

In the Name of God
Islamic Republic of Iran
Ministry of Health and Medical Education
Deputy Ministry for Education

Pharmacy

Degree: MPharm/PharmD

Total Number of Credits

General Courses: 10

Fundamental Courses: 44

Specialized: 113

Introductory Practice Experience: 6

Advanced Practice Experience: 12

Thesis (PharmD): 8

Thesis (MPharm): 4

Total Number of Credits (PharmD): 193

Total Number of Credits (MPharm): 156

Introduction

At the beginning of the twentieth century pharmacy was introduced as an independent field of study due to man's need for new cures, the chemical and biological advances happening at the time, the close relations between different scientific disciplines and also the possibility to explore and present new treatment processes using new drugs and pharmaceutical products. In Iran this happened in 1935, after the independence of the field from medicine, and the establishment of the school of pharmacy. The School of Pharmacy is equipped with educational and research laboratories in Pharmacognosy, Pharmaceutics, Instrumental analysis, Pharmacology, Toxicology, Pharmaceutical Biotechnology, Medicinal Chemistry, Microbial Control, Physico-chemical Analysis and Medicinal plants. Today, in addition to establishing new pharmacy departments, each department has built research centers and designed more specialized programs based on specific medical needs of society.

Definition MPharm/PharmD, is a field in medical sciences, designed to meet the pharmacy-related medical needs of society. Students study basic sciences for 2 years and then continue specialized pharmacy courses. Students have the choice of either MPharm degree or PharmD degree. Pharmacy MPharm degree lasts 4-4.5 years while a PharmD degree lasts approximately 5.5 years. The school's curriculum provides students with the opportunity to develop their skills both in theory and practice. The curriculum provides graduates with the opportunity to work in industrial and pharmaceutical companies, quality control laboratories, poison control centers, cosmetic companies, cellular pharmacology, herbal medicine, biotechnology research, and academia.

The Aim of the Course: Pharmaceutical scientists are expected to have sufficient general knowledge in different areas of pharmaceutical sciences and be able to meet related needs of the society. The general aims of this field are as follows:

- a. Meeting the general educational and research needs to better understand pharmaceutical sciences and all related factors.
- b. Knowing all scientific and practical research in the area of pharmaceutical sciences.
- c. Increasing knowledge and skills in:
 - Thorough knowledge of the existing drugs in pharmacopoeia
 - The ability to manage general and specialized pharmacies and guiding patients and doctors to use pharmaceutical products correctly.
 - Making of drugs and cosmetics at the pharmacy level
 - Making of drugs and cosmetic products at industrial level.
 - Quality and quantity control of pharmaceuticals, foods and cosmetics.
 - Preventing poisoning and drug side effects
 - Knowledge of pharmaceutical sciences references
 - The ability to recognize and plan for all health and pharmaceutical related issues at a national level.
 - Cultures and mindsets of different peoples
 - Research and educational subjects
 - Promotion of professional ethics

Mission: Our major responsibility is to train scientists who can provide health care services, practice in research and programming organizations and provide pharmaceutical services. Training such scientists will lead to health care system progress; moreover, using new methods and technologies to develop novel pharmaceutical products and providing consultation, helps diagnose, treat and prevent diseases. Therefore, creativity, innovation, teamwork and professional ethics are central to this field.

Vision: In an ever-changing and constantly evolving world, a pharmaceutical scientist has an effective and crucial role in raising the standing of Iran in different educational and research areas and fulfilling the demands of a progressing society, in collaboration with other medical scientists and specialists. We hope that this educational curriculum will raise the standing of the field and help it to meet international standards. Therefore, it is highly hoped that this field can find its true position in national and international circles in the next 10 years.

General Competencies:

It is essential for pharmacy students to have good written and oral communication skills. Students must be able to communicate effectively with patients, physicians and with other members of the health care team. The final applicant pool may be interviewed.

Specific Competencies and Skills (Special Qualifications):

They can provide service in:

1. Urban pharmacies to supervise dispense prescriptions and offer guidance to patients.
2. Hospital pharmacies to supervise prescription dispensing, supply the needs of different wards and offer guidance to patients.

In consultation roles:

1. In urban and hospital pharmacies to guide patients and doctors to choose the right medicine.
2. Decreasing drug side effects by providing patients and doctors with accurate pharmaceutical information.

In management roles:

1. In pharmaceutical institutions and organizations
2. In all matters related to pharmaceuticals, including pharmaceutical companies and health care networks
3. In pharmaceutical companies to supervise drug production and control as technical supervisors

In research roles:

1. Regarding the role of the program, can provide doctors with information performing research on drug use patterns and endemics
2. In research areas of institutions and pharmaceutical companies

The Terms and Conditions of Admission to the Course:

All applicants must apply electronically on our website www.gsia.ac.ir. After an application is submitted, the applicant will receive a confirmation e-mail and an application code from the Office of Admissions indicating successful submissions of the application.

