

ISTINYE UNIVERSITY FACULTY OF PHARMACY THE CONTENT OF THE COURSES

1st SEMESTER

ECZ111 Mathematics (203)

Within the framework of Calculus, the students have fundamental mathematical concepts and mathematical skills in order to be able to analyze and to make necessary calculations the events of single degree of freedom.

ECZ112 Physics and Biophysics (213)

This course will focus on the physical quantities, unit systems, measurement, chaotic theory, forces, weight, biomechanics, compressive and tensile forces, stress and strain, shear force, biomechanical properties of the bone, movement system, muscle and joint biomechanics, bioenergetics and thermodynamic laws, energy flow in living organisms, diffusion, osmosis and membrane transport systems, electricity, bioelectric potentials, action potentials, Bernoulli and Poiseuille Laws, fluid mechanics, viscosity, circulation dynamics, body pumping systems, surface tension, respiratory dynamics, optics, hearing and vision mechanisms.

ECZ113 General Chemistry (213)

At the completion of General Chemistry, the students develop the basic knowledge and ability of comprehension of the core concepts of general chemistry. The students will have developed a set of fundamental skills that can be applied to various chemical situations. They will be able to identify the essential parts of a problem and formulate a strategy for solving the chemical problem. They will be able to estimate the solution to a problem, apply appropriate techniques to arrive at a solution, test the correctness of their solution, interpret their results.

ECZ114 Biology, Molecular Biology and Genetics (213)

This course covers cell and functions of organelles, the characteristics and functions of chromosomes, DNA and RNA, Mendelian genetics, transcription and its control, the genetic code and protein synthesis, post-translational modifications, mitosis and meiosis, cell cycle phases and checkpoints, DNA replication, relationship between mutations and DNA repair mechanisms, cell death and its mechanisms, stem cells and their importance, the immune system's mechanism and regulation.

ECZ115 First-Aid and Basic Medical Skills (112)

This course is designed to help students avoid life-threatening situations by lifting life-threatening dangers, maintaining vital functions, preventing worsening of the patient's condition, facilitating healing, saving lives, or deteriorating the condition until helped by health workers and also it includes non-medicinal applications with existing tools and equipment, without seeking medical equipment with the aim of preventing the situation from getting worse.

ECZ116 Problem Solving, Research Techniques and Writing Skills (112)

Pharmacists must be able to use very effectively problem solving, research techniques and writing skills especially for the benefit of patients.

ECZ17 History of Pharmacy and Pharmacy Today (112)

After completion of pharmacy course, students learn the reasons for the emergence of their profession with the development of early ages in their lifetime. Departing from the concept of physician-pharmacist, they learn the birth of the profession of pharmacy, and students understand the historical basic concepts of their jobs for the future. They pass through these acquisitions while practicing their

profession. Students learn a wide range of information about the pharmacist's position in the healthcare sector and in the scientific world where the pharmaceutical industry develops rapidly.

ECZ118 Basics of Eight-star and Evidence Based Pharmacy (101)

To be effective healthcare team members, pharmacists need skills and abilities enabling them to assume many different functions. The concept of the "seven-star pharmacist" was introduced by WHO and adopted by FIP in 2000 in its policy statement on Good Pharmacy Education Practice to cover the roles of caregiver, decision-maker, communicator, manager, life-long learner, teacher and leader. The function of the pharmacist as a researcher has since been added and all these have been addressed in the competence standards as «Eight star pharmacist» (8*P). The pharmacist must make evidence based decisions and be able to use the evidence base (e.g., scientific, pharmacy practice, health system) effectively in order to advise on the rational use of medicines in the healthcare team.

HIN111 Preparatory English (10 2 10)

At the end of this course, students will read short and simple texts understand general information in simple everyday texts such as advertisements, manuals, menus and timelines, and understand short personal letters. They can use a number of phrases to describe his family and other people, their living conditions, their educational background, and their final job etc.

