlin.alexander@cop.ufl.edu
- Gainesville Campus
- Phone: 352-594-5276

John Allen, PharmD, BCPS, BCCCP, FCCM
Associate Dean – Diversity, Inclusion, and Health Equity
Clinical Associate Professor, Pharmacotherapy and Translational Research
- Email: john.allen@cop.ufl.edu
- Orlando Campus
- Phone: 407-313-7006

Zachary Drabik, PharmD, BCPS BCCCP
Clinical Pharmacy Specialist, Burn/ENT/Plastics Intensive Care Unit, UF Health Shands Hospital
- Email: zdra0001@shands.ufl.edu
- Phone: 352.265.2418

Bethany Shoulders, PharmD, BCCCP
Clinical Assistant Professor, Pharmacotherapy and Translational Research
- Email: brshoulders@cop.ufl.edu
- Gainesville Campus
- Phone: 865-603-6467

Instructional Designers:

Chris Egan, M.Ed., NRP
- Email: cegan@ufl.edu
- Phone: 352-273-5636

Skylar Johnson, M.A.
- Email: skylarjohnson@ufl.edu
- Phone: 352-273-5719

Academic Coordinator Gainesville Campus:

Ashleigh Langford
- Email: lynn8597@cop.ufl.edu
- Office: HPNP 4309
- Phone: 352-273-6284

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

Educational Coordinators

Katie Orben
- Email: korben06@ufl.edu
- Office: Jacksonville Campus
- Phone: 904-244-9590

Andrea M Arredondo
- Email: aarredondo1@cop.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.)

Appendix B: Course Outline

Date / Time	Mod #	Activity	Activity Title	Contact Time (hr)	Responsible
	1	Module	Introduction to the Virtual ICU		Carinda Feild
04/26/23	1.1	Presentation Slides	Course Introduction and VICU Welcome (Slides posted lecture in class)	1.5	Carinda Feild
04/26/23	1.2	Other	VICU Guide		Carinda Feild
04/26/23	1.3	Simulation	Visit Virtual ICU 1	1	Carinda Feild
04/26/23		Assignment (Ungraded)	VICU Treasure Hunt	1	Carinda Feild
04/26/23 at 12:00 - 1:50pm		Active Learning Session	ALS Class Session 1 - Course and VICU Introduction		Carinda Feild
04/26/23		Quiz (Self-Assessment)	VICU Survey		Carinda Feild
	2	Module	Toxicology		John Allen
04/27/23	2.1	Lecture Video	Toxicology - Acute Management of Poisoning	1.25	John Allen
04/27/23	2.2	Simulation	Virtual Simulation - MICU	0.75	John Allen
04/27/23	2.3	Reading	Acute Liver Failure (Bernal 2013)	0.75	John Allen
04/27/23	2.4	Reading	A Review of Acetaminophen Poisoning (Hodgman 2012)	0.75	John Allen
04/28/23 at 10:00 - 11:50am		Active Learning Session	ALS Class Session 2 MICU Toxicology Case	2	John Allen
04/28/23		Quiz (iRAT/tRAT)	Readiness Assurance Test 1		John Allen
04/29/23 at 1159		Assignment (Graded)	Session 2 Follow-Up Questions		John Allen
	3	Module	Trauma		Bethany Shoulders, Carinda Feild, Kaitlin Alexander
04/28/23	3.1	Other	Traumatic ICU Interactive Lesson	1.5	Bethany Shoulders, Carinda Feild, Kaitlin Alexander
04/28/23	3.2	Simulation	Virtual Simulation - Trauma ICU	1	Bethany Shoulders, Carinda Feild, Kaitlin Alexander
05/01/23 at 10:00 - 11:50am		Active Learning Session	ALS Class Session 3	2	Bethany Shoulders, Carinda Feild, Kaitlin Alexander
05/01/23		Quiz (iRAT/tRAT)	Readiness Assurance Test 2		
5/2/23 at 1159		Assignment (Graded)	Session 3 Follow-Up Questions		
	4	Module	Burn		Carinda Feild, Kaitlin Alexander, Zach Drabick

Date / Time	Mod #	Activity	Activity Title	Contact Time (hr)	Responsible
05/02/23	4.1	Lecture Video	Burn ICU	2.5	Carinda Feild, Kaitlin Alexander, Zach Drabick
05/02/23	4.2	Simulation	Virtual ICU - Burn ICU	0.75	Carinda Feild, Kaitlin Alexander, Zach Drabick
05/02/23	4.3	Reading	Initial Assessment and Fluid Resuscitation in Burn (Cancio 2014)	0.375	Carinda Feild, Chris Egan, Kaitlin Alexander, Zach Drabick
05/02/23	4.4	Reading	The critical care management of the burn patient (Snell, Loh, Mahambrey, Shokrollahi 2013)	0.375	Carinda Feild, Kaitlin Alexander, Zach Drabick
05/03/23 at 10:00 - 11:50am		Active Learning Session	ALS Class Session 4	2	Carinda Feild, Kaitlin Alexander, Zach Drabick
05/03/23		Quiz (iRAT/tRAT)	Readiness Assurance Test 3		
5/3/23/ at 1159		Assignment (Graded)	Drug Information Question Answer posted on Canvas Discussion and under Assignments		
5/4/23 at 1159		Assignment (Graded)	Session 4 Follow-Up Questions		
	5	Module	Brain Injury		Carinda Feild, Kaitlin Alexander
05/04/23	5.1	Lecture Video	Traumatic Brain Injury (TBI)	0.75	Carinda Feild, Kaitlin Alexander
05/04/23	5.2	Simulation	Virtual ICU - Neuro ICU	1.25	Carinda Feild, Kaitlin Alexander
05/04/23	5.3	Optional/Supplemental	Brain Trauma Foundation TBI Guidelines		Carinda Feild, Kaitlin Alexander
05/05/23 at 10:00 - 11:50am		Active Learning Session	ALS Class Session 5	2	Carinda Feild, Kaitlin Alexander
05/05/23		Quiz (iRAT/tRAT)	Readiness Assurance Test 4		
5/5/23 at 1159		Assignment (Graded)	Drug information question posted to discussion board		
5/6/23 at 1159		Assignment (Graded)	Session 5 Case Follow-Up Questions		
	6	Module	Pulmonary Acute Respiratory Distress Syndrome (ARDS)		Carinda Feild
05/05/23		Lecture Video	Acute Respiratory Distress Syndrome (ARDS)	1	Carinda Feild
05/05/23		Simulation	VICU Session 6	1.25	Carinda Feild
05/08/23 at 10:00 - 11:50am		Active Learning Session	ALS Class Session 6	2	Carinda Feild
05/08/23		Quiz (iRAT/tRAT)	Readiness Assurance Test 5		

