

**King Saud University
College of Pharmacy
Department of Pharmaceutics**

Doctor of Philosophy in Pharmaceutics

**Academic Year
1432/1433H
2011/2012D**

College of Pharmacy

Department of Pharmaceutics

Introduction

The establishment of an advanced higher education is considered one of the most important facets in the development and progression of any country. The Kingdom of Saudi Arabia has given a lot of attention to this issue and has invested innumerable assets towards achieving this highly vital goal. King Saud University is amongst the Kingdom's best universities that are well aware of the impact of higher education in the development of our nation, and has encouraged all its colleges to develop and establish programs of higher education. The College of Pharmacy, this year celebrated its 52nd anniversary of its establishment, when it took the lead and initiated a Master in Pharmaceutics 28 years ago.

The Master in Pharmaceutics was introduced in 1404 (H). This program underwent three separate occasions of revising, upgrading and modifying with the last revised and modified version being in 1427 (H). Throughout the 27 years since the inception of the MSc program, there have been more than 25 students (male and female) that have been awarded MSc degree and more than 50 research papers abstracted from their theses have been published in peer-reviewed international journals.

With the purpose of continuing the progress in the educational field, the Doctor of Philosophy (Ph.D.) program in pharmaceutics is proposed by the Pharmaceutical Department as the first program of its kind in the Kingdom. This program will contribute to satisfying the increased demand of qualified personnel particularly with the enormous intake of students in the higher education industry. This proposed Ph.D. program will also serve to show that King Saud University is taking the initiative in establishing a knowledge-based economy.

The current proposal of the Ph.D. program emphasizes on the performance of high quality research in particular the field of drug delivery systems and drug targeting. This program is designed to be an extension of the MSc and thus it includes some

topics that have not been properly covered in the MSc program such as utilizing nanotechnology in drug delivery and polymeric drug delivery systems. Elective courses have also been introduced allowing the advisors the authority to design the content of these elective courses according to the research point to suit the students' needs.

Since this is the first program in the Kingdom of Saudi Arabia in the pharmaceuticals field, the pharmaceutical department will put forward the maximum effort to present this program in a manner that is to the standard of international universities.

The department of pharmaceuticals includes a teaching staff of 27 in addition to the 15 researchers holding Ph.D. in a variety of pharmaceutical fields. The excellent infrastructure of the department includes 11 research laboratories equipped with a number of state-of-the-art instruments and research facilities.

One of the objectives of the program is to prepare such persons in a professional capacity to have the ability to perform research in the pharmaceutical industry and to serve in both the academic field as well as health care. As a result, this program will be essential in reducing the high cost of recruiting foreign experts, decreasing the need for study abroad, satisfying the increased demand for pharmaceutical postgraduate studies, and supporting the national economy.

Degree Name: Doctor of Philosophy in Pharmaceutics

Program Objectives:

The objectives of the program can be summarized as follows:

1. To provide graduate students with instructions and individualized research training of the highest quality leading to the doctor of philosophy degree (Ph.D.) in pharmaceutics.
2. To qualify the graduate students for a research-oriented career in industry, academia, government service and/or health care institutions.

3. To strengthen the scientific background of the graduate students in all areas of pharmaceuticals.
4. To fulfill the growing demand for postgraduate study within the Saudi society.
5. To contribute in supporting the national economy through the rehabilitation of national competencies and save on the prohibitive costs of attracting such expertise from outside Saudi Arabia.

Admission Requirements:

1. The admission requirements enumerated in the unified law organizing the graduate studies in Saudi universities should be adhered to.
2. The applicant should hold a bachelor degree in pharmaceutical sciences or Doctor of Pharmacy (Pharm.D.) degree.
3. The applicant should hold a master degree in pharmaceuticals or any related pharmaceutical sciences. The department may add any required supplementary courses to be equivalent to The Department of Pharmaceutics Master holders.
4. Obtaining a TOEFL with a minimum score of 500 or the equivalent score.
5. Successfully pass an interview in the Department of Pharmaceutics.

Degree Requirements:

The study in this program depends on the thesis in addition to some courses. The requirements include:

- A. Successful completion of 21 credit hours Ph.D. graduate courses distributed over two semesters.
- B. Passing the comprehensive examination.
- C. Completion and successful defense of a thesis.