If any part of the application is incomplete, our admission coordinator will request the missing information and mark the application incomplete until the requested information is submitted. The completed application form is reviewed in the preliminary review council (PRC).

Once the initial preliminary review council (PRC) has made a decision, the application will be sent to the School and the related department, for an Admission Review.

If you have requested or applied for a scholarship, your application is also forwarded to the Scholarship Committee.

Selection Criteria for Undergraduate Applicants

- Academic grade point average (GPA): Minimum 300/400
- Proficiency in English; Acceptable TOEFL or IELTS score (IELTS of 5.5 or equivalent is required upon graduation <http://gsia.tums.ac.ir/page-2305.htm>)
- Evidence of intellectual or creative achievement or substantial public service
- Special talents, achievements, and awards in particular fields
- Experiences that demonstrate promise for leadership
- Academic accomplishment in light of the applicant's life experiences and special circumstances
- Please also include an English translation for all documents.

NOTE: In addition to meeting the selection criteria outlined above, applicants might be asked to participated in an interview

Educational Strategies, Methods and Techniques:

Pharmacy education lasts approximately 5-6 years for PharmD degree. This degree requires a high school diploma. Successful students can opt to achieve a PharmD (Pharmacy Doctor) degree. Pharmacy students study basic sciences for 2 years and then continue on specialized courses.

Student Assessment:

Students should take part in the end of term exams for each module separately. Some lectures may decide to take an additional exam in the midterm. The pass criteria for each exam are 50% of the total mark. However, if the average mark for all exams taken in each term is less than 12/20, the student's admission to the next term would be conditional in which a reduced number of modules could be taken. Repetitive conditional admission may result in the student being expelled from the Pharmacy program.

Ethical issues

The graduates should,

- Observe the Patient's Bill of Rights¹ when working with the patients.
- Strictly observe Biosafety and Patient Safety Rules* concerning the patients, personnel and workplace.
- Observe the Rulebook for Dress Code².
- Strictly observe the Regulations of Working with the Laboratory Animals³.
- Carefully preserve resources and equipment.
- Truly respect faculty members, the staff, classmates and other students and work for creating an intimate and respectful atmosphere.
- Observe social and professional ethical considerations in criticism.

1, 2 and 3 are contained in the Enclosures.

* Biosafety and Patient Safety Rules will be set out by the Educational Departments and will be available to the students.

Number and Type of Credits and Tables of the Courses

Tehran University of Medical Sciences- International Campus					
Pharmacy curriculum for the <u>MPharm/PharmD</u> degree offered as half-year semesters.					
Pharmacy- 1st semester					
	Subject	Number of credits			Total credits
		Credit (theory)	Credit (practical)	prerequisite	
1	General Chemistry	3			3
2	General Chemistry (Lab.)		1		1
3	Medical Terminology	2			2
4	First Aid	1	1		2
5	Anatomy & Histology	2			2
6	Anatomy& Histology (Lab.)		1		1
7	General Biology	2			2
8	Pharmaceutics (Introduction)	2			2
9	Maths for Pharmacist	2			2
10	Persian Language I	2			2
11	Physical Training I		1		1
	Total	16	4		20
Pharmacy- 2nd semester					
	Subject	Number of credits			Total credits
		Credit (theory)	Credit (practical)	prerequisite	
1	Organic Chemistry I	3		General Chemistry	3
2	Biochemistry	3			3
3	Biochemistry (Lab.)		1		1

4	Medical Microbiology I	3		General Biology	3
5	Medical Microbiology I (Lab.)		1		1
6	Physical Pharmacy I	2			2
7	Physiology I	4		Anatomy & Histology, General Biology	4
8	Persian Language II	2			2
9	Physical Training II		1		1
	Total	17	3		20

Pharmacy- 3rd semester					
	Subject	Number of credits			Total credits
		Credit (theory)	Credit (practical)	prerequisite	
1	Analytical Chemistry	2		General Chemistry	2
2	Analytical Chemistry (Lab.)		2	General Chemistry (theory and practical)	2
3	Physiology II	4		Physiology I	4
4	Physiology II (Lab.)		1	Physiology I	1
5	Medical Microbiology II	2		Medical Microbiology I	2
6	Medical Microbiology II (Lab.)		1	Medical Microbiology I	1
7	Physical Pharmacy II	2		Physical Pharmacy I	2
8	Organic Chemistry II	3		Organic Chemistry I	3
	Organic Chemistry II (Lab.)		1	Organic Chemistry I	1
9	Epidemiology	2			2
	Total	15	5		20

Pharmacy- 4th semester					
	Subject	Number of credits			Total credits
		Credit (theory)	Credit (practical)	prerequisite	
1	Immunology	3		Medical Microbiology I	3
2	Immunology (Lab.)		1	Medical Microbiology I	1
3	Clinical Biochemistry	2		Biochemistry	2

