REPUBLIC OF TÜRKİYE
İSTANBUL MEDİPOL
UNIVERSITY
SCHOOL OF PHARMACY

SCHOOL OF PHARMACY

ENGLISH PROGRAM

GUIDELINES

İstanbul-2023

School of Pharmacy English Program Guidelines Preparation Commission

Assoc. Prof. Gülnur EKŞİ BONA (Head of Commission)

Assist. Prof. Sema KOYUTÜRK

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Res. Assist. Tuğba ARSLAN

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FOREWORD

Universities are educational and research institutions where the necessary updates are made in scientific knowledge alongside transferring the knowledge to the students. From this perspective, the knowledge available in higher education institutions should evolve, and only institutions that can achieve this goal would shape young people who think distinctive and make analyses and syntheses. For this reason, the 21st century has become the age of informatics as well as the age of information and communication. The vision of İstanbul Medipol University is to be one of the exemplary universities in our country and in the world with its level of excellence in education and training, its determination to train well-equipped human resources who aspire to build the future of society, its highly qualified academic staff and modern infrastructure. Our university is determined to create a teaching and learning model focused on providing a better future for our students, to whom we will entrust our future. The School of Pharmacy, one of the crucial Faculty of İstanbul Medipol University in the field of health, has taken significant steps to provide a certain standard of education and has succeeded in being accredited. Our graduates of the School of Pharmacy are trained with the ability to offer great services to our country by taking duty and authority at every stage, from the acquisition of pharmaceutical raw materials to the use of the drug. I am glad to present the İSTANBUL MEDİPOL UNIVERSITY SCHOOL OF PHARMACY PROGRAM GUIDELINES prepared by the School of Pharmacy members to our students and the information of those concerned. In the person of Dean Prof. Dr. Gülden Zehra OMURTAG, I would like to thank all faculty members who contributed to the preparation and publication of the guidelines.

Best regards,

Prof. Dr. Ömer CERAN

Rector

July 2023

PRESENTATION

Dear Students,

İstanbul Medipol University School of Pharmacy is completing the 13th anniversary of its establishment, and giving the 9th graduates this year. In line with the mission and vision of our faculty, our graduates are trained as qualified pharmacists who have professional, ethical values, are open to development, have acquired the habit of lifelong learning, prioritize public health, have strong academic foundations required for education and contribute to the development of the country. As an education and research institution, our faculty, which is in a leading position open to growth, continues its steady rise with the opportunities provided by our university. Our faculty profoundly contributes to science and industry by conducting research projects, publications, and providing consultancy services with its well-equipped, dynamic and experienced academicians. In our Faculty, in addition to activities we organized like "Career Days", "National Pharmacy Congresses", "The Contribution of Digitalization in Health to Organized Value and the Dimension of Disaster Management Symposium and Horizon Scanning Meeting", "National Environment, Nutrition, and Microbiota Symposium" and "Pharmacy Day" to prepare our students for the professional life, there are also technical and cultural trips to help them having a vision for their socio-cultural development. Our students are supported to meet different cultures through international student exchange programs such as Erasmus+, which our university is also a part of. In addition, our university has in-house double major, minor, and lateral transfer programs that our successful young students can benefit from. We are pleased that our graduates, who are honest, hardworker, and aware of their duties and responsibilities towards the environment and society. We are very happy that our graduates have become highly preferred by the private sector as well as their successful work in industry and academia. On the other hand, we never stop asking ourselves the question, "Can't it be done better?". In this context, our faculty was entitled to receive Full Accreditation for six years between 2019-2025 due to the evaluation made by the National Pharmacy Education Accreditation Board. We continue to work together to achieve the mission and vision we aim for. You inspire us with this excitement.

With love and respect,

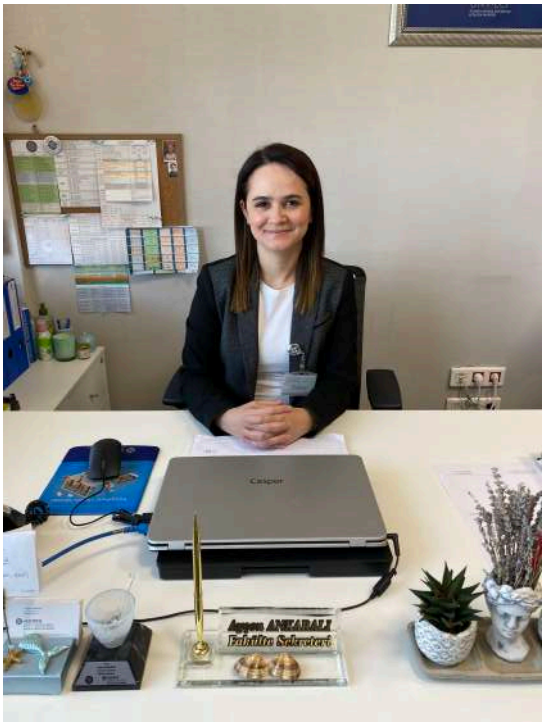
Prof. Dr. Gülden Zehra OMURTAG

Dean

July 2023

Assoc. Prof. Gülnur EKŞİ BONA
Vice Dean

Assist. Prof. Muhammet Davut ARPA
Vice Dean



Ayşen ANKARALI
Faculty Secretary

Secretaries of Dean's Office

Sevgi BEYAZKILINÇ

Melek AY

Nisa ÇETİNKAYA

Öznur AYDIN

İlkay KAVALCI

CONTENTS

HISTORY OF OUR FACULTY

Establishment

Our faculty was established by the Turkish Education, Health and Research Foundation (TESA) by Law Number 2547 in relation to Higher Education Institutions under İstanbul Medipol University Rectorate, established on 23.06.2009 by Article 1 of Law Number 5913.

Education and training in our faculty were started during the 2010-2011 academic year at the Haliç Campus. In the 2013–2014 academic year Master education (MSc) and in the 2015–2016 academic year, Doctorate education (PhD) was started within the Department of Clinical Pharmacy. In 2018, the Department of Clinical Pharmacy and Pharmacy Business Administration and in 2022 the Department of Pharmaceutical Botany was established within the Division of Pharmaceutical Occupational Sciences. In the 2019–2020 academic year, MSc education was started in the Department of Pharmacognosy. İstanbul Medipol University, School of Pharmacy has started to give graduates since the 2014–2015 academic year.

Pharmacy Education Program in English was started in the 2019-2020 academic year. The English Pharmacy Program will have the first graduates in the 2024-2025 academic year.

Location

Between the 2012-2013 and the 2016-2017 academic years, education had been performed in the Kavacık North Campus. Since 2016-2017 academic year, faculties including the School of Pharmacy maintained the education and training activities in the Kavacık South Campus in the classrooms and laboratories allocated by the university.

MISSION and VISION

Mission

Our mission is to train pharmacists capable to serve in all fields of pharmacy and faithful to ethical values, as well as being competent in the preparation of drug active substances, formulation of drug delivery systems, physical, chemical, pharmacological and toxicological analysis of pharmaceutical products, responsible for all phases of drug delivery to the patients and elimination of the drug from the body and to train pharmacists who care about pharmaceutical care.

Vision

To be a research, teaching, training and consultation center, aimed at increasing the quality of life, producing and providing the academic information at an international level that the health sector needs about pharmacy and medicine.

EDUCATION AND TRAINING PROGRAM

Undergraduate Education

Our faculty maintains the education and training activities in the Kavacık South Campus with its outstanding academic staff who contribute to achieve the goals of universal science standards with their high-quality research activities. Our faculty's modern facilities such as classrooms and laboratories are also effective in the quality of pharmacy education.

Our students in the fifth academic year of the curriculum are prepared for postgraduate pharmacy practices by taking elective courses such as Laboratory Practices in the Pharmaceutical Industry, Patient Information, Pharmacy Management, Sports Pharmacy, R&D in Pharmacy, Patent and Authorization, Forensic Toxicology, Hospital Pharmacy, Pharmacy in Industry, Marketing and Sales Management in Pharmacy.

The pharmacy (English) education and training program was started in the 2019-2020 academic year and the first graduates will be given in the 2024-2025 academic year.

Number of Students and OSYM QUOTA

In the 2022-2023 academic year, the OSYM quota for the Turkish Pharmacy Program of our faculty was 90 and 60 for the English Pharmacy Program. According to the results of the Higher Education Institution Exam (YKS) for 2022, the base score for the Turkish program was determined as 438.813 and as 431.944 for the English program.

Postgraduate Education

The Clinical Pharmacy MSc program is the first postgraduate program in our faculty started in the 2013-2014 academic year. In the following academic year, 2015-2016, the Ph.D. program was started in the Department of Clinical Pharmacy. In 2018, the Department of Clinical Pharmacy and the Department of Pharmacy Business Administration were become departments under Professional Pharmaceutical Sciences. In the 2019-2020 academic year MSc program was started in the Department of Pharmacognosy. The postgraduate educations

(master and doctorate) are carried out by our faculty members accompanied by national (BAP, TUBITAK) projects. MSc and Ph.D. theses are published in various national and international scientific magazines.

Health Sciences and Technologies Research Institute (SABITA)

The Health Science and Technologies Research Institute (SABITA) laboratories within our university carry out comprehensive scientific studies and projects by hosting many centers and facilities on scientific, technical and applied subjects with the latest technological devices and experienced staff. SABITA has the most advanced imaging technologies in the world, allowing for intervention at the cellular level, functional imaging at the protein level, detailed electron microscopic analysis, and real-time recording of cellular movements. SABITA includes a regenerative and restorative medicine research center, drug development center, cancer research center, neuroscience research center, bioengineering and biotechnology research center. Thanks to unlimited access to SABITA's high-tech core facilities, centers, research groups and individual scientists, researchers can focus on their projects in a healthy way, with the confidence of infrastructure and administrative support. Our research centers allow postgraduate and Ph.D. students from domestic and foreign universities to carry out their

research and theses, and faculty members and researchers to make observations, experiments, projects, research and examinations.

Symposiums and Congresses

Symposiums

The Contribution of Digitalization in Health to Value and Disaster Management Dimension Symposium and Horizon Scanning Meeting" was held on March 15 in 2023. At the symposium, our colleagues discussed the importance, current approaches, developments and future trends on topics of digitalization and healthcare management, pharmacoeconomics, value in healthcare, and the role of healthcare management in disasters.

"1st Acta Pharmaceutica Sciencia International Symposium" (APSIS) was held on 7th of June in 2023 with Social and Administrative Pharmacy sub-sessions. In the symposium, our colleagues discussed the importance, current approaches, and developments of issues such as emergency and disaster pharmacy, sustainable pharmacy, holistic pharmacy (community pharmacy practices, pharmacy practices for individual well-being, digital pharmacy, pharmacogenetics, and current biotechnological approaches in pharmacy).

Congresses

The National Pharmacy Congress ALFAKON was held in 2016 for the first time, in which the School of Pharmacy students have taken the major role and organized a comprehensive congress in every aspect from the scientific program to the gala event. The congress includes various trainings, workshops, seminars, and panels. In addition to numerous scientific events, ALFAKON aims to establish professional and personal connections between young pharmacist candidates and newly graduated pharmacists from Turkey and Cyprus via activities during the congress and gala event.

The 2nd ALFAKON was organized in 2018 by the School of Pharmacy students. At the congress, well-known pharmacist colleagues shared their valuable knowledge and experiences in various fields of pharmacy with the participants. Extremely effective sessions were held, opened new horizons in pharmacy, such as Clinical Pharmacy, Phytopharmacy and social responsibility projects.

The 3rd ALFAKON, which was planned to be held face-to-face between the 17th and 19th of April in 2020, was held from the 13th to 15th of May in 2022. It was hybrid on the 1st day and continued online on the 2nd and 3rd days, due to the Covid-19 pandemic.

Scientific Activities of Our Academic Staff in 2022

Publications / Reviews / Case Presentations in SCI/SCIE Journals	32
Publications /Reviews / Case Presentations in International refereed Journals non SCI/SCIE	23
Publications in National Journals	8
Books and Book Chapters	16
National Oral presentation	3
National Poster presentation	2
International Oral presentation	5
International Poster presentation	8

Awards

Name – Surname	**Award**
Prof. Dr. Seref Demirayak	I.M.U. School of Pharmacy Dean's Office, "Outstanding Achievement Award" (2016)
Assoc. Proff. Neslihan Üstündağ	I.M.U. School of Pharmacy Dean's Office, "Outstanding Achievement Award" (2016)
Assist. Prof. İrem Atay Balkan	"Best Poster Paper Award" (63th International Congress and Annual Meeting of the Society for Medicinal Plant and Natural Product Research 23-27 August 2015, Budapest, Hungary(2016)
Lect. Dr. Sevda Er	Tubitak Ph.D. Scholarship for Priority Fields (2017)
Assist. Prof. Dr. Muhammed Davut Arpa	I.M.U. School of Pharmacy Dean's Office, "Incentive Award" (2017)
Res. Assist. Esra Acar Şah	"Poster Paper 2nd Prize (23rd Herbal Medicine Raw Materials Meeting, (2018)

Res. Assist. Esra Acar Şah	I.M.U. School of Pharmacy Dean's Office, "Incentive Award" (2018)
Res. Assist. Esref Tatlipinar	I.M.U. School of Pharmacy Dean's Office, "Incentive Award" (2019)
Assoc. Prof. Ozan Emre Eyupoğlu	Wiley (Journal of Food Biochemistry) Reviewer Award, USA, (2019).
Prof. Dr. Fatma Tosun	I.M.U. School of Pharmacy Dean's Office, "Outstanding Achievement Award" (2019)
Assoc. Prof. Ozan Emre Eyupoğlu	Elsevier (Journal of Food Biochemistry) Reviewer Avard, USA, (2019).
Res. Assist. Zafer Sahin	I.M.U. School of Pharmacy Dean's Office, "Incentive Award" (2020)
Res. Assist. Sevde Nur Biltekin	I.M.U. School of Pharmacy Dean's Office, "Incentive Award" (2020)
Res. Assist. Ayşe Esra Karadağ	I.M.U. School of Pharmacy Dean's Office, "Outstanding Achievement Award" (2021)
Res. Assist. Betül Sirin	I.M.U. School of Pharmacy Dean's Office, “Incentive Award” (2021)
Res. Assist. Ayşegül Çaşkurlu	I.M.U. School of Pharmacy Dean's Office, “Incentive Award” (2021)
Res. Assist. Gülden Zehra Omurtag	By Medya “Effective Manager Award in Pharmacy Education” (20.03.2022)
Assoc. Prof. Ozan Emre Eyupoğlu	International Scientist Awards 2022 On Engineering, Science and Medicine "Best Researcher Award" (13.01.2022)
Res. Assist. Meryem Nur Baş	I.M.U. School of Pharmacy Dean's Office, “Incentive Award” (2022)
Res. Assist. Sevde Nur Biltekin Kaleli	I.M.U. School of Pharmacy Dean's Office, "Outstanding Achievement Award" (06.07.2022)
Assist. Prof. Ayşe Esra Karadağ	I.M.U. School of Pharmacy Dean's Office, "Outstanding Achievement Award" (2023)

Res. Assist. Ayşe İnci	I.M.U. School of Pharmacy Dean's Office, “Incentive Award” (2023)
Aysen Ankaralı	I.M.U. School of Pharmacy Dean's Office, “Incentive Award” (2023)

İSTANBUL MEDİPOL UNIVERSITY SCHOOL OF PHARMACY ACADEMIC STAFF

Title	Name	Department
Prof. Dr.	OMURTAG, Gülden Zehra	Pharmaceutical Toxicology
Prof. Dr.	TOSUN, Fatma	Pharmacognosy
Prof. Dr.	AKBUĞA, Fatma Jülide	Pharmaceutical Technology
Prof. Dr.	ZEYBEK, Ahmet Ulvi	Pharmaceutical Botany
Prof. Dr.	YARIM YÜKSEL, Mine	Pharmaceutical Chemistry
Prof. Dr.	ÜNSALAN, Seda	Pharmaceutical Chemistry
Prof. Dr.	AYDIN, Ali Osman	Analytical Chemistry
Prof. Dr.	GÜZEL, Mustafa	Analytical Chemistry
Assoc. Prof.	EKŞİ BONA, Gülnur	Pharmaceutical Botany
Assoc. Prof.	EYUPOĞLU, Ozan Emre	Biochemistry
Assist. Prof.	ARPA, Muhammet Davut	Pharmaceutical Technology
Assist. Prof.	İDUĞ, Tuğba	Pharmacognosy
Assist. Prof.	MACİT, Çağlar	Pharmacology
Assist. Prof.	ÜLFER, Gözde	Biochemistry
Assist. Prof.	HOŞ, Ayşegül	Pharmaceutical Microbiology
Assist. Prof.	ERİM, Ümit Can	Analytical Chemistry
Assist. Prof.	UMAR Rashida Muhammad	Clinical Pharmacy
Assist. Prof.	TANER, Neda	Clinical Pharmacy
Assist. Prof.	ÇATTIK, Büşra Nur	Clinical Pharmacy
Assist. Prof.	KARATAŞ BRISTOW, Hacer	Pharmaceutical Chemistry
Assist. Prof.	SUCU, Bilgesu Onur	Pharmaceutical Chemistry
Assist. Prof.	KARADAĞ, Ayşe Esra	Pharmacognosy
Assist. Prof.	KOYUTÜRK, Sema	Analytical Chemistry
Assist. Prof.	EROĞLU, İpek	Pharmacy Business Administration
Res. Assist.	BİLTEKİN KALELİ, Sevde Nur	Pharmaceutical Microbiology
Res. Assist.	İNCİ, Ayşe	Pharmaceutical Microbiology
Res. Assist.	BAŞ, Meryem Nur	Pharmaceutical Toxicology
Res. Assist.	PALA, Özce Esma	Pharmaceutical Toxicology
Res. Assist.	ÇAŞKURLU, Ayşegül	Pharmacognosy
Res. Assist.	KARAVUŞ, Şule Nur	Pharmacognosy
Res. Assist.	KAHYA, Sümeyye Elif	Pharmacognosy
Res. Assist.	BAYDAR, Rengin	Pharmacognosy
Res. Assist.	SARI, Fatma	Pharmaceutical Botany

Res. Assist.	KOCAİZMİRLİ, Zeynep	Pharmaceutical Chemistry
Res. Assist.	ÖZTÜRK, Tarık Emre	Pharmaceutical Chemistry
Res. Assist.	KAÇMAZ, Muhammet	Pharmaceutical Chemistry
Res. Assist.	ŞİRİN, Betül	Clinical Pharmacy
Res. Assist.	AĞ, Melih Buğra	Clinical Pharmacy
Res. Assist.	ÜNÜKÜR, Melike Zeynep	Pharmaceutical Technology
Res. Assist.	KESMEN, Ebrar Elif	Pharmaceutical Technology
Res. Assist.	ARSLAN, Tuğba	Pharmaceutical Technology
Res. Assist.	DOĞAN, Nilay	Pharmaceutical Technology
Res. Assist.	ERASLAN, Huriye	Pharmaceutical Technology
Res. Assist.	KASA, Nursu Aylin	Analytical Chemistry
Res. Assist.	TEZÇAKAR, Mehmet Enes	Analytical Chemistry
Res. Assist.	ÇALIŞ, Ayşe	Pharmaceutical Microbiology
Res. Assist.	ALTUNÇUL, İsmet Berrak	Pharmaceutical Chemistry
Res. Assist.	DİŞER, Ahmet Sezer	Pharmaceutical Chemistry
Res. Assist.	OKAY, Nezahat Nazlı	Pharmacology
Lecturer	ŞAHİN KURT, Büşra	Analytical Chemistry

İSTANBUL MEDİPOL UNIVERSITY SCHOOL OF PHARMACY DIVISIONS AND DEPARTMENTS

Division of Basic Pharmaceutical Sciences

1. Department of Analytical Chemistry
2. Department of Biochemistry
3. Department of Pharmaceutical Microbiology

Division of Professional Pharmaceutical Sciences

1. Department of Pharmacognosy
2. Department of Pharmacology
3. Department of Pharmaceutical Botany
4. Department of Pharmaceutical Chemistry
5. Department of Pharmaceutical Toxicology
6. Department of Clinical Pharmacy
7. Department of Pharmacy Business Administration

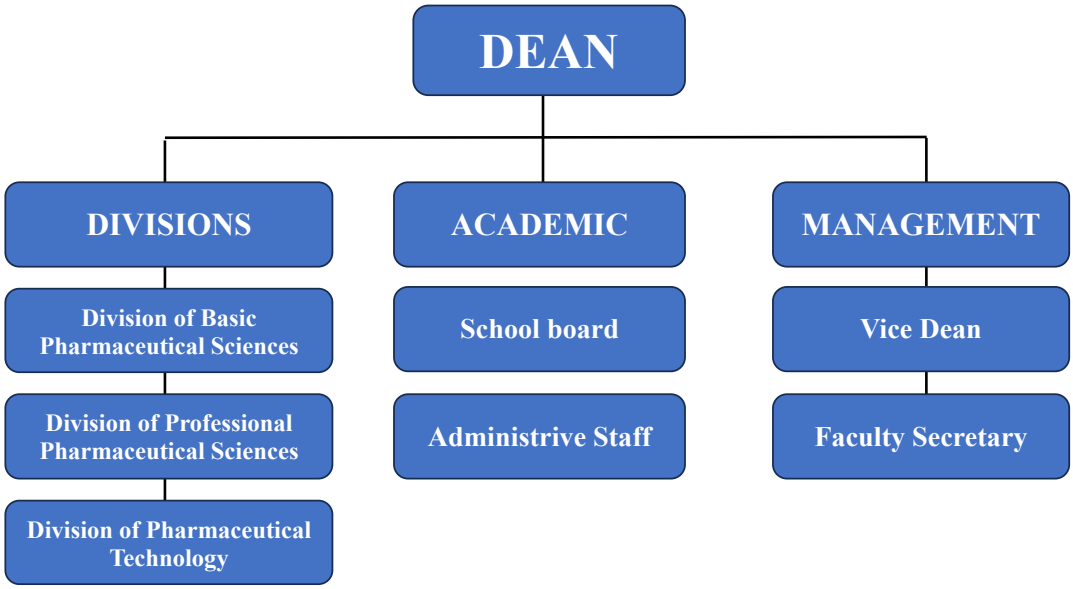
Division of Pharmaceutical Technology

1. Department of Pharmaceutical Technology
2. Subdepartment of Cosmetology

Number of Academic Staff

Title	Number
Professor	8
Associate Professor	2
Assistant Professor	14
Lecturer	1
Research Assistant	25
Technical Staff	8
Sum	58

İSTANBUL MEDİPOL UNIVERSITY SCHOOL OF PHARMACY
ORGANIZATION CHART



FACILITIES FOR STUDENTS

Erasmus

The Erasmus Exchange Program is a European Union project, coordinated and financed by the National Agency of the Ministry of the European Union in Turkey encourages the cooperation between higher education institutions and the short-term academic experiences of students and academics in different countries and universities. Within the scope of the Erasmus learning movement program, students can proceed for one or two semesters of the academic year at another higher education institution and carry out the internship at least two months at higher education institutions or in enterprises for industry internship. The main feature of the program is that students do not pay tuition fees to the university they attend. In addition, students can apply for an Erasmus grant to help with the expenses incurred during their education abroad.

