## وصف البرنامج:

يهدف برنامج ماجستير العلوم الصيدلية في الكيمياء التحليلية الصيدلية إلى أعداد صيادلة ذوى قاعدة علمية وخبرة عملية متطورة في مجالات تحليل الدواء ، رقابة الأدوية وتأكيد الجودة . البرنامج يهيئ الخريج للتفاعل المهني مع العاملين في المهن الصحية والصيدلانية. يؤهل البرنامج الدارسين لإجراء الأبحاث المتميزة فى مجال التخصص . ويشرف على هذا البرنامج قسم الكيمياء الصيدلية . تبين الجداول التالية أرقام الساعات المعتمدة المطلوبة للحصول على درجة ماجستير العلوم الصيدلية فى الكيمياء التحليلية الصيدلية مع توضيح المقررات الدراسية و عدد الساعات المعتمدة وتوزيع درجات الامتحان لكل مقرر .

### الفصل الأول

| Code | Course | | Credit | | Course Assessment | | | |
|---|---|---|---|---|---|---|---|---|
| | | | Lect | Pract | Course Work | Pract Exam | Written Exam | Total |
| PCR 801 | Scientific Writing | Compulsory | 1 | 0 | 10 | - | 40 | 50 |
| PCR 802 | Ethics of Scientific Research | | 1 | 0 | 10 | - | 40 | 50 |
| PCR 803 | Pharmaceutical Statistics | | 2 | 0 | 20 | - | 80 | 100 |
| PHC 811 | Spectral Analysis of Organic Compounds | | 3 | 0 | 30 | - | 120 | 150 |
| PHC 821 | Advanced Chromatographic Analysis | | 3 | 0 | 30 | - | 120 | 150 |
| PHC 822 | Advanced Electrochemical Methods | | 2 | 0 | 20 | - | 80 | 100 |
| | **Total Credits** | | **12** | | **Total Marks** | | | **600** |

### الفصل الثانى

| Code | Course | | Credit | | Course Assessment | | | |
|---|---|---|---|---|---|---|---|---|
| | | | Lect | Pract | Course Work | Pract Exam | Written Exam | Total |
| PHC 823 | Advanced Spectroscopic Methods | Compulsory | 3 | 0 | 30 | - | 120 | 150 |
| PHC 824 | Special Topics in Analytical Pharmaceutical Chemistry | | 1 | 0 | 10 | - | 40 | 50 |
| PHC 825 | Physicochemical Investigation | Elective | 2 | 0 | 20 | - | 80 | 100 |
| PHC 826 | Stability Indicating Assays | | 2 | 0 | 20 | - | 80 | 100 |

| | | | | |
|---|---|---|---|---|
| **PHC 900** | Thesis | **6** | | |
| | **Total Credits** | **12** | **Total Marks** | **300** |

**بالإضافة الى 24 ساعة معتمدة "رسالة" توزع على فصلين دراسيين إضافيين على الأقل.**

## PROGRAM COURSES

### PCR 801: SCIENTIFIC WRITING (1+0)

**Course Description**

This course aims to demystify the writing process and teach the fundamentals of effective scientific writing. Instructions will focus primarily on the process of writing and publishing scientific manuscripts but grant writing will also be addressed. The course will be presented in two segments: Part (1) teaches students how to write effectively, concisely, and clearly and part (2) takes them through the preparation of an actual scientific manuscript or grant.

### PCR 802: ETHICS OF SCIENTIFIC RESEARCH (1+0)

**Course Description**

The course is essentially intended for graduate students in the biomedical sciences. This course delineates important ethical issues of scientific investigation, including intellectual property, plagiarism, conflict of interest, human and animal subjects, and record keeping.

### PCR 803: PHARMACEUTICAL STATISTICS (2+0)

**Course Description**

An intensive introductory course in statistical methods used in applied research. Emphasis is placed on the principles of statistical reasoning, underlying assumptions, and careful interpretation of results. Topics covered include descriptive statistics, graphical displays of data, introduction to probability, expectations and variance of random variables, confidence intervals and tests for means, differences of means, proportions, differences of proportions, chi-square tests for categorical variables, regression and multiple regressions, an introduction to analysis of variance.

### PHC 821: ADVANCED CHROMATOGRAPHIC ANALYSIS (3+0)

**Course Description**

The course is designed to present all advanced chromatographic methods such as adsorption, partitioning, size-exclusion, ion exchange, electrophoresis, gas, TLC and HPLC. Furthermore application of HPLC in the quantitation of pharmaceutical compounds is highlighted. The practical part involves a number of experiments to be performed using various pharmaceutical dosage forms to illustrate the quantitative application of HPLC and TLC in pharmaceutical analysis.

## PHC 822: ADVANCED ELECTROCHEMICAL METHODS (2+0)

**Course Description**

The course includes studying of some electrochemical methods of analysis such as conductometry, potentiometry, polarography and voltammetry. Furthermore, the application of electrochemical methods in the analysis of some pharmaceutical compounds will be addressed.

## PHC 823: ADVANCED SPECTROSCOPIC METHODS (3+0)

**Course Description**

The course deals with the application of advanced methods in single- and multi-component spectrophotometric and spectrofluorimetric analysis of pharmaceutical compounds. Chemical derivatization and functional group analysis using colorimetric methods will be discussed. It will include investigation of deviations from Lambert-Beer's law, stray light effects, and relative photometric concentration error. Suitable UV-light absorbing systems will be utilized to demonstrate the mathematical methods used in multi-component spectrophotometric analysis of pharmaceuticals. First- and second-derivative absorption curves methods to illustrate the use of derivative UV-spectroscopy in quantitation analysis.

## PHC 824: SPECIAL TOPICS IN ANALYTICAL PHARMACEUTICAL CHEMISTRY (1+0)

**Course Description**

This is a versatile course for providing the student with recent knowledge on relevant specialized topics in advanced methods of spectroscopic analysis and general analytical techniques such as mass spectrometry, nuclear magnetic resonance and infrared absorption spectroscopy. In addition the application of these methods in the analysis of pharmaceutical compounds will be discussed.

## PHC 825: PHYSICOCHEMICAL INVESTIGATION (2+0)

**Course Description**

The course is designed to introduce the students to chemical kinetics on experimental and theoretical basis. Kinetic parameters involving order of reaction, rate constant, activation energy and related parameters will be presented. In addition, the use of kinetic methods in quantitation will be elaborated and the link between mechanism and reaction kinetics is highlighted.

## PHC 826: STABILITY INDICATING ASSAYS (2+0)

The course deals with the separation of the intact drug from its metabolites or its degradation products, which liberated from the effect of acids, bases, hydrogen peroxide, oxidation, light and temperature. Different separation techniques are selected; such as extraction, chromatographic and spectrophotometric methods. The chemical structures of the separated metabolites or degradation products are elucidated by different methods such as NMR, UV, MS and IR spectrophotometry.