Program structure:

Twenty one credit hours courses divided into two semesters, passing the comprehensive exam, and submission of a research thesis are required.

Item required	Credit hours
First semester	11
Second semester	10
Comprehensive exam	---
Thesis	---
Total	21

Course work Schedule

First Semester:

Course code	Course title	Credit hours
PHT 610	Graduate seminar in pharmaceuticals 1	1 (1+0)
PHT 612	Selected topics in drug delivery 1	2 (2+0)
PHT 614	Advanced pharmacokinetics	2 (2+0)
PHT 616	Stabilization of Biopharmaceuticals	2 (2+0)
PHT 618	Polymeric drug delivery systems	2 (2+0)
PHT 620	Good regulatory practice	2 (2+0)
Total		11

Second Semester

Course code	Course title	Credit hours
PHT 622	Graduate seminar in pharmaceuticals 2	1 (1+0)
PHT 624	Selected topics in drug delivery 2	2 (2+0)
PHT 626	Advanced pharmaceutical biotechnology	2 (2+0)
PHT 628	Nanotechnology in drug delivery	2 (2+0)
PHT 630	Drug transport across biological membranes	2 (2+0)
PHT 632	Research laboratories rotation	1 (0+1)
Total		10

Third and subsequent semesters

Course code	Course title	Credit hours
PHT 700	Thesis	0

The comprehensive examination

The comprehensive exam was designed to measure the preparation of the graduate students in-depth knowledge and ability to absorb all aspects of their specialization as well as measuring their ability to develop appropriate hypotheses, analyze and discuss the results and draw the right conclusions and propose viable solutions.

The exam is set in accordance with the unified law governing the graduate studies in Saudi universities. The overall test consists of two parts: one written and one oral. The student should commence the exam during the first semester following the completion of the required courses. The exam committee is formed from at least three members who hold the degree of Professor or Associate Professor. The committee shall be responsible for conducting the exam, both written and oral. It should take place during the period from the fourth week until the tenth week of the semester provided that a period of not less than two weeks is between the two parts of the exam.

The written test:

Written test measures the student's knowledge and ability for systematic thinking and problem-solving in pharmaceutical research in the field of pharmaceuticals and includes the student's ability in the skills assessment of scientific literature and their ability to develop scientific hypotheses and the design of experiments for verification as well as the ability to analyze laboratory data. Although graduate students are supposed to have a full understanding of science and concepts introduced in all the courses of the program, the exam in general does not measure the ability to remember and retrieve specific information given throughout the courses.

To pass the exam, the student must achieve the required average in accordance with the unified law organizing the graduate studies. If the student fails the written exam, they will be given another opportunity to re-sit the exam under the auspices of the same exam committee. Failure to pass the exam for the second time will mean both the immediate disqualification of the student to become a candidate for a doctorate and revoking their registration.

Oral test:

After consultation with the student the exam committee will set a date for the oral exam. The student shall be required to submit a research proposal at least three days before the test date and it should be written in accordance with the model of the proposed research for a doctorate at the College of Pharmacy.

At the exam time, the student shall orally present the research proposal using the appropriate modern ways of presentation. Thereafter, the exam committee will start asking questions of appropriate and relevant aspects of research that could include, but not exclusively on the following aspects:

- Literature evaluation skills
- Writing skills
- Scientific background
- Study design
- Utility of animal models of disease or conditions relative to the human situation
- Analytical methods
- Clinical measurement methods
- Data and statistical analysis skills
- Differentiation of clinical and statistical significance

If the student fails to pass, the student will be given another opportunity during the next semester. Failure to pass the exam for the second time will mean both the immediate disqualification of the student to become a candidate for a doctorate and revoking their registration.

Research thesis

The Ph.D. candidate should complete creative and original research thesis according to the higher education guidelines. The Ph.D. program is designed to be a research oriented program to meet the demands of pharmaceutical research in Saudi Arabia at both the academic and industrial fields.

Selection of a research major advisor:

The department shall appoint an academic instructor for each Ph.D. student at the beginning of their enrollment to the program. The department shall help the student in selecting an appropriate major thesis advisor.

The advisor will help the student in choosing the point of research and the background research necessary for such a point so that directed courses should be adequately covered. The advisor will also be responsible in submitting a progress report to the department by the end of each semester.