ECZ191 Graduation Project I (011)

In this course, students are given a research topic to work on throughout their 5-year education. Students are expected to complete their literature search, laboratory work, ideally publish their work in a scientific journal, and finally submit their research report before they graduate.

2nd SEMESTER

ECZ121 Anatomy and Histology (235)

This course gives general information about human anatomy, systematic anatomy, digestive system, circulation-excretion system, urogenital system, respiratory system and nervous system, histological methods and microscopy, cytology, histology of connective tissue, bone, muscle and body systems.

ECZ122 Physiology (203)

Introduction to physiology, homeostasis, cell and structure, cell potentials, skeletal physiology, smooth muscle physiology, blood physiology, cardiopulmonary physiology, coronary and peripheral circulation, peripheral nervous system, parasympathetic nervous system.

ECZ123 Biochemistry (203)

This course includes the structure and function of proteins and amino acids, evaluation of proteins and amino acids in biochemistry laboratory, bioenergetics and carbohydrate metabolism, lipid metabolism, evaluation of lipids in biochemistry laboratory, storage and expression of genetic information, nitrogen metabolism, integration of metabolism, vitamins, enzymes, minerals, body fluids, urine and their laboratory evaluation.

ECZ124 Microbiology and Immunology (203)

In this course students are thought odern molecular biologym with strong emphasis on infectious diseases and immunology. At the end of this course, students are expected to have a broad knowledge on microbiology and immunology, including virology, parasitology, microbial genetics, immunology and medical bacteriology.

ECZ125 Basics of Community and Hospital Pharmacy (123)

Business management and communication techniques are aimed to teach to the pharmacy students. Students will learn their position as pharmacist within the distribution channel of the hospital. Students will know optimum human, material and money management.

ECZ126 Medical Communication Skills I (112)

In this course, students will have the knowledge of professional communication, including gathering, organizing, conveying and documenting patient-related information. The courses emphasize a patient-centered approach to communication and cover social factors such as health literacy, barriers to communication and cultural competency and will develop professional behaviors and attitudes in pharmacy practice.

HIN121 Preparatory English (10 2 10)

In this course, students will write short, simple notes and messages. He will write very short personal letters like a thank you note and understand patterns associated with some topics and frequently used words. They also will understand the basic idea of short, clear, simple message and announcement.

ECZ192 Graduation Project I (011)

In this course, students are given a research topic to work on throughout their 5-year education. Students are expected to complete their literature search, laboratory work, ideally publish their work in a scientific journal, and finally submit their research report before they graduate.

Summer

ECZ131 Apprenticeship 1 (Community Pharmacy I) (0 160 5)

ECZ132 Apprenticeship 2 (Hospital Pharmacy I) (0 80 3)

3rd SEMESTER

ECZ211 Organic Chemistry (225)

At the completion of Organic Chemistry, the students will understand the classification, structure, nomenclature, reactions, reaction mechanisms, and synthesis of carbon compounds including halocarbons, alkenes, and alcohols. Students will demonstrate their understanding by solving problems about the knowledge and ability of their comprehension of the core concepts of organic chemistry. The students will have developed a set of fundamental skills that can be applied to various chemical situations. Students also use their chemical knowledge about organic chemistry on laboratory applications.

ECZ212 Analytical Chemistry (225)

This course gives an introduction to analytical chemistry and an overview of important analytical methods and their range of application within detection of chemical compounds. Important analytical quantitative techniques from classical methods, electrochemical methods, spectrophotometric methods, and separation techniques are reviewed. The course gives an overview of important use of selected classical and instrumental chemical quantitative analytical methods and their basic theory.

ECZ213 Biostatistics (224)

At the end of this course the students will gain the knowledge about the pharmacoeconomics and evaluation processes of pharmacy in hospital pharmacy, to gain basic statistical notion in post pharmacy practice fields after graduation, to foresee statistical concepts to be encountered after pharmacy education and to gain knowledge to work in pharmacy production, license and clinical research units.) Students will learn the Basic Concepts and Definitions in Biostatistics, Descriptive Sample Statistics, Probability Theory and Chance Variables, Statistical Interpretation, Relations Between Variables, and concepts of Regression and Correlation.