Library

The library serves as an open shelf system. The classification is done in the form of thematic classification (LC-Library of Congress). Collaboration with other university libraries

is made through the ILL (Interlibrary Loan system). In this way, students are provided with the opportunity to conduct online research using different databases through the electronic library.

Our library uses Yordam Library Automation Program. Through this program, students can access to all sources in library, access to studies easier and faster with detailed search, reserve a book or extend the date of reserved book.

MEDUPSA (İstanbul Medipol University Pharmaceutical Student's Association)

MEDUPSA is a student community established by the students of İstanbul Medipol University School of Pharmacy on January the 4th of 2013. MEDUPSA is a non-profit, non-political, independent and democratic student organization.

In general, their purposes are as follows:

- To introduce the international dimensions of pharmacy to students.
- To communicate with pharmacy students from all over the world through various congress, social events and internship mobility programs.
- To expand the student's vision in the field of pharmacy, carry out activities for the recognition and use of different and widespread perspectives, scientific research, and pharmacy practices,
- To provide a professional activity platform for pharmacy students to help them to become more active, knowledgeable and self-confident individuals and pharmacists in the future.
- To provide vocational and social support to future pharmacists with determined, influential and comprehensive activities.

Student Clubs – School of Pharmacy

	1. Consultant	**2.Consultant**
MEDUPSA Club	from our Faculty	from our Faculty
Ultraslan Uni Club	from another Faculty	from our Faculty
Genç Kızılay Club	from another Faculty	from our Faculty
İzcilik Club	from another Faculty	from our Faculty
Ahbap Club	from another Faculty	from our Faculty

Internship

The instruction has been prepared based on the 43(2) article of the İstanbul Medipol University Associate and Undergraduate Education Regulations, the 3rd article of the Istanbul Medipol University School of Pharmacy Education Instruction and following the amendment in the subparagraph (b) of second paragraph of 8th article of the Regulation on Determination of Minimum Education Conditions for Medicine, Nursing, Midwifery, Dentistry, Veterinary, Pharmacy and Architecture Education Programs published in the Official Gazette dated 2/2/2008 and numbered 26775.

To obtain a pharmacist diploma, students must complete their compulsory internship program, which has to be at least six months, in a public pharmacy or hospital under the supervision of a pharmacist, in a pharmaceutical or medical equipment production facility, cosmetics factory and/or R&D related to these production areas, that organized following the provisions of the instruction given in article of 43(2). The responsible manager pharmacist must have at least five years of experience for internships in a public or hospital pharmacy. During the undergraduete education, students have to complete four internship applications called Internship I, Internship II, Internship III and Vocational Training in Business (change: 2022/11-01 senatusconsult).

Job Opportunities

Our graduate students can manage pharmacies and work in public or private hospital pharmacies after fulfilling the legal requirements. Pharmacists can work in pharmaceutical companies in departments such as research and development, quality control, production, licensing, marketing, medical and clinical research and patent and product management.

After undergraduate education, pharmacists can specialize in different fields in postgraduate education. In our country, there are opportunities to pursue an academic career starting from the position of research assistants at state or foundation universities.

COMMON COMPULSORY COURSES

Course Code	Course Name	Course Type	Weekly Course		Credits	ECTS
			T	A/L		
TDL1110400	**TURKISH LANGUAGE I**	**Compulsory**	**2**	**0**	**2**	**2**
Course Objectives	To correct the deficiencies of native and foreign students in Turkish language. To improve students' written and oral expression by using texts of writers who are employing Turkish nicely.					

TOPICS

1. Definition, function of the language
2. Historical Periods of Turkish Language
3. Languages of the World
4. The Growing Branches of Turkish in Historical Period
5. Written Expression: Composition
6. Situation and Spreading Areas of Turkish Language
7. Old Turkish Literature and Poetry Analysis
8. Speech Language - Writing Language
9. Is Turkish a rich language?'
10. Alphabets Used by Turks
11. Sound and Sound Events
12. Main Writing Rules
13. Figure Information
14. New Turkish Literature and Poetry Analysis

Course Code	Course Name	Course Type	Weekly Course		Credits	ECTS
			T	A/L		
TDL1210600	**TURKISH LANGUAGE II**	**Compulsory**	**2**	**0**	**2**	**2**
Course Objectives	To correct the deficiencies of native and foreign students in Turkish language. To improve students' written and oral expression by using texts of writers who are employing Turkish nicely.					

TOPICS

1. Curriculum Vitae (CV)
2. Word Types
3. Writing Rules of Combined Word
4. Voices of Verb
5. Emphasis
6. Word Groups
7. Turkish Sufi Literature and Poetry Analysis
8. Paragraphs
9. Oral Expression Types
10. Expression Disorders I
11. Expression Disorders II
12. Sentence Information: According to the Constitution
13. Types of sentences
14. Folk Literature and Poetry Analysis

Course Code	Course Name	Course Type	Weekly Course		Credits	ECTS
			T	A/L		
ATA1110300	**HISTORY OF THE TURKISH REPUBLIC I**	**Compulsory**	**2**	**0**	**2**	**2**
Course Objectives	To give information about the foundation process of the Republic of Turkey and Atatürk's Principles and Revolutions.					

TOPICS

1. Developments and Changes in the 19th Century World
2. Modernization Efforts in the Ottoman State in the First Half of the 19th Century
3. New Ottomans, Constitutionalism and Constitutional Movements
4. II. Modernization of Abdülhamid Period
5. II. Constitutional Way, Opposition Movements, Union and Progress
6. Ways of Salvation for the Country: Ottomanism, Turkism, Islamism, Westernism
7. War Period: Trabulusgarp-Balkan-First World Wars
8. Mondros Armistice, Occupations, Mustafa Kemal Pasha and Independence War Plan
9. Defence of Rights Societies
10. Harmful Societies
11. Strategic Issues of Turkey
12. Turkish-Armenian Relations, Turkish-Greek Relations
13. Establishment of the Grand National Assembly of Turkey
14. Eastern and Southern Frontiers in the War of Independence

Course Code	Course Name	Course Type	Weekly Course		Credits	ECTS
			T	A/L		
ATA1210500	**HISTORY OF THE TURKISH REPUBLIC II**	**Compulsory**	**2**	**0**	**2**	**2**
Course Objectives	Establishment of the Republic of Turkey and Ataturk's principles and revolutions to give information about the process.					

TOPICS

1. West Front of the War of Independence, Victory Acquisition and Mudanya truce
2. Abolition of the Sultanate and Istanbul Relations
3. Lausanne Peace Treaty, Proclamation of the Republic
4. Abolition of the Caliphate, the 1924 Constitution
5. Atatürk’s Reforms
6. Social, legal, education and culture areas of reforms
7. Social, legal, education and culture areas of reforms
8. Social, legal, education and culture areas of reforms
9. Trials of transition to multi-party
10. 1929 Economic Crisis. Development Policy of the Republic
11. Atatürk’s Foreign Policy
12. After the death of Ataturk Turkey
13. Strategic Issues in Turkey, Mosul Question, Hatay issue
14. Strategic Issues in Turkey, the Straits Question, Cyprus

DEPARTMENTS OF OUR FACULTY

RELATED CLASSROOMS AND LABORATORIES

DIVISION OF BASIC PHARMACEUTICAL SCIENCES

HEAD OF DIVISION

Assoc. Prof. Ozan Emre EYUPOĞLU

DEPARTMENT OF ANALYTICAL CHEMISTRY

Academic staff

Prof. Dr. Ali Osman AYDIN

Prof. Dr. Mustafa GÜZEL

Assist. Prof. Ümit Can ERİM (Head of Department)

Assist. Prof. Sema KOYUTÜRK

Res. Assist. Nursu Aylin KASA

Lect. Büşra ŞAHİN KURT

Res. Assist. Mehmet Enes TEZÇAKAR

Tech. Ayşenur FİL

Research areas

Chemistry, as one of the major axes of Pharmacy education, is a scientific branch that analyzes the building blocks of the substances, components and measures the interaction and quantity of these components. In the first semester of the faculty, general chemistry is lectured by Department of Analytical Chemistry, along with Analytical Chemistry – I, Analytical Chemistry II, Analytical Chemistry Applications – I and Analytical Chemistry Applications – II in the third and fourth semesters.

İstanbul Medipol University School of Pharmacy Department of Analytical Chemistry research areas include:

1. Enrichment of precious metals by solid phase extraction methods
2. Development of adsorption isotherms, analytical methods, and analysis of adsorption conditions.

Course Code	Course Name	Course Type	Weekly Course		Credits	ECTS
			T	A/L		
PHA1112086	**GENERAL CHEMISTRY**	**Compulsory**	**4**	**0**	**4**	**6**
Course Objectives	This course offered in the fall semester, lays the foundation for all subsequent study in chemistry. During the semester, we will focuson the key chemical themes of structure and equilibrium. We start with a quick review of basic concepts like matter, atom, molecules,and ionic compounds, writing equations to describe chemical reactions, particularly, in solution, mass and mole relationship andstereochemistry. We will review the basic of ideal gas behavior as well. The rest of the semester fleshes out the theme of structureand equilibrium. First we introduce key concepts about light and quantum mechanics and use them to explain the properties of atomand the structure of periodic table. Next, we develop a set of powerful model that explains how atom forms chemical bonds, andthree-dimensional structure of organic and inorganic molecules. We conclude with physical properties of solutions, chemical equilibrium and the solution phase reactions of acid and bases.					

TOPICS

1. Matter, atom and atomic theory
2. Chemical compounds
3. Chemical reaction
4. Introduction to reactions in aqueous solution
5. Gases
6. Thermochemistry
7. Electrons in atom
8. The periodic table and same atomic properties
9. Chemical bonding I
10. Chemical bonding II
11. Intermolecular forces: liquids and solids
12. Solutions and their physical properties
13. Principles of chemical equilibrium
14. Acids and bases

Course Code	Course Name	Course Type	WeeklyCourse		Credits	ECTS
			T	A/L		
PHA2113088	**ANALYTICAL CHEMISTRY I**	**Compulsory**	**3**	**0**	**3**	**5**
Course Objectives	This course contains; in analytical chemistry, chemicals, supplies and basic operations, in analytical chemistry, chemicals, supplies and basic operations, calculations in analytical chemistry, aqueous solutions and chemical equilibrium, aqueous solutions and chemical equilibrium, solutions of equilibrium problems in complex systems, solutions of equilibrium problems in complex systems, solutions of equilibrium problems in complex systems, solutions of equilibrium problems in complex systems, titrimetric methods and precipitation titrimetry, titrimetric methods and precipitation titrimetry, principles of neutralization titrations, principles of neutralization titrations, applications of neutralization titrations.				

TOPICS

1. In analytical chemistry, chemicals, supplies and basic operations
2. In analytical chemistry, chemicals, supplies and basic operations
3. Calculations in analytical chemistry
4. Aqueous solutions and chemical equilibrium
5. Aqueous solutions and chemical equilibrium
6. Solutions of equilibrium problems in complex systems
7. Solutions of equilibrium problems in complex systems
8. Solutions of equilibrium problems in complex systems
9. Solutions of equilibrium problems in complex systems
10. Titrimetric methods and precipitation titrimetry
11. Titrimetric methods and precipitation titrimetry
12. Principles of neutralization titrations
13. Principles of neutralization titrations
14. Applications of neutralization titrations

Course Code	Course Name	Course Type	WeeklyCourse		Credits	ECTS
			T	A/L		
PHA2113079	**ANALYTICAL CHEMISTRY PRACTICE I**	**Compulsory**	**0**	**3**	**1,5**	**3**
Course Objectives	To teach the reactions of anions and cations and their properties and to make the students gain skills of systematic qualitative chemical analysis in laboratory.					

TOPICS

1. Group I cations and their systematic analysis (HCl group cations)
2. Group II cations and their systematic analysis (H2S group cations)
3. Group II cations and their systematic analysis (H2S group cations)
4. Group III cations and their systematic analysis [$(NH_4)_2S$ group cations]
5. Group III cations and their systematic analysis [$(NH_4)_2S$ group cations]
6. The groups IV and V cations and their systematic analysis [$(NH_4)_2CO_3$ group cations]
7. Groups IV and V cations and their systematic analysis [$(NH_4)_2CO_3$ group cations]
8. Systematic analysis of group I-V cations (All the group cations)
9. Systematic analysis of group I-V cations (All the group cations)
10. Systematic analysis of group I-V cations (All the group cations)
11. Group I anions and their systematic analysis [$Ca(NO_3)_2$ group anions]
12. Groups II and III anions and their systematic analysis [$Ba(NO_3)_2$ and $Zn(NO_3)_2$ group anions]
13. Groups IV and V anions and their systematic analysis ($AgNO_3$ and soluble group anions)
14. Systematic analysis of anions and cations in the an unknown solid sample

Course Code	Course Name	Course Type	Weekly Course		Credits	ECTS
			T	A/L		
PHA2213091	**ANALYTICAL CHEMISTRY II**	**Compulsory**	**3**	**0**	**3**	**5**
Course Objectives	To be able to do qualitative and quantitative chemical analysis to make the students gain knowledge and skills by teaching fundamentals of instrumental analysis techniques in addition to the analytical chemistry and electrochemistry**.**					

TOPICS

1. Complexation reactions and titrations
2. Electrochemistry
3. The applications of oxidation-reduction titrations
4. Potentiometry
5. Potentiometry applications
6. Electrogravimetry and coulometry
7. Voltammetry
8. Introduction to spectrochemical methods
9. Molecular absorption spectroscopy
10. Molecular absorption spectroscopy
11. Molecular fluorescence spectroscopy
12. Introduction to chromatographic methods
13. Gas chromatography
14. High-performance liquid chromatography

Course Code	Course Name	Course Type	Weekly Course		Credit	ECTS
			T	A/L		
PHA2213096	**ANALYTICAL CHEMISTRY PRACTICE II**	**Compulsory**	**0**	**3**	**1,5**	**3**
Course Objectives	As being a part of quantitative chemical analysis methods, to teach principles of gravimetric and volumetric analysis methods and apply them in the laboratory. To teach various instrumental analysis methods used in quantitative analysis and to perform those skills in the laboratory.					

TOPICS

1. Gravimetric analysis and determination of sulphate
2. Acid-base titrations; preparation of standard solution and determination of sodium hydroxide
3. Preparation of standard solution and determination of hydrochloric acid
4. Determination of carbonate and bicarbonate mix
5. Precipitation titrations; determination of chloride by AgNO3 solution
6. Complexometric titrations; determination of calcium and magnesium by EDTA solution.
7. Oxidation-reduction titrations; determination of H2O2 by permanganate solution.
8. Determination of copper (iodometrically) by sodium thiosulfate solution
9. Determination of the ratios of fatty acid of various oils by gas chromatography (GC)
10. Determination of the ratios of fatty acid of various oils by gas chromatography (GC)
11. Determination of caffeine and aspirin in the pain-breakers by ultraviolet (UV) spectrometer
12. Quantitative analysis with IR spectrophotometry
13. Ion change chromatography
14. Compensatory week

DEPARTMENT OF BIOCHEMISTRY


Academic staff:

Assoc. Prof. Ozan Emre EYUPOĞLU (Head of Department)

Assist. Prof. Gözde ÜLFER

Research Areas

Biochemistry is the science that examines the organization and functions of biological systems for molecular purposes. It is a multidisciplinary basic science study area closely related to fields such as toxicology, pharmacognosy, pharmacology, analytical chemistry, microbiology. Biochemistry department teaches lessons as biochemistry during the second spring semester and clinical biochemistry applications during the fourth spring semester at two semesters to pharmacy students.

Research areas of the Biochemistry Department at the School of Pharmacy at the İstanbul Medipol University;

1. Bioactivity studies in plant extracts and blood serum (such as antioxidants, prooxidant activities)
2. Enzyme purification and characterization.
3. Development of new bioanalytical methods for bioactive component analysis of biological samples
4. Investigation of the effects of natural and synthetic drug substances on biological specimens in terms of biochemical parameters
5. Chromatographic analysis of essential volatile components of medicinal aromatic plants and bioaffinity applications of these components
6. Inhibition of enzymes in biological fluids and tissues as a result of drug interactions
7. Biochemical activity measurements as *in vivo*, *in vitro* and *ex vivo*
8. Biosensor development and applications

Course Code	Course Name	Course Type	Weekly Course		Credits	ECTS
			T	A/L		
PHA2213092	**BIOCHEMISTRY**	**Compulsory**	**3**	**0**	**3**	**4**
Course Objectives	Recognition of organic molecules and elements in the human organism, explaining their metabolism and energy formation, associating systems that control metabolism, exemplifying pathological conditions related to metabolisms.					

TOPICS

1. The molecular meaning of life
2. Biochemical perspective on blood
3. Structure and metabolism of carbohydrates
4. Evaluation of carbohydrates in the biochemistry laboratory
5. Structural features and metabolism of lipids
6. Evaluation of lipids in the biochemistry laboratory
7. Biochemical perspective on atherosclerosis
8. Structure of protein and amino acids
9. Evaluation of proteins and amino acids in the biochemistry laboratory
10. Vitamins
11. Enzymes and laboratory evaluations
12. Hormones and laboratory evaluations
13. Minerals and laboratory evaluations
14. Body fluids and urine

Course Code	Course Name	Course Type	Weekly Course		Credits	ECTS
			T	A/L		
PHA4214872	**CLINICAL BIOCHEMISTRY PRACTICES**	**Compulsory**	**2**	**0**	**2**	**3**
Course Objectives	To understand the normal and pathological conditions defined by the clinical biochemistry field which is frequently encountered during the practice of pharmacy profession. To understand the meaning of the biochemical parameters used in diagnosis, treatment, follow- up and prevention of diseases and according to this, be properly ensured orientation of the patient.					

TOPICS

1. What is clinical biochemistry? How does the clinical biochemistry laboratory work?
2. Liver function tests and interpretation of tests
3. Kidney function tests
4. Physical and chemical analysis of urine
5. Anemia, laboratory analysis and interpretation
6. Insulin, diabetes and diagnostic tests.
7. General tests for the recognition of carbohydrates
8. Hyperlipidemias and its clinical interpretation
9. Inflammation
10. Disorders of amino acid metabolism
11. Hormones and approach to clinical diagnosis
12. Vitamins, trace elements and clinical interpretation
13. Congenital metabolic defects
14. Tumor markers

DEPARTMENT OF PHARMACEUTICAL MICROBIOLOGY

Academic staff:

Assist. Prof. Ayşegül HOŞ (Head of Department)

Res. Assist. Sevde Nur BİLTEKİN KALELİ

Res. Assist. Ayşe İNCİ

Res. Assist. Ayşe ÇALIŞ

Tech. Elif ÖZKOCA

Research areas

Pharmaceutical microbiology, one of the main fields of pharmacy, is a science which studies microorganisms. Pharmaceutical microbiology is a multidisciplinary field which corporates with pharmaceutical chemistry, pharmacognosy and pharmaceutical technology. Microbiology theoretical and practical lectures are in the second year of the faculty.

The research areas of Pharmaceutical Microbiology Department at the School of Pharmacy at İstanbul Medipol University are;

1. Determination of the antimicrobial activity of newly synthesis products and herbal extracts
2. Detection of the antimicrobial activity of the pharmaceutical technology formulations
3. Examination of contamination in the pharmaceutical products

Course Code	Course Name	Course Type	Weekly Course		Credits	ECTS
			T	A/L		
PHA2113084	**MICROBIOLOGY**	**Compulsory**	**3**	**0**	**3**	**4**
Course Objectives	The aim of the microbiology course is to give information about microorganisms which are important in medical and industrial fields.					

TOPICS

1. History of microbiology, importance of microbiology
2. Microbial taxonomy
3. Microbial morphology
4. Microbial reproduction, genetics, metabolism
5. Sterilization and disinfection methods
6. Bacterial infection agents
7. Viral and parasitary infection agents, microbial identification
8. Fungal infection agents
9. Normal flora (Microbiota)
10. Antimicrobial chemoteraphy
11. Immunity and immune response, hypersensitivity, immunodeficiency
12. Vaccines and immune serums
13. Microbial contamination in pharmaceutical products
14. Good Manufacturing Practices in pharmaceutical products, sterile pharmaceutical products

Course Code	Course Name	Course Type	Weekly Course		Credits	ECTS
			T	A/L		
PHA2113078	**MICROBIOLOGY LABORATORY**	**Compulsory**	**0**	**2**	**1**	**2**
Course Objectives	The aim of this course is to define basic laboratory techniques of working with microorganisms, cultures, and stain techniques, with practical sessions in laboratory.					

TOPICS

1. Lab policies, devices and materials used in the microbiology laboratory, and the use of the microscope
2. Sterilization and disinfection methods
3. Preparation of media
4. Inoculation methods
5. Inoculation methods
6. Preparation of smear and simple staining
7. Antibiotic susceptibility testing
8. Microscopic examination of bacteria with Gram staining
9. Observation of yeasts under the microscope
10. Observation of molds under the microscope
11. Identification tests of bacteria
12. Serological tests (Blood group determination)
13. Microorganism counting methods
14. Microbiological analysis of pharmaceutical products

DIVISION OF PROFESSIONAL PHARMACEUTICAL SCIENCES

HEAD OF DIVISION

Prof. Dr. Gülden Zehra OMURTAG

DEPARTMENT OF PHARMACOGNOSY

Academic staff:

Prof. Dr. Fatma TOSUN (Head of Departmant)

Assist. Prof. Tuğba İDUĞ

Assist. Prof. Ayşe Esra KARADAĞ

Res. Assist. Ayşegül ÇAŞKURLU

Res. Assist. Şule Nur KARAVUŞ

Res. Assist. Sümeyye Elif KAHYA

Res. Assist. Rengin BAYDAR

Tech. Buse ERDOĞAN

Research areas

Pharmacognosy investigates the pharmaceutical bioactive compounds and excipients derived from plants or other natural sources and is one of the core branches of the pharmaceutical sciences. Pharmacognosy is a multidisciplinary science and closely related to botany, biochemistry, pharmacology, chemistry and microbiology. Pharmacognosy courses emphasize the importance of natural products in drug discovery. The pharmacognosy department is responsible for teaching Pharmacognosy for 3 semesters and phytotherapeutics for 1 semester to Pharmacy students. Nutritional pharmacy is offered as the theoretical elective course.

The research areas of the Pharmacognosy Department:

1. Bioassay-guided fractionation and isolation of the active components from natural sources.
2. Structure elucidation of the isolated compounds from natural sources.
3. *In vitro* biological activity studies.
4. Instrumental analysis and standardization of herbal preparations (HPLC, HPTLC etc.).
5. Pharmacopeia analysis of herbal preparations.

Course Code	Course Name	Course Type	Weekly Course		Credits	ECTS
			T	A/L		
PHA3114147	**PHARMACOGNOSY I**	**Compulsory**	**2**	**0**	**2**	**4**
Course Objectives	Provide information about the biologically active compounds and drug excipients from plants and other biological resources, as well as explanation of their classification, pharmacological activities and usage.					

