

# **Faculty of Pharmacy and Drug Manufacturing**

**Pharos University in Alexandria**



## **Program Specification**

### **Diploma Degree in Hospital Pharmacy**

**10/8/2020** إعتماء مجلس وحدة

**12/8/2020** إعتماء مجلس كلية



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**University: Pharos University in Alexandria.**  
**Faculty: Pharmacy and Drug Manufacturing**

## Program Specification

### A- Basic Information:

1- Program Title: Diploma Degree in Hospital Pharmacy

2- Program Type:           Single            Double            Multiple

3- Department (s): Pharmaceutics and Pharmaceutical Technology

4- Program Coordinator: Prof. Dr. Soad Toaima

5- Date of Program Specifications Approval: 12/8/2020

### B- Special Information:

#### 1. Program Aims:

The aim of the program is to provide the candidate with advanced knowledge, understanding and training in the field of hospital and clinical pharmacy, critical, analytical problem solving and transferable skills; ability to think rigorously and independently to meet higher level expectations in different fields. In addition to preparing the postgraduate student in some specialized fields including; clinical cases analysis and handling, optimum drug selection for different disease states and in different co-morbid cases. In addition to providing students with enhanced knowledge of nosocomial infections or hospital acquired infections (HAIs), particularly an understanding of evidence-based guidelines, utilizing the appropriate treatment options, knowing about basic concepts of total quality management and its application in hospital pharmacy practice to assure the delivery of consistently high-quality pharmacy services. The candidate will have a wide vision about carrying out an independent research project on a particular hospital pharmacy service.



## **Graduate Attributes:**

**By the end of this program the graduate should be able to:**

- 1. Provide pharmacists with the opportunity to continue their postgraduate education in the field of hospital and clinical pharmacy.**
- 2. Provide the graduate with independent learning ability needed for continuing professional development.**
- 3. Identify basic knowledge of hospital pharmacy and provide students who have previously graduated in more general areas with a specialization in the field of hospital and clinical pharmacy practice.**
- 4. Acquire tailored treatment plan for the patients using latest guidelines and professional medical websites and simulation of having clinical cases.**
- 5. Provide training in problem solving, communication skills and information technology.**
- 6. Explain, assess and participate in antibiotic stewardship used in the hospital .in addition to acquiring skills in hospital infection control policy that should be applied.**
- 7. Outline the recent developments in optimum drug selection and rational drug use, dosage regimen, design and optimal dose individualization.**
- 8. Design a study and implement basic methodologies of scientific research in hospital pharmacy.**
- 9. Identify principles and applications of biostatistics**
- 10. Adopt handling of different problems by statistical and economical techniques.**
- 11. Select a research topic and identify key research questions.**
- 12. Achieve independence in planning, designing and executing, assessing treatment plans.**
- 13. Work as a member in a team as well as effectively communicate with professional colleagues.**
- 14. Show awareness about the role of the graduate in community development.**
- 15. Prepare and present seminars and engage in a review of current and classic literature by presenting journal clubs through the program.**



- 16. Interpret the patient lab results, tailoring and individualization of the drug dosing preparation of a research project on a particular hospital pharmacy Service, all leading to the awarding of a professional hospital pharmacist at the end of the program.**
- 17. Deal with a research project and journal clubs that involve extensive literature surveys and training on clinical cases, hospital cases -based practical work which make them able to pursue a career in this field.**

## **2- Intended Learning Outcomes (ILOs):**

### **2/1- Knowledge and Understanding:**

**By completion of the program, students should be qualified to:**

**A1:** Recognize the basics of hospital pharmacy practice, different factors modifying drug dose-response relationship and different factors affecting drug selection and to be used in the prevention or treatment of various diseases in the different populations such as (geriatrics, pediatrics, pregnancy and lactation).

**A2:** Explain the fundamental principles of hospital pharmacy and clinical pharmacy to detect possible targets for drug action.

**A3:** Describe the main concepts in pharmacokinetics pharmacodynamics.

**A4:** Identify principles of research work including (basics of clinical pharmacy, health economics and drug policy, biomedical and hospital statistics for good interpretation of results, bioinformatics software and web-based applications).

