



Jordan University of Science and Technology

Faculty of Pharmacy

**Department of Clinical Pharmacy**

*Curriculum of M.Sc. program in Pharmacoeconomics*

**2024**

The master's degree in Pharmacoeconomics is awarded by the Faculty of Graduate Studies at Jordan University of Science and Technology (JUST) upon the fulfillment of JUST running master's degree regulations and the Successful completion of (34) credit hours in the *master thesis track* and *comprehensive examination track* including compulsory and elective courses as follow:

Classification	Credit hours			
	Department compulsory	Department elective	Specialization compulsory	Total
Master Thesis track	16	9	9	34
Comprehensive Examination Track	25	9	0	34

## Master Thesis track

### 1. Department compulsory requirements: (16 Credit Hours)

Course No.	Course title	Credit hours	Prerequisite Courses
Phar. 700	Scientific Writing and Research Ethics	2	---
Phar. 702	Applied Statistics	2	---
Phar. 741	Pharmacoeconomics (1)	2	---
Phar. 742	Theoretical Development of Survey Measures	2	---
Phar. 743	Pharmacoepidemiology and Advanced Statistics	3	---
Phar. 744	Pharmacoeconomics (2)	2	---
Phar. 745	Electronic resources and secondary databases	2	---
Phar. 747	Pharmacoeconomics Modelling Methods	1	---
Phar. 770	Seminar	0	---
<b>Total</b>		<b>16</b>	---

**2. Department elective requirements: (9 credit hours)**

Course No.	Course title	Credit hours	Prerequisite Courses
Phar. 718	Hospital Pharmacy and Communication Skills	3	---
Phar. 719	Drug Information	1	---
Phar. 740	Pharmaceutical Care	3	---
Phar. 748	Qualitative Research Methods	1	---
Phar. 749	Advanced Pharmaceutical Marketing	3	---
Phar. 762	Patient-Reported Outcomes	3	---
Phar. 763	Public Health Policy	1	---
Phar. 764	Introduction to Systematic Reviews and Meta-Analysis	1	---
Phar. 765	Health Management and Finance	3	---
Phar. 766	Contemporary Issues in Social Pharmacy	3	---
Phar. 767	Health Informatics	2	---
Phar. 768	Advanced Quantitative Research Methods	2	---
Phar. 786	Applied Survey Research Methods	3	---

**3. Specialization compulsory requirements: (9 credit hours)**

Course No.	Course title	Credit hours
Phar. 799A	Master Thesis	9
Phar. 799B	Master Thesis	6
Phar. 799C	Master Thesis	3
Phar. 799D	Master Thesis	0

# Comprehensive Examination Track

## 1. Department compulsory requirements: (25 Credit Hours)

Course No.	Course title	Credit hours	Prerequisite Courses
Phar. 700	Scientific Writing and Research Ethics	2	---
Phar. 702	Applied Statistics	2	---
Phar. 741	Pharmacoeconomics (1)	2	---
Phar. 742	Theoretical Development of Survey Measures	2	---
Phar. 743	Pharmacoepidemiology and Advanced Statistics	3	---
Phar. 744	Pharmacoeconomics (2)	2	---
Phar. 745	Electronic resources and secondary databases	2	---
Phar. 747	Pharmacoeconomics Modelling Methods	1	---
Phar. 749	Advanced Pharmaceutical Marketing	3	---
Phar. 762	Patient-Reported Outcomes	3	---
Phar. 770	Seminar	0	---
Phar. 786	Applied Survey Research Methods	3	---
<b>Total</b>		<b>25</b>	---

**2. Department elective requirements: (9 credit hours)**

Course No.	Course title	Credit hours	Prerequisite Courses
Phar. 718	Hospital Pharmacy and Communication Skills	3	---
Phar. 719	Drug Information	1	---
Phar. 740	Pharmaceutical Care	3	---
Phar. 748	Qualitative Research Methods	1	---
Phar. 763	Public Health Policy	1	---
Phar. 764	Introduction to Systematic Reviews and Meta-Analysis	1	---
Phar. 765	Health Management and Finance	3	---
Phar. 766	Contemporary Issues in Social Pharmacy	3	---
Phar. 767	Health Informatics	2	---
Phar. 768	Advanced Quantitative Research Methods	2	---

**3. Specialization compulsory requirements: (0 credit hour)**

Course No.	Course title	Credit hours	Prerequisite Courses
Phar. 798	Comprehensive Exam	0	Passing 34 credit hours successfully.

## *Course description*

- **Phar. 700 Scientific Writing and Research Ethics (2 credit hours)**

This course covers the topics relevant to research methods, including, literature search, principles of scientific writing, research proposal, thesis preparation, and manuscript writing. It focuses on aspects in research ethics, research misconduct, data management and presentation, human participants and animal subjects in research, and laboratory safety. This will be covered by writing a research proposal of a selected subject of the student's interest.

- **Phar. 702 Applied Statistics (2 credit hours)**

This course will cover descriptive statistics and statistical inference relevant to health care research, including basic principles in data analysis, correlation analysis, analysis of variance, linear regression and logistic regression. Students will also learn how to conduct data analysis using statistical softwares.