TOPICS

1. Introduction to Pharmacognosy
2. Carbohydrates, monosaccharides
3. Oligosaccharides, homogeneous polysaccharides
4. Heterogeneous polysaccharides
5. Glycosides, cardiotonic glycosides
6. Saponins
7. Phenolics-shikimates-phenylpropane derivatives, phenols, phenolic acids, coumarins
8. Lignans, neolignans
9. Phenylpropane chain elongation derivatives
10. Flavonoids
11. Anthocyanins
12. Tannins
13. Polyketides-quinones, phloroglucinols
14. Glucosinolates, cyanogenic glycosides, iridoids

Course Code	Course Name	Course Type	Weekly Course		Credits	ECTS
			T	A/L		
PHA3114148	**PHARMACOGNOSY PRACTICE I**	**Compulsory**	**0**	**3**	**1,5**	**3**
Course Objectives	Identification of botanical drugs with glycosidic and phenolic active substances by microscopic examination and chemical identification of biologically active phenolic compounds and quantitative determination of glycosides in medicinal plants.					

TOPICS

1. Microscopic examination of pulverized drugs 1
2. Microscopic examination of pulverized drugs 2
3. Microscopic examination of pulverized drugs 3
4. Microscopic examination of pulverized drugs 4
5. Microscopic examination of pulverized drugs 5
6. Microscopic examination of pulverized drugs 6
7. Application of thin layer chromatography
8. Identification of flavonoids
9. Isolation of bioflavonoids
10. Identification of anthraquinones
11. Identification of tannins
12. Identification of cyanogenetic glycosides
13. Identification of cardiotonic glycosides
14. Quantitative determination of saponins

Course Code	Course Name	Course Type	Weekly Course		Credits	ECTS
			T	A/L		
PHA3214155	**PHARMACOGNOSY II**	**Compulsory**	**2**	**0**	**2**	**4**
Course Objectives	Provide information about the lipids, amino acids, enzymes and alkaloids from plants and other natural sources; explain their biosynthetic pathways, biological activities, and chemical properties.					

TOPICS

1. Definition and Properties of Alkaloids
2. Protoalkaloids
3. Piperidine and Pyridine Alkaloids
4. Tropane Alkaloids
5. Pyrrolizidine and Quinolizidine Alkaloids
6. Indole Alkaloids-Ergoline alkaloids, monoterpenoid indole alkaloids
7. Quinoline Alkaloids
8. Isoquinoline Alkaloids-morphinan alkaloids
9. Isoquinoline Alkaloids-Benzyltetrahydroisoquinolines
10. Isoquinoline Alkaloids-Monoterpenoid isoquinolines
11. Purine bases, Terpenoid and steroid alkaloids
12. Amino Acids, Lectins, Natural protein sweeteners
13. Enzymes, Probiotics and prebiotics
14. Homeopathy, Apitherapy, Hirudotherapy

Course Code	Course Name	Course Type	Weekly Course		Credits	ECTS
			T	A/L		
PHA3214156	**PHARMACOGNOSY PRACTICE II**	**Compulsory**	**0**	**3**	**1,5**	**3**
Course Objectives	Identification of plant drugs that contain alkaloids by microscopic examination, extraction, chemical identification, purification and quantitative determination of alkaloids from medicinal plants.					

TOPICS

1. Demonstration
2. Microscopic examination of pulverized drugs 1
3. Microscopic examination of pulverized drugs 2
4. Microscopic examination of pulverized drugs 3
5. Microscopic examination of pulverized drugs 4
6. Microscopic examination of pulverized unknown drugs
7. Microscopic examination of pulverized unknown drugs
8. Extraction and identification of alkaloids
9. Quantitative analysis of alkaloids (Volumetric)
10. Identification of opium alkaloids
11. Extraction of caffeine and identification by murexide reaction
12. HPLC analysis of caffeine
13. Quantitative determination of Solanaceae alkaloids (Colorimetric)
14. Identification of Cinchonae cortex alkaloids

Course Code	Course Name	Course Type	Weekly Course		Credit	ECTS
			T	A/L		
PHA4114866	**PHARMACOGNOSY III**	**Compulsory**	**2**	**0**	**2**	**4**
Course Objectives	Lipids, terpenoids and lipid and essential oil containing drugs are the subject of Pharmacognosy III. This course provides information about the lipids and essential oils; summarize their chemical properties, biological activities and uses.					

TOPICS

1. Lipids
2. Drugs containing lipids.
3. Definition, biosynthetic pathway and properties of terpenoids
4. Distribution and structure of monoterpenes and sesquiterpenes
5. Definition, physical properties, chemical composition and functions of essential oils
6. Methods of production for essential oils, quality control for drugs containing essential oils and quality control of essential oils.
7. Pharmacological properties and uses of drugs containing essential oils.
8. Acyclic monoterpene containing-drugs
9. Monocyclic monoterpene and bicyclic monoterpene containing drugs
10. Sesquiterpene containing-drugs
11. Aromatic compounds containing-essential oil drugs
12. Resin, oleoresin, oleogumresin and balsam-containing drugs
13. Diterpenoids, Triterpenoids and Tetraterpenes-Carotenoids
14. Aromatherapy

Course Code	Course Name	Course Type	Weekly Course		Credits	ECTS
			T	A/L		
PHA4114867	**PHARMACOGNOSY PRACTICE III**	**Compulsory**	**0**	**3**	**1,5**	**3**
Course Objectives	This course provides information about the essential oils from plants; evaluate practically identification, distillation, qualitative and quantitative determination and pharmacopoeia analysis.					

TOPICS

1. Demonstration
2. Microscopic examination of essential and fixed oil contained drugs
3. Extraction and quantitative determination of lipids in plant material
4. Determination of acid value and saponification number of lipids
5. Quantitative analysis of volatile oils (volumetric)
6. Total aldehyde quantitation
7. Total alcohol quantitation
8. Quantitative analysis of phenolic compounds
9. Pharmacopoeia analysis of Thymi aetheroleum and Terebinthinae aetheroleum
10. Analysis of herbal teas
11. TLC analysis of different volatile oils
12. GC-MS analysis of volatile oil
13. Article presentation
14. Article presentation

Course Code	Course Name	Course Type	Weekly Course		Credits	ECTS
			T	A/L		
PHA4214875	**PHYTOTHERAPEUTICS**	**Compulsory**	**2**	**0**	**2**	**3**
Course Objectives	Introduction to the phytotherapeutic preparations that used for the treatment of various diseases, as immunostimulant/ immunomodulator and for the amelioration of geriatric problems.					

TOPICS

1. Introduction and basic concepts of phytotherapeutics
2. CNS active phytotherapeutics I
3. CNS active phytotherapeutics II
4. Cardiovascular system active phytotherapeutics I
5. Cardiovascular system active phytotherapeutics II
6. Phytotherapeutics used in the treatment of respiratory system ailments
7. Phytotherapeutics used in the treatment of GI system diseases I
8. Phytotherapeutics used in the treatment of GI system diseases II
9. Phytotherapeutics used in the treatment of urinary tract ailments
10. Phytotherapeutics used in the treatment of gynecological ailments
11. Phytotherapeutics used in the treatment of dermal and connective tissue ailments
12. Phytotherapeutics used in the treatment of rheumatoid arthritis and degenerative joint diseases
13. Adaptogenic and immunomodulator phytotherapeutics
14. Potential drug and food interactions of phytotherapeutics

DEPARTMENT OF PHARMACOLOGY

Academic Staff:

Assist. Prof. Çağlar MACİT (Head of Department)

Res. Assist. Nezahat Nazlı OKAY

Research areas

Pharmacology is the study of drugs, their mechanism of action and uses, is one of the core branches in the pharmacy curriculum. Pharmacology, is multidisciplinary and strongly related to Pharmacognosy, Pharmaceutical Chemistry, Clinical pharmacy etc. The pharmacology department is responsible for teaching Pharmacology for 3 semesters to Pharmacy students.

The research areas of Pharmacology Department at the School of Pharmacy at Istanbul Medipol University are;

1. To study pharmacokinetic and pharmacodynamic parameters and their effects on systems and effect of drugs.
2. To teach the definition and resources of drugs, mention about the importance of route of administration, dose and how to be administered. Additionally, it aims to make pharmacological classification of drugs and examine mechanism of action.

Course Code	Course Name	Course Type	Weekly Course		Credits	ECTS
			T	A/L		
PHA2213094	**PHARMACOLOGY I**	**Compulsory**	**2**	**0**	**2**	**4**
Course Objectives	To evaluate the general pharmacology, drug toxicity, drug abuse, drug addiction issues, and the pharmacological properties of central nervous system drugs					

TOPICS

1. Introduction to Pharmacology, routes of administration
2. Absorption, distribution, drug biotransformation and excretion, mechanisms of drug actions
3. Dose-concentration-effect relationship
4. Receptors, drug-receptor relationship, factors that change the drug effect
5. Pharmacodynamic and pharmacokinetic drug interactions
6. Drug toxicity
7. Teratogenic effects
8. Hypersensitivity reactions
9. Chemotherapeutics, betalactams, macrolides
10. Lincosamide, chloramphenicol, tetracyclines, aminoglycosides
11. Narrow spectum antistaphilococcus and antianaerobs, sulfonamides and fluoroquinolones
12. Antiviral drugs
13. Immunemodulator drugs, antifungals, antiprotozals, antihelmintics
14. Antineoplastics

Course Code	Course Name	Course Type	Weekly Course		Credits	ECTS
			T	A/L		
PHA3114141	**PHARMACOLOGY II**	**Compulsory**	**2**	**0**	**2**	**4**
Course Objectives	To evaluate the pharmacological properties of the analgesics, anti-inflammatories, anesthetics, drugs used for the treatment of fluid-electrolyte and acid-base balance disorders, autonomic nervous system drugs and cardiovascular system drugs.					

TOPIC

1. Introduction to autacoids, histamine and antihistaminics
2. Endotheline and NO/Arahidonic acid metabolites
3. Serotonin and Renin-Angiotensin-Kinin
4. Introduction to autonomic nervous system and parasympathomimetic drugs
5. Parasympatholytic drugs
6. Sympathomimetic drugs and ganglion blockers
7. Antihypertensive drugs and diuretics I
8. Antihypertensive drugs and diuretics II
9. Congestive heart failure and antianginal drugs
10. Hypolipidemic agents
11. Anticoagulants and arrhythmics
12. Antitussives, mucolytics and expectorants
13. Bronchodilators
14. Drugs used in electrolite and acid-base imbalance disorder

Course Code	Course Name	Course Type	Weekly Course		Credits	ECTS
			T	A/L		
PHA3214159	**PHARMACOLOGY III**	**Compulsory**	**2**	**0**	**2**	**4**
Course Objectives	To evaluate the pharmacologycal properties of the endocrin system drugs, diuretics, chemotherapeutics, antifungal agents and ectoparasitic agents.					

TOPICS

1. Introduction to central nervous system
2. Hypnosedatives
3. Antidepressant and antimanic drugs
4. General and local anesthesic drugs
5. Opioid analgesics and NSAIDs
6. Antiepileptic drugs and drugs used in parkinson treatment
7. Introduction to endocrine system and antithyroid drugs
8. PTH, vitamin D and Calcitonine
9. Insulin and oral antidiabetic drugs
10. Hypothalamus hormones
11. Eostrogen, progestin and androgens
12. Corticosteroid hormones
13. Antiemetic and antidiarrheics
14. Review for the exam

DEPARTMENT OF PHARMACEUTICAL BOTANY

Academic Staff:

Prof. Dr. Ahmet Ulvi ZEYBEK (Head of Department)

Assoc. Prof. Gülnur EKŞİ BONA

Res. Assist. Fatma SARI

Research Areas

The Department of Pharmaceutical Botany is a branch of Pharmacy, that systematically studies of medicinal and aromatic plants with pharmaceutical uses and besides them, the important poisonous plants. Morphological and anatomical features, similarities and differences of medicinal plants are compared scientifically. Toxic but pharmaceutical plants are also included in the course. Optical devices such as loops and light microscopes are also used in the diagnosis and identification of medicinal plants. It is a science that deals with recognizing and diagnosing the main drugs belonging to these medicinal plants and used as raw material of herbal medicine, and the ethnopharmaceutical-botanical uses of some medicinal plants in the Flora of Turkey. Conservation of herbal biodiversity and sustainability of herbal medicine resources is one of the fields of study. Using the herbarium preparation techniques, preparing herbarium samples from medicinal plants is also within the scope of the Department. The Pharmaceutical Botany course to pharmacy students takes place for one semester in the fourth semester and it is conducted in parallelly as both theoretical and practical courses of the faculty. By creating the infrastructure for the pharmacognosy courses of the fifth and sixth semesters, the subjects that will form the basis for the students to understand and comprehend more easily.

Course Code	Course Name	Course Type	Weekly Course		Credits	ECTS
			T	A/L		
PHA2213093	**PHARMACEUTICAL BOTANY**	**Compulsory**	**3**	**0**	**3**	**4**
Course Objectives	Introduction to the systematic classification, anatomical/histological/ morphological properties, identification and biologically active compounds of medicinal plants.					

TOPICS

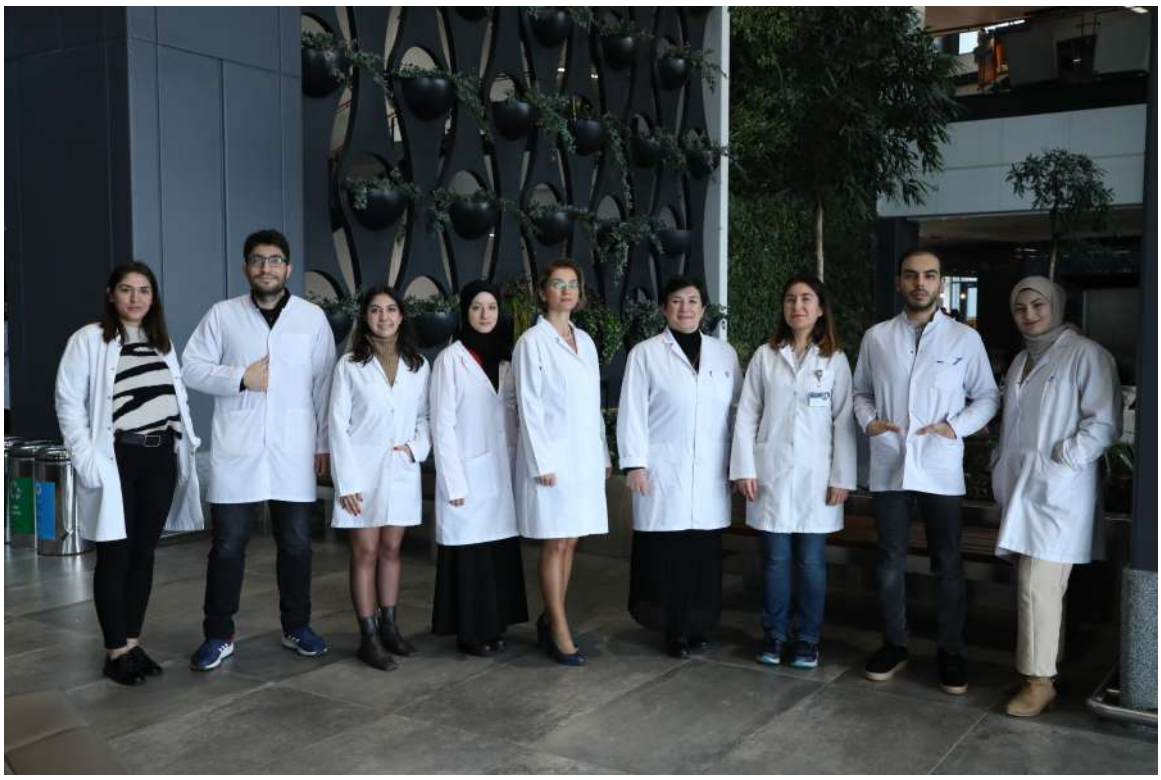
1. Plant cells and properties.
2. Morphological features of plant tissues, root, stem and leaves.
3. Morphological features of flowers, fruits and seeds.
4. History of Pharmaceutical Botany, Systematic classification of medicinal plants
5. Naming and identification of plants and drugs, Flora of Turkey, herbariums, divisions of plant kingdom
6. Bacteriophyta, Cyanophyta, Phycophyta
7. Mycophyta, Bryophyta, Pteridophyta
8. Gymnospermae: Cycadaceae, Ginkgoaceae, Coniferae, Ephedraceae
9. Angiospermae: Poaceae, Liliaceae, Orchidaceae, Piperaceae, Fagaceae, Ranunculaecae
10. Angiospermae: Lauraceae, Papaveraceae, Brassiceae, Rosaceae, Leguminosae
11. Angiospermae: Rutaceae, Malvaceae, Apiaceae
12. Angiospermae: Lamiaceae, Asteraceae, Solanaceae
13. Geographical distribution and trading of natural medicinal plants of Turkey, cultivation of medicinal plants and drug stabilization
14. Properties of medicinal, toxic and economically important plants

Course Code	Course Name	Course Type	Weekly Course		Credits	ECTS
			T	A/L		
PHA2213095	**PHARMACEUTICAL BOTANY PRACTICES**	**Compulsory**	**0**	**3**	**1,5**	**3**
Course Objectives	Anatomical/morphological properties of medicinal plants and their identification using the microscopy and botanical familyidentification keys.					

TOPICS

1. Introduction to Microscopy and plant cells
2. Morphological properties of leaves
3. Glandular trichomes and hairs
4. Crystalline cellular structures
5. Morphological properties of flowers
6. Morphological properties of fruits and seeds
7. Pinaceae, Liliaceae and Papaveraceae
8. Characteristic properties of Lamiaceae and Leguminosae
9. Characteristic properties of Apiaceae, and Asteraceae families
10. Morphology of drugs
11. Morphology of drugs
12. Morphology of drugs
13. Identification of plant families
14. Preparation of herbarium samples

DEPARTMENT OF PHARMACEUTICAL CHEMISTRY



Academic Staff:

Prof. Dr. Mine YARIM YÜKSEL (Head of Department)

Prof. Dr. Seda ÜNSALAN

Assist. Prof. Hacer KARATAŞ BRISTOW

Assist. Prof. Bilgesu Onur SUCU

Res. Assist. Zeynep KOCAİZMİRLİ

Res. Assist. Tarık Emre ÖZTÜRK

Res. Assist. Muhammet KAÇMAZ

Res. Assist. İsmet Berrak ALTUNÇUL

Res. Assist. Ahmet Sezer DİŞER

Tech. Semanur SARIKAYA

Research areas

Pharmaceutical Chemistry, in short, means pharmacy chemistry, and it is one of the main areas of pharmacy that examines all stages from the design, synthesis of drug substance molecules, the examination of chemical structure-pharmacological effect relationships in the biological environment, their metabolism and their elimination from the body.The analysis of pharmaceutical active substances which are obtained naturally or synthetically is the study area of the pharmaceutical chemistry.

1. Examination of drug substance-enzyme relationships and accordingly the design of the chemical structure
2. Development of new derivatives based on known drug molecules
3. Development of synthesis procedures of drug substance molecules
4. Examining the relationships between chemical structure-pharmacological and toxic effects
5. Investigation of chemical structure – metabolism relations
6. Making qualitative and quantitative analyzes of active pharmaceutical ingredients using chemical and spectral methods.

Course Code	Course Name	Course Type	Weekly Course		Credits	ECTS
			T	A/L		
PHA1212091	**ORGANIC CHEMISTRY I**	**Compulsory**	**2**	**0**	**2**	**4**
Course Objectives	Evaluate the principles of organic chemistry, properties of functional groups and basic reactions					

TOPICS

1. Properties of carbon, atomic theories, bond theories, carbon-carbon bonds, formation and properties of carbon-heteroatom bonds
2. Reactivity and mechanism, electrophiles and nucleophiles and their properties, acidity and basicity
3. Nomenclature of organic compounds, nomenclature rules
4. Alkanes, cycloalkanes and constitutional isomerism
5. Alkenes, alkynes, double bond isomerism
6. General properties of alkyl halides, alcohols and ethers and sulfur compounds
7. Chirality and stereoisomers
8. Aromaticity and properties of aromatic reactions
9. General properties of carbonyl groups, aldehydes and ketones
10. General properties of carbonyl group, aldehydes and ketones
11. General properties of carboxylic acids and their derivatives
12. General properties of carboxylic acids and their derivatives
13. General properties of amines
14. Biological compounds and polymers

Course Code	Course Name	Course Type	Weekly Course		Credits	ECTS
			T	A/L		
PHA2113086	**ORGANIC CHEMISTRY II**	**Compulsory**	**3**	**0**	**3**	**5**
Course Objectives	Explain the reaction types, synthesis and possible reactions of organic compounds					

TOPICS

1. Alkane reactions and radicalic reactions
2. Alkene and alkyne reactions: elimination and addition reactions
3. Reactions of alkyl halides and alcohols; nucleophilic substitution reactions
4. Reactions of alkyl halides and alcohols; nucleophilic substitution reactions (continue)
5. Reactions of aromatic compounds, aromatic electrophilic substitution reactions
6. Reactions of aromatic compounds, aromatic electrophilic substitution reactions (cont.)
7. The reactions through carbonyl groups
8. The reactions through carbonyl groups (continue)
9. The reactions through alfa position of carbonyl groups
10. The reactions of the carboxylic acid and its derivatives
11. Reactions of amines
12. Nomenclature and general synthesis of heterocyclic compounds
13. Nomenclature and general synthesis of heterocyclic compounds (continue)
14. Name reactions

Course Code	Course Name	CourseType	Weekly Course		Credits	ECTS
			T	A/L		
PHA3114143	**PHARMACEUTICAL CHEMISTRY I**	**Compulsory**	**3**	**0**	**3**	**5**
Course Objectives	The aim of this course is the history and general characteristics of the drug, physicochemical and chemical factors that influence drug activity, drug metabolism pathways and evaluate new drug research and development and applications.					

TOPICS

1. Introduction to pharmaceutical chemistry, history of medicine, resources, nomenclature and classification
2. Physicochemical properties: solubility of drugs
3. Determination of Solubility
4. Physicochemical properties: the degree of ionization of drugs
5. Determination of Ionization degree
6. Chemical properties: the chemical bonds in drug-receptor interaction
7. Chemical properties: Drug-receptor interactions
8. Steric properties
9. Drug Metabolism: Phase II reactions
10. Drug Metabolism: Phase II reactions
11. Bioisosterism
12. Structure-activity relationship
13. Development of new drugs
14. Prodrugs: Designing and synthesis

Course Code	Course Name	CourseType	Weekly Course		Credits	ECTS
			T	A/L		
PHA3114146	**PHARMACEUTICAL CHEMISTRY PRACTICE I**	**Compulsory**	**0**	**3**	**1,5**	**3**
Course Objectives	Using materials and methods in the synthesis of drug molecules and thin layer chromatography.					

