



**Jordan University of Science and Technology**  
**Faculty of Pharmacy**  
**Pharmacy Department**

PHAR743 Pharmacoepidemiology And Advanced Statistics

Second Semester 2023-2024

**Course Catalog**

3 Credit Hours. The course focuses on the design and analytical aspects of pharmacoepidemiologic studies. The course will introduce students to the field of pharmacoepidemiology and provide them with the biostatistics skills needed to perform statistical analysis of epidemiologic data, such as developing appropriate study designs, identifying key sources of data for epidemiologic purposes, learning different measurements of treatments and outcomes, identifying sources of bias and controlling confounders, as well as learning techniques to reduce bias and confounding. Furthermore, this course will cover the most commonly used statistical models used in public health risk-benefit analysis such as survival analysis and Cox regression, Poisson regression, generalized linear models, log-linear models, and mixed-effects models.

**Teaching Method:** On Campus

**Text Book**

<b>Title</b>	Understanding Pharmacoepidemiology
<b>Author(s)</b>	Yi Yang, Donna West-Strum
<b>Edition</b>	1st Edition
<b>Short Name</b>	Ref # 1
<b>Other Information</b>	

**Course References**

Short name	Book name	Author(s)	Edition	Other Information
Ref # 2	Textbook of Pharmacoepidemiology	Brian L. Strom, Stephen E. Kimmel, Sean Hennessy	3rd Edition	
Ref # 3	Essential Medical Statistics	Betty R. Kirkwood, Jonathan A. C. Sterne	2nd Edition	
Ref # 4	A Handbook of Statistical Analyses using SPSS	Sabine Landau, Brian S. Everitt	1st Edition	

**Instructor**

Name	<b>Dr. Fatema Mahmoud</b>
Office Location	-
Office Hours	
Email	fmmahmoud@just.edu.jo

**Class Schedule & Room**

Section 1:  
 Lecture Time: Sun, Tue : 10:00 - 11:30  
 Room: U

**Tentative List of Topics Covered**

Weeks	Topic	References
Weeks 1, 2	Introduction to Pharmacoepidemiology	From <b>Ref # 1</b> , From <b>Ref # 2</b>
Week 2	Study designs available for pharmacoepidemiologic studies	From <b>Ref # 1</b> , From <b>Ref # 2</b>

Week 3	Data sources for Pharmacoepidemiologic studies	From <b>Ref # 1</b> , From <b>Ref # 2</b>
Week 4	Validity of Pharmacoepidemiologic Drug and Diagnosis Data	From <b>Ref # 2</b>
Week 5	Using Quality-of-Life Measurements in Pharmacoepidemiologic Research	From <b>Ref # 2</b>
Week 6	Studies of Medication Adherence	From <b>Ref # 2</b>
Week 7	Revision of basic statistics in pharmacoepidemiology (workshop)	From <b>Ref # 1</b> , From <b>Ref # 3</b> , From <b>Ref # 4</b>
Weeks 8, 9	Regression: Poisson regression, generalized linear models, log-linear models, and mixed-effects models	From <b>Ref # 3</b> , From <b>Ref # 4</b>
Week 10	Time-to-event modelling, survival function, and hazard function	From <b>Ref # 1</b> , From <b>Ref # 3</b>
Week 11	Kaplan-Meier estimation and Cox regression model	From <b>Ref # 1</b> , From <b>Ref # 3</b>
Weeks 12, 13	Introduction to Systematic Review and Meta-analysis in Pharmacoepidemiology	From <b>Ref # 3</b>
Weeks 14, 15	Bias in pharmacoepidemiology and Methods for Mitigating Bias in Pharmacoepidemiologic Studies	From <b>Ref # 1</b> , From <b>Ref # 2</b>

**Relationship to Program Student Outcomes (Out of 100%)**

PLO1.1	PLO2.1	PLO3.2	PLO3.3	PLO2.2	PLO2.3	PLO2.4	PLO3.1	PLO3.4	PLO3.5	PLO3.6	PLO4.1	PLO4.2	PLO4.3	PLO4.4	PLO5.1

**Evaluation**

Assessment Tool	Weight
Mid Exam	40%
Midterm Project	15%
Assignments and in-class workshops	5%
Final Exam	40%

**Policy**

EXAMS	The format for the exams is generally multiple-choice questions (MCQS) and essay questions. Grades will not be given out via e-mail Makeup exam should not be given unless there is a valid excuse. Arrangements to take an exam at a time different than the one scheduled <b>MUST</b> be made prior to the scheduled exam time
Cheating	Prohibited; and in case of cheating the student will be subject to punishment according to the standard JUST policy. The commitment of the acts of cheating and deceit such as copying during examinations, altering examinations for re-grade, plagiarism of homework assignments, and in any way representing the work of others as your own is dishonest and will not be tolerated. Standard JUST policy will be applied المادة 7: إذا ضبط الطالب أثناء الامتحان أو الاختبار متلبساً بالغش فتوقع عليه العقوبات التالية مجتمعة أ- اعتباره راسباً في ذلك الامتحان أو الاختبار. ب- الغاء تسجيله في بقية المساقات المسجل لها في ذلك الفصل ج- فصله من الجامعة لمدة فصل دراسي واحد، و هو الفصل التالي للفصل الذي ضبط فيه
Attendance	Excellent attendance is expected. JUST policy requires the faculty member to assign ZERO grade (35) if a student missed 10% of the classes that are not excused. If you miss class, it is your responsibility to find out about any announcements or assignments you may have missed.
Participation	Is highly encouraged and will be managed through in-class questions and interactive discussions.
Withdraw	Last day to drop the course is before the twelve (12th) week of the current semester