**A5:** Describe the pathophysiology of various disease for better treatment options.

**A6:** Recognize the role of hospital pharmacist in handling pharmaceuticals, chemotherapy preparation and TPN.



**A7:** Identify how to promote health, prevent and treat diseases in special populations: geriatric, pediatric as well as in pregnant and lactating females by providing basic information on pharmaceutical care for these populations.

**A8:** Point the strategies used to identify and control hospital-based outbreaks, recall emerging and re-emerging infectious diseases, in addition to the standard and transmission-based precautions required to prevent the spread of infection and the fundamentals of occupational safety, to finally summarize the methods for preventing contamination of sterile product, and identification of the principles for cleaning, disinfection, and sterilization.

**A9:** Identify principles and applications of biostatistics.

**A10:** Show expertise in highly specialized and advanced research by the design, execution, and preparation of reports based on research investigation.

**A11:** Identify the concept of pharmaceutical care and practice of patient-focused approach using a systematic approach to problem-solving and development of patient profile, identification of drug-related problems, drug history taking, patient counseling, discharge planning and follow up.



## **2/2- Intellectual Skills:**

**By completion of the program, students should be qualified to:**

- B1:** Interpret test statistics to compare statistical tools used in data analysis.
- B2:** Apply evidence-based medicine and systematic approach to solve patient problems, examine medical and medication problems using SOAP analysis and distinguish between drug related problems and disease symptoms.
- B3:** Apply pharmacoeconomics to drug therapy decision and formulary management, principles of drug utilization evaluation and determination of the economic impact of pharmaceuticals on health care systems.
- B4:** Determine the hospital pharmacy legislation & regulation and demonstration of quality assurance data.
- B5:** Build skills of hospital pharmacy practice, searching drug information and solving enquiries related to medications based on scientific strategy.
- B6:** Apply communication skills and improved personal and professional abilities on an ongoing basis.
- B7:** Apply skills of individualizing drug therapy, utilizing therapeutic drug levels, and examining changes in dose-response relationship in different disease states.
- B8:** Determine different types of research methodology and its contribution to pharmacy practice, suitable study design for different health problems, the application of various association and effect measures in pharmacoepidemiology and methods used to deal with bias and confounding factors.
- B9:** Plan research project, after applying a relevant and up-to-date literature review, examining logically the data, reporting, presenting the findings, and making justifiable conclusions.
- B10:** Explain basics of infection control, disposal of hospital waste, appropriate management of blood and body fluid spillages and selection of the most appropriate sterilization methods.



**B11:** Explain the appropriate preventive measures, diagnosis, and treatment of the most common infections and their causative pathogens, principles of antibiotic resistance and how to use guidelines for post exposure prophylaxis (HBV, HCV, HIV).

**2/3 - Professional skills:**

**By the end of this program the graduate should be able to:**

**C1:** Develop basics of clinical pharmacy practice in hospital setting: designing discharge plan and a patient counseling plan about drug use & drug related problems, preparing pharmaceutical care plan and performing rationale drug selection according to clinical practice guidelines.

**C2:** Analyse case study and case presentation using SOAP analysis, the medication list and problem list.

**C3:** Assess performance of health care systems across countries.

**C4:** Take part in hospital pharmacy duties; participation in rounds, performance of annual reports and main medication list, strategy for dispensing controlled substances, application of policies for safe handling of chemotherapy and examining of prescriptions for appropriateness and accuracy prior to dispensing.

**C5:** Build platform for preventing and controlling infection, and determining the importance of hand hygiene, using of PPE, and proper waste management procedures.

**C6:** Compare between different interventions using pharmacoeconomics evaluation methods and analyzing equity efficiency trade-offs.

**C7:** Create strategic plan for the hospital, annual and financial reports.

**C8:** Construct a cost-effective, risk-established quality assured program that documents medication errors with data analysis to prevent errors, with outcome measurement as well as dealing with risk situations.