TOPICS

1. Principles of pharmaceutical chemistry laboratory studies
2. The tools and equipment used in organic syntheses
3. The methods used in organic syntheses: mixing, heating, cooling and drying
4. Separation and purification methods: distillation, crystallization, extraction
5. Determination of melting point, chromatographic methods, efficiency and accountability of the reaction
6. The synthesis of some organic and pharmaceutical active substances
7. The synthesis of some organic and pharmaceutical active substances
8. The synthesis of some organic and pharmaceutical active substances
9. The synthesis of some organic and pharmaceutical active substances
10. The synthesis of some organic and pharmaceutical active substances
11. The synthesis of some organic and pharmaceutical active substances
12. The synthesis of some organic and pharmaceutical active substances
13. The synthesis of some organic and pharmaceutical active substances
14. The synthesis of some organic and pharmaceutical active substances

Course Code	Course Name	CourseType	Weekly Course		Credits	ECTS
			T	A/L		
PHA3214153	**PHARMACEUTICAL CHEMISTRY II**	**Compulsory**	**3**	**0**	**3**	**5**
Course Objectives	The aim of this course is, central nervous system acting on structure-activity relationships of drugs, chemical structures, and to evaluate the synthesis and analysis.					

TOPICS

1. General characteristics of drugs that affect the nervous system, general anesthetics
2. Sedative-hypnotics
3. Tranquilizers
4. Neuroleptics
5. Antidepressants: Tricyclic
6. Antidepressants: MAO inhibitors
7. antidepressants: serotonin re-uptake inhibitors
8. Psychotomimetic analeptics
9. Central muscle relaxants
10. Antiepileptics
11. Narcotic analgesics
1. 12.Expectorants, antitussives
12. Non-narcotic analgesics
13. Local anesthetics

Course Code	Course Name	CourseType	Weekly Course		Credits	ECTS
			T	A/L		
PHA3214154	**PHARMACEUTICAL CHEMISTRY PRACTICE II**	**Compulsory**	**0**	**3**	**1,5**	**3**
Course Objectives	The aim of this course, the synthesis of certain organic and pharmaceutical active substances, study of mechanisms of organic reactions, separation and purification procedures, showing computational drug design methods					

TOPICS

1. Introduction of Separation and purification process
2. The extraction, distillation and crystallization
3. Physical separation methods, electrophoresis, chromatography
4. Some organic and drug Separation and purification of the active substance
5. Some organic and drug separation and purification of the active substance
6. Cannizaro Reaction
7. refractometric and polarimetric methods
8. Isolation of the active agent formulation in use
9. Isolation of active ingredient from the formulations in use
10. Column chromatography
11. Column chromatography application
12. Recognition of computerized drug design methods
13. Molecular modeling study
14. Molecular modeling study

Course Code	Course Name	CourseType	Weekly Course		Credit	ECTS
			T	A/L		
PHA4114864	**PHARMACEUTICAL CHEMISTRY III**	**Compulsory**	**3**	**0**	**3**	**5**
Course Objectives	The aim of this course, the autonomic nervous system and autacoids with drugs acting on the cardiovascular system and hormones and those which give information about their associated drugs.					

TOPICS

1. Direct and indirect acting sympathomimetic, sympatolytics, parasympathomimetic, parasympatholytic
2. Used in Hearth failure drugs, antiaritmic, antianginal
3. Calcium channel blockers and adrenergic neuron blockers, peripheral vasodilators
4. Adrenergic receptor blockers
5. Hemostatics, anticoagulants, antitrombocytic, thrombolytic and antianemias
6. Arterial and venouvasodilators, effective compounds on vascular smooth muscle and direct-acting vasodilators
7. Effective drugs on renin-angiotensin system
8. Diuretics and anti-hyperlipidemic drugs
9. Digestant, antiulcer, emetics and antiemetics, laxative and antidiareitic,
10. Thyroid and peptide hormones and antidiabetics
11. Sex hormones
12. Adrenocortical
13. Antihistamines
14. Radiocontrast, vitamins, immunomodulators

Course Code	Course Name	Course Type	Weekly Course		Credits	ECTS
			T	A/L		
PHA4114865	**PHARMACEUTICAL CHEMISTRY PRACTICE III**	**Compulsory**	**0**	**3**	**1,5**	**3**
Course Objectives	This course aims to provide information on quantitative analysis of pharmaceutical active ingredients and to make the application, UV-Vis spectrophotometric methods, analyzing the IR and HPLC system					

TOPICS

1. General description of the quantitative analysis.
2. Titrimetric analysis methods
3. Titrimetric analysis application
4. Titrimetric analysis application
5. Titrimetric analysis application
6. Titrimetric analysis application
7. UV-Vis. spectrophotometric method
8. The quantification by the UV-Vis spectrophotometric method application
9. The quantification by the UV-Vis spectrophotometric method application
10. IR spectrophotometric method
11. Recognition of the HPLC system
12. Known sample application in HPLC
13. Known sample application in HPLC
14. Unknown sample application in HPLC

Course Code	Course Name	CourseType	Weekly Course		Credits	ECTS
			T	A/L		
PHA4214873	**PHARMACEUTICAL CHEMISTRY IV**	**Compulsory**	**3**	**0**	**3**	**5**
Course Objectives	The aim of this course is to give information about chemotherapeutic drugs.					

TOPICS

1. Antiseptic and disinfectants.
2. Sülfonamid, antimycobacterial drugs.
3. Quinolones.
4. Oxazolidinones, nitroheterocyclic.
5. β-lactam antibiotics, penicillins.
6. Cephalosporins.
7. Aminoglycoside antibiotics, tetracyclines.
8. Polypeptide and macrolide antibiotics.
9. Lincomycin and chloramphenicol antibiotics.
10. Antiprotozoal drugs.
11. Antihelmintic drugs.
12. Antifungal drugs.
13. Antiviral drugs.
14. Anticancer drugs

Course Code	Course Name	CourseType	Weekly Course		Credits	ECTS
			T	A/L		
PHA4214874	**PHARMACEUTICAL CHEMISTRY PRACTICE IV**	**Compulsory**	**0**	**3**	**1,5**	**3**
Course Objectives	This course aims to give information on qualitative analysis of pharmaceutical active compounds and to make the application.					

TOPICS

1. Qualitative analysis of active compound (general concepts)
2. Determination of the physical properties and the elements
3. Determination of the functional group.
4. Specific reactions
5. Specific reactions
6. Analysis of unknown samples.
7. Analysis of unknown samples
8. Analysis of unknown samples
9. Analysis of unknown samples
10. NMR spectroscopic methods
11. NMR spectroscopic methods
12. MS Spectroscopic Methods
13. UV. Vis., IR, NMR and MS spectral data solution
14. UV. Vis., IR, NMR and MS spectral data solution

DEPARTMENT OF PHARMACEUTICAL TOXICOLOGY

Academic Staff:

Prof. Dr. Gülden Zehra OMURTAG (Head of Department)

Res. Assist. Meryem Nur BAŞ

Res. Assist. Özce Esma PALA

Tech. Fatma GÜVEN

Research areas

Pharmaceutical Toxicology is a science that examines the toxic effects of chemical substances on living organisms, deals with their diagnosis and treatment, examines poisoning in terms of forensic medicine and defines the harmlessness limits of chemical substances. It is a pharmacy discipline that studies the cellular, biochemical and molecular mechanisms of the toxic effects of all chemical substances, including drugs. In the Department of Pharmaceutical Toxicology, one semester Toxicology theory course and one semester Toxicology practice course are given to Pharmacy students. Forensic Toxicology course is given theoretically as elective courses.

Research areas of Istanbul Medipol University School of Pharmacy, Department of Pharmaceutical Toxicology; It carries out research in the following areas in order to obtain toxicity data of drugs and various chemicals and to identify the harmful effects of these data on both humans and the environment;

1. Toxicity research on animal models, in vitro cytotoxicity studies
2. Genotoxicity and cytogenetic techniques
3. Genetic polymorphisms, epigenetics
4. Drug safety
5. Forensic toxicology
6. Toxicology of Natural Substances: Foods, fungi, medicinal herbs, plants, and venomous animals
7. Occupational toxicology
8. Clinical toxicology
9. Environmental and clinical biomarkers
10. Analytical toxicology
11. Risk assessment

Course Code	Course Name	Course Type	Weekly Course		Credits	ECTS
			T	A/L		
PHA4214876	**TOXICOLOGY**	**Compulsory**	**3**	**0**	**3**	**5**
Course Objectives	The aim of this course is to inform the general toxicological concepts, toxic dose, entry ways into the body of poisons, toxicokinetic and toxicodinamy, systematic toxicology and toxicological examination of chemicals, general principles of treatment in poisoning, allergy, genetic factors and advers drug reactions.					

TOPICS

1. Introduction to toxicology, dose, entry ways into the body and absorption of poisons
2. Distribution, accumulation, biotransformation of toxicants and factors affecting biotransformation. Excretion of poisons
3. Toxic effect mechanisms (Toxicodynamics)
4. Systemic toxicology. Toxicological analysis of xenobiotics. Assessment and risk analysis of the test results. Factors affecting toxicity
5. Toxic effects of organic solvents. Biomarkers
6. Toxic effects from herbal and animal poisons
7. Mycotoxins and toxic effects of mycotoxins. Mushroom poisoning and treatment of mushroom poisoning
8. First aid in acute poisoning, antidotes and treatment principles
9. Toxicity of pesticides, and treatment of pesticides poisoning
10. Drug toxicity. Treatment of acute poisoning with drugs
11. Toxicity of metals
12. Carbon monoxide poisoning and treatment of carbon monoxide poisoning. Cyanide poisoning and treatment of cyanide poisoning.
13. Pharmacogenetics, toxicogenomics, the difference between pharmacogenetics and allergic reactions
14. Adverse drug reactions and pharmacovigilance practices in Turkey

Course Code	Course Name	Course Type	Weekly Course		Credits	ECTS
			T	A/L		
PHA4214877	**TOXICOLOGY PRACTICES**	**Compulsory**	**0**	**3**	**1,5**	**3**
Course Objectives	The aim of this course to give information about systematic toxicology, determination of metallic, natural and synthetic poisons in biological materials using chemical and instrumental methods and to perform their applications.					

TOPICS

1. In vitro cytotoxicity tests
2. Genotoxicity techniques, basic cell culture
3. Acute toxicity (LD50) determination
4. Various techniques used in screening methods of poisons
5. Determination of poisons in biological materials and their isolation techniques
6. Analysis of toxic compounds in biological materials: volatile poisons
7. Analysis of toxic compounds in biological materials: Non-volatile organic poisons
8. Polimerase Chain Reaction (PCR)
9. Quantitation of Salicylate and Paracetamol - Interpretation of Done Nomogram
10. Determination of volatile substances in biological sample by microdiffusion technique
11. Determination of non-volatile metallic poisons in biological samples
12. Qualitative determination of acidic and basic drugs by chromatographic method
13. Methemoglobin Quantification and Cyanide Determination in Blood
14. Isolation of DNA from blood

DEPARTMENT OF CLINICAL PHARMACY

Academic Staff:

Assist. Prof. Neda TANER (Head of Department)

Assist. Prof. Rashida MUHAMMAD UMAR

Assist. Prof. Büşra Nur ÇATTIK

Res. Assist. Betül ŞİRİN

Res. Assist. Melih Buğra AĞ

Research areas

Clinical pharmacy, one of the basic pharmacies, is the pharmacy discipline that provides patient care and optimizes the medical treatment, which provides prevention of diseases and protection of health. Providing patient-oriented and rational drug use, pharmacoeconomic treatment arrangements are among the tasks of clinical pharmacists.

Istanbul Medipol University School of Pharmacy Clinical Pharmacy Research Fields;

1. The role of the clinical pharmacist in the treatment of acute and chronic diseases, patient education, monitoring of medication and treatment, rational drug use, pharmacoeconomics, pharmaceutical care,
2. The role of pharmacist in public health,
3. Oncology pharmacy,
4. Hospital pharmacy,
5. Drug side effects, drug interactions, efficiency comparisons constitute the main research areas of the Science branch.

Course Code	Course Name	Course Type	Weekly Course		Credits	ECTS
			T	A/L		
PHA4114863	**CLINICAL PHARMACY**	**Compulsory**	**3**	**0**	**3**	**4**
Course Objectives	Describe the concepts of clinical pharmacy and patient-oriented pharmacy and show the roles of the clinical pharmacist at rational drug use and successful pharmacotherapy in acute and chronic cases.					

TOPICS

1. Introduction to Clinical Pharmacy, Patient Oriented Pharmacy, Current Status in World
2. Therapeutic drug monitoring and laboratory tests evaluation
3. Asthma and COPD Management
4. Upper and Lower Respiratory System Infections
5. Peptic Ulcer and GERD
6. Diarrhea and Constipation
7. NSAID, Pain and fever management
8. Diabetes
9. Hypertension
10. Kidney disease
11. Hyperlipidemia
12. Coronary artery disease
13. Heart failure
14. Constipation and Diarrhea

Course Code	Course Name	Course Type	Weekly Course		Credits	ECTS
			T	A/L		
	CLINICAL PRACTICES	**Compulsory**	**0**	**4**	**2**	**3**
Course Objectives	Clinical visits, knowledge on therapeutic application and treatment practices in the clinical setting, competency in patient approach, case study, and patient education					

TOPİCS

1. Clinical pharmacy practice demonstration
2. Hospital pharmacy demonstration and infection risk education
3. Internal medicine ward visit and patient file evaluation
4. Internal medicine ward visit and patient file evaluation
5. Internal medicine ward visit and patient file evaluation
6. Pediatric ward visit and patient file evaluation
7. Pediatric ward visit and patient file evaluation
8. Pediatric ward visit and patient file evaluation
9. Infectious diseases ward visit and patient file evaluation
10. Infectious diseases ward visit and patient file evaluation
11. Infectious diseases ward visit and patient file evaluation
12. Hospital pharmacy and affiliated units
13. Hospital pharmacy and affiliated units
14. Hospital pharmacy and affiliated units

Course Code	Course Name	Course Type	Weekly Course		Credits	ECTS
			T	A/L		
PHA4114871	**PHARMACOTHERAPY**	**Compulsory**	**2**	**0**	**2**	**3**
Course Objectives	Pharmacology knowledge they have acquired during training to give students the ability to examine the basis of common diseases.					

TOPICS

1. Prescribing.
2. Pharmacovigilance.
3. Rational drug use.
4. Vaccines, toxoids, and immune globulins.
5. The drugs used in the treatment of sexually transmitted diseases.
6. Drugs used in radiological diagnosis and radiopharmaceuticals.
7. Drugs used in the treatment of diseases of the liver and gall bladder.
8. Drugs for treatment of respiratory diseases.
9. Drugs used in the treatment of kidney and urinary tract diseases.
10. Drugs used in the treatment of obstetric and gynecological diseases.
11. Anemia, vitamins, nutrition and blood products.
12. Drugs used in diseases of the gastrointestinal tract.
13. Drugs used in the treatment of neurological diseases.
14. Drugs used in the treatment of psychiatric disorders.

DEPARTMENT OF PHARMACY BUSINESS ADMINISTRATION

Academic Staff:

Assist. Prof. İpek EROĞLU (Head of Department)

Research areas

Pharmacy Business Administration is a study that contributes to the social and administrative fields of pharmacy sciences. Pharmacy Business Administration is a multidisciplinary pharmacy study field that acts as a bridge between pharmacy and different disciplines such as other health sciences, economics and administrative sciences, law, communication, education, sports sciences, human and social sciences, engineering and natural sciences. The Department of Pharmacy Business Administration is responsible for teaching the one-semester compulsory courses of orientation to pharmacy and ethics, pharmacy legislation and management, scientific research and literature review, history of pharmacy. Pharmacoeconomics, health economics, health legislation, marketing and sales management in pharmacy, pharmaceutical marketing, health communication and media, professional communication skills, public relations are offered as one-semester elective courses.

The research areas of Pharmacy Business Administration Department at the School of Pharmacy at Istanbul Medipol University are:

1. Pharmacoethics
2. Pharmacy and pharmaceutical sciences administration
3. Pharmacy law
4. Pharmacoeconomics
5. Pharmacy communication skills
6. Sustainability in pharmacy and pharmaceutical sciences

Course Code	Course Name	Course Type	Weekly Course		Credits	ECTS
			T	A/L		
PHA1112084	**ORIENTATION to PHARMACY and ETHICS**	**Compulsory**	**2**	**0**	**2**	**3**
Course Objectives	The aim is to evaluate the education system of the School of Pharmacy, its laws, regulations and the contents of the departments that will teach during the 5-year education.					

TOPICS

1. Introduction, provisions on universities in the constitution and laws, basic concepts in higher education law
2. University, faculty, college, department, department, science branch concepts, introduction of Medipol University and School of Pharmacy Pharmacy-pharmacist concepts, duties, responsibilities
3. National and international institutions and organizations related to pharmacy, Ministry of Health, Ministry of Labor and Social Security,
4. Turkish Pharmacists Association, Regional Pharmacist Chambers, World Health Organization
5. International Pharmaceutical Federation, various foreign pharmacy associations
6. Concepts of health and disease
7. The concepts of drugs, active ingredients, excipients
8. Classification of drugs, pricing of drugs
9. The concept of pharmacy, the concept of pharmacy warehouse, the introduction of the pharmaceutical industry
10. Duties and responsibilities of the pharmacist in health protection and treatment
11. The concept of prescription
12. The concept of prescription
13. The concept of deontology and ethics
14. The concept of research and publication in pharmacy

Course Code	Course Name	Course Type	Weekly Course		Credits	ECTS
			T	A/L		
PHA2113082	**HISTORY of PHARMACY**	**Compulsory**	**1**	**0**	**1**	**1**
Course Objectives	The aim is to reveal the stages of the pharmacy profession and pharmacy education, and the important developments in the history of pharmacy in Turkey.					

TOPICS

1. Origins of pharmacy
2. Islamic pharmacy
3. Turkish pharmacy
4. Pharmacy in Ottoman Period: Pharmacies, pharmacy education
5. Pharmacy in Ottoman Period: Pharmaceutical preparations, associations, journals
6. Pharmacy in Turkish Republic Period: Pharmacies, education, Turkish Pharmacy Day
7. Istanbul History of Pharmacy Museum
8. Collections of History of Pharmacy in Turkey
9. History of opium in Ottoman Empire
10. Poisons and poisoning cases in Istanbul in Ottoman Period
11. Importance of pharmacy advertising in history of pharmacy
12. Importance of pharmacy advertising in history of pharmacy
13. Plants that changed the world
14. The importance of chocolate in health from Aztecs to today

Course Code	Course Name	Course Type	Weekly Course		Credits	ECTS
			T	A/L		
	PHARMACEUTICAL LEGISLATION and MANAGEMENT	**Compulsory**	**2**	**0**	**2**	**3**
Course Objectives	With this course, it is aimed to teach the managerial and financial information necessary for the planning, organization, execution and control of pharmacy services.					

TOPICS

1. Requirements for opening a pharmacy, pharmacist placement, pharmacy location, relations with stakeholders, information system in pharmacy
2. Personnel recruitment and management
3. Financial transactions in the pharmacy
4. Shelf layout and stock management in the pharmacy
5. Pharmacist-patient relations, SGK Medula system
6. Legal responsibilities of the pharmacist
7. Pharmacy as a business
8. Financial statements
9. Financial statement analysis
10. Accounting information system
11. Basic principles of accounting
12. Basic principles of accounting (cont.)
13. Cash flow statement
14. Cash flow statement (cont.)

DIVISION OF PHARMACEUTICAL TECHNOLOGY

HEAD OF DIVISION

Assist. Prof. Muhammet Davut ARPA

DEPARTMENT OF PHARMACEUTICAL TECHNOLOGY

Academic Staff:

Prof. Fatma Jülide AKBUĞA

Assist. Prof. Muhammet Davut ARPA (Head of Department)

Res. Assist. Melike Zeynep ÜNÜKÜR

Res. Assist. Ebrar Elif KESMEN

Res. Assist. Tuğba ARSLAN

Res. Assist. Nilay DOĞAN

Res. Assist. Huriye ERASLAN

Tech. Hafize Nur PEKER

Research areas

Pharmaceutical Technology is one of the pharmaceutical disciplines which involves developing and testing novel pharmaceutical dosage forms of natural, synthetic and semi-synthetic compounds, and all technologies regarding usage of the drug. In our department, there are educational and research laboratories which possess equipment and instruments in a wide range that enable researchers not only to prepare classical magistral prescriptions but the usage of latest technological devices.

The research areas of Pharmaceutical Technology Department at School of Pharmacy at Istanbul Medipol University are:

1. Formulation Design and Characterization
2. Process, structure, characteristics, physicochemical and biopharmaceutical features of pharmaceutical dosage forms
3. Formulation of Solid (Tablets, Capsules, Pellets), Semi-Solid (Oinments, Emulsions, Gels, Creams), and Liquid Dosage Forms
4. Nanotechnology, Nano/Micro Sized Drug Carrier Systems (Nanoparticles, Microemulsions, Microspheres, Liposomes, Nanospheres, Nanocapsules, Solid Lipid Nanoparticles, Micelles, Self-Emulsifying Drug Delivery Systems), *in vitro-in vivo* Evaluation
5. Gene Delivery Systems and Vaccine Technologies
6. Peptide/Protein Loaded Targeted Drug Delivery Systems, *in vitro* and *in vivo* Evaluation
7. Oral, Dermal, Ocular, Transdermal, Topical, Parenteral, Mucosal Drug Formulations
8. Controlled Release Systems, *in vitro-in vivo* Evaluation
9. Stability Studies
10. Biopharmaceutic and Pharmacokinetics
11. Bioavailability and Bioequivalence
12. Drug Industry and Patent Studies
13. Drug Engineering

Course Code	Course Name	Course Type	Weekly Course		Credits	ECTS
			T	A/L		
PHA3114149	**PHARMACEUTICAL TECHNOLOGY I**	**Compulsory**	**3**	**0**	**3**	**5**
Course Objectives	To inform the students about the basic knowledge of pharmaceutical technology, parmaceutical water, solutions and dissolution.					

TOPICS

1. The historical development of the drug, international pharmaceutical organizations
2. Pharmaceutical calculations (prescription and dose calculation)
3. The basic process on pharmaceutical manufacturing
4. The basic process on pharmaceutical manufacturing.
5. Colligativeproperties
6. Extraction and the pharmaceutical preparations prepared by extraction
7. Drug delivery systems and the routes of administration
8. Drug delivery systems and the routes of administration
9. Preformulation, pharmaceutical excipients and the stability of dosage forms
10. Pharmaceutical water
11. Pharmaceutical water
12. Solutions
13. Solutions
14. Solubility and the factors affecting solubility

Course Code	Course Name	Course Type	Weekly Course		Credits	ECTS
			T	U/L		
PHA3114151	**PHARMACEUTICAL TECHNOLOGY PRACTICE I**	**Compulsory**	**0**	**3**	**1,5**	**3**
Course Objectives	To prepare pharmaceutical dosage forms in the solution forms with evaluating basic elements on drugs preparation.					