- **Phar. 718 Hospital Pharmacy and Communication Skills (3 credit hours)**

This course covers a detailed discussion of the practice of hospital pharmacy including the different duties of the hospital pharmacists, namely: organization of the hospital and hospital pharmacy, purchase and inventory control, the Pharmacy and Therapeutics Committee, the Hospital Formulary, unit dose system, preparation of intravenous admixture services, patient education and counseling. Communication skills with medical staff and patients will also be covered.

- **Phar. 719 Drug Information (1 credit hour)**

The course deals with different drug information resources. A systematic approach to the search for drug information will be emphasized. The course provides the opportunity for students to take part in the process of appropriately responding to healthcare providers' and patients' drug-information requests.

- **Phar. 740 Pharmaceutical Care (3 credit hours)**

This course focuses on teaching the students how to provide comprehensive pharmaceutical care for the patients in order to achieve the optimum goal and improving the quality of life. Through this course the student will enhance his/her skills in assessing drug therapy, developing and monitoring pharmacy care plans, and communicating recommendations to the other health care providers.



- **Phar. 741 Pharmacoeconomics (1) (2 credit hours)**

This course introduces the role of health economics in healthcare system. The course explains fundamentals of core theories underpinning health economics, it aims to stimulate students' critical thinking about the major challenges within health care systems and how health economics can play a role in understanding and mitigating those challenges. The course incorporates a combination of the core theory underpinning health economics and empirical research within health economics.

- **Phar. 742 Theoretical Development of Survey Measures (2 credit hours)**

This course introduces methods of research that help students to obtain knowledge that links between theory and practice in research. This course can assist students to understand survey research terminology, identify the structure of theoretical frameworks, analyze published survey measures, and select the appropriate match between theories and survey measures. This course equips students with necessary skills to design formats and questions to collect data about variables of interest. In addition, it will prepare students to evaluate psychometric properties of survey measures.

- **Phar. 743: Pharmacoepidemiology and Advanced Statistics (3 credit hours)**

The course focuses on the design and analytical aspects of pharmacoepidemiological studies. The course will introduce students to the field of pharmacoepidemiology and provides 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.

- **Phar. 744: Pharmacoeconomics (2) (2 credit hours)**

This course introduces the central role of pharmacoeconomics (PE) in healthcare decision making from different perspectives. The course explains fundamental methods of PE analysis and illustrates a step-by-step rational approach to select the appropriate analysis method. This course helps students identify, quantify and compare different outcomes (Economic, Clinical, and Humanistic) of pharmaceutical products and services to broaden their skills in comparing treatments, implementing individualized therapeutic plans, and conducting critical appraisal of PE studies.

- **Phar. 745 Electronic resources and secondary databases (2 credit hours)**

This course focuses on the importance of secondary data analysis in epidemiology and public health research and practice. The course will introduce major sources of publicly available secondary data and skills needed to deal with such data. This course will highlight the important skills needed to deal with secondary economic data (retrospective costing data).

- **Phar. 747 Pharmacoeconomics Modelling Methods (1 credit hour)**

This course will introduce students to decision analytic tools and techniques especially Markov modeling. The class will involve numerous exercises from building simple decision trees to complex Monte-Carlo Markov models.

- **Phar. 748 Qualitative Research Methods (1 credit hour)**

This course defines qualitative research and explains how it differs from quantitative research. Students will explore various qualitative research methods and evaluate when and how to use them appropriately in research projects. This course helps students to design qualitative instruments necessary for interviews or focus groups, and plan recruitment efforts.

- **Phar. 749 Advanced Pharmaceutical Marketing (3 credit hours)**

This course covers the marketing fundamentals beginning with strategy, target marketing and opportunity analysis, then developing the marketing mix, pricing pharmaceuticals, channels of distribution and an introduction to customer driven marketing strategy. The graduates of this course will learn the complex marketing fundamentals required to manage work in community and hospital pharmacies, and pharmaceutical companies together with a detailed explanation of interactions between clinical and marketing departments in particular as well as other departments of the pharmaceutical company. It also provides the students with an in-depth understanding of the global development and marketing of pharmaceuticals with an emphasis on the Jordan system.

- **Phar. 762 Patient-Reported Outcomes (3 credit hours)**

This course is designed to define and measure patient-reported outcomes to support informed healthcare decision-making. The course will enable evaluating the impact of healthcare interventions on healthcare quality from patients' perspectives. When physiological measurements are limited, issues related to health conditions and adverse effects that directly reported by patients become important aspects of patients/ health and quality of life.

- **Phar. 763 Public Health Policy (1 credit hour)**

This course introduces students to the fundamental concepts and frameworks used for the study of public health and policy; the financing and managing of health systems at the local and international levels; and the formulation and analysis of public health policies. This course emphasizes in the intersection of public health and the determinant of drug use and pharmacy related policies. Students will have the opportunity to analyze and critically evaluate existing health policies, public health actions and reforms in Jordan and globally.

- **Phar. 764 Introduction to Systematic Reviews and Meta-Analysis (1 credit hour)**

This course will provide an overview of the concepts necessary for performing systematic reviews and meta-analyses. Throughout this course, students will learn skill in research synthesis and the production of systematic review and meta-analysis.