**C9:** Develop research skills: appraising different scientific papers using epidemiologic research methods and performing statistical data analysis using different software programs in addition to designing research plan and preparing research paper.



#### **2/4 - General Skills:**

**By the end of this program the graduate should be able to:**

**D1:** Use new technologies; reference manager software and the internet to search relevant materials as well as text books and scientific journals.

**D2:** Do calculations and computer based statistical analysis.

**D3:** Develop the ability of participating in team work to prioritize tasks and manage time effectively and practice presentation skills.

**D4:** Develop critical thinking and decision-making abilities and self-learning skills.

**D5:** Solve problems through applying scientific & systematic strategy.

**D6:** Develop good communication skills to participate in a healthcare team effectively and to transfer knowledge.

#### **3- Academic Standards of Program Specification:**

Academic Reference Standards (ARS) for Diploma Degree in Hospital Pharmacy  
(Department of Pharmaceutics and Pharmaceutical Technology)

#### **4- External references for standards (Benchmarks):**

- NA



## 5- Program Structure and Contents:

### a- Program Duration: One academic year

### b- Program Structure: 24 Cr. Must be studied:

- 20 Cr. Required diploma courses,
- 2 Cr. Hospital training and seminar and
- 2 Cr. Research project and scientific writing.

### c- Program Course Levels (in credit-hours system):

#### First Semester:

No.	Course Code	Course Title	Credit Hours
1	PP D01	Hospital Pharmacy Administration & Management	2
2	PP D02	Hospital Pharmacy Practice I	3
3	PP D03	Hospital Training & Seminar	2
4	PL D10	Pharmacoepidemiology & Clinical Research Design	1
5	PL D11	Clinical Pharmacy Practice	2
6	PL D12	Biomedical & Hospital Statistics	2

#### Second Semester:

No.	Course Code	Course Title	Credit Hours
1	PP D04	Hospital Pharmacy Practice II	3
2	PP D05	Optimum Drug Selection & Dosing	3
3	PP D06	Health Economics & Drug Policy	2
4	PM D07	Hospital Infection Control	1
5	PP D08	Hospital Quality Management	1
6	PP D09	Research Project & Scientific Writing	2

## 6- Program Courses Contents:

### I. Required Courses

Course Title	Hospital Pharmacy Administration & Management								
Course Code	PP D01	Credit Hours	2	Lecture	2	Tutorial	0	Practical	0
Pre-requisite	Permission of Instructor								
Department	Pharmaceutics and Pharmaceutical Technology								

#### Course objectives:

To provide postgraduate students with in-depth knowledge of administrative and management services provided by the pharmacy department and staff in hospitals.

#### Course content:

- Hospital Pharmacy legislation, and regulation.
- Organizational structure, responsibilities & skills.
- Committees & staff management.
- Strategic planning.
- Budgeting.
- Annual and financial reports.

Course Title	Hospital Pharmacy Practice I								
Course Code	PP D02	Credit Hours	3	Lecture	2	Tutorial	0	Practical	2
Pre-requisite	Permission of Instructor								
Department	Pharmaceutics and Pharmaceutical Technology								

#### Course objectives:

- To provide students with in-depth knowledge of different comprehensive and information technology services provided by the hospital pharmacy.
- Hospital rounds to provide practical education experience in purchasing, medical supply, inventory management, storage, drug distribution systems such as unit dose and floor stock and repackaging.

#### Course content:

- Supply of drugs and ancillary supplies.
- Purchasing & inventory management.
- Stock arrangement, rotation and control.
- Storage conditions.
- Inpatient & outpatient drug distribution systems.
- Dispensing of controlled substances, investigational and cytotoxic drugs.
- Record keeping.
- Information technology: electronic stock control systems, electronic patient record & automation.



Course Title	Hospital Pharmacy Practice II								
Course Code	PP D04	Credit Hours	3	Lecture	2	Tutorial	0	Practical	2
Pre-requisite	Permission of Instructor								
Department	Pharmaceutics and Pharmaceutical Technology								

**Course objectives:**

- To provide postgraduate students with in-depth knowledge of technical services provided by the pharmacy department and staff in hospitals.
- Hospital rounds to provide practical education experience in repackaging, labeling, compounding, preparation of IV admixtures, handling chemotherapy drugs and parenteral nutrition fluids.

