

## Integrated Pharmacotherapy 9: Critical Care and Clinical Toxicology

PHAR 7489

Spring Semester 2022

### Course Description:

This required course shall serve as an introduction to critical care pharmacotherapy and clinical toxicology with specific emphasis given to toxidromes, acute patient management, and drug therapy as it relates to the critically ill.

### Additional Course Information:

Comprehensive cases will be embedded into the course to ensure longitudinal recall of pharmacotherapy over the course of the didactic curriculum

### Course Credit:

4 credit hours

### Pre-requisites:

P3 Standing

### Class Meeting Days, Time, and Location:

Tuesday and Thursday: 2:00 – 4:00 PM

### Course Coordinator:

Young Ran Lee, Pharm.D., BCPS, BCCCP, BCIDP

WT Brookshire Hall, Room #233

Phone: (903) 566-6111

E-mail: [younglee@uttyler.edu](mailto:younglee@uttyler.edu)

Office Hours: Monday and Wednesday 11:30 AM -1:00 PM; other times by appointment

Preferred method of contact: E-mail

### Instructors:

Cole Wilder, Pharm.D., BCPS, BCCCP

WT Brookshire Hall, Room #241

Phone: (903) 566-6145

E-mail: [jwilder@uttyler.edu](mailto:jwilder@uttyler.edu)

Office Hours: Tuesday and Thursdaysday 4:00 PM -5:00 PM; other times by appointment

Preferred method of contact: E-mail

### Fisch College of Pharmacy (FCOP) and UT Tyler Policies

This is part 1 of the syllabus. Part 2 contains UT Tyler and the FCOP course policies and procedures.

These are available as a PDF at <https://www.uttyler.edu/pharmacy/academic-affairs/files/fcop-syllabuspolicies.pdf>.

### Required Materials:

Most course required materials are available through the Robert R. Muntz Library. These materials are available either online\* (<http://library.uttyler.edu/>) or on reserve.

1. Goldfrank's Toxicologic Emergencies (11<sup>th</sup> edition). Lewis S. Nelson, Mary Ann Howland, Neal A. Lewin, Silas W. Smith, Lewis R. Goldfrank, Robert S. Hoffman. McGraw-Hill Education ISBN 978-1-259-85961-8, 2019.
2. Casarett & Doull's Essentials of Toxicology (3<sup>rd</sup> edition). Curtis D. Klaassen and John B Watkins III. McGraw-Hill Education, ISBN 978-0-07-184708-7, 2015.
3. Pharmacotherapy: A pathophysiologic approach (10<sup>th</sup> edition). Joseph T. DiPiro, Robert L. Talbert, Gary C. Yee, Gary R. Matzke, Barbara G. Wells, L. Michael Posey. McGraw-Hill Education, ISBN 978-1-259-58748-1, 2017.
4. Other required materials will be posted on the classes' Canvas site. The site address is: [uttyler.edu/canvas](http://uttyler.edu/canvas).

**Recommended Materials:**

1. Marino, PL. *The ICU Book*. 4th ed. Philadelphia, PA: Lippincott Williams & Wilkins; 2013.

**Course Format**

The course may include, but are not limited to, the following activities:

1. Independent study of selected readings
2. Individual readiness assessment tests (iRATs)
3. Individual active learning strategies (iAPPs)
4. Team-based learning, active learning strategies:
  - a. Team readiness assessment tests (tRATs)
  - b. Team application of content and concepts (tAPPs)
  - c. Team presentation of content and concepts
5. Lecture
6. **Case studies** (see below)
7. Educational video clips (online and in-class)

**Course Assessment Methods**

	Assessment Method	Description
1	Midterm/Final Exam Multiple Choice or Multiple Selection Question(s)	<i>Standard MCQ and Select All That Apply questions.</i>
2	Midterm/Final Exam Open Ended Question(s)	<i>Constructed-Response/Fill-in-the-Blank/Matching questions, Short-Answer questions, Hot Spot questions</i>

**Course Learning Outcomes**

CLOs	PLO(s) Assessed for this CLO	EPAs	Assessment Methods	Grading Method	ACPE Std. 11 & 12
1. Describe the pharmacokinetic and toxicokinetic properties, including the biotransformation processes of select toxins.	1	1.1	1, 2	ES, RUB	1
2. Recognize the clinical presentation and identify distinguishing pathophysiologic features of toxidromes associated with selected toxins.	1, 5, 6	1.1, 1.2, 3.1	1, 2	ES, RUB	1, 2
3. Formulate appropriate therapeutic regimens for selected toxins, including antidotal therapy, where indicated; monitoring parameters; and recommendations for modification to therapeutic regimens based on patient-specific parameters.	1, 2, 5, 6	1.3, 1.4, 1.5, 3.2, 4.2	1, 2	ES, RUB	2, 3
4. Demonstrate understanding of shock state management in critical illness utilizing pathophysiology, pharmacology, and therapeutic knowledge.	1, 5, 6	4.2	1, 2	ES, RUB	1,2
5. Demonstrate understanding of medications utilized in critical illness by utilizing pathophysiology, pharmacology, and therapeutic knowledge.	1, 2, 5, 6	4.2	1, 2	ES, RUB	1,2
6. Develop plans for supportive care of critically ill patients, including sedation, analgesia and pain management, stress ulcer and DVT prophylaxis, nutrition support, and glucose control.	1, 2, 5, 6	1.3, 1.4, 1.5, 3.2, 4.2	1,2	ES, RUB	1, 2