- **Phar. 765 Health Management and Finance (3 credit hour)**

This course provides an overview of management theories, human resources, and financial management applied to pharmacy and healthcare institution operations. Elements of supervision, management, and leadership will be discussed to help students develop the skills needed to operate pharmaceutical organizations effectively. Also covered are finance topics such as capital costs, profit analysis, cost structures, budgeting, payment for services rendered, and accounting.

- **Phar. 766 Contemporary Issues in Social Pharmacy (3 credit hours)**

This course covers special contemporary topics in social pharmacy.

- **Phar. 767 Health Informatics (2 credit hours)**

The course is designed to provide students with a solid grasp of the conceptual knowledge in evolving health information technology, and the opportunity to explore how medical information is collected and stored in a digital format to improve healthcare quality and enhance patient safety through combining pharmacy knowledge with communication systems. This course helps students expand their skills set to manage patients' electronic records and exploring health-related information to improve health care delivery.

- **Phar. 768 Advanced Quantitative Research Methods (2 credit hours)**

This course exposes students to selected advanced empirical methods useful in social, behavioral, economic, and administrative research and to provide them with hands-on experience in conducting empirical research. Within this context, this course covers a variety of topics including linear programming, network models, and other quantitative approaches.

- **Phar. 770 Seminar (0 credit hours)**

This course is designed so students present their research ideas/findings as seminars.

- **Phar. 786 Applied Survey Research Methods (3 credit hours)**

This course provides in-depth training and experience in survey research. The course trains students to apply survey instruments to measure key groups of variables for surveys involving different modes of data collection. It also teaches students how to understand the effects of question formatting, wording, coding and ordering on responses and data quality. Students will develop and present questionnaires related to their individual interests.

- **Phar. 798 Comprehensive Exam (0 credit hour) (Prerequisite Course: Passing 34 credit hours successfully)**

In this course the student will set for an exam that includes all topics addressed throughout his academic program. Comprehensive exam will be held inside school of pharmacy under the supervision of specialized faculty members.

- **Phar. 799 (A, B, C, D) Master Thesis (9, 6, 3, 0 credit hours)**

Individual research under the direction of a faculty member (s) and committee leading to preparation, completion, and oral defense of a thesis.

## Study Plan – Master Thesis Track

First year							
First Semester				Second semester			
Course No.	Course title	Credit hours	Pre-requisites	Course No.	Course title	Credit hours	Pre-requisites
Phar. 700	Scientific Writing and Research Ethics	2	-	Phar. 742	Theoretical Development of Survey Measures	2	-
Phar. 702	Applied Statistics	2	-	Phar. 743	Pharmacoepidemiology and Advanced Statistics	3	-
Phar. 741	Pharmacoeconomics (1)	2	-	Phar. 744	Pharmacoeconomics (2)	2	-
	Department elective course	3	-		Department elective course	2	-
<b>Total</b>		<b>9</b>		<b>Total</b>		<b>9</b>	

Second year							
First semester				Second semester			
Course No.	Course title	Credit hours	Pre-requisites	Course No.	Course title	Credit hours	Pre-requisites
Phar. 745	Electronic resources and secondary databases	2	-	Phar. 799A	Master Thesis	9	-
Phar. 747	Pharmacoeconomics Modelling Methods	1	-				
Phar. 770	Seminar	0	-				
	Department elective course	3	-				
	Department elective course	1	-				
<b>Total</b>		<b>7</b>		<b>Total</b>		<b>9</b>	

## Study Plan - Comprehensive Examination Track

First year							
First Semester				Second semester			
Course No.	Course title	Credit hours	Pre-requisites	Course No.	Course title	Credit hours	Pre-requisites
Phar. 700	Scientific Writing and Research Ethics	2	-	Phar. 742	Theoretical Development of Survey Measures	2	-
Phar. 702	Applied Statistics	2	-	Phar. 743	Pharmacoepidemiology and Advanced Statistics	3	-
Phar. 741	Pharmacoeconomics (1)	2	-	Phar. 744	Pharmacoeconomics (2)	2	-
	Department elective course	3	-		Department elective course	2	-
<b>Total</b>		<b>9</b>		<b>Total</b>		<b>9</b>	

Second year							
First semester				Second semester			
Course No.	Course title	Credit hours	Pre-requisites	Course No.	Course title	Credit hours	Pre-requisites
Phar. 745	Electronic resources and secondary databases	2	-	Phar. 749	Advanced Pharmaceutical Marketing	3	-
Phar. 747	Pharmacoeconomics Modelling Methods	1	-	Phar. 786	Applied Survey Research Methods	3	-
Phar. 770	Seminar	0	-		Department elective course	1	-
Phar. 762	Patient-Reported Outcomes	3					
	Department elective course	3					
<b>Total</b>		<b>9</b>		<b>Total</b>		<b>7</b>	

Third year			
First semester			
Course No.	Course title	Credit hours	Pre-requisites
Phar. 798	Comprehensive Exam	0	Passing 34 credit hours successfully.
	<b>Total</b>		<b>0</b>