**Course content:**

- Pharmaceutical repackaging and labeling.
- Sterile & non-sterile manufacture.
- Preparation of IV admixtures.
- Total parenteral nutrition fluids
- Safe handling of chemotherapy drugs.
- Drug information services & drug information bulletin/newsletter.

Course Title	Optimum Drug Selection & Dosing								
Course Code	PP D05	Credit Hours	3	Lecture	3	Tutorial	1	Practical	0
Pre-requisite	Permission of Instructor								
Department	Pharmaceutics and Pharmaceutical Technology								

**Course objectives:**

To introduce the concept of rational drug selection, dosage regimen design and optimal dose individualization.

**Course content:**

- Dosage regimen design and adjustment: basic pharmacokinetics and pharmacodynamics principles, factors modifying drug dose-response relationship, therapeutic drug monitoring and dosage regimen adjustment of commonly used therapeutic agents, including immunosuppressive medicines, digoxin, phenytoin, and vancomycin, pharmacokinetic concepts for individualization of drug therapy and drug selection & pharmacokinetic consideration on the dose selection in different age groups and in various physiologic and disease states.
- Assessment of therapy and medication therapy management: rational pharmacotherapy, drug selection and clinical practice guidelines. Laboratory monitoring and optimizing therapeutic drug regimens in antiplatelet, cancer, heparin, insulin & antimicrobial therapy monitoring. warfarin dosing and monitoring & Thyroid replacement therapy monitoring.



Course Title	Health Economics & Drug Policy								
Course Code	PP D06	Credit Hours	2	Lecture	2	Tutorial	0	Practical	0
Pre-requisite	Permission of Instructor								
Department	Pharmaceutics and Pharmaceutical Technology								

**Course objectives:**

To give the student an overview of pharmacoeconomics and health outcomes measurement principles.

**Course content:**

- The organization of the health care and insurance markets.
- Definition, measurement and comparison of the equity and efficiency.
- Payment systems & pricing.
- The theory of supply and demand.
- Value of life and quality of life.
- Pharmacoeconomic evaluation methods: cost-minimization, cost-effectiveness, cost-benefit, cost-of-illness & cost-utility.
- Cost analysis.
- Evidence-based Decision making.
- Pharmacy & therapeutic committee and policy making.
- The Hospital formulary.
- Rational use of drugs and essential drug list.
- Drug use & Drug utilization Review.

Course Title	Hospital Infection Control								
Course Code	PM D07	Credit Hours	1	Lecture	1	Tutorial	0	Practical	0
Pre-requisite	Permission of Instructor								
Department	Pharmaceutics and Pharmaceutical Technology								

**Course objectives:**

To provide students with enhanced knowledge of nosocomial infections, particularly an understanding of evidence-based guidelines to prevent common nosocomial infections and utilize the appropriate treatment options.

**Course content:**

- Nosocomial Infections and their surveillance.
- Outbreak Investigation.
- Infection Control Precautions.
- Isolation and barrier precautions.
- Disinfection, sterilization, environmental management.
- Decontaminating agents (disinfectants, antiseptics, and sterilants)
- Antimicrobial use and resistance.
- Prophylaxis and rational use of antibiotics.
- Device-related and blood-borne infections.



Course Title	Hospital Quality Management								
Course Code	PP D08	Credit Hours	1	Lecture	1	Tutorial	1	Practical	0
Pre-requisite	Permission of Instructor								
Department	Pharmaceutics and Pharmaceutical Technology								

**Course objectives:**

To discuss basic concepts of total quality management as they apply to hospital pharmacy practice to assure the delivery of consistently high quality pharmacy services.

**Course content:**

- Quality assurance and quality control of medicines.
- Quality assurance principles and strategies applicable to pharmacy services.
- Quality Audit.
- Quality improvement tools.
- Performance appraisal systems.
- Medication errors and risk management.