4	Pharmacology I	3		Physiology, Biochemistry	3
5	Medical Devices	1			1
6	Biostatistics	2	1		3
7	Medicinal Chemistry I	3		General Chemistry, Organic Chemistry, Pharmacology I	3
8	Nutraceuticals & Nutrition Care	2		Biochemistry, Analytical Chemistry	2
	Total	16	2		18

Pharmacy- 5th semester					
	Subject	Number of credits			Total credits
		Credit (theory)	Credit (practical)	prerequisite	
1	Pharmaceutics (Solid Dosage Forms)	3	1	Pharmaceutics (Introduction)	4
2	Pharmacology II	3	1	Pharmacology I	4
3	Sociology	2			2
4	Medicinal Plants	2	1		3
5	Medicinal Chemistry II	3		Medicinal Chemistry I, Pharmacology II	3
6	Biological Products	2		Immunology	2
7	Ethics in Pharmacy	1			1
	Total	16	3		19

Pharmacy- 6th semester					
	Subject	Number of credits			Total credits
		Credit (theory)	Credit (practical)	prerequisite	
1	Pharmaceutics III (Liquid Dosage Forms)	3	1	Pharmaceutics I (Introduction)	4
2	Pharmacology III	3		Pharmacology II	3
3	Pharmacognosy I	2		Medicinal Plants	2
4	Medicinal Chemistry III	3		Medicinal Chemistry II	3
5	Pharmacotherapy I	3		Pharmacology III	3
6	Psychology	2			2
7	Community Pharmacy Training I		2	Pharmacotherapy I	2
	Total	16	4		20

Pharmacy- 7th semester					
	Subject	Number of credits			Total credits
		Credit (theory)	Credit (practical)	prerequisite	
1	Pharmaceutics (Semi-Solids & Inhalers)	2	1	Pharmaceutics (Introduction)	3
2	Pharmacotherapy II	3		Pharmacotherapy I	3
3	Pharmacognosy II	3		Pharmacognosy I	3
4	Pharmacognosy (Lab.)		2	Pharmacognosy I	2
5	Pharmaceutical Policy & Pharmaco-economics	2			2
6	Biopharmacy & Pharmacokinetics	3		Maths for Pharmacist, Pharmacology III	3
7	Community Pharmacy Training II		2		2
8	Thesis I		2	After 90 Credits	2
	Total	13	7		20

Pharmacy- 8th semester					
	Subject	Number of credits			Total credits
		Credit (theory)	Credit (practical)	prerequisite	
1	Instrumental Analytical Methods	3	1	Organic Chemistry, Analytical Chemistry	4
2	Hygiene & Cosmetic Products	2		Pharmaceutics (Semi-Solids & Inhalers)	2
3	Pharmacotherapy III	3		Pharmacotherapy II	3
4	Radiopharmaceuticals	2			2
5	Industrial Training		2	Pharmaceutics (Semi-Solids & Inhalers)	2
6	Hospital Pharmacy Training		2	Pharmacotherapy III	2
7	Toxicology	2	1	Pharmacology III	3
8	Thesis II		2	Thesis I	2
	Total	12	8		20

MPharm students will graduate at this stage upon successful completion of all modules.

Pharmacy- 9th semester					
	Subject	Number of credits			Total credits
		Credit (theory)	Credit (practical)	prerequisite	

1	Microbial Control	2	1	Medical Microbiology II, Pharmaceutics (Introduction)	3
2	Pharmaceutical Biotechnology	3		General Biology	3
3	Instrumental Analytical Methods (advanced)	2	1	Instrumental Analytical Methods	3
4	Drug Poisoning Management	2		Toxicology, Pharmacology III, First Aids	2
5	Elective course	2		Relevant to the Thesis	2
6	Advanced Medicinal Chemistry	2		Medicinal Chemistry III	2
7	Pharmaceutics (Novel Drug Delivery Systems)	2	1	Pharmaceutics (Semi-Solids & Inhalers)	3
8	Thesis III		2		2
	Total	15	5		20

Pharmacy- 10th semester					
	Subject	Number of credits			Total credits
		Credit (theory)	Credit (practical)	prerequisite	
1	Physico-chemical Control	2	1	General Chemistry, Analytical Chemistry, Instrumental Analytical Methods	3
2	Community Pharmacy Internship		6	Community Pharmacy Training II , Pharmacotherapy III	6
3	Clinical Internship		6*	Community Pharmacy Training II , Pharmacotherapy III	6*
4	Industrial Internship		6*	Industrial Training	6*
5	Elective course	2			2
5	Thesis IV		2	Thesis III	2
	Total	4	15*		19*
* Students may choose either Clinical or Industrial Internship.					

Pharmacy- Elective courses			
Subject	Credit	Subject	Credit
Instrumental analytical methods (Advanced)	2	Nutritional materials (Chemistry and control)	2
Hospital Pharmacy	2	Biopharmacy (lab.)	1

Clinical pharmacy	2	Plant cell culture	2
Phytochemistry	2	Animal cell culture	2
Traditional and alternative medicine	2	Drug/poisoning information services	2