TOPICS

1. The rules of laboratory study that must be followed, prescription scales, the measurement of liquid, drop weigh and drip technique
2. Filters, use of the filters, mortar and use of mortars, prescription information, the rulers (the rulers A, the rulers B, the rulers C)
3. Water purification methods, softening the hard water, deionized water (Recovering water from ions), determination of ion exchange capacities for the ion exchange resin
4. Expressions of the concentration, dilution, measuring the density of liquid, degree of bauma, pH calculations
5. Preparation of buffer solutions, for buffer solutions calculation of capacity of the buffer and ion of strength
6. Aluminum acetate solution, aluminum subacetate solution, cresol soap solution
7. Resorcinol-salicylic acid solution, a solution of coal tar, juniper tar lotion
8. Rivanol solution, merbromin solution, boric acid solution
9. In concentrated hydrogen peroxide Quantification of hydrogen peroxide, and preparing a dilute solution of hydrogen peroxide, collutuvar of methylene blue
10. Benzalkonium chloride solution, carboline fuchsin solution
11. Determination of active chlorine at sodium hypochlorite solution, the neutral sodium hypochlorite (Dakin) solution
12. Lugol solution, the lead water
13. Alkaline sodium hypochlorite solution, alcoholic solution of iodine
14. Preparation of the solution prescriptions

Course Code	Course Name	Course Type	Weekly Course		Credits	ECTS
			T	A/L		
PHA3214157	**PHARMACEUTICAL TECHNOLOGY II**	**Compulsory**	**3**	**0**	**3**	**5**
Course Objectives	To inform the student about rheology, the properties of two-phase systems, semisolid dosage forms and their functions and quality controls.					

TOPICS

1. Rheology
2. Colloids
3. Interfacial properties
4. Suspensions
5. Suspensions
6. Emulsions
7. Emulsions
8. Semi solid dosage forms
9. Semi solid dosage forms
10. Permeability from the skin and transdermal systems
11. Permeability from the skin and transdermal systems
12. Suppositories
13. Aerosols
14. Basic pharmacokinetic

Course Code	Course Name	Course Type	Weekly Course		Credits	ECTS
			T	U/L		
PHA3214158	**PHARMACEUTICAL TECHNOLOGY PRACTICE II**	**Compulsory**	**0**	**3**	**1,5**	**3**
Course Objectives	To be performed the design of semi-solid dosage forms (ointment, path, suppository, gel etc.) and two-phase systems formulations, preparations and controls.					

TOPICS

1. Demonstration
2. Suspensions and their preparations
3. Quality control in suspensions, determination of distribution and sedimentation volume, particle size distribution in suspensions
4. Emulsion preparation and HLB values calculation
5. Determination of emulsion types
6. Liniments
7. Ointments (the preparation of simple and hydrophilic ointment)
8. Ointment with active ingredients and gel preparations
9. Path preparations
10. Cold cream, stearate cream
11. Suppository preparations
12. Dissolubility test in suppositories
13. Ovule preparations
14. Ovule preparations

Course Code	Course Name	Course Type	Weekly Course		Credits	ECTS
			T	A/L		
PHA4114868	**PHARMACEUTICAL TECHNOLOGY III**	**Compulsory**	**3**	**0**	**3**	**5**
Course Objectives	To give knowledge about the preparation methods of sterile dosage forms, the design of the sterile areas, the pharmaceutical packaging materials, GMP and quality assurance issues.					

TOPICS

1. Parenteral preparation
2. Parenteral preparations
3. Parenteral preparations
4. Ocular drugs
5. Sterilization and contamination
6. Nasal preparations
7. Sterile area and it's design
8. Sterile area and it's design
9. GMP, quality assurance, validation
10. GMP, quality assurance, validation
11. Medical devices and products
12. Drug incompatibility
13. Pharmaceutical packaging materials and Surgical materials
14. Biotechnological Drugs

Course Code	Course Name	Course Type	Weekly Course		Credits	ECTS
			T	U/L		
PHA4114869	**PHARMACEUTICAL TECHNOLOGY PRACTICE III**	**Compulsory**	**0**	**3**	**1,5**	**3**
Course Objectives	To be intended the design, preparation and quality controls of the sterile dosage forms.					

TOPICS

1. Demonstration
2. The ampoules that are prepared under normally conditions
3. The ampoules that are prepared under inert gase
4. The preparation of sterile neutral olive oil
5. The preparation of hormone formulations using sterile neutral olive oil
6. The preparation of multi-dose parenteral formulations
7. Perfusion and Ringer's solutions
8. The preparation of eye drops
9. Eye wash and lens solutions
10. Ear drops
11. Nasal drops
12. The quality controls of the parenteral dosage forms
13. The working principle of the autoclave.
14. Make-up

Course Code	Course Name	Course Type	Weekly Course		Credits	ECTS
			T	A/L		
PHA4214878	**PHARMACEUTICAL TECHNOLOGY IV**	**Compulsory**	**3**	**0**	**3**	**5**
Course Objectives	To inform the student about the preparation and quality controls of solid dosage forms, the stability tests and the licensing of drugs.					

TOPICS

1. Powder preparation and micromeritic, adsorption isotherms
2. Capsules, granule and tablets
3. Tablets, tablet types
4. The coating of the tablets
5. Micropellets
6. Extended release systems and modern therapeutic systems
7. Extended release systems and modern therapeutic systems
8. Extended release systems and modern therapeutic systems
9. Extended release systems and modern therapeutic systems
10. Veterinary and agricultural drugs
11. The drug licensing
12. The drug licensing
13. Stability
14. Radiopharmacy

Course Code	Course Name	Course Type	Weekly Course		Credits	ECTS
			T	U/L		
PHA4214879	**PHARMACEUTICAL TECHNOLOGY PRACTICE IV**	**Compulsory**	**0**	**3**	**1,5**	**3**
Course Objectives	To be intended to enable students to have practical skills the preparations and quality controls of solid dosage forms, stability tests and reaction kinetics.					

TOPICS

1. Demonstration
2. The preparations of cachet
3. The preparation of hard gelatin capsules
4. Wet and dry granulation
5. The preparation of tablet by direct compression method
6. The preparation of tablet by wet granulation method
7. The preparation of tablet by wet granulation method
8. The preparation of effervescent tablets
9. The coating of tablets by Wurster Apparatus
10. The preparation of dragee
11. The quality control of granule
12. The quality control of tablets
13. Accelerated stability test
14. Make-up

Course Code	Course Name	Course Type	Weekly Course		Credits	ECTS
			T	A/L		
	PHARMACEUTICAL BIOTECHNOLOGY	**Compulsory**	**2**	**0**	**2**	**3**
Course Objectives	To give to the students about recombinant DNA technology, biotechnological products and biosimilar drugs.					

TOPICS

1. Recombinant DNA technology and expression of genes in prokaryotic and eukaryotic cells
2. Recombinant DNA technology and production
3. Production of biotechnology-derived drugs, upstream process and cell banks
4. Production of biotechnological drugs: downstream process, bioreactors
5. Purification of biopharmaceuticals in protein structure, it's characterization and preparation: Further purification by Ultrafiltration-Chromatography
6. Recombinant Biopharmaceuticals I: monoclonal antibodies, cytokines, cell culture
7. Recombinant Biopharmaceuticals II: insulin, therapeutic hormones, therapeutic enzymes and clotting-related drugs and erythropoietin
8. Targeting of recombinant protein and nucleic acid-based drugs, the pegylated technologies and advancements
9. Gene therapy and gene medicines
10. Biosimilar drugs
11. Biosimilar drugs
12. Cell therapy products
13. Blood Products
14. Biotechnological vaccines

SUBDEPARTMENT OF COSMETOLOGY

Academic Staff:

Assist. Prof. Muhammet Davut ARPA (Head of Subdepartment)

Research areas

Development and characterization of cosmetic formulations

New cosmetic delivery systems (Microemulsions, Liposomes)

Course Code	Course Name	Course Type	Weekly Course		Credits	ECTS
			T	A/L		
	COSMETOLOGY	**Compulsory**	**2**	**0**	**2**	**3**
Course Objectives	To be confirmed the students about cosmetic and dermocosmetic products, it's preparations, stability and effectiveness.					

TOPICS

1. The definition and history of the cosmetics; national and international regulations; cosmetic good manufacturing process.
2. Structure and characteristic of the skin, skincare products.
3. Cosmetic raws
4. Cosmetic raws.
5. Skin aging, characteristics of aged skin
6. Skin whitening, using dermocosmetic for getting rid of brown spots on the skin.
7. Dandruff and alopecia, the effect of the sun, the sunscreen products.
8. The etiology of cellulite and anti-cellulite approaches; oral cavity and oral care products.
9. Modern cosmetic systems
10. Dermocosmetics – Laboratory
11. Dermocosmetics – Laboratory
12. Dermocosmetics – Laboratory
13. Dermocosmetics – Laboratory
14. Dermocosmetics - Laboratory

BASIC MEDICAL SCIENCE AND OTHER COURSES TAUGHT IN THE SCHOOL OF PHARMACY

Course Code	Course Name	Course Type	Weekly Course		Credits	ECTS
			T	A/L		
PHA1239590	**MEDICAL FIRST AID**	**Compulsory**	**2**	**0**	**2**	**2**
Course Objectives	To provide those, who will intervene in cases of accident and injury, with first aid training and playing adetermining role in maintenance of life, injury prevention and shortening the healing process.					

TOPICS

1. Introducing the Course, Establishing the Relation Between Course Learning Outcomes and Program Competencies Basic Concepts Related to First Aid
2. Human Body and Vital Findings
3. First aid on the bleedings
4. First aid in case of shock
5. First aid in case of disorders of consciousness
6. First aid in case of injuries and trauma
7. First aid in case of fracture, dislocations and sprains
8. First aid in case of burning
   First aid in case of freezing
9. First aid in Electric Shock, Hot and Sunburst
10. First aid in case of poisoning
11. First aid for a foreign object in ear, nose and eye
12. First aid in suffocation
13. Techniques for patient/wounded transport

Course Code	Course Name	Course Type	Weekly Course		Credits	ECTS
			T	A/L		
PHA1212095	**PHARMACEUTICAL TERMINOLOGY**	**Compulsory**	**2**	**0**	**2**	**3**
Course Objectives	The aim is to teach the terms used in the pharmacy.					

TOPICS

1. Introduction to Pharmaceutical Terminology
2. Latın grammer rules
3. Latın grammer rules
4. Latın grammer rules
5. Terminology of Pharmaceutical Botany
6. Terminology of Pharmaceutical Botany
7. Terminology of Pharmacognosy
8. Prescription terminology and abbreviations
9. Terminology of Biochemistry
10. Terminology of Pharmaceutical Technology
11. Terminology of Pharmacology
12. Terminology of Pharmacology
13. Terminology of Toxicology
14. Codex and Pharmacopoeia

Course Code	Course Name	Course Type	Weekly Course		Credits	ECTS
			T	A/L		
PHA1212092	**ANATOMY**	**Compulsory**	**2**	**0**	**2**	**3**
Course Objectives	To inform, to make practice about anatomical terminology, general medical terms, organization of human body, locomotor, respiratory and circulatory, reproductive and nervous systems.					

TOPICS

1. Introduction to anatomy and basic concepts, general knowledge about basic medical terminology, regional anatomy, regions and organization of human body and systems.
2. Anatomy of locomotor system
3. Anatomy of locomotor system
4. Information about anatomy of digestive system and its anatomical formations
5. Information about anatomy of circulatory system and its anatomical formations
6. Information about anatomy of respiratory system and its anatomical formations
7. Information about anatomy of urogenital system and its anatomical formations
8. Information about anatomy of endocrine system and its anatomical formations
9. Information about anatomy of endocrine system and its anatomical formations
10. Organization of the nervous system and its classification
11. Central nervous system
12. Peripheral nervous system
13. Autonomic nervous system
14. Sense organs

Course Code	Course Name	Course Type	Weekly Course		Credits	ECTS
			T	A/L		
PHA1212093	**PUBLIC HEALTH**	**Compulsory**	**2**	**0**	**2**	**3**
Course Objectives	To evaluate public health perspective and important working areas and public health point of view for health issues.					

TOPICS

1. Introduction
2. Health & Public Health
3. Determinants of Health And Disease and Vulnerable Populations
4. Demography and Public Health
5. Basics of Epidemiology
6. Health Promotion, Health Education and Health Literacy
7. Communicable Diseases
8. Environmental Health
9. Occupational Health
10. Behavioural Determinants of Health and Disease
11. Food and Nutrition
12. Geriatric Health and NCD's
13. Pharmacy and Public Health
14. General Review and Discussion

Course Code	Course Name	Course Type	Weekly Course		Credits	ECTS
			T	A/L		
PHA2113081	**PHYSIOLOGY**	**Compulsory**	**4**	**0**	**4**	**6**
Course Objectives	To understand the structure and functioning of different systems in body. To understand integrated aspect of functioning of all the systems in totality in body.					

TOPICS

1. Introduction to Physiology: The Cell and General Physiology
2. Nerve and Muscle
3. Blood Physiology
4. Autonomic Nervous System
5. Cardiovascular System Physiology I
6. Cardiovascular System Physiology II
7. Midterm
8. Respiratory Physiology
9. Endocrine Physiology
10. Physiology of Reproduction
11. Body Fluids and Renal Physiology
12. Neurophysiology I
13. Neurophysiology II
14. Final

Course Code	Course Name	Course Type	Weekly Course		Credits	ECTS
			T	A/L		
PHA2213097	**RESEARCH METHODOLOGY AND BIOISTATISTICS**	**Compulsory**	**2**	**0**	**2**	**3**
Course Objectives	To give basic information of biostatistical methodology to solve problems related to pharmaceutical research and analysis.					

Course Code	Course Name	Course Type	Weekly Course		Credits	ECTS
			T	A/L		
PHA1212094	**PHARMACY MATHEMATICS**	**Compulsory**	**2**	**0**	**2**	**3**
Course Objectives	Explaining pharmaceutical calculations which will be used during pharmaceutical education and professional career.					

TOPICS

1. Quantities, units, dimensions, variables, equations
2. Numbers, measurement, significant numbers, exponential numbers.
3. International System of Units
4. Linear, exponential and logarithmic functions
5. Logarithms and applications
6. Drawing graphics in functions
7. Percentage, ratio and other concentration expressions
8. Dilution and dose calculations
9. Calculation of Dose
10. Calculation of Isotonic and Buffer Solutions
11. Milliequivalents, Millimoles, Milliosmoles
12. Calculation for Formulations
13. Calculations about Plant Extractives
14. Calculations about Active Ingredients

Course Code	Course Name	Course Type	Weekly Course		Credits	ECTS
			T	A/L		
PHA1113781	**INFORMATION TECHNOLOGIES and TOOLS**	**Compulsory**	**2**	**0**	**2**	**2**
Course Objectives	To teach student fundamentals of hardware, operating systems, office programs and especially spreadsheet program (excel) in order to have them ability to use them for management and operational levels.					

TOPICS

1. History of computer
2. Hardware and peripheral units
3. Operating systems
4. Computer networks and internet
5. Word Program (office)
6. Word Program (office)
7. Presentation Program (office)
8. Presentation Program (office)
9. Web Design
10. Spreadsheet program
11. Spreadsheet program
12. Spreadsheet program
13. Spreadsheet program
14. Spreadsheet program

Course Code	Course Name	Course Type	Weekly Course		Credits	ECTS
			T	A/L		
PHA1213075	**SCIENTIFIC RESEARCH and LITERATURE REVIEW**	**Compulsory**	**2**	**0**	**2**	**2**
Course Objectives	The aim of this course is to examine scientific resources and prepare report.					

TOPICS

1. Introduction to literature review and the role of literature review in scientific research
2. Literature sources and how to find them
3. Analyzing research article-1
4. Citation
5. Analyzing research article-2
6. Article types
7. Reference management and reference management software
8. Preparing figures, tables, and schemes
9. Writing class report-1
10. Analyzing class report
11. Academic communication
12. Academic communication-practice
13. Writing class report-2
14. Writing class report-3

Course Code	Course Name	Course Type	Weekly Course		Credits	ECTS
			T	A/L		
PHA1190003	**PROFESSIONAL ENGLISH I**	**Compulsory**	**4**	**0**	**4**	**4**
Course Objectives	The aim of this course is to enable the student to gain competence to communicate at CEFR B2 level and related vocabulary knowledge using advanced written and spoken communication skills in the frame of "Pharmaceutical English"					

TOPICS

1. Introduction to the course
2. Cardiovascular System
3. Cardiovascular System Diseases
4. The Musculoskeletal System
5. The Musculoskeletal System Diseases
6. Neurologic System
7. Mental Health and Diseases
8. The Urinary System
9. The Urinary System Diseases
10. Speaking Test
11. Hepatic System
12. Hepatic System Diseases
13. Reproductive System
14. Follow-up scientific resources related to profession

Course Code	Course Name	Course Type	Weekly Course		Credits	ECTS
			T	A/L		
PHA1290004	**PROFESSIONAL ENGLISH II**	**Compulsory**	**4**	**0**	**4**	**4**
Course Objectives	The aim of this course is to enable the student to gain competence to communicate at CEFR B2 level and related vocabulary knowledge using advanced written and spoken communication skills in the frame of "Pharmaceutical English"					

TOPICS

1. Introduction to the course
2. Cardiovascular System and related literature
3. Cardiovascular System Diseases, medication and its effect
4. The Musculoskeletal System and modern day problems
5. The Musculoskeletal System Diseases and remedies
6. Neurologic System and related vocabulary
7. Mental Health and Diseases
8. The Urinary System
9. The Urinary System Diseases
10. Revision
11. Hepatic System
12. Hepatic System Diseases
13. Reproductive System
14. Follow-up scientific resources related to profession

Course Code	Course Name	Course Type	Weekly Course		Credits	ECTS
			T	A/L		
PHA2113083	**PROFESSIONAL ENGLISH III**	**Compulsory**	**3**	**0**	**3**	**4**
Course Objectives	The aim of this course is to enable the student to gain competence to communicate at CEFR B2 level and related vocabulary knowledge using advanced written and spoken communication skills in the frame of "Pharmaceutical English"					

TOPICS

1. Introduction to Academic English
2. Academic Vocabulary and Structures
3. Health Core Divisions
4. Pharmaceutical and Chemistry Basic English Phrases+Unit 1
5. Introduction to Prescription+Unit 2
6. Introduction to Prescription+Unit 2
7. Related Unit + Terminology + Unit 3
8. Related Unit + Terminology + Unit 3
9. Health Systems in the World+ Units Revision
10. Health Systems in the World+ Units Revision
11. Private and Public Health Services +Unit Word Revision
12. Private and Public Health Services +Unit Word Revision
13. Related Unit + Terminology + Unit 4
14. Related Unit + Terminology + Unit 4

Course Code	Course Name	Course Type	Weekly Course		Credits	ECTS
			T	A/L		
PHA2213098	**PROFESSIONAL ENGLISH IV**	**Compulsory**	**3**	**0**	**3**	**4**
Course Objectives	The aim of this course is to enable the student to gain competence to communicate at CEFR B2 level and related vocabulary knowledge using advanced written and spoken communication skills in the frame of "Pharmaceutical English"					

TOPICS

1. Modern Solution focuses in pharmacy
2. Modern Solution focuses in pharmacy
3. The future of pharmacy
4. The future of pharmacy
5. Comparison of different methods in pharmacy
6. Comparison of different methods in pharmacy
7. Case Study analysis
8. Case Study
9. Case study
10. Suffix and prefix in words related to pharmacy
11. Suffix and prefix in words related to pharmacy
12. Pharmacy and Public Health
13. Pharmacy and Public Health
14. Revision

Course Code	Course Name	Course Type	Weekly Course		Credits	ECTS
			T	A/L		
PHA3114152	**PROFESSIONAL ENGLISH V**	**Compulsory**	**3**	**0**	**3**	**3**
Course Objectives	The aim of this course is to enable the student to gain competence to communicate at CEFR B2 level and related vocabulary knowledge using advanced written and spoken communication skills in the frame of "Pharmaceutical English"					

TOPICS

1. Modern solution focuses in pharmacy
2. Modern solution focuses in pharmacy
3. The future of pharmacy
4. The future of pharmacy
5. Comparison of different methods in pharmacy
6. Comparison of different methods in pharmacy
7. Case study analysis
8. Case study
9. Case study
10. Suffix and prefix in words related to pharmacy
11. Suffix and prefix in words related to pharmacy
12. Pharmacy and Public Health
13. Pharmacy and Public Health
14. Revision

Course Code	Course Name	Course Type	Weekly Course		Credits	ECTS
			T	A/L		
PHA3214161	**PROFESSIONAL ENGLISH VI**	**Compulsory**	**3**	**0**	**3**	**3**
Course Objectives	The aim of this course is to enable the student to gain competence to communicate at CEFR B2 level and related vocabulary knowledge using advanced written and spoken communication skills in the frame of "Pharmaceutical English"					

TOPICS

1. Modern Solution focuses in pharmacy
2. Modern Solution focuses in pharmacy
3. The future of Pharmacy
4. The future of Pharmacy
5. Comparison of different methods in pharmacy
6. Comparison of different methods in pharmacy
7. Case Study analysis
8. Case Study
9. Case study
10. Suffix and prefix in words related to pharmacy
11. Suffix and prefix in words related to pharmacy
12. Pharmacy and Public Health
13. Pharmacy and Public Health
14. Revision

Course Code	Course Name	Course Type	Weekly Course		Credits	ECTS
			T	A/L		
PHA1139730	**PHYSICS**	**Compulsory**	**2**	**0**	**2**	**3**
Course Objectives	To gain knowledge and develop skills in the basic concept of mechanics and radiation.					

TOPICS

1. Physical quantities (Measurement and unit systems)
2. Vector I
3. Vector II
4. Kinematics I
5. Kinematics II
6. Dinamics I
7. Dinamics II
8. Work, energy and power
9. Work, energy and power
10. Electrostatic I
11. Electrostatic II
12. Current and resistance I
13. Current and resistance II
14. Magnetic field

Course Code	Course Name	Course Type	Weekly Course		Credits	ECTS
			T	A/L		
PHA1112085	**MEDICAL BIOLOGY AND GENETICS**	**Compulsory**	**3**	**0**	**3**	**6**
Course Objectives	The students learn basic data about genetic material.					

TOPICS

1. Introduction to Medical Biology
2. Cellular structure and organelles
3. DNA, chromosomes and genome
4. DNA replication and repair mechanisms
5. RNA and protein synthesis
6. Control of gene expression and Epigenetics
7. Midterm exam
8. Cell junctions and signal transduction
9. Cell cycle and cell division
10. Cellular aging and cell death
11. Cancer and molecular mechanisms
12. Stem cell biology and treatments
13. Genetics and genetic disorders
14. Final exam

SCHOOL OF PHARMACY GRADUATION PROJECT AND INTERNSHIP COURSES

Course Code	Course Name	Course Type	Weekly Course		Credits	ECTS
			T	A/L		
	FINAL PROJECT	**Compulsory**	**2**	**0**	**2**	**4**
Course Objectives	The aim of this course is to show the designing, planning, scanning the literature and evaluating of a research Project.					

TOPICS

1. What is the Project and aim of preparing it.
2. Determining subject of Project
3. Researching literature about subject of the Project.
4. Researching literature about subject of the Project.
5. Researching literature about subject of the Project.
6. Researching literature about subject of the Project.
7. Presentation of subject of the Project
8. Evaluating literature data.
9. Evaluating literature data.
10. Evaluating literature data.
11. Evaluating literature data.
12. Evaluating literature data.
13. Presentation the results of researching Project literature
14. Presentation the results of researching Project literature

Course Code	Course Name	Course Type	Weekly Course		Credits	ECTS
			T	A/L		
	APPLICATION OF FINAL PROJECT	**Compulsory**	**0**	**6**	**3**	**6**
Course Objectives	The aim of this course is to show preparation of the final project.					