Course Title	Pharmacoepidemiology & Clinical Research Design								
Course Code	PL D10	Credit Hours	1	Lecture	1	Tutorial	1	Practical	0
Pre-requisite	Permission of Instructor								
Department	Pharmaceutics and Pharmaceutical Technology								

**Course objectives:**

To develop knowledge and familiarity with the methods used in clinical research and pharmacoepidemiology to evaluate the efficacy and effectiveness of medicines and therapeutic interventions.

**Course content:**

- Basic concepts of pharmacoepidemiology: prevalence, incidence rate, relative risk & odd ratios.
- Characteristics of health care databases.
- Pharmacoepidemiological research designs to evaluate therapeutic interventions: observational database study, case report, case-control, cohort study, meta-analysis, experimental randomized clinical trials & phase IV clinical study design and operational strategies.
- Pharmacovigilance.
- Overview of post-marketing drug surveillance.
- Drug safety regulatory and monitoring system.
- Off-label use of medications.



Course Title	Clinical Pharmacy Practice								
Course Code	PL D11	Credit Hours	3	Lecture	2	Tutorial	0	Practical	2
Pre-requisite	Permission of Instructor								
Department	Pharmaceutics & Pharmaceutical Technology								

**Course objectives:**

To understand the concept of pharmaceutical care and practice of patient-focused approach using a systematic approach to problem-solving. The skills to be developed include: development of patient profile, identification of drug-related problems, drug history taking, patient counseling, discharge planning and follow up.

**Course content:**

- Definition, development and characterization of clinical pharmacy.
- Functions of clinical pharmacists at ward settings.
- Pharmaceutical care concept in comparison to conventional care.
- Patient medication record taking.
- SOAP notes and problem solving approach.
- Communication and counseling skills development.

Course Title	Biomedical & Hospital Statistics								
Course Code	PL D12	Credit Hours	2	Lecture	1	Tutorial	0	Practical	1
Pre-requisite	Permission of Instructor								
Department	Pharmaceutics & Pharmaceutical Technology								

**Course objectives:**

To introduce the basic concepts and methodologies of statistics for the evaluation of biomedical data. To outline principles of health care statistics with emphasis on hospital statistics. To enable utilization of computers and statistical software in the analysis of data.

**Course content:**

- Differences between descriptive and inferential statistics.
- Methods of summarizing and presenting data.
- Measurement of central tendency (mean, median & mode).
- Measurement of dispersion of data (standard deviation, standard error of the mean, range, interquartile range).
- Statistical significance, confidence intervals & p-values.
- Hypothesis testing of the population mean.
- Correlation and regression
- Skill development in computation and calculation of health data.



## II. Hospital training

Course Title	Hospital Training & Seminar								
Course Code	PP D03	Credit Hours	2	Lecture	1	Tutorial		Practical	2
Pre-requisite	Permission of Instructor								
Department	Pharmaceutics and Pharmaceutical Technology								

### Course objectives:

To obtain the practical knowledge, basic technical and clinical skills and sense of responsibility for public health and safety necessary to become a competent hospital pharmacist.

### Course content:

- Areas of training include: drug distribution systems, hospital pharmacy administration, outpatient and inpatient dispensary, clinical pharmacy, ward pharmacy services, oncology pharmacy, sterile and non-sterile manufacturing and the Drug Information Centre.
- Activities include taking drug histories, participating in ward rounds, influencing treatment- decisions, optimizing medicines management and monitoring outcomes, counseling patients.
- For each rotation, learning outcomes from self -directed learning activities will be presented and discussed in weekly seminars.

## III. Research project

Course Title	Research Project & Scientific Writing								
Course Code	PP D09	Credit Hours	2	Lecture	1	Tutorial	0	Practical	2
Pre-requisite	Permission of Instructor								
Department	Pharmaceutics and Pharmaceutical Technology								

### Course objectives:

- To carry out an independent research project on a particular hospital pharmacy Service.
- To educate post graduate students how to plan, execute and report a research project.