ECZ214 Public Health and Epidemiology (213)

Definition and history of public health and epidemiology, the role of pharmacist in public health and epidemiology related services; basics and applications of clinical research and screening in communicable and non-communicable diseases; nutrition, exercise and environmental/infrastructural issues as determinants of public health; vaccination programs, occupational health; accidents and awareness programs.

HIN211 Preparatory English III (425)

Students will understand texts that contain the most frequently used words on the job or daily basis. and understand the events, feelings and wishes mentioned in personal letters. They will have the capacity to connect various patterns in a simple way to describe his experiences, dreams, hopes, wishes and events. They will briefly list the explanations and reasons for thoughts and plans and will tell a story, tell a book or a story of film.

ECZ291 Graduation Project III (011)

In this course, students are given a research topic to work on throughout their 5-year education. Students are expected to complete their literature search, laboratory work, ideally publish their work in a scientific journal, and finally submit their research report before they graduate.

ATA411 Atatürk's Principles and History of Turkish Revolution I (202)

This course gives the reasons leading to the collapse of the Ottoman Empire, the efforts to stop the collapse and the quest for reform, the reasons leading to World War I, the participation in the war and its consequences, the Mondros Armistice, the Societies, the beginning of the National Struggle.

TURK411 Turkish Language I (204)

The course aims at helping students improve their skill in written and oral narration, by teaching them features and rules of the language

ISU281 Manifest of Intinye I (021)

Activities to be held to improve the knowledge, skills and competencies of our students in fields such as art, sports, culture and social responsibility will be announced at the beginning of each semester. It is necessary for the student to actively participate in the announced schedule and to participate in more than half of the activities.

4th SEMESTER**ECZ221 Physiopathology and Pathology (215)**

This course includes general physiology, cell physiology, blood physiology, muscle physiology, membrane potentials and action potentials, sensory organs, nervous physiology, autonomic nervous system physiology, respiratory physiology, circulatory physiology, liver physiology, digestive and excretion physiology. Within the course of pathology, basic pathological concepts will be studied in

order to understand pathological diagnoses and clinical information found in cell, tissue and organ damage mechanisms, structural changes and pathology reports.

ECZ222 Clinical Biochemistry (235)

In this course, the definition of clinical biochemistry, regulation of glucose, cardiac damage indicators, cholesterol and triglyceride metabolism, hormone regulation and secretion mechanisms, clinical enzymes used in diagnosis of diseases, liver function tests, renal function tests, specific plasma proteins, tumor markers and hematological tests. The main function of clinical biochemistry applications is to ensure that patients are properly tested for the diagnosis and treatment. Within this course, the pharmacist candidates learn how to use and interpret biochemical tests with a pharmacist's point of view.

ECZ223 Clinical and Pharmaceutical Microbiology (235)

This course teaches students clinical and preclinical cases with the focus on bacterial and viral infection as well as the immune system in health and disease. At the end of the course, students are expected to have knowledge on virulence factors, bacterial as well as fungal infections, etc.

ECZ224 Principals of Clinical Pharmacy (202)

Clinical Pharmacy lectures aim to train pharmacists providing patient care that optimizing the use of medication and promoting health, wellness, and disease prevention. Introduction to clinical pharmacy gives to the fundamental principles of the field. It provides a comprehensive study of patient education, drug and treatment supervision, rational drug usage.

HIN221 Preparatory English IV (425)

At the completion of this course, students will write a text about any given subjects. They will write personal letters describing their experience and impressions. Students will understand the outline of the clear, standard speech in any situations in environments and understand the main outlines of most of the radio and television programs related to current events or issues.