## Attendance

To receive full credit a student must attend all class session. Only those students that have prior approval for distance learning will be allowed to attend remotely. Students can request an excused absence, see the Attendance and Make-up Policy (beginning page 2) <https://www.utt Tyler.edu/pharmacy/academicaaffairs/files/fcop-syllabus-policies.pdf>

## Grading Policy & Grade Calculation:

Grades will be determined based on evaluation of individual and team readiness assessment tests (iRATs, tRATs), individual cumulative assessment tests (iCATs), final written examinations, graded application assignments, participation in team-based projects, and other assessment methods that may include, but are not limited to assignments and projects at the discretion of the course coordinator and instructors.

Examinations, RATs and CATs may consist of, but are not limited to: multiple choice, true/false, fill in the blank, short-answer, essay, and problem-based questions.

During the time the course in progress, students whose cumulative course percentage falls below 70.0% may receive an academic alert and be subject to periodic course content review in special sessions with the course instructor(s). The student's faculty advisor may receive an academic alert to act upon the student's behalf.

All examinations, tests, and assignments, including the final examination, may be cumulative. Students are responsible for material presented during the 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 the examination/assessment policy below.

### Standard Grade Calculation\*

<b>Individual Component</b>	<b>95%</b>
iRATs/Individual Applications/Activities (iAPPs)	10%
Assessment (iCAT) 1	28%
Assessment (iCAT) 2	22%
Cumulative Final Examination	35%
<b>Team Component</b>	<b>5%</b>
tRATs	1%
Individual Applications/Activities (tAPPs)	4%
<b>Total</b>	<b>100%</b>

**\*\*\*Failure to attend the Case Studies session assigned to this course will result in an 2% deduction from your final course grade\*\*\***

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

A	90-100%
B	80-89.999%
C	70-79.999%
D	65-69.999%
F	<65%

## Case Studies

Case Studies are a longitudinal supplement intended to reinforce and integrate concepts and skills from the didactic curriculum, P1-P3 inclusive. **Content and concepts from Case Studies will be integrated into team applications for the P3 spring courses.**

### Case Studies Format

Case days may include, but are not limited to, the following activities:

1. Guided discussions
2. Individual and team active learning strategies
  - a. Individual and team case application of content and concepts
  - b. Individual and team case presentation of content and concepts
  - c. Individual and team SOAP note(s)

### Case Studies Expectations

Attendance and full participation are a student obligation and expectation. Failure to attend each Case Studies session will result in an **2% deduction from the final course grade for the participating P3 courses.** Failure to attend all Case Studies sessions would result in a 2% deduction from the final grade of each of the following courses: PHAR 7487, 7288, 7489, 7296, and 7220. At the discretion of the session's assigned course coordinator, absences from a case session may be either approved or unapproved. Students are expected to notify the session's assigned course coordinator *as soon as possible, and no later than 9:00am the morning of the requested absence, with supporting documentation of the absence provided within 3 days of the absence per the College of Pharmacy Policies available in Part 2 of the Syllabus.*

*Example:* Unapproved absences for sessions 2 and 3, would result in 2% final course grade deduction for the above listed courses. At the end of the semester if the student's course grades for PHAR 7487, 7288, 7489, 7296, and 7220 were 91%, 89%, 85%, 90%, and 71% respectively, their final grade would be reduced to 89%, 87%, 83%, 88%, and 69% respectively because of their Case Studies' absences.

### Case Study Schedule

Case Studies will be held over three sessions on Fridays from 9:00am-12:00pm. Each session's attendance deduction is assigned to the participating P3 courses. Case content is not limited to the P3 courses and will be integrated into team applications for the P3 spring courses.

