

## PHAR 7274 Biostatistics and Clinical Research Methods

Spring 2024

### Course Description

This course introduces pharmacy students to the principles of applied biostatistics and clinical research methods. The goal of this course is for students to develop the ability to critically appraise health and drug literature in order to make evidence-based decisions in their practice.

### Additional Course Information

This course provides students with the knowledge and skills needed to interpret and evaluate quantitative findings in the pharmacy and medical literature. Topics include using statistical methods to summarize data, testing research hypotheses, making statistical inferences, and differentiating between statistical and clinical significance of research findings. The course also introduces the students to basic elements of the research framework, various experimental and observational study designs, and literature aggregation methods.

### Course Credit

Two (2) credit hours

### Pre-Requisites

None

### Co-Requisites

None

### Class Meeting Days, Time & Location

Tuesday 10:00 am – 12:00 pm in W.T. Brookshire Hall Room 235.

The first Exam will be on 2/13/2024 from 8:00 am – 9:00 am, followed by a regular class from 10:00 am – 12:00 pm in W.T. Brookshire Hall Room 235.

### Course Coordinator

Osama A. Shoair, Ph.D.

W.T. Brookshire Hall Room 346

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Office hours: Tuesday/Wednesday 12:00 pm – 1:30 pm, and 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/>

### 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. Malone PM, Malone MJ, Park SK. *Drug Information: A Guide for Pharmacists*. 6<sup>th</sup> ed. McGraw-Hill Education; 2018. ISBN: 978-1-259-83797-5.
2. Yang Y, West-Strum D. *Understanding Pharmacoepidemiology*. 1<sup>st</sup> ed. McGraw-Hill Education; 2011. ISBN: 978-0-07-163500-4.
3. Other required materials will be posted on the classes' Canvas site. The site address is <http://uttyler.edu/canvas>

### Recommended Materials

None.

### Course Format

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

1. Independent study of selected readings
2. Preclass assignments
3. Individual readiness assessment tests (iRATs)
4. Individual applications of content and concepts
5. Team-based assignments
  - a. Team readiness assessment tests (tRATs)
  - b. Team application of content and concepts
  - c. Team presentation of content and concepts
6. Completion of online training and quizzes
7. Educational video clips (online and in class)
8. Journal Clubs

### Course Learning Outcomes (CLOs)

CLOs	PLO(s) Assessed for this CLO (1-15)	EPAs (1-13)	ACPE Std. 11 & 12 (1-4)	Grading Method	Assessment Methods
1. Evaluate the appropriate use of commonly employed statistical tests in published research studies and accurately interpret the results from those tests	1	NA	4	ES	1
2. Describe the various study designs and research methods commonly used to test hypotheses or answer health-related research questions	1	NA	4	ES	1

## Course Assessment Methods

	Assessment Method	Description
1	Summative Written Exams	<i>Standard multiple-choice, select all that apply, matching, true/false, hot spot, fill-in-the-blank, and short essay questions</i>

### Grading Policy & Grade Calculation

The final course score and grade will be based on the first, second, and final written exams.

The students may receive ungraded individual and team readiness assessment tests (iRATs, tRATs), ungraded quizzes, ungraded individual and team application exercises, and other ungraded assessment methods throughout the course that cover concepts discussed in the course modules. These ungraded assessments are designed to prompt reflection, critical thinking, and application of course concepts. It's important to note that these ungraded assessments are formative and will not be factored into determining the student's final course score and grade.

All course assessments may consist of multiple-choice, select all that apply, matching, ordered-response, hot spot, fill-in-the-blank, short essay, and problem-based questions.

During the time the course is in progress, students whose cumulative course percentage falls below 75% 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 on the student's behalf.

All examinations, tests, and assignments, including the final examination, may be **cumulative**. Students are responsible for the material presented during the prior courses. The grading scale for all course-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 available in Part 2 of the syllabus, available as a PDF at <https://www.utt Tyler.edu/pharmacy/academic-affairs/>

### Standard Grade Calculation

First Exam	25%
Midterm Exam	30%
Final Exam	45%
<b>TOTAL</b>	<b>100%</b>

### Final Course Letter Grade

A	90 - 100 %
B	80 - 89.999 %
C	70 - 79.999 %
D	65.0 - 69.999 %
F	< 65.0 %

**PHAR 7274 Course Schedule\***

Spring 2024

WK	DAY	TOPIC	INSTRUCTOR	CLO	Disease State
1	1/16	Biostatistics: Descriptive Statistics	Shoair	1	\$20.99
2	1/23	Biostatistics: Probability and Hypothesis Testing	Shoair	1	\$20.99
3	1/30	Biostatistics: Comparing Proportions	Shoair	1	\$20.99
4	2/6	Biostatistics: Comparing Means	Shoair	1	\$20.99
5	2/13	<b>First Exam from 8:00 am – 9:00 am (Content covered from 1/16 to 2/6)</b>			
5	2/13	<b>Biostatistics: Correlation and Regression (from 10:00 am – 12:00 pm)</b>	<b>Shoair</b>	<b>1</b>	<b>\$20.99</b>
6	2/20	Biostatistics: Logistic Regression and Survival Analysis	Shoair	1	\$20.99
7	2/27	Biostatistics: Power and Sample Size	Shoair	2	\$20.99
7	2/27	Biostatistics: Statistical vs. Clinical Significance	Shoair	2	\$20.99
8	3/5	Research Design: Fundamentals of Clinical Research	Shoair	2	\$20.99
	3/12	<b>Spring Break: No Classes</b>			
9	3/19	<b>Second Exam from 10:00 am – 12:00 pm (Content covered from 1/16 to 3/12)</b>			
10	3/26	Research Design: Randomized-Controlled Trials	Shoair	2	\$20.99
11	4/2	Research Design: Observational Study Designs	Shoair	2	\$20.99
12	4/9	Research Design: Observational Study Designs	Shoair	2	\$20.99
13	4/16	Research Design: Equivalence and Noninferiority Trials	Shoair	2	\$20.99
14	4/23	Research Design: Narrative Reviews, Systematic Reviews, and Meta-Analyses	Shoair	2	\$20.99
15	5/1	<b>Final Exam from 9:00 am – 12:00 pm (Content covered from 1/16 to 4/23)</b>			
<i>*Dates, topics, and assignments are subject to change. In the event of a change, you will be given ample notification of the changes.</i>					