TOPICS

1. Spelling rules of the final project.
2. Spelling rules of the final project.
3. Spelling rules of the final project.
4. Spelling rules of the final project.
5. Spelling rules of the final project.
6. Spelling rules of the final project.
7. Presentation of the project draft.
8. Writing of the final project.
9. Writing of the final project.
10. Writing of the final project.
11. Writing of the final project.
12. Writing of the final project.
13. Presentation of the final project.
14. Presentation of the final project.

Course Code	Course Name	Course Type	Weekly Course		Credits	ECTS
			T	A/L		
	INTERNSHIP I	**PRACTICE**	**0**	**40**	**0**	**2**
Course Objectives	Learning general information about pharmacy management and applications					
TOPICS Community Pharmacy internship learning objectives						

Course Code	Course Name	Course Type	Weekly Course		Credits	ECTS
			T	A/L		
	INTERNSHIP II	**PRACTICE**	**0**	**40**	**0**	**3**
Course Objectives	The aim is to enable students to see the roles of pharmacist in their field during the applications to be performed in community pharmacy and hospital pharmacy, also to help them gain the necessary experience before starting their career.					
TOPICS Community pharmacy and hospital pharmacy learning aims						

Course Code	Course Name	Course Type	Weekly Course		Credits	ECTS
			T	A/L		
	INTERNSHIP III	**PRACTICE**	**0**	**40**	**0**	**3**
Course Objectives	The aim is to enable students to see the roles of pharmacist in their field during the applications to be performed in community pharmacy, hospital pharmacy and drug industry, also to help them gain the necessary experience before starting their career.					
TOPICS Community pharmacy learning aims Hospital pharmacy learning aims Drug industry learning aims						

Course Code	Course Name	Course Type	Weekly Course		Credits	ECTS
			T	A/L		
	PROFESSIONAL EDUCATION in BUSINESS	**PRACTICE**	**0**	**24**	**0**	**15**
Course Objectives	The aim of this course is to enable the students to see the roles of the pharmacist in their profession during the practices in the community pharmacy, hospital pharmacy and pharmaceutical industry, and to help them gain the necessary experience before starting their professional life.					
TOPICS Community Pharmacy/ Hospital Pharmacy / Pharmaceutical Industry - Learning Objectives						

PROGRAM RELATED ELECTIVE COURSES

Course Code	Course Name	Course Type	Weekly Course		Credits	ECTS
			T	A/L		
	PROFESSIONAL COMMUNICATION SKILLS	**Elective**	**2**	**0**	**2**	**3**
Course Objectives	Introducing human psychology and providing basic information about psychology. It will be held in two parts, which are theoretical and practical parts by applying case studies and role plays as well as emphasizing theoretical background.					

TOPICS

1. Introduction to course
2. Senses, perception, and attention
3. Language development and communication
4. Theories of learning
5. İnstincts and motives
6. İntelligence and intelligence tests
7. Life-long developmental theories i (freud, erikson, piaget)
8. Life-long developmental theories ii (vygotsky, kohlberg)
9. Theories of personality and personality tests
10. Attitudes, prejudices, and social impacts on human behavior
11. Concepts of normal and abnormal and psychopathologies
12. Defense mechanisms
13. Health psychology: definition and the concept of social support
14. Psychological well-being of patient and the relationship of patient and psychologist/doctor

Course Code	Course Name	Course Type	Weekly Course		Credits	ECTS
			T	A/L		
	PATIENT INFORMATION	**Elective**	**4**	**0**	**4**	**6**
Course Objectives	The aim of this course to give the students examples of information to help the patients in treatment process.					

TOPICS

1. Introduction to patient information, patient education methods and materials used in patient information
2. Effective communication in patient education
3. Use of different dosage forms
4. Polypharmacy
5. Analgesics and antispazmodics
6. Vitamine and minerals
7. Herbal and food supplements
8. Medication for the cold and flu
9. Oral health products and smoke cessation products
10. Contraceptives
11. Vaccines, maternal and baby products
12. Weight-loss products and sport supplements
13. Medication for gastrointestinal disorders
14. Ophtalmic and dermatological products

Course Code	Course Name	Course Type	Weekly Course		Credits	ECTS
			T	A/L		
	HOSPITAL PHARMACY	**Elective**	**2**	**0**	**2**	**3**
Course Objectives	The aim of this course is to inform students about the role and responsibilities of hospital pharmacist in related units at the hospital and also to gain experience on hospital pharmacy practice.					

TOPICS

1. Basic concepts in hospital pharmacy
2. Comparison of hospital pharmacy practices in different countries and turkey
3. Responsibilities of pharmacist in hospital
4. Communication of pharmacists with other medical staffs in hospital
5. Evaluation of prescription and adjustment of drug doses
6. Drug control, inventory management and supply of medical equipment
7. Preparation of magistral formulations
8. Pharmacy experience in hospital pharmacy
9. Pharmacy practice in the internal medicine department
10. Pharmacy practice in the pediatric department
11. Pharmacy practice in oncology department
12. Pharmacy practice in infection department
13. Pharmacy practice in intensive care department
14. Pharmacy practice in polyclinic

Course Code	Course Name	Course Type	Weekly Course		Credits	ECTS
			T	A/L		
	PHARMACOECONOMY	**Elective**	**2**	**0**	**2**	**3**
Course Objectives	Teach the students the concepts and types of costs used in pharmacoeconomic assessments.					

TOPICS

1. Introduction: Pharmacoeconomics definition and importance
2. Pharmacoeconomic studies
3. Cost terms, measuring and estimating costs
4. Cost minimization analysis (CMA)
5. Cost effectiveness analysis (CEA)
6. article review: cost effectiveness analysis
7. Cost utility analysis (CUA)
8. article review: cost utility analysis
9. Cost benefit analysis (CBA)
10. Article review: Cost benefit analysis
11. Pricing of pharmaceuticals and reimbursement
12. Reference pricing
13. Risk sharing agreements
14. Pharmaceutical sector in Turkey

Course Code	Course Name	Course Type	Weekly Course		Credits	ECTS
			T	A/L		
	RATIONAL DRUG USE	**Elective**	**2**	**0**	**2**	**3**
Course Objectives	Preparing students about using drug or drug combinations; most accurately, efficient, safety, minimal number of drugs as much as possible, suitable doses and using type.					

TOPICS

1. Principles of rational drug use
2. Drug use evaluation
3. Rational drug use in pediatric patients
4. Rational drug use in geriatric patients
5. Principles of drug use during pregnancy and lactation
6. Rational drug use in oncology patients
7. Appropriate use of herbal products
8. Appropriate use of antibiotics
9. Rational choice of drugs in acute illnesses
10. Rational choice and use of drugs in patients with chronic diseases
11. Management of pharmaceutical waste
12. Drug use in renal dysfunction
13. Drug use in hepatic dysfunction
14. Pharmacists role and contribution in implementing rational drug use programs

Course Code	Course Name	Course Type	Weekly Course		Credits	ECTS
			T	A/L		
	PHARMACEUTICAL CARE	**Elective**	**2**	**0**	**2**	**3**
Course Objectives	Aims to introduce disease, health care, pharmaceutical care to concepts and principles, and to provide the knowledge and skills, to create a pharmaceutical care plan for acute and chronic diseases.					

TOPICS

Diseases and Health Related Basic Concepts and Definitions
Pharmaceutical Care Introduction and Basic Concepts
Pharmaceutical Care in Depression
Pharmaceutical Care in Diarrhea and Constipation
Pharmaceutical Care in Heart Failure Patients
Pharmaceutical Care in Ulcer and Reflux
Pharmaceutical Care in Asthma and COPD Patients
Pharmaceutical Care in Diabetes Mellitus Patients
Pharmaceutical Care in Hypertension Patients
Pharmaceutical Care in Geriatric Patients
Pharmaceutical Care in Renal Failure Patients
Pharmaceutical Care in Infectious Diseases
Pharmaceutical Care in Cancer Patients
Pharmaceutical Care in Pregnancy

Course Code	Course Name	Course Type	Weekly Course		Credits	ECTS
			T	A/L		
	R&D in PHARMACY	**Elective**	**2**	**0**	**2**	**3**
Course Objectives	Have knowledge about how R&D studies in pharmaceutical industries are performed.					

TOPICS

1. Definition and history of R&D
2. Basic research
3. Basic research
4. Applied research
5. Applied research
6. Experimental development
7. Experimental development
8. İnnovation in pharmaceutical industries
9. Innovation studies about development of new pharmaceutical active substances
10. Innovation studies about development of new pharmaceutical forms
11. R&D in pharmacy and university, industry and government cooperation
12. R&D expenditures
13. National incentive programs and politics for R&D
14. National incentive programs and politics for R&D

Course Code	Course Name	Course Type	Weekly Course		Credits	ECTS
			T	A/L		
	CLINICAL RESEARCHES	**Elective**	**2**	**0**	**2**	**3**
Course Objectives	The main goal and objective of this class is to provide pharmacy students the essentials of pre-clinical and clinical research, phase studies, research motifs as well as the situation of clinical research in Turkey, preparation and evaluation of a sample case study preliminary report and prepare with students sample clinical study, and finally investigating dosage finding studies of active pharmaceutical ingredient in clinical research.					

TOPICS

1. General terms and principals in clinical research and pre-clinical research. Ethical committees, preparation of protocols
2. Stages of pre-clinical research for drug development (Phase-0)
3. The importance and role of bio-statistic in clinical research.
4. Determination of clinical data and variables, survey procedures, validity and reliability, scientific research planning
5. Research tools and key components in clinical research, bio similarity experiments
6. Phase studies in clinical research (Phase-1 through Phase-IV).
7. Important parameters and tools while conducting a clinical study (reliability, audition, data gathering, and evaluation of tolerability)
8. Quality in clinical research, sampling, finding co-horts and study subjects, randomization study, blind study methods, selecting control groups and properties of clinical study)
9. Sources of mistakes, and bias in clinical research.
10. Ethical committees in clinical research and their function and importance
11. Data analysis of clinical research and complete evaluation of case reports and finalizing the outcome, preparation of final report.
12. Preparation of a sample case study (preliminary draft and preparing a final study and the situation of clinical research in Turkey.
13. Clinical research in Turkey.
14. Clinical research in Turkey

Course Code	Course Name	Course Type	Weekly Course		Credits	ECTS
			T	A/L		
	DRUG INTERACTIONS	**Elective**	**2**	**0**	**2**	**3**
Course Objectives	The aim of this course is to inform about drug interactions that is as a change in the pharmacologic effect of a therapeutic drug that results when it is given concurrently with another drug or with food.					

TOPICS

1. Mechanisms of drug interactions: Pharmacokinetic and Pharmacodynamic interactions
2. CYP enzyme family and the drugs that induct and inhibit CYPs
3. Importance of drug-drug interactions and drug side/adverse effects statement
4. Alcohol interactions, food interactions
5. Antibacterial and antiviral drug interactions
6. Antihypertensive drug interactions
7. Antiarrhythmic and digital glycoside drug interactions
8. Antianginal, anticoagulant drug interactions
9. Analgesic and non-steroidal anti-inflammatory drug interactions
10. Immunosuppressive drug interactions
11. Anticonvulsant drug interactions
12. Neuroleptic, anxiolytic, hypnotic drug interactions
13. Antidepressant and oral-contraceptive drug interactions
14. Interactions with herbals

Course Code	Course Name	Course Type	Weekly Course		Credits	ECTS
			T	A/L		
	INDUSTRIAL PHARMACY	**Elective**	**2**	**0**	**2**	**3**
Course Objectives	With the light of pharmacy and engineering information, to explicate the knowledge of sector of the pharmacist who is the most important cornerstone of the pharmaceutical industry and to inform the students.					

TOPICS

1. Basic operations in the pharmaceutical industry
2. Electrotechnical/ Mechatronic
3. Qualification / Validation (including computerized systems)
4. HVAC systems, clean room design, WFI systems
5. Pharmaceutical industry process and analytical technology (PAT)
6. Pharmaceutical industry process and analytical technology (PAT)
7. QbD (Quality by Design)
8. Examples for QbD and PAT
9. Examples for QbD and PAT
10. Packaging techniques and technologies.
11. Approach in terms of engineering in pharmaceutical analysis
12. Hygiene and sanitation in pharmaceutical industry.
13. Quality management and systems
14. EMEA, FDA and ICH actual guideline

Course Code	Course Name	Course Type	Weekly Course		Credits	ECTS
			T	A/L		
	NUTRITIONAL PHARMACY	**Elective**	**2**	**0**	**2**	**3**
Course Objectives	Provide information about nutraceuticals, functional foods and food supplements					

TOPICS

1. Definition of nutraceuticals, functional foods and food supplements
2. Sources of nutraceuticals in nature
3. Carbohydrates
4. Phenolics
5. Terpenoid nutraceuticals
6. Fatty acids as nutraceuticals
7. Probiotics and prebiotics as nutraceuticals
8. Nutraceuticals for bone and joint diseases
9. Nutraceuticals for cardiovascular system
10. Nutraceuticals for the prevention of cancer
11. Nutraceuticals for skin health
12. Nutraceuticals for sleep enhancement, weight control and enhancement of sportive performance
13. Nutraceuticals for eye health and woman health
14. Nutraceuticals for mental health and eye health

Course Code	Course Name	Course Type	Weekly Course		Credits	ECTS
			T	A/L		
	NON-DRUG PRODUCTS AND MEDICAL DEVICES	**Elective**	**2**	**0**	**2**	**3**
Course Objectives	To provide information about concepts, knowledge, skills, purpose of use, route of administration and maintenance related to medical devices and medical products, perfumery products, agricultural and veterinary medicines and supplies that students may encounter in their business life.					

TOPICS

1. Professional definitions, historical development, applications, goals and requirement
2. Common medical supplies, wound and patient care products
3. Gynecology service, child respiration and surgery equipments
4. Mother-baby health, planned parenthood, sterilization and disinfection products
5. Diagnostic products, diabetes and blood pressure devices, stethoscopes, thermometer
6. Physical therapy, exercise, walk-assistant products
7. First-aid and work safety supplies, medical clothes and slippers
8. Perfumery products,
9. Varicosis stockings, bandages and edema salve
10. Hospital main stock supplies, diagnosis and curing products
11. Veterinary medicine (brief info and medicine)
12. Agricultural pesticides (brief info and medicine)
13. Orthopedical products-1
14. National legislation on medical devices

Course Code	Course Name	Course Type	Weekly Course		Credits	ECTS
			T	A/L		
	DRUG MARKETING	**Elective**	**2**	**0**	**2**	**3**
Course Objectives	The aim of this course is to inform about drug marketing, basic principles of selling, general information about personal selling and to bring students in required knowledge and ability to construct of drug marketing.					

TOPICS

1. What is the marketing and sale
2. Life cycle of the product (Leanings, Recognition, Confirmation and Following)
3. New product development (R&D) and growth strategies in the market
4. The marketing and sale personnels and tasks of them
5. Pricing
6. Trademark and patent of the drug
7. Advertising and promotional activity of the drug
8. Marketing and ethics
9. Drug and role of it in the sustainability
10. Pharmacy and design
11. The marketing and sale performance at the pharmaceutical industry
12. Importance of communication in the marketing and sale of the drug
13. Marketing and sale as of team game
14. Drug marketing information systems (IMS, Medula, RxMedia)

Course Code	Course Name	Course Type	Weekly Course		Credits	ECTS
			T	A/L		
	HEALTH LEGISLATION	**Elective**	**2**	**0**	**2**	**3**
Course Objectives	To redound a pharmacist ability of coming over the ethical and law relating problems by analytical thinking and to provide being informed about new health applications.					

TOPICS

1. Importance of health legislation
2. Examples of problems are experienced in health legislation
3. Examples of problems are experienced in health legislation. (Cont.)
4. Principles of law and relation of law and health
5. Mission of health professionals in Turkish law
6. Law-related responsibility of health professionals
7. Evaluation of current law-related problems
8. Evaluation of current law-related problems. (Cont.)
9. New health applications
10. New health applications (Cont.)
11. New health applications (Cont.)
12. Principles of ethics
13. Analysed examples about ethic
14. Analysed examples about ethic. (Cont.)

Course Code	Course Name	Course Type	Weekly Course		Credits	ECTS
			T	A/L		
	MARKETING AND SALES MANAGMENT IN PHARMACY	**Elective**	**2**	**0**	**2**	**3**
Course Objectives	The purpose of this lesson is to teach, how to use correct marketing sales management techniques in pharmacy practice and how it effects.					

TOPICS

1. The importance of sales and marketing on pharmacy management and basic concepts about management
2. Understanding and evaluating limitations on marketing and sales management in pharmacy that situated in Republic of Turkey promotional activities of the Ministry of Health Regulation on human medicinal products
3. The basic concepts of marketing
4. Marketing management in the pharmacy
5. To call a successful pharmacist in pharmacy marketing management to pharmacy courses and case studies on pharmacy marketing management
6. The basic concepts of sales
7. Pharmacy sales management
8. To call a successful pharmacist in pharmacy marketing management to pharmacy courses and case studies on pharmacy marketing management
9. Applied SWOT analysis
10. The effect of coordination and exhibition on marketing and sales management in pharmacy practice, basic rules of coordination and exhibition, coordination and exhibition categories
11. The effects of body language on marketing and sales management in the pharmacy, the meaning of the basic movements of body language and the ways of using body language to communicate using the correct paths
12. Drugs and OTC products marketing and sales management in the pharmacy market, and the impact of this effect should be borne in mind of a pharmacist to be properly managed
13. To call an employee as a guest speaker to share the experience in the course of drugs and OTC products market, to explain the effects of pharmacy market through case studies
14. To read current articles and evaluate pharmacy with marketing and sales management

Course Code	Course Name	Course Type	Weekly Course		Credits	ECTS
			T	A/L		
	HEALTH COMMUNICATION AND MEDIA	**Elective**	**2**	**0**	**2**	**3**
Course Objectives	The purpose of this lesson is to teach the basic elements and the role of pharmacist of the health communication and media.					

TOPICS

1- Health communication and basic elements of the health communication
2- Target audience in health communication and how to determine target audience in health communication
3- Evaluation the concept of contact from a health communication point of view.
4- Health communication in the patients, pharmacists and doctors triangle.
5- Health communication campaigns
6- Basic concepts in the media and the importance of media in health communication
7- Health news on central media and health reporting in newspapers
8- To call in a newspaper reporter or columnist from central media engaged in health reporting as a guest of the course and case studies
9- Television health news on central media and health reporting
10- To call a health reporter from central media engaged in health reporting as a guest of the course and case studies
11- Health news on magazines and journalism
12- Health news on medical journals and journalism
13- Social media, health news and journalism
14- Health news in the local media and local journalism

Course Code	Course Name	Course Type	Weekly Course		Credits	ECTS
			T	A/L		
	LABORATORY PRACTICES IN DRUG INDUSTRY	**Elective Course**	**4**	**0**	**4**	**6**
Course Objectives	Recognizing the processes of laboratory practices ins drug industry.					

TOPICS

1.ICH, EMA, FDA, GMP, GLP and Pharmacopeias
2. Development of APIs.
3.Analyticalt and manufacturing of raw materials
4.Validation and calibration
5.Electhrophoretic methods (Gel, capillar)
6.Spectroscopic methods (UV, IR)
7.Chromatographic methods (HPLC)
8.Development of chromatographic methods (HPLC)
9.Preformulation studies and development of new formulations
10.Preformulation studies and development of new formulations
11.Pharmacopeia tests applied on drug formulations
12.Stability tests
13.Quality by design (QbD)
14.Process analytical technologies (PAT)

Course Code	Course Name	Course Type	Weekly Course		Credits	ECTS
			T	A/L		
	FORENSIC TOXICOLOGY	**Elective**	**2**	**0**	**2**	**3**
Course Objectives	Causality assessment between chemical exposure and occurence of lethal/toxic effects and toxicological analysis needed for clarification of criminal records.					

TOPICS

1. Principles of forensic toxicology
2. Classification of toxic substances
3. Classification of toxic substances
4. Classification of toxic substances
5. Classification of toxic substances
6. Analytic role in forensic toxicology
7. Analytic role in forensic toxicology
8. Toxicological investigation of a poison death
9. Toxicological investigation of a poison death
10. Criminal poisoning of the living
11. Forensic urine drug testing
12. Analytical procedures
13. Analytical procedures
14. Analytical procedures

Course Code	Course Name	Course Type	Weekly Course		Credits	ECTS
			T	A/L		
	PATENT and LICENSING	**Elective**	**2**	**0**	**2**	**3**
Course Objectives	Providing in the subject of drug registration, process and importance of registration, patent, licence types of patents and increasing the potential of studying in these areas for students					

TOPICS

1. Aim, extent and descriptions in drug registration
2. Documents that must be presented in drug registration application
3. Shortened applications
4. Derivated product applications for the registrated active compounds
5. Returning and rejecting of registration application
6. Validity period of registration and re-evaluation of registrated products
7. Drug registration in U.S.A and E.U
8. Basic terms and patent in drug.
9. History of the protection of patent in Turkey and the World
10. Non-material and patent ownership rights
11. Patent in drug
12. Preparation of patent applications
13. Licence types of patent
14. International applications

Course Code	Course Name	Course Type	Weekly Course		Credits	ECTS
			T	A/L		
	SPORTS PHARMACY	**Elective**	**2**	**0**	**2**	**3**
Course Objectives	To introduce the concepts of sports pharmacy, to show the roles that pharmacists can take on rational drug use and the success of patient treatment through acute and chronic cases.					

TOPICS

1. Sport sciences, sport and health, introduction to sports pharmacy.
2. To explain the anatomy and muscular systems.
3. Biochemistry
4. Sports physiology, Sport genetics
5. Rational drug use in sports pharmacy
6. Sports kinetics, sports pharmacy orthosis massage for athletes
7. Doping
8. Nutrition/Supplements
9. Infections
10. Upper and lower extremity injuries
11. Sports psychology, stress, sleep and pain
12. Sports law
13. Sports Chronobiology
14. Elite athlete / Medical exercise

Course Code	Course Name	Course Type	Weekly Course		Credits	ECTS
			T	A/L		
	DISASTER AND EMERGENCY PHARMACY (ADEC)	**Elective**	**2**	**0**	**2**	**3**
Course Objectives	To raise awareness about disasters and emergency situations, To enable the pharmacist to gain knowledge about the management of medicines and pharmaceutical services during disaster periods, To emphasize the importance of pharmacovigilance studies in extraordinary conditions such as natural disasters, pandemics To get information about the guide “Pharmacy Services in Extraordinary Circumstances" prepared by the International Pharmaceutical Federation.					

TOPICS

1.Disaster Terminology and Disaster Types
2. Basic Disaster Awareness
3.Pharmacy Practices in Disasters
4. Disaster Pharmacy in Turkey and in the World, International Pharmacy Federation Guide
5.Acquiring Basic Skills in Disaster Preparedness
6. Preparation of Essential Medicine Lists in Disaster and Emergency Situations.
7. Pharmacovigilance Practices in Disasters
8. Medicine and Pharmacy Management in Disasters
9. Collaboration with Governments and Pharmaceutical Organizations in Disasters
10. Pharmaceutical Industry in Disaster and Emergency Situations
11.First Aid
12. Triage
13. Emergency Medical Response Information in Disasters
14. Leadership and Management.

INSTRUCTIONS

REPUBLIC OF TÜRKİYE

İSTANBUL MEDİPOL UNIVERSITY SCHOOL OF PHARMACY PROGRAM GUIDELINES

SECTION ONE

Purpose, Scope, Basis and Definitions

Purpose

ARTICLE 1– (1) The purpose of this instruction is to regulate the education, assessment, and evaluation activities as well as the procedures and principles implemented in the bachelor's degree exams conducted at Istanbul Medipol University, School of Pharmacy.

Scope

ARTICLE 2 – (1) This Instruction covers the terms related to the education program, principles of examination and assessment, matriculation, diploma and titles, exmatriculation and freezing procedures, internship, graduation project and other education studies as well as academic consultancy procedures conducted for the bachelor's degree at the Istanbul Medipol University, School of Pharmacy.

Basis

ARTICLE 3 – (1) This instruction has been prepared based on the "Istanbul Medipol University Associate and Undergraduate Education Regulations," which went into operation by being published in the Official Gazette dated 17.08.2012 and numbered 28387. These regulations are associated with "The Regulation related to Determination of the Minimum Education Conditions in the School of Medicine, Nursing, Tocology, Dentistry, Veterinary Medicine, Pharmacy and Architecture" was published in the Official Gazette dated 02 February 2008 and numbered 26775.

Definitions

ARTICLE 4 – (1) The following definitions shall apply for the purposes of this Instruction:

a) European Credit Transfer System (ECTS/AKTS): The credit contains must-do studies to accomplish the determined course.

b) Advisor: Faculty member that attends to educational and other problems of students and is tasked with the Faculty Board with the suggestion of the Deanship.
c) Deanship: Deanship of the Istanbul Medipol University School of Pharmacy.
d) Semester Grade Point Average (SGPA): The grade is acquired by the division of the total grade point for the courses a student takes in the determined semester or academic year to the credit of taken courses (ECTS).
e) Faculty: Istanbul Medipol University School of Pharmacy
f) Faculty Council: Faculty of Istanbul Medipol University School of Pharmacy.
g) Faculty Board: Faculty Board of Istanbul Medipol University School of Pharmacy.
h) Cumulative Grade Point Average (CGPA): The grade is acquired by the division of the total grade point for the grade point average of all the courses students take from the first year of their academic year to the total ECTS of these courses.
i) Student: Students of the Istanbul Medipol University School of Pharmacy.
j) Registrar's Office: The Registrar's Office of the Istanbul Medipol University.
k) Prerequisite Courses: The course in which students should succeed or ensure compulsory attendance to be able to select the prerequisite courses.
l) Rectorship: Rectorship of Istanbul Medipol University.
m) Senate: Senate of Istanbul Medipol University.
n) University: Istanbul Medipol University.

SECTION TWO

Rules related to Education

Education

ARTICLE 5 – (1) The education period in the Turkish Program of the School of Pharmacy is five years, and the education is organized based on the semester and the basis of passing the courses. The education period in the English Program of the School of Pharmacy is six years with the Preparatory Year, and the education is organized based on the semester and the basis of passing the courses.

(2) Pharmacy education provides training in Basic Pharmaceutical Sciences Education in the first two years and Professional Pharmaceutical Sciences in the last three years.

(3) The maximum study period in the School of Pharmacy is 8 (eight) year for the Turkish Program. The maximum study period in the School of Pharmacy is 8 (eight)year, except for the preparatory year in the English Program.

(4) Students must do their compulsory internships for a total of six months in public pharmacies, hospital pharmacies under the control of a pharmacist, pharmaceutical production facilities, medical stuff production facilities, cosmetic factories, and/or r&d centers related to those areas.

(5) Students prepare for their Graduation Projects by taking the Graduation Project course in the 9th and the Graduation Project Practice course in the 10th semester of their pharmacy education.

(6) The final year students who expired the maximum study period are allowed to take two additional exams for each course they failed. After those exams, students who have five failed courses are allowed to take the exams of these courses within three semesters. Students who have five failed courses without taking the additional exams are allowed to take the exams of these courses within three semesters. Students with one failed course are allowed to take the exam of this course undated, without taking advantage of the studentship. Compulsory attendance is not necessary for the courses out of the Laboratory, Practice, and the ones which have not been taken already. (C) paragraph of the 44th Article of the Higher Education Law numbered 2547.

(7) The registrations of students are not deleted in case of non-payment of the tuition or no re-registration during the maximum study period. However, if a student would not pay the tuition or reregister their registration for four years in a row, their registration can be deleted by the decision of the Senate and the approval of the Higher Education Council.

Terms related to the Internship Instruction and Graduation Project are determined addedly. These terms are in the legislation tab of the University as Istanbul Medipol University Internship Instruction, Istanbul Medipol University School of Pharmacy Graduation Project Practice Rules

Language of Education

ARTICLE 6 **–** (1) The language of the Turkish Program is Turkish. All the courses except for the English courses in the 1st, 2nd, and 3rd classes are %100 in Turkish.

(2) The language of the English Program is %100 in English.

Education Commission

ARTICLE 7 **–** (1) An Education Commission of at least three is constituted by Faculty Board to organize the education. Dean or Vice Dean is in charge of the Commission. The Commission consults with the Dean and Faculty Board about topics related to education.

Compulsory English Preparatory Training

ARTICLE 8 – (1) English preparatory class is compulsory for the School of Pharmacy English Program and its maximum study period is 2 (two) years. Students who fail at the end of this period are processed according to the current legislation. Terms related to the English placement test and English preparatory year are conducted within the scope of "Regulation on Foreign Language Teaching in Higher Education Institutions and Principles to complied on the Foreign Language Teaching" and "Istanbul Medipol University English Preparatory Year Education Instruction" terms.

Courses and Credits

ARTICLE 9 – (1) Education is arranged according to the instructional plans consisting of names, weekly credit hours, and ECTS of the courses in each semester.

(2) Courses consist of the compulsory, common compulsory, elective and elective courses related to the program.

(a) **Compulsory Courses:** The courses in the curriculum that the student must take and be successful to graduate.

(b) **Common Compulsory Courses:** The courses partaking in the 1st subclause of the 5th article of the Higher Education Law numbered 2547 which Atatürk's Principles and History of Turkish Revolution, Turkish Language and Foreign Language courses instructed in the School of Pharmacy Turkish Program as the common compulsory courses. Atatürk's Principles and History of Turkish Revolution, Turkish Language courses are the common compulsory courses instructed in the School of Pharmacy English Program

(c) **Elective Courses:** It consists of elective and optional elective courses depending on the program.

(1) **Elective courses related to the program**; These are the courses that are included in the curriculum in which the student is registered and that they must take and be successful by choosing from certain courses or course groups recommended for graduation. These are Elective Vocational Orientation Courses in the ninth and tenth semesters. The number of courses, hours, and credits (ECTS) that a student should take is determined by consideration to complete the total credits (ECTS) students should take to graduate.

(2) **Optional elective courses**; The courses that the students take at their request and with the approval of their advisor, are not counted as elective courses related to the program increase their knowledge, manners, and liberal education; that is not taking part in their program curriculum to complete the credit (ECTS) required for graduation.

Prerequisite Courses

ARTICLE 10 – (1) The first of the courses in different semesters and continuation courses (such as I, II, III, and IV) are the prerequisite course for the others.* (Except for the I, II, III, and IV of English Language and Professional English courses.) A student who takes the first courses can take the others without following the order. For the student to take a prerequisite course, it is sufficient to have completed the prerequisite course attendance requirement.

(2) The courses and their prerequisite courses are given in the table below.

Prerequisite Courses	**Courses**
General Chemistry	Organic Chemistry I, Analytical Chemistry I, Analytical Chemistry Practice I
Analytical Chemistry II	Pharmaceutical Technology I and Pharmaceutical Technology Lab.I
Analytical Chemistry Practice II	Pharmaceutical Technology I and Pharmaceutical Technology Lab.I
Organic Chemistry II	Biochemistry, Pharmaceutical Chemistry I, Pharmaceutical Chemistry Lab. I
Biochemistry	Clinical Biochemistry Practice
Pharmaceutical Botany and Pharmaceutical Botany Lab.	Pharmacognosy I, Pharmacognosy Lab. I
Pharmacognosy III	Phytotherapeutics
Anatomy	Physiology
Physiology	Pharmacology I
Pharmacology III	Pharmacotherapy, Toxicology, Toxcicology Practice, Clinical Pharmacy

*Pharmaceutical Technology I-II-III and IV courses are the partake continuation courses.

(3) Prerequisites related to the elective courses related to the program and compulsory courses in the ninth and tenth semesters are determined and announced by the Decision of the Faculty Board. The courses in the 5th year of the School of Pharmacy and their prerequisite courses are given in the table below.

Courses	**C/E**	**ECTS**	**Prerequisite**
Pharmacoeconomy	E	3	Completion of the 1st, 2nd, 3rd and 4th semester class attendance policies
Occupational Communication Skills	E	3	
Nonpharmacological Products	E	3	
Health Economies	E	3	
Media in Health Communication	E	3	
Sports Pharmacy	E	3	
Graduation Project	C	4	

Graduation Project Practice	C	7	Completion of the 5th and 6th semester class attendance policies
Marketing and Sales Management in Pharmacy	E	3	
Pharmacy Legislation and Administration	C	3	
Pharmaceutical Marketing	E	3	
Clinical Studies	E	3	
Nutritional Pharmacy	E	3	
Health Legislation	E	3	
Rational Drug Use	E	3	Completion of Pharmacotherapy and Clinical Pharmacy class attendance policies *Completion of the 5th and 6th semester class attendance policies*
Pharmaceutical Care	E	3	
Patient Information	E	6	
Hospital Pharmacy	E	3	
Drug Interactions	E	3	
Clinical Practices	C	3	
Biotechnology Derived Article and Biosimilar Drugs	C	3	Completion of Pharmaceutical Technology I--II-III-IV and Pharmaceutical Technology Lab. I-II-III-IV class attendance policies
Cosmetology	C	3	
Industrial Pharmacy	E	3	
Patent and Authorization	E	3	*Completion of the 5th and 6th semester class attendance policies*
Forensic Toxicology	E	3	Completion of Toxicology and Toxicology Practice class attendance policies *Completion of the 5th and 6th semester class attendance policies*
Laboratory Practices in Drug Industry	E	6	Completion of Pharmaceutical Chemistry I--II-III-IV and Pharmaceutical Chemistry Lab. I-II-III-IV, Pharmaceutical Technology I--II-III-IV and Pharmaceutical Technology Lab. I- II-III-IV class attendance policies *Completion of the 5th and 6th semester class attendance policies*

THIRD SECTION

Rules related to Matriculation and Registration Procedures

Lateral Transfer Commission

ARTICLE 11 – (1) The Commission evaluates the applications constituted by the board by provisions of relevant regulations of the Transfers Among the Associate Degree and Undergraduate Programs in the Higher Education Institutions and Regulation Related to Rules of Double Major, Minor, and Interacademic Credit Transfer.

Lateral Transfer and Course Exemption

ARTICLE 12 – (1) The number, semester, and schedule along with the application document and conditions of the students who will be accepted via lateral transfer from within the country, abroad, and intra-academic are determined and announced by the University. Lateral transfer processes are realized according to the provisions of Transfers Among the Associate Degree and Undergraduate Programs in the Higher Education Institutions and Regulation Related to Rules of Double Major, Minor, and Istanbul Medipol University Lateral Transfer Instruction. (Transfers Among the Associate Degree and Undergraduate Programs in the Higher Education Institutions and Regulation Related to Rules of Double Major, Minor), (Istanbul Medipol University Lateral Transfer Instruction).

(2) Consideration and course exemption related to the Lateral Transfer are evaluated by the Lateral Transfer Commission.

(3) In the transfer of the courses that the students who get accepted into the Faculty through various procedures have previously taken and succeeded in higher education institutions in Turkey and abroad, the process is carried out by the Instruction on Equivalence in the Credit-Grade Transfers of the Courses Taken Outside of Istanbul Medipol University. (Instruction on Equivalency in Credit-Grade Transfers of Courses Taken Outside of Istanbul Medipol University).

Double Major and Minor Programs

ARTICLE 13 – (1) Students who will apply to the Double Major Program should observe the provisions of Regulation on the Principles of Transfer between Associate Degree and Undergraduate Degree Programs in Higher Education Institutions, Double Major, Minor, and

Inter-Institutional Credit Transfer published in the Official Gazette dated 24/04/2010 and numbered 27561. The conditions of the students who will apply are given below.

a) Students with the first 100,000 in the related base score type as a result of ÖSYM-YKS in 2020 can apply. This condition is not required for students who took ÖSYM-YKS before 2020.

b) Students can apply to the Double Major Diploma program at the beginning of the 3rd semester at the earliest and the 5th semester at the latest.

c) For students to apply for the Double Major Program, they must meet the following conditions:

(a) The student must have completed all the courses he/she has taken in the undergraduate program he/she is registered for until the semester he/she applies.

(b) The student's cumulative grade point average at the time of application must be at least

2.70 (70/100).

(c) The student must be in the top 20% in terms of success in the relevant class of the major undergraduate program.

(2) Students who will apply to the Double Major Program should observe the provisions of Regulation on the Principles of Transfer Between Associate and Undergraduate Degree Programs in Higher Education Institutions, Double Major, Minor, and Inter-Institutional Credit Transfer published in the Official Gazette dated 24/04/2010 and numbered 27561. The conditions of the students who will apply are given below.

a) The student must have completed all the courses taken in the undergraduate program he/she is enrolled in until the semester he/she applies and must have a weighted grade point average of at least 2.48 (65/100).

b) The student can apply to the Minor Certificate Program at the beginning of the 3rd semester at the earliest and at the beginning of the 5th semester at the latest of the undergraduate program he/she is registered for.

Exchange Programs

ARTICLE 14 – (1) Inter-university student exchange programs can be implemented by the agreements made between the University and higher education institutions in the country

or abroad. Within the framework of these programs, students can be sent to these universities for one or two semesters. Exchange programs are implemented in line with bilateral agreements and the principles determined by the Council of Higher Education.

Orientation and Student Counseling

ARTICLE 15 – (1) At the beginning of the fall semester of the academic year, orientation programs (orientation) are organized by the Dean's Office to introduce the University to the first-year students who are registered.

(2) Advisor; During the undergraduate education life of the School of Pharmacy, the Dean's Office is to supervise the enrollment procedures of the student within the framework of the principles determined by the Administrative Board, to support the student in the solution process of the problems related to education and training, to inform and guide the student about adaptation to university life, professional development, and career. commissioned by. Student Advisors are appointed before course registration begins.

Re-Registration and Course Selection

ARTICLE 16 – (1) Course selections are made at the beginning of each semester between the dates determined by the academic calendar with the help of their advisors.

(2) The prerequisite for course selection is re-registration by fulfilling the tuition fee commitment.

(3) During the re-registration, the courses that the student will take in that semester are determined. Students can add or remove courses that they will choose in that semester, within the periods determined in the academic calendar. The registration of students whose excuses are accepted can be postponed until the end of the add-deletion period at the latest. The course selection process is finalized after the approval of the advisor.

(4) Students can withdraw from courses other than the courses they failed in the first two semesters until the date determined in the academic calendar is approved by their advisors.

(5) Students are obliged to take the course/courses that they failed, should, or could not take from the lower semester/year first.

(6) When a compulsory course that they have taken before is unsuccessful or that they have not taken at all, they take an equivalent course in terms of credit value (ECTS) approved by the Faculty Board.

(7) Students who fail the courses removed from the education plan are not held responsible for these courses unless an equivalent course is replaced. However, they have to complete the lack of ECTS to graduate.

(8) The status of students who do not renew their registration for two consecutive semesters is discussed in the administrative board when necessary. A student who does not complete the course selection/registration process is deemed to have waived his right to study for that semester/semester, he is not continued in the courses, he is not taken to the exams, and the exams are taken, if any, are deemed invalid.

Special Student

ARTICLE 17– (1) Students who are registered in a higher education institution and want to gain gains in a different higher education institution environment and culture at the same level can apply to become a special student, provided that their registration remains at their university. The applications made are evaluated and decided by the Faculty Administrative Board of our Faculty.

(2) The time spent by the student as a special student is counted as the period of study.

(3) Students studying in programs whose language of instruction is Turkish must certify that their foreign language level is sufficient to be able to take courses from programs where the medium of instruction is a foreign language.

(4) The special student opportunity can be used for a maximum of two semesters during a program. This period can be extended by the decision of the Higher Education Council, upon the student's request and only under the following conditions:

a) In case the student is diagnosed with a serious disease that cannot be cured in the province of residence due to his/her education after his/her placement in a higher education institution, or the progression of the existing disease is documented by a medical board report obtained from a state hospital or a state university hospital.

b) In case the university administrative board offers that the student cannot continue his/her education in the higher education institution where he/she is registered due to acts such as assault and violence.

Summer school

ARTICLE 18 – (1) Considering that the compulsory internships of the students studying in various classes of the Turkish and English Programs of our faculty are planned during the summer semesters, the requests of the students to take courses from the summer schools in other higher education institutions cannot be found appropriate.

Continuation Obligation

ARTICLE 19 – (1) Attendance to classes, laboratories/practices is compulsory. Unless a contrary decision is taken by the Senate, it is the responsibility of the relevant faculty member to determine the limits of absenteeism and to monitor the attendance status of the students. However, the attendance requirement cannot be less than 70% for theoretical courses and 80% for applied courses. Students who are documented to have exceeded the absenteeism limit by the instructor will not be admitted to the general exam of that course.

Leave of Absence

ARTICLE 20 – (1) In the presence of justified and valid reasons, two-semester leave may be granted upon the written application of the student or his/her representative. Students' permission requests and reasons are evaluated by the administrative board and the result is reported to the Rectorate. For students in foreign language preparatory classes, the opinion of the preparatory class coordinator is taken; a student can be allowed a maximum of two semesters at a time and a total of 4 semesters during the whole education period. Leave periods are not counted as teaching time.

(2) Permission requests; A leave of absence/freezing registration petition is filled and submitted to the Dean's Office until the last day of the add-deletion period each semester, together with the reasons and documents. These applications are decided by the Faculty Administrative Board.

(3) The student who will request leave due to a medical excuse must certify his excuse with a committee report from the health institutions.

(4) Among the students who are taken into custody or arrested, students whose detention and detention have ended or who have been acquitted of the crime they are on trial for, are considered to be on leave for this period.

(5) Students who have to take a break from their education due to their military service are considered to be on leave until they complete this service. These students continue their education in the academic year following the end of their military service.

(6) Students participating in scientific, social, cultural, and sports activities and competitions to represent Turkey or our University are deemed to be on leave from classes and exams with the decision of the Senate. These students are taken to make-up exams from the exams they could not take at that time.

(7) Students may be granted leave, with or without a scholarship, to contribute to their education and training, in case of opportunities such as domestic/international education, internship, research, increasing knowledge and experience, by the decision of the board of directors, according to the periods specified in the first paragraph. These permissions are included in the education period and applications on this subject must be made before the end of the add-deletion period.

(8) If the newly enrolled students in our faculty freeze their registration in the first semester, the first-semester fee is charged. The collected tuition fee is recalculated by deducting the next tuition fee that the student will continue to study. If the student is dismissed for any reason, the fee collected for the first semester the registration is frozen will not be refunded to the student.

(9) No tuition fee is charged to students who request a registration freeze for the semesters following the semester they are enrolled in our faculty.

(10) Students on leave can continue their education from where they left off by registering at the end of the leave period.

Deregistration

ARTICLE 21 – (1) The student or his/her official representative who wishes to cancel the registration applies to the Dean's Office with a petition. The student is dismissed by deregistering the student by the relevant administrative board. Deletion of students' records is possible if the following situations occur.

a) The student's request for deregistration at his request,

b) The student must be expelled from the higher education institution by the provisions of the Higher Education Institutions Student Disciplinary Regulation,

c) The Faculty Administrative Board has decided based on the health board report that he cannot practice the profession of pharmacy due to health reasons,

d) The student's transfer to another higher education institution for any reason,

e) It is determined that the student has given false and/or false documents during registration,

f) Failure to complete his/her education at the end of the maximum period specified in Article 5,

(2) The student who wants to cancel the registration must fulfill the financial commitment of the semester/year before the registration application. Otherwise, the student's record will not be deleted,

(3) The payments made by the unregistered student for the semester in which he is registered are not refunded.

SECTION FOUR

Exams and Success Status Exams

Exams

ARTICLE 22 – (1) Exams; consist of midterm, general exam, make-up exam, exemption exam, make-up exam, three-course exams, and internship exams. These exams can be written, oral, or both written and oral and/or applied. Exam dates are announced at least one week before the exams.

(2) A student who does not take the exams is deemed to have used his right to take the exam and has received zero points from the exams he has not taken.

(3) If necessary, with the decision of the Faculty Administrative Board and the approval of the Rectorate, classes, and exams can also be held on Saturdays and Sundays.

(4) Students are required to take the exams on the announced day, time and place and to have their identity documents and other required documents with them; otherwise, their exams will be deemed invalid. If a student takes the exam for a course for which he/she does not fulfill the conditions, the grade he/she has received will be deemed invalid even if it has been announced.

(5) The relevant lecturer submits the transcripts and exam documents of the course he/she has conducted to the Faculty Dean's Office by the "Principles Regarding the Preservation

of Exam Documents in Istanbul Medipol University Associate Degree and Undergraduate Programs". The submitted exam documents are kept in the University archive for two years (Principles on Preservation of Exam Documents in Istanbul Medipol University Associate and Undergraduate Programs).

(1) **The principles regarding the exams are as follows:**

a) **Midterm Exam:** At least one midterm exam is given for each course. Mid- term evaluations of projects, graduation papers, laboratories, workshops, and similar studies can replace midterm exams. Midterm exam results are announced before the general exam period.

b) **General Exam:** It is the exam held at the end of the semester or year in which a course is completed. Students who fulfil the attendance requirement by registering for a course take the general exam.

c) **Make-up Exam:** It is an exam that is taken by optionally waiving the general exam grade to raise the grade, although the exams held at the end of the semester/ year are successful with the failed courses. A student who wants to take the exam to raise the grade can only take the make-up exam from one course which means the exam that he/she has to apply with a petition to the relevant unit at least one week before the exam that course.

d) **Exemption Exam:** It is held at the beginning of the semester for the courses determined by the Senate.

e) **Make-up Exam:** It is the exam given instead of the midterm exam. Among the students who could not take the midterm exam due to their rightful and valid excuses, those whose excuses are accepted by the faculty administrative boards use their midterm exam rights according to the calendar to be determined within the same semester. General exams do not have make-up exams. Unless a contrary decision is made by the board of directors, a make-up exam is not held for the internship and make-up exams.

f) **Three Course Exams:** Students who have not completed the maximum education period stipulated in paragraph (c) of Article 44 of the Higher Education Law No. 2547; It is the exam, which is given at the end of each semester, within thirty days of the end of the make-up exams, which is given to the student who has completed his education in the diploma program of our faculty, but has failed at most three courses to graduate as a result of the make-up exams. The grade obtained in this exam replaces the course success grade.

g) **Internship Exams:** These are the exams that cover the internship subjects and are held during the periods when the internship courses are included in the education curriculum.