ATA421 Atatürk's Principles and History of Turkish Revolution II (202)

The other revolutions that effected Turkish revolution; The aim of Turkish revolution: Democratic Law State; Establishment of secular Turkish secular law system; Establishment of Turkish secular education system Reconstruction of Turkish economy, national economic and globalization; Novelties that made the Turkish society contemporary General quality of Kemalist principles and republicanism; Nationalism; Etatism and Populism; Secularism; Revolutionism; Criticisms against Kemalist ideology and answers to them.

TURK421 Turkish Language II (204)

The course aims at helping students improve their skill in written and oral narration, by teaching them features and rules of the language.

ECZ292 Graduation Project IV (011)

In this course, students are given a research topic to work on throughout their 5-year education. Students are expected to complete their literature search, laboratory work, ideally publish their work in a scientific journal, and finally submit their research report before they graduate.

ISU282 Manifest of Istinye II (021)

Activities to be held to improve the knowledge, skills and competencies of our students in fields such as art, sports, culture and social responsibility will be announced at the beginning of each semester. It

is necessary for the student to actively participate in the announced schedule and to participate in more than half of the activities.

Summer Semester

ECZ231	Apprenticeship 3 (Hospital Pharmacy II)	(0 80 3)
ECZ232	Apprenticeship 4 (Clinical Pharmacy I)	(0 160 5)

5th SEMESTER

ECZ311 Pharmaceutical/Medicinal Chemistry I (230)

The Department of Medicinal Chemistry is part of the highly collaborative, interdisciplinary subdivision of the Professional Pharmacy Division of Pharmacy. In this course, students are thought a broad spectrum of medicinal chemistry topics including computer assisted drug discovery, anticancer drug development, synthesis and characterization of chemicals bioactive against cancer, neurodegenerative diseases, bacteria, fungi, viruses, etc. Drug-receptor interactions and personalized drug development issues are also thought in this course .

ECZ312 Pharmacology I1 (213)

The Department of Pharmacology is at the forefront of research into the effects of drugs and other molecules on biological systems with a view to understanding the mechanisms of the human body. Pre-clinical research in the Department aims to examine cellular and molecular pathways in living systems as the first step towards a greater understanding of disease and effective treatment. In this course, students are thought pharmacokinetics of drugs, principals of drugs actions and mechanisms, drug indications and side effects.

ECZ313 Pharmaceutical Technology I (235)

The content of this course includes pharmacopoeias, prescription and dose calculations, pharmaceutical water, basic processes, solutions, colloids, suspensions, emulsions, extraction enzyme and hormone preparations, aerosols. Students will learn; about the preparation, administration routes and controls of radiopharmaceuticals; formulation, quality control and packaging of injection dosage forms and other sterile dosage forms; contamination, sterilization and sterilization methods.

ECZ314 Pharmaceutical Botany (224)

The courses gives an introduction to the fundamental principles of pharmaceutical botany and the plant sciences. It includes terminology and morphology belonging medicinal plants, binary nomenclature of plants and drugs, monographs, kingdom plantae, classification based on plants' similarities and differences, identification of the pharmaceutical plants due to their characteristics, medicinal plants of Turkey, their distribution and way of uses and ethnobotany. The main aim of this course is to provide knowledges useful to recognize the most used medicinal plants.

ECZ315 Pharmacognosy I (213)

The course comprises natural products with usage as drugs and other bioactive molecules from nature, their origin, identification, development, production, control and usage. Lectures include methods for extraction, characterization, detection of active ingredient in medicinal plants, complementary and alternative medicine (CAM), pharmacologically active compounds which are obtained from natural origin mainly plant origin, secondary metabolite as alkaloids, cardiac glycosides and cannabinoids, natural products as drug precursors. At laboratory sessions students own will take part in extraction,

usage of chromatographic methods used in isolation, methods of detection of secondary metabolites in medicinal herbs.

ING311 Occupational English I (425)

In this course, students will learn the technique of preparing academic publications and seminars and see examples of academic translation on pharmacy. During this course, students will make technical vocabulary studies and learn translation rules from English to Turkish. After completion of this course they learn the technique of preparing official letter, CV.