Date / Time	Mod #	Activity	Activity Title	Contact Time (hr)	Responsible
05/11/23 at 9:00 - 11:00am		Exam	Final Exam		
			Total Hours	27.75	

Appendix C: Active Learning Requirements

Drug Information Question

Groups will be assigned a drug information question pertaining to a clinical controversy from a pre-specified pool of options and prepare a written response, using the DI form. The responses are to be submitted online via Canvas. The purpose of the assignment is to provide experience in evaluating the literature regarding therapeutic controversies and questions such as those that may come about in the care of patients and presenting that information in the form of a patient specific answer. The available literature on the topic should be evaluated and then a conclusion/clinical recommendation regarding the question or controversy is to be submitted using the DI question template. "More research is needed" is NOT an acceptable conclusion. You have a patient for whom a therapeutic plan needs to be determined and you must make a recommendation for your patient. Questions will be assigned on the 1st day of class, 4/26/23. Responses are due a week later 5/3/23. Team DI question response submissions make up 15% of the grade. See document in Canvas for assignments. See Appendix D for grading rubric.

Drug Information Question Follow-up

Each person will be assigned one of the group drug information responses to post a meaningful question about. Each person in the response posting group will also be assigned a person to whose question they must respond.   Students will post their questions by 5/5/23. The posting team responders will provide responses by 5/8/23 (last day of class). Individual discussion board posting of a question about DI submission will make up 2.5% of the grade. Discussion board posting of response to questions will make up 2.5% of the grade (for a total of 20% of the grade). See document in Canvas for assignments.

Post Class Follow-up Questions

At the end of the first 4 case sessions (class sessions 2-5) students will be presented with follow-up questions. The learning objectives for the follow up questions are for students to be able to provide monitoring or follow up recommendations and address aspects of care under conditions different than addressed in the class cases. Case follow-up questions will be worth a total of 20% of the grade. Case follow-up questions will be assigned at the end of sessions 2-5 and will be due at 1159 the day following class. They are submitted via Canvas. They will be graded on a 15 point scale. See Appendix E for grading rubric.

Appendix D: Drug Information Question Rubric

DI Question Rubric	2pts	3 pts	4 pts	4.5 pts	5 pts	Score
	Multiple missing elements AND serious improvement in quality needed	Multiple missing elements OR serious improvement in quality needed	All elements present but room for moderate quality improvement OR some elements missing	All elements present but room for minor quality improvement	All elements present and of high quality	
Recommendation 1. A recommendation is given based on information gathered 2. Recommendation is clear, reasonable 3. Recommendation is detailed and includes all necessary particulars (Ex. drug, dose, route, duration, monitoring)						$\frac{\quad}{6}$ X =
Content 1. Information is accurate, current and supported by both reasoning and evidence 2. Relevant information is retrieved, analyzed, and interpreted correctly 3. Student demonstrates understanding of topic 4. Relevant studies are evaluated thoroughly (Ex. tables, annotated bibliography)						$\frac{\quad}{8}$ X =

5. Safety and efficacy data are addressed						
References 1. Appropriate type and number for question asked 2. Primary references utilized 3. References incorporated into answer 4. References formatted correctly						__ X 4 =
Organization 1. Statement of answer in first sentence 2. Contains restatement of original question 3. Cohesive and logical 4. Concise 5. Formatting assists with reader understanding 6. Grammar and spelling correct						__ X 2 =
						Total = ___ /100

Appendix E: Follow-up Question Rubric

	2pts	3 pts	4 pts	4.5 pts	5 pts
Follow-up Question Rubric	Multiple missing elements AND serious improvement in quality needed	Multiple missing elements OR serious improvement in quality needed	All elements present but room for moderate quality improvement OR some elements missing	All elements present but room for minor quality improvement	All elements present and of high quality
Accuracy 1. A recommendation is given based on information gathered 2. Recommendation is clear, reasonable 3. Recommendation is detailed and includes all necessary particulars (Ex. drug, dose, route, duration, monitoring)					
Completeness 1. Information is accurate, current, and supported by both reasoning and evidence 2. Relevant information is retrieved, analyzed, and interpreted correctly 3. Student demonstrates understanding of topic 4. Relevant studies are evaluated thoroughly (Ex. tables, annotated bibliography) 5. Safety and efficacy data are addressed					

Succinctness/References					
1. Appropriate type and number for question asked 2. Primary references utilized 3. References incorporated into answer 4. References formatted correctly					