Calculation of Success Score

ARTICLE 23 – (1) Course Success Grade is at least 60 out of 100 points. The course success grade is obtained by evaluating the average of the grades received by the student from the midterm exam and other activities in the form of midterm exams, together with the general exam grade. In theoretical courses, the weight of the semester grade is 40%, and the grade weight of the general exam is 60%; The success grade weight of the applied courses is 60%, and the grade weight of the general exam is 40%. A student who does not get at least 50 points in the general exam, valid for all courses, is considered unsuccessful in that course.

(2) Grades taken out of one hundred full points in the exams are converted according to the Istanbul Medipol University Associate Degree and Undergraduate Education and Training Regulations.

Grade average

ARTICLE 24 – (1) The weighted grade of a course is the number found as a result of multiplying the credit value (ECTS) of that course with the success grade coefficient. Term weighted grade point average; It is found by dividing the weighted grades of all the courses taken by a student in the specified semester or year by the sum of the credit values (ECTS) of the courses taken.

(2) GPA; It is the number obtained by dividing the weighted grades of all compulsory, elective, program-related elective and common compulsory courses in the student's program by the sum of the credit values (ECTS) of these courses. In courses repeated or taken to raise grades, including summer education, the last grade taken is included in the calculation.

(3) Values resulting from the calculation of the averages are rounded to two digits after the decimal point; The third digit after the decimal point is rounded to zero if it is less than five, and rounded to increase the second digit if it is five and greater than five.

Success Status of Students

ARTICLE 25 – (1) Among the students who have successfully completed the program they are enrolled in and have not received any disciplinary punishment, those with a GPA between

3.13-3.54 are considered honour students, and those between 3.55-4.00 are considered high honour students.

Lesson Repetition

ARTICLE 26 – (1) Students who fail a course repeat that course in accordance with the provisions of Article 16. Students who want to increase their GPA can repeat the courses they have taken before, in addition to the courses they must take in the current semester, with the approval of the advisor. For the students who fail the courses with (F2), attendance is required in the course repetition. Students who repeat a course must also attend the midterm exams of the relevant course.

Correction of Error of Fact

ARTICLE 27 – (1) An objection can be made to the exam results and grades only due to error of fact. This objection can be made by the instructor/student with a petition to the Dean of our Faculty within 5 (five) working days after the announcement of the exam results. Applications are decided upon by the decision of the Faculty Administrative Board.

Cheating in Exams

ARTICLE 28 – (1) Istanbul Medipol University Student Disciplinary Investigation Procedures and Principles prepared in accordance with the provisions of the Higher Education Institutions Student Disciplinary Regulation published in the Official Gazette dated 18/8/2012 and numbered 28388 about the student who cheats, attempts to cheat or cheats in the exams (Legislation-Process-Forms) is applied. A student who is found to have cheated, attempted to cheat or cheated as a result of a disciplinary investigation is given a zero grade in that exam (Istanbul Medipol University Student Disciplinary Investigation Procedures and Principles (Legislation-Process-Forms).

Sick Leave

ARTICLE 29 – (1) Health excuses of students that arise during the education period are accepted or rejected by the decision of the Faculty Administrative Board, in case of justified and valid reasons.

(2) Make-up exams are only valid for midterm exams. Students who do not take the make-up exam for any reason will not be offered a new make-up exam.

(3) It is obligatory for the students to document the health excuses that occur during the education period with a doctor's report. Students who submit their reports to our Faculty within 5 (five) working days following the report issuance date, whose health excuses are accepted by the Executive Board, can take the make-up exams. Excuses given after five days will not be accepted.

(4) Make-up exams are made as written, oral, or both written and oral and/or practical.

(5) A student who has not attended any midterm exam without a justified and valid excuse accepted by the Board of Directors is deemed to have scored a zero in that exam.

(6) Students whose midterm exams are at the same time are given the right to make-up exams for the exams they could not take. Students in this situation must apply to the relevant department with a petition within 3 (three) business days after the exam schedule is announced.

(7) Medical reports received due to excuses include the exams on the day or days they belong. Students with a report will not be admitted to the classes and exams held on the days of their sick leave. If a situation to the contrary is determined, the faculty administrative board will invalidate the student's excuse and, if made, the excused exam result.

(8) Students are considered absent on the days of their sick leave.

CHAPTER FIVE
Miscellaneous and Final Provisions

Notification and Address Reporting

ARTICLE 30 – (1) All kinds of notifications are deemed to have been made by sending them in writing to the address given by the student during registration to the University. If a notification is sent to the current address of the University, students who have not informed the

Registrar's Office and the Faculty even though they have changed the address they reported while registering, or who have given an incorrect or incomplete address, are deemed to have been notified.

Date of graduation

ARTICLE 31 – (1) The graduation date of the student is the day of the last successful exam. Students whose graduation carries over to the next academic year pay the tuition fee of that semester.

Teaching Level / Diplomas

ARTICLE 32 – (1) Students studying in the Turkish and English Program of the of Pharmacy are awarded the following diploma:

a) At least 300 (three hundred) ECTS for graduation, who are successful by taking the compulsory, common compulsory, elective and program-related elective courses that must be taken during the 5 (five) years of education foreseen for the Turkish and English Programs of the School of Pharmacy (excluding the preparatory class). Students who complete the "Bachelor and Master Degree of Pharmacy" and "Pharmacist" titles are given.

Cases Not Provisioned in the Instruction

ARTICLE 33 – (1) In cases where there is no provision in this Instruction, the procedures are carried out according to the Istanbul Medipol University Associate Degree and Undergraduate Education and Training Regulations, the provisions of other relevant legislation, the University Administrative Board and Senate Decisions, and the Faculty Management and Faculty Board Decisions.

Repeal

ARTICLE 34 – (1) As of the effective date of this instruction, the "Education and Training Instruction of the School of Pharmacy", which was accepted with the decision of the University Senate dated 17/02/2015 and numbered 2015/07-03, has been repealed.

Force

ARTICLE 35 – (1) The provisions of this Instruction enter into force on the date it is

accepted by the University Senate to be implemented as of the fall semester of the 2022-2023 academic year.

Executive

ARTICLE 36 – (1) The provisions of this Instruction are executed by the Dean of Istanbul Medipol University School of Pharmacy.

***Accepted by the University Senate's decision dated 07/07/2022 and numbered 2022/09-06.**

REPUBLIC OF TÜRKİYE
ISTANBUL MEDIPOL UNIVERSITY SCHOOL OF PHARMACY
INTERNSHIP INSTRUCTION

Aim

ARTICLE 1 – (1) The aim of this instruction is to determine the basic principles of planning, implementation, and evaluation rules of internship studies at the School of Pharmacy of Istanbul Medipol University students are obliged to do during their education.

Scope

ARTICLE 2 – (1) This instruction covers the students registered in the School of Pharmacy.

Base

ARTICLE 3 – (1) This instruction has been prepared based on the 43(2) article of the Istanbul Medipol University Associate and Undergraduate Education Regulations, the 3rd article of the Istanbul Medipol University School of Pharmacy Education Instruction and following the amendment in the subparagraph (b) of second paragraph of 8th article of the Regulation on Determination of Minimum Education Conditions for Medicine, Nursing, Midwifery, Dentistry, Veterinary, Pharmacy and Architecture Education Programs published in the Official Gazette dated 2/2/2008 and numbered 26775.

Internship Principles

ARTICLE 4 – (1) To obtain a pharmacist diploma, students must complete their compulsory internship, which is at least six months, organized following the provisions of this instruction, in a public pharmacy or hospital under the supervision of a pharmacist, in a pharmaceutical production facility, medical equipment production facility, cosmetics factory and/or R&D related to these production areas, centers must be completed.

The responsible manager pharmacist must have at least five years of experience for internships in a public pharmacy or hospital pharmacy.

During their education, students must complete four internship applications, which are defined as Internship I, Internship II, Internship III and Internship IV.

Internship Commission

ARTICLE 5 – (1) The Internship Commission consists of at least five academic staff, one of whom is the president, elected for three years by the School Administrative Board. The regulation, organization, examination and evaluation of internship documents, supervision and internship exams are made by the Internship Commission.

Internship Documents

ARTICLE 6 – (1) Students are responsible for preparing, getting approved and submitting the following documents during their internship period.

***Internship Application Form:** It is the form in the internship logbook, which is separately for each internship application and contains information about the pharmacy or institution and the student in its content. It is submitted to the Dean's Office after the student fills it in before starting the internship and signed by the authorized person where the internship will take place.

***Internship Approval Form:** It is the form in which the activities carried out during the internship are arranged following the internship writing rules in accordance with the relevant internship application form and approved by the responsible for the relevant institution. This form is submitted to the Dean's Office in the first month of the academic year following the end of the relevant internship.

(2) Internship Application and Internship Approval Forms are prepared separately for each internship application.

Internship Application Period

ARTICLE 7 – (1) The student must apply for an internship by the end of the 12th week of the spring semester.

Internship Facilities

ARTICLE 8 – (1) Internship is done in a public pharmacy or hospital under the supervision of a pharmacist, in a pharmaceutical production facility, medical equipment production facility, cosmetics factory and/or R&D centers related to these production areas.

(2) With the recommendation of the Internship Commission and the approval of the Dean, internships can also be done in equivalent institutions/organizations, determined by various international programs or private initiatives, instead of the relevant internship place.

Change of Internship Facility

ARTICLE 9 – (1) After students start their internship, they cannot change their internship place without the knowledge and approval of the Internship Commission.

In case of strikes and lockouts, death, mutual negativities, natural disasters such as earthquake, fires and flood, and other force majeure, students can continue their internships in another place with the approval of the Internship Commission.

Compulsory Attendance

ARTICLE 10 – (1) It is compulsory for the student to continue the internship between the dates specified in the Internship Application Form. The days when the internship cannot be continued due to valid excuses are stated in the Internship Approval Form and are compensated.

Code of Practice

ARTICLE 11 – (1) Students are required to take Occupational Health and Safety Training before starting their first internship. This training is carried out with the expert staff of the University under the coordination of the Internship Commission.

Students are obliged to complete their internship in accordance with the internship dates announced with the recommendation of the Internship Commission and the approval of the Dean's Office.

Before each internship application, the Internship Application Form, filled by the student and approved by the authorized person at the place where the internship will take place, is delivered to the Dean's Office. Students are obliged to perform all their internships in accordance with their internship learning objectives. The studies that the student has done

during the internship, the knowledge he has gained transfers his experiences and observations to the Internship Approval Form.

The responsible person approves each page of this form at the place of internship. Forms without stamp/seal and signature approval are not considered in the evaluation. Forms without a signature, stamp/seal and dates, erasure, scraping, and improper corrections are not accepted.

The student submits the Internship Approval Form to the Dean's Office in the first month of the new academic year following the end of the internship. All submitted Internship Application Forms and related Internship Approval Forms are prepared by the student in the 5th grade and turned into an Internship Logbook.

Work accident and occupational disease insurance are provided by the University as long as the students continue their workplace internship before they start their internship, according to subparagraph (a) of the first paragraph of Article 4 of Law No. 5510.

Students do not inform others about matters that require confidentiality related to production and service. They do not participate in union activities. The University cannot be a party to disputes that may arise between the enterprise and the student. During the internship, students must comply with the provisions of the Higher Education Institutions Student Disciplinary Regulation, the working principles of the institution where they do their internship, the rules regarding work conditions, discipline and work safety.

Monitoring of Internship

ARTICLE 12 – (1) Internship Commission members, when deemed necessary, make the required follow-up to ensure that the internship is carried out following its purpose and rules, and may contact the company where the internship is held, obtain information about the internship student, and ensure that the students are followed.

These monitoring and inspections related to the internship can be carried out face-to-face or over the phone.

Evaluation of the Internship

ARTICLE 13 – (1) Before the internship exam, the Internship Book containing all the internship forms of the student is examined by the Internship Commission. To take the relevant internship exam, the student must first complete a six-month internship.

Students who do not have absenteeism and whose Internship Logbook is examined by the Internship Commission and who are determined to have received sufficient education and skills in accordance with the internship learning objectives are entitled to take the internship exam.

Internship exams are held under the coordination of the Internship Commission. A member of the jury can be selected among self-employed pharmacists with at least five years of experience in their profession or working in an institution. Examinations are made orally and/or in writing for the student's internship applications, internship learning objectives and professional issues. Exam results are declared as successful/unsuccessful.

Successful completion of the internship exam is recorded in the Internship Evaluation Form and approved by the exam commission. Students who fail the internship exam are taken to the make-up exam within one month following the exam. Students who fail the make-up exam are given a repeat internship upon the recommendation of the Internship Commission and the approval of the Dean's Office. Those who cannot complete their internship cannot graduate.

All kinds of internship documents are submitted to the Dean's Office for archiving after the internship evaluation is completed.

Internship Exemption

ARTICLE 14 – (1) Some or all the internships, which the students who come to the faculty with the internal transfer, a document that they have done while they are registered at the Higher Education Institution, can be accepted with the approval of the Internship Commission. The status of students who apply for an exemption is decided upon by the Internship Committee, and the relevant documents are kept in the student's internship file.

Miscellaneous and Final Provisions

ARTICLE 15 – (1) In cases not specified in this instruction, action is taken following the relevant board decisions.

Enforcement

ARTICLE 16 – (1) This instruction comes into force on the date it is accepted by the Istanbul Medipol University Senate to be valid.

Abolition

ARTICLE 17 – (1) With this instruction, "TC İstanbul Medipol University School of Pharmacy Internship Instruction", which entered into force with the Senate decision dated 13.05.2014 and numbered 2014/17-01, has been repealed.

Execution

ARTICLE 18 – (1) This instruction is executed by the Dean of İstanbul Medipol University School of Pharmacy.

Provisional ARTICLE 1- Students who completed their 6-months internship at the date which this Instruction comes into force are responsible for taking internship exams (Internship I, Internship II, Internship III, and Internship IV) will be held at the relevant semesters.

30 days in the summer term of 2nd year (public pharmacy), 60 days in the summer term of 3rd year (public pharmacy/hospital pharmacy), 60 days in the summer term of 4th year (public pharmacy/hospital pharmacy / pharmaceutical industry / other), 5th class In the spring semester, they will complete their 180-day internship, which will be 30 days (freelance pharmacy/hospital pharmacy / pharmaceutical industry / other).

*Adopted by the University Senate's decision dated 18/09/2018 and numbered 2018/27-04. ANNEXES

Internship Learning Objectives Internship Periods

Internship Logbook Internship Application Form Internship Approval Form Internship Supervision Form

İSTANBUL MEDİPOL UNIVERSITY SCHOOL OF PHARMACY CLASS SCHEDULE

First Grade						
Fall Semester						
Course Code	**Course Name**	**T**	**A/L**	**C/E**	**ECTS**	**LECTURERS**
PHA1113781	INFORMATION TECHNOLOGIES and TOOLS	2	0	C	2	Assist. Prof. Özge DOĞUÇ
PHA1112086	GENERAL CHEMISTRY	4	0	C	6	Assist. Prof. Sema KOYUTÜRK
PHA1139730	PHYSICS	2	0	C	3	Lect. Mehmet Sıddık CEBE
PHA1112085	MEDICAL BIOLOGY and GENETICS	3	0	C	6	Assist. Prof. Berrak ÇAĞLAYAN, Lect. Yasemin YOZGAT BYRNE, Assist. Prof. Muzaffer ARIKAN, Lect. Dr. Özlem MUTLU BURNAZ
PHA1112084	ORIENTATION to PHARMACY and ETHICS	2	0	C	3	Assist. Prof. İpek EROĞLU
ATA1110300	HISTORY of the TURKISH REPUBLIC I	2	0	C	2	Lect. Nimetullah YAŞAR Lect. Kenan BODUR
PHA1190003	PROFESSIONAL ENGLISH I	2	0	C	4	Lect. Onur KAVAK Lect. Semih PALA
TDL1110400	TURKISH LANGUAGE I	2	0	C	2	Lect. Kübra GÜRSOY
Spring Semester						
Course Code	**Course Name**	**T**	**A/L**	**C/E**	**ECTS**	**LECTURERS**
PHA1212094	PHARMACY MATHEMATICS	2	0	C	3	Assist. Prof. Sema KOYUTÜRK
PHA1213075	SCIENTIFIC RESEARCH and LITERATURE REVIEW	2	0	C	2	Assist. Prof. İpek EROĞLU
PHA1239590	MEDICAL FIRST AID	2	0	C	2	Assist. Prof. Vildan ÇAKAR
PHA1212095	PHARMACEUTICAL TERMINOLOGY	2	0	C	3	Assist. Prof. Çağlar MACİT, Assist. Prof. Büşra Nur ÇATTIK, Assoc. Prof. Gülnur EKŞİ BONA
PHA1212092	ANATOMY	2	0	C	3	Prof. Dr. Alper ATASEVER, Prof. Dr. Burak BİLECENOĞLU
PHA1212091	ORGANIC CHEMISTRY I	2	0	C	4	Prof. Dr. Mine YARIM YÜKSEL
PHA1212093	PUBLIC HEALTH	2	0	C	3	Lect. Ayşe Seval PALTEKİ
ATA1210500	HISTORY of the TURKISH REPUBLIC II	2	0	C	2	Lect. Nimetullah YAŞAR Lect. Kenan BODUR
PHA1290004	PROFESSIONAL ENGLISH II	4	0	C	4	Lect. Onur KAVAK Lect. Semih PALA
TDL1210600	TURKISH LANGUAGE II	2	0	C	2	Lect. Kübra GÜRSOY
	TOTAL	43	0		56	

Second Grade						
Fall Semester						
Course Code	**Course Name**	**T**	**A/L**	**C/E**	**ECTS**	**LECTURERS**
PHA2113082	HISTORY of PHARMACY	1	0	C	1	Prof. Dr. Afife Mat
PHA2113088	ANALYTICAL CHEMISTRY I	3	0	C	5	Assist. Prof. Ümit Can ERİM, Assist.Prof. Sema KOYUTÜRK
PHA2113081	PHYSIOLOGY	4	0	C	6	Prof. Dr. Ahmad Ibrahım Mohamed ALSHAFEI, Assist. Prof. Ali Behram SALAR
PHA2113086	ORGANIC CHEMISTRY II	3	0	C	5	Prof. Dr. Mine YARIM YÜKSEL
PHA2113079	ANALYTICAL CHEMISTRY PRACTICE I	0	3	C	3	Assist. Prof. Ümit Can ERİM, Assist. Prof. Sema KOYUTÜRK
PHA2113084	MICROBIOLOGY	3	0	C	4	Assist. Prof. Ayşegül HOŞ Prof. Dr. Tunç AKKOÇ
PHA2113078	MICROBIOLOGY PRACTICES	0	2	C	2	Assist. Prof. Ayşegül HOŞ Prof.Dr. Tunç AKKOÇ
PHA2113083	PROFESSIONAL ENGLISH III	3	0	C	4	Lect. Onur KAVAK Lect. Semih PALA
Spring Semester						
Course Code	**Course Name**	**T**	**A/L**	**C/E**	**ECTS**	**LECTURERS**
PHA2213091	ANALYTICAL CHEMISTRY II	3	0	C	4	Assist. Prof. Ümit Can ERİM, Assist. Prof. Sema KOYUTÜRK
PHA2213096	ANALYTICAL CHEMISTRY PRACTICE II	0	0	C	4	Assist. Prof. Ümit Can ERİM, Assist. Prof. Sema KOYUTÜRK
PHA2213095	PHARMACEUTICAL BOTANY PRACTICE	0	0	C	5	Assoc. Prof. Gülnur EKŞİ BONA
PHA2213093	PHARMACEUTICAL BOTANY	3	3	C	3	Assoc. Prof. Gülnur EKŞİ BONA
PHA2213097	RESEARCH METHODOLOGY and BIOISTATISTICS	2	3	C	3	Prof. Dr. Abdulbari BENER
PHA2213092	BIOCHEMISTRY	3	0	C	4	Assist. Prof. Derya CANSIZ
PHA2213094	PHARMACOLOGY I	2	0	C	3	Assist. Prof. Neriman İpek SÖNMEZ
PHA2213098	PROFESSIONAL ENGLISH IV	3	0	C	4	Lect. Onur KAVAK Lect. Semih PALA
	TOTAL	33	6		60	
Third Grade						
Fall Semester						
Course Code	**Course Name**	**T**	**A/L**	**C/E**	**ECTS**	**LECTURERS**
PHA3114141	PHARMACOLOGY II	2	0	C	4	Assist. Prof. Neriman İpek SÖNMEZ

Third Grade						
Fall Semester						
Course Code	**Course Name**	**T**	**A/L**	**C/E**	**ECTS**	**LECTURERS**
PHA3114143	PHARMACEUTICAL CHEMISTRY I	3	0	C	5	Prof. Dr. Mine YARIM YÜKSEL
PHA3114146	PHARMACEUTICAL CHEMISTRY PRACTICE. I	0	3	C	3	Prof. Dr. Mine YARIM YÜKSEL
PHA3114147	PHARMACOGNOSY I	2	0	C	4	Prof. Dr. Fatma TOSUN Assist. Prof. Ayşe Esra KARADAĞ
PHA3114148	PHARMACOGNOSY PRACTICE. I	0	3	C	3	Prof. Dr. Fatma TOSUN Assist. Prof. Ayşe Esra KARADAĞ
PHA3114149	PHARMACEUTICAL TECHNOLOGY I	3	0	C	5	Prof. Dr. Fatma Julide AKBUĞA
PHA3114151	PHARMACEUTICAL TECHNOLOGY PRACTICE.I	0	3	C	3	Prof. Dr. Fatma Julide AKBUĞA
PHA3114152	PROFFESIONAL ENGLISH V	3	0	C	3	Lect. Onur KAVAK Lect. Semih PALA
Spring Semester						
Course Code	**Course Name**	**T**	**A/L**	**C/E**	**ECTS**	**LECTURERS**
PHA3214153	PHARMACEUTICAL CHEMISTRY II	3	0	C	5	Prof. Dr. Mine YARIM YÜKSEL
PHA3214154	PHARMACEUTICAL CHEMISTRY PRACTICE. II	0	3	C	3	Prof. Dr. Mine YARIM YÜKSEL
PHA3214155	PHARMACOGNOSY II	2	0	C	4	Prof. Dr. Fatma TOSUN Assist. Prof. Ayşe Esra KARADAĞ
PHA3214156	PHARMACOGNOSY PRACTICE. II	0	3	C	3	Prof. Dr. Fatma TOSUN Assist. Prof. Ayşe Esra KARADAĞ
PHA3214157	PHARMACEUTICAL TECHNOLOGY II	3	0	C	5	Prof. Dr. Fatma Julide AKBUĞA
PHA3214158	PHARMACEUTICAL TECHNOLOGY PRACTICE. II	0	3	C	3	Prof. Dr. Fatma Julide AKBUĞA
PHA3214159	PHARMACOLOGY III	2	0	C	4	Assist. Prof. Neriman İpek SÖNMEZ
PHA3214161	PROFFESIONAL ENGLISH VI	3	0	C	3	Lect. Onur KAVAK Lect. Semih PALA
	TOTAL	26	9		60	

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