Faculty Elective I (203)

Pharmacy related elective course focused to specific areas in pharmacy.

ECZ391 Graduation Project V (011)

In this course, students are given a research topic to work on throughout their 5-year education. Students are expected to complete their literature search, laboratory work, ideally publish their work in a scientific journal, and finally submit their research report before they graduate.

ISU381 Manifest of Istinye III (021)

Activities to be held to improve the knowledge, skills and competencies of our students in fields such as art, sports, culture and social responsibility will be announced at the beginning of each semester. It is necessary for the student to actively participate in the announced schedule and to participate in more than half of the activities.

6th SEMESTER

ECZ321 Pharmaceutical/Medicinal Chemistry II (235)

The Department of Medicinal Chemistry is part of the highly collaborative, interdisciplinary subdivision of the Professional Pharmacy Division of Pharmacy. In this course, students are thought a broad spectrum of medicinal chemistry topics including computer assisted drug discovery, anticancer drug development, synthesis and characterization of chemicals bioactive against cancer, neurodegenerative diseases, bacteria, fungi, viruses, etc. Drug-receptor interactions and personalized drug development issues are also thought in this course

ECZ322 Pharmacology II (213)

The Department of Pharmacology is at the forefront of research into the effects of drugs and other molecules on biological systems with a view to understanding the mechanisms of the human body. Pre-clinical research in the Department aims to examine cellular and molecular pathways in living systems as the first step towards a greater understanding of disease and effective treatment. In this course, students are thought pharmacokinetics of drugs, principals of drugs actions and mechanisms, drug indications and side effects.

ECZ323 Pharmaceutical Technology II (235)

In this course supplying information about solid dosage forms (powders, capsules, tablets, coated dosage forms), ointments, gels and suppositories, stability, controlled dosage forms, dosage forms used in veterinary and packaging will be covered. Students will learn; good manufacturing practices (GMP); validation and types of validation.

ECZ324 Pharmacognosy II (224)

The course comprises natural products with usage as drugs and other bioactive molecules from nature, their origin, identification, development, production, control and usage. Lectures include methods for extraction, characterization, detection of active ingredient in medicinal plants, complementary and alternative medicine (CAM), pharmacologically active compounds which are obtained from natural origin mainly plant origin, secondary metabolite as alkaloids, cardiac glycosides and cannabinoids, natural products as drug precursors. At laboratory sessions students own will take part in extraction, usage of chromatographic methods used in isolation, methods of detection of secondary metabolites in medicinal herbs.

ECZ325 Medical Communication Skills II (212)

Students will learn the Basic concepts in communication, communication levels, types of communication, communication and perception, communication models, self-recognition, defensive communication, hearing and listening communication and patient.

ECZ326 Symptoms and Clinical Conditions (101)

Dry mouth, anemia, fever, dizziness, headache, sore throat, nausea-vomiting, nasal discharge and obstruction, dyspepsia, diarrhea, hypertension, hypotension, anorexia, constipation, abdominal pain, itching, obesity, weight loss, cough, polydipsia, polyuria, pollacuria, nocturia, animal bites, jaundice, parestesia, hydrophobia, fotophobia, loss of senses, delirium.

ING311 Occupational English I (425)

After the completion of this course, will have the capacity of reading and translation of a given passage, will comprehend the sentence, find topic sentences and key words, and will know how to write an essay, an essay on pharmacy, making a presentation, and also will know how to give a seminar, to write a good laboratory report, The students will demonsrate their English level by making translations from English to Turkish, and from Turkish to English, and giving oral presentations

Faculty Elective II (203)

Pharmacy related elective course focused to specific areas in pharmacy.

ECZ392 Graduation Project VI (011)

In this course, students are given a research topic to work on throughout their 5-year education. Students are expected to complete their literature search, laboratory work, ideally publish their work in a scientific journal, and finally submit their research report before they graduate.