P3 Case Study Schedule				
Session	Date	Assigned Course Coordinator	Topic	Instructors
1	2/4/2022	Newsome	TBA	P3 course coordinators
2	3/4/2022	Lee	TBA	P3 course coordinators
3	4/8/2022	Brazill	TBA	P3 course coordinators

**PHAR 7489 Course Schedule**  
Spring Semester 2022

Week	Day	Date	Time	Topic	iCAT	Faculty	CLO	FCOP Category	
<b>Clinical Toxicology</b>									
1	Tue	1/11/22	2:00pm-4:00pm	Course Introduction & Introduction to Toxicology	1	Lee/Wilder	/	\$19.03, \$19.04	
	Thu	1/13/22	2:00pm-4:00pm	*Management of Poisoned Patient: General Principles of Clinical Toxicology		Wilder	1, 2	\$19.99	
2	Tue	1/18/22	2:00pm-4:00pm	*Management of Acetaminophen Toxicity		Wilder	1, 2, 3	\$19.01	
	Thu	1/20/22	2:00pm-4:00pm	*Management of Salicylate Toxicity		Wilder	1, 2, 3	\$19.09	
<b>9:00am-12:00pm CASE STUDY INTRODUCTION</b>									
3	Tue	1/25/22	2:00pm-4:00pm	*Management of Ethanol and Toxic Alcohol Toxicity	1	Wilder	1, 2, 3	\$06.12, \$19.19	
	Thu	1/27/22	2:00pm-4:00pm	*Management of Opioid Toxicity		Wilder	1, 2, 3	\$19.02	
4	Tue	2/1/22	2:00pm-4:00pm	*Management of Neuropsychiatric Agent Toxicity		Wilder	1, 2, 3	\$19.07, \$19.10, \$19.18	
	Thu	2/3/22	2:00pm-4:00pm	*Management of Sympathomimetic Toxicity		Wilder	1, 2, 3	\$19.12	
<b>9:00am-12:00pm CASE STUDY SESSION 1</b>									
5	Tue	2/8/22	2:00pm-4:00pm	*Management of Cardiovascular Agent Toxicity	1	Wilder	1, 2, 3	\$19.08, \$19.11	
	Thu	2/10/22	2:00pm-4:00pm	*Emergent Reversal of Anticoagulants and Antiplatelets		Wilder	1, 2, 3	\$19.06	
6	Tue	2/15/22	2:00pm-4:00pm	*Management of Toxic Envenomations		Wilder	1, 2, 3	\$19.05	
	Thu	2/17/22	2:00pm-4:00pm	Comprehensive Case(s): Clinical Toxicology		Wilder	/	/	
<b>2:00pm-4:00pm iCAT 1</b>									
<b>Critical Care</b>									
7	Thu	2/24/22	2:00pm-4:00pm	*Pharmacotherapy: FAST-HUG BID	2	Lee	5, 6	\$18.99	
	8	Tue	3/1/22	2:00pm-4:00pm		*Pain, Agitation, Sedation, and Delirium	Lee	5, 6	\$18.11
Thu		3/3/22	2:00pm-4:00pm	*Stress ulcer, DVT Prophylaxis, Glucose Management		Lee	5, 6	\$18.99	
<b>9:00am-12:00pm CASE STUDY SESSION 2</b>									
<b>***Failure to attend the Case Studies session assigned to this course will result in an 2% deduction from your final course grade***</b>									
9	Tue	3/8/22	2:00pm-4:00pm	<b>Spring Break: NO CLASSES</b>					
	Thu	3/10/22	2:00pm-4:00pm						
10	Tue	3/15/22	2:00pm-4:00pm	*Fluid Management	2	Lee	5	\$04.05	
	Thu	3/17/22	2:00pm-4:00pm	*Electrolyte Management		Lee	5	\$04.05	
11	Tue	3/22/22	2:00pm-4:00pm	*Hyperglycemic Crises (DKA/HHS)		Lee	5, 6	\$07.02	
	Thu	3/24/22	2:00pm-4:00pm	*Categorization of Shock and Vasopressors		Lee	4	\$18.13, \$18.16	
12	Tue	3/29/22	2:00pm-4:00pm	*Sepsis and Septic Shock	Lee	4	\$15.12, \$18.28		
	Thu	3/31/22	2:00pm-4:00pm	Comprehensive Case(s): Critical Care	Lee	/	/		
<b>2:00pm-4:00pm iCAT 2</b>									
13	Thu	4/7/22	2:00pm-4:00pm	*Acute Respiratory Distress Syndrome	Final	Lee	5, 6	\$18.10	
	<b>9:00am-12:00pm CASE STUDY SESSION 3</b>								
14	Tue	4/12/22	2:00pm-4:00pm	*Respiratory Support	Final	Lee	5, 6	\$18.15	
	Thu	4/14/22	2:00pm-4:00pm	*Status Epilepticus		Lee	5	\$05.04	
15	Tue	4/19/22	2:00pm-4:00pm	*Traumatic Brain Injury		Lee	5	\$18.12	
	Thu	4/21/22	2:00pm-4:00pm	Comprehensive Case(s): Clinical Toxicology and Critical Care		Lee	/	/	
<b>9:00am-12:00pm Comprehensive Final Examination</b>									
Please note that dates, topics, and assignments are subject to change. In the event of a change, you will be given ample notification of the change.									
Asterisk (*) denotes scheduled dates and topics for iRAT/tRAT; please note, iRATs/tRATs can occur at any time at the discretion of the course faculty.									