### Course content:

- Setting research plan.
- Gathering up-to-date literature review.
- Analyses of data.
- Presentation skills and tools.
- Writing Process.
- Elements of the Scientific Research Paper.
- Citation style.
- Referencing software.



## 7- Program Admission Requirements:

### Admission requirements include:

1. Holders of bachelor's degree in Pharmaceutical Sciences – minimum general grade Good (C), or the equivalent of this grade from one of the universities recognized by the Supreme Council in the field of specialty, or from an equivalent foreign university.
2. Based on the recommendation of the relevant department council, the faculty council may accept the registration of a student holding a Bachelor's degree not in the same specialty and wants to register for a diploma degree, he/she must pass a number of complementary courses which should not be prerequisites for the compulsory courses. The complementary courses should be at least four courses which should be determined by the relevant department council with a general grade not less than (C) and if the complementary courses will be more than four, student should spend a preparation year to pass the courses and these courses are not part of the hours of the program.
3. The student gets the approval of the department council if he fulfills the terms set by the scientific department (if any) and then the approval of the faculty's Council.

## 8- Regulations Rules for Program Course Completion:

To obtain a Diploma degree, 24 credit hours must be studied including 20 credit hours for diploma courses, 2 credit hours for hospital training and seminar and 2 credit hours for research project and scientific writing.

### 9- Teaching and Learning Methods:

Teaching and Learning Method	Skills to be Achieved
Lectures	Knowledge, Understanding, Intellectual and Professional Skills
Practical	
Tutorial	
Research Project	
Hospital Training	
Interactive Modules; Self-Learning Assignments, Group Presentation/Discussion, Case Study, Problem Solving, Cooperative Learning, Simulation and Videos	

### 10- Methods and Rules of Student's Evaluation:

Methods	Program Intended Learning Outcomes
Written exams Final written exam (40%) Midterm exam (20%)	General knowledge & Understanding and Intellectual and Professional Skills
Oral exams (10%)	General knowledge & Understanding, Intellectual Skills, Professional skills and general skills
Continuous assessment (30%)	General knowledge & Understanding, Intellectual Skills, Professional skills and general skills

- **Examinations Procedure:**

1. **The final grade awarded to student in a course are distributed as follows:**

- 30% for the continuous assessment.
- 20% for the mid-semester exam.
- 40% for the final written exam
- 10% for the oral exam

2. **Each credit hour is allotted a total of 100 points.**



• **Grading System:**

Grade		Numerical Average	Grade points
Excellent	A+	100 – 97	4.0
Excellent	A	$90 \leq X < 97$	3.85
Excellent	A-	$85 \leq X < 90$	3.7
Very Good	B+	$80 \leq X < 85$	3.3
Very Good	B	$75 \leq X < 80$	3.0
Good	C+	$70 \leq X < 75$	2.7
Good	C	$65 \leq X < 70$	2.3
Pass	D	$60 \leq X < 65$	2.0
Fail	F	$X < 60$	0.0
Satisfactory	S	—	—
Unsatisfactory	US	—	—
In progress	IP	—	—
Withdrawal	W	—	—
Military withdrawal	MW	—	—
Incomplete	I	—	—
Excuse	E	—	—
No excuse	NE	0.0	0.0
Denial	DN	0.0	0.0

**X = Percentage Grade.**

$$\text{Cumulative GPA} = \frac{\sum \text{Grade points} \times \text{N}^\circ \text{ Cr. Hrs}}{\sum \text{Cr. Hrs}}$$



### 11- Evaluation of Program Intended Learning Outcomes:

Evaluator	Tool	Sample	% Contribution in total marks of program evaluation
Student	Questionnaires and periodic meeting	Questionnaires 20% and periodic meeting	25%
Graduates	Questionnaires and periodic meeting	Questionnaires 20% and periodic meeting	25%
Stakeholders (employers)	Questionnaires and periodic meeting	One meeting/year	25%
External evaluator	Reviewing of the specifications of the program and the courses according to the by law.	At least one reviewer professor in the specialty	25%

**Program Coordinator**  
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