ISU382 Manifest of Istinye IV (021)

Activities to be held to improve the knowledge, skills and competencies of our students in fields such as art, sports, culture and social responsibility will be announced at the beginning of each semester. It is necessary for the student to actively participate in the announced schedule and to participate in more than half of the activities.

Summer Semester

ECZ331 **Apprenticeship 5 (Community Pharmacy II) (0 120 4)**
ECZ332 **Apprenticeship 6 (Clinical Pharmacy II) (0 120 4)**

7th SEMESTER

ECZ411 Clinical Pharmacy I (235)

Laboratory medicine plays an integrated role in public health. Students that have learned the fundamentals of clinical pharmacy will take another step further with the courses. It includes rational drug use, pharmaceutical care, role of clinical pharmacist in the treatment of acute and chronic diseases, role of pharmacist in public health. With the help of this lectures students become more competent pharmacists.

ECZ412 Pharmacotherapy I (235)

Students are assigned in groups to interact with a volunteer patient. Fundamental interview and physical assessment skills are introduced. As a group, students conduct health care screenings in retail areas in the community under the supervision of pharmacists. In addition, students present case studies that integrate subject matter from didactic courses in the first professional year. Students are also assigned to shadow senior pharmacy students in patient care areas.

ECZ413 Pharmaceutical Toxicology (235)

This course teaches students the toxic effects of chemical substances on living organisms and to define their harmless limits in animal models, cellular systems as well as in human. Students are also thought about genetic polymorphism, genotoxicity and cytogenetic techniques, biological macromolecules, xenobiotic biotransformation, drug safety, environmental and clinical biomarkers, environmental exposure, bioconcentration and bioaccumulation, food toxicology and natural toxins, occupational toxicology is the main research area of our department.

ECZ414 Pharmacokinetics and Pharmacodynamics (112)

This course is designed to introduce the student to mechanisms of drug action. This includes an understanding of: (1) the location of the site of drug action; (2) the cellular or molecular mechanism of drug action; (3) the relationship between dose-response functions and biologic action, and (4) the fate of drugs in the body.

ECZ415 Self Care, Non-Prescription Drug Use and Evidence-Based Phytotherapy (202)

The aim of the program is main concept of self-care and non-prescription drugs, classification of OTC and BTC drugs, methods of preparing herbal teas and medicines. Regulations and applications of non-prescription drug use around the world and in our country will be discussed. Students will learn dosage, toxicity, side effects, interaction and evidence based symptoms of herbal drugs.

ECZ416 Pharmacy Management and Administration (213)

In this course, students will learn the application of business knowledge and skills to the field of pharmacy. At the completion of this course, the students will understand the pharmacy management issues in the context of good pharmacy practices and prepare themselves for pharmacy pharmacy. Students will also learn characteristics of Pharmacy, Health Sector and Pharmacy Business and pharmacy sales ability of purchasing and marketing practices and profitability analysis and also will learn Health Institutions and Organizations with which the pharmacy is affiliated, and Consultation Services.

ECZ417 Interpretation of Diagnostic Tests (011)

Literacy of common laboratory tests (biochemistry, microbiology, microscopic pathology, molecular, radiologic, USG, EEG, EMG etc.); statistical principles of interpretation of diagnostic tests, truth table, precision, accuracy, ROC curve, preanalytical/analytical/postanalytical laboratory errors.

Faculty Elective III (203)

Pharmacy related elective course focused to specific areas in pharmacy.

University Elective I (203)

Course related to a field not directly related to pharmacy.

ECZ491 Graduation Project VII (011)

In this course, students are given a research topic to work on throughout their 5-year education. Students are expected to complete their literature search, laboratory work, ideally publish their work in a scientific journal, and finally submit their research report before they graduate.

8th SEMESTER**ECZ421 Clinical Pharmacy II (235)**

This course aims to enable students to take their role in oncology pharmacy, hospital pharmacy, drug side effects, efficacy comparisons.

ECZ422 Pharmacotherapy II (235)

Students are expected to learn dispensing procedures and other operations necessary for the successful delivery of pharmaceutical services in these practice environments. Students are assigned to a community pharmacy for one semester and to a hospital pharmacy in another semester. Case studies sessions are held that integrate subject matter in didactic coursework in the second professional year.

ECZ423 Radiopharmacy and Biopharmaceuticals (202)

Basic information about radiopharmaceuticals and Biopharmaceuticals; their use, side effects and drug interactions will be covered during this course. Safe and efficient use of these drugs is the main objective of this course.

ECZ424 Principles of Drug Engineering and Pharmaceutical Biotechnology (213)

This course gives a basic knowledge of the history of the pharmaceutical industry, the definition of pharmaceutical biotechnology, the role of pharmaceutical biotechnology in drug production and development, related basic concepts and applications, knowledge of drug development processes, drug delivery systems, drug administration routes, biopharmaceuticals, advantages of using protein therapeutics and parameters affecting drug performance.

ECZ425 Prescription Acceptance and Drug Dispensing (112)

The course objective is classification of prescriptions, practice of prescription receiving techniques, good communication with the patient. Students will learn how to dispense drugs to the patients with prescription.

ECZ426 Placebo and Complementary Medicine (202)

This course gives general information about complementary medicine branches, their application areas, how they are applied and used in other countries as evidence based treatment and its place in our country, what is placebo effect and how it can be used during treatments.

ECZ427 Pharmacoeconomy (112)

The aim of the program is covering the types of costs and benefits in health issues, the methodologies of pharmaco-economic analysis, cost-minimization, cost-benefits, cost-effectiveness and cost-utility analysis, as well as its main characteristics, advantages, disadvantages and applicability.

Faculty Elective IV (203)

Pharmacy related elective course focused to specific areas in pharmacy

University Elective II (203)

Course related to a field not directly related to pharmacy.

ECZ492 Graduation Project VIII (011)

In this course, students are given a research topic to work on throughout their 5-year education. Students are expected to complete their literature search, laboratory work, ideally publish their work in a scientific journal, and finally submit their research report before they graduate.

Summer Semester

ECZ431 Apprenticeship 7 (Community Pharmacy III) (0 120 4)

ECZ432 Apprenticeship 8 (Clinical Pharmacy III) (0 120 4)

ECZ433 Apprenticeship 9 (Industrial Pharmacy) (0 80 3)

9th SEMESTER

ECZ511 Eight-Star and Evidence-Based Pharmacist (213)

To be effective healthcare team members, pharmacists need skills and abilities enabling them to assume many different functions. The concept of the “seven-star pharmacist” was introduced by WHO and adopted by FIP in 2000 in its policy statement on Good Pharmacy Education Practice to cover the roles of caregiver, decision-maker, communicator, manager, life-long learner, teacher and leader. The function of the pharmacist as a researcher has since been added and all these have been addressed in the competence standards as «Eight star pharmacist» (8*P). The pharmacist must make evidence based decisions and be able to use the evidence base (e.g., scientific, pharmacy practice, health system) effectively in order to advise on the rational use of medicines in the healthcare team.

ECZ512 Pharmacovigilance, Drug Interactions and Adherence (213)

The safety of drugs both in their development and their clinical use is of paramount importance. This course provides an introduction to Pharmacovigilance including key definitions and the nature and burden of adverse drug reactions (ADRs). It covers safety monitoring in clinical trials, what ADRs this will detect and its limitations. It will look at the methods for post-marketing surveillance, introduces patient risk management and relevant guidelines.

ECZ513 Food Supplements, Probiotics and Prebiotics (202)

This course gives general information about probiotics, prebiotics, food supplements, food groups, their contents and how they should use in daily life.

ECZ514 Seminars of Community/Hospital/Industrial Pharmacy (011)

Pharmacists must be able to learn with literacy of common about herbal products in this seminar lecture. Pharmacists can be studied with herbal products in free pharmacies, hospital pharmacies, pharmaceutical and cosmetic industries in this course and they must be able to carries out independent work on an advanced level of knowledge. This course includes takes responsibility as a pharmacist in cooperation with other occupational groups working on free pharmacies, hospital pharmacies, pharmaceutical and cosmetic industries.

ECZ515 Medical Data Mining, Bioinformatics and Systems Biology (123)

Introduction to medical data mining, bioinformatics and system biology, software programs used in bioinformatics, usage area of software programs, general information about python, matlab, R programs, how to combine biology and software programs.

ECZ516 Occupational Health and Safety / Environmental and Global Issues (213)

This course will focus on the historical development of occupational health and safety, occupational accidents and occupational diseases and cost, concept of occupational safety, importance of occupational safety in terms of workforce productivity, basic elements of occupational safety, sources of danger, occupational health concept, psychosocial risk factors, organizations concerned with international occupational health and safety aim to inform the student in the ILO directives. Within this course, student can be able to acquire the knowledge and skills necessary to develop the health of the individual, family and society by learning the basic concepts related to the development of the health and health of the student. Other aim of this course is to raise the attention of the international community to environmental issues and to ensure the development of national and international environmental policy and law.

ECZ517 Entrepreneurship and Project Writing (223)

In this course, students will learn conceptual framework of entrepreneurship, approaches, functions, process, and also will have a knowledge about the culture of entrepreneurship, international context and ethics of entrepreneurship.

Faculty Elective V (203)

Pharmacy related elective course focused to specific areas in pharmacy

University Elective III (203)

Course related to a field not directly related to pharmacy.

ECZ591 Graduation Project IX (066)

In this course, students are given a research topic to work on throughout their 5-year education. Students are expected to complete their literature search, laboratory work, ideally publish their work in a scientific journal, and finally submit their research report before they graduate.

10th SEMESTER**ECZ521 Personalized Medicine, Pharmacogenetics, Health Protection and Healthy Aging (213)**

Personalized medicine, also referred to as precision medicine, holds great promise to improve healthcare. As the cost of genetic analysis decreases and research advances, it is becoming increasingly possible to include the genetic make-up of a person in the repertoire of tools that inform his or her healthcare. This lesson gives students to delve into the hopes and challenges of personalized medicine and to consider the practical applications of genetic analysis in medicine. Pharmacogenomics module teach to students learn about the concept of personalized medicine; how differences in genes affect whether a drug treatment will be successful or have serious side effects, and how they can use this information to customize treatments for individual patients. This course aims to another substantial area that improves the health of the student by understanding the concepts related to health, the dimensions of health, evaluating the conditions affecting health, understanding the importance of protecting and developing health in human life, learning the responsibilities of pharmacist in health protection and developing health awareness in individuals.

ECZ522 Pharmacy Legislation and Malpractice (202)

The course objective is to provide information about national and international laws, regulations, statutes, in pharmacy and pharmaceutical industry. Bio-ethic, ethical standards and malpractice concepts are evaluated by the pharmacy students.

ECZ523 Cosmetology/Oral and Teeth Care Products (213)

The course objective is to design, good manufacturing and quality controlling of cosmetic formulations, regulations of cosmetology, to teach the detailed anatomical and physiological hair, skin and oral structure to the pharmacy students.

ECZ524 Biomedical and Medical Products / Agricultural and Veterinary Medicines (213)

This course gives a introduction to properties and compatibility of the metal, ceramics, polymers, composites in contact with biological fluids, human and animal tissue. In addition this course gives a basic knowledge to agricultural and veterinary drugs, agricultural drug development rules, toxicity tests, application and control tests, classification of agricultural pesticides and concentrations of contamination.

ECZ525 Occupational Ethics and Deontology (202)

Ethical concepts and approaches, basic ethical principles, autonomy principle, utility principle, do not harm principle, examining the ethical systems and the factors that play a role in the formation of morality, ethics of profession, social responsibility concept.

ECZ526 Social Social Responsibility Project (202)

Students will have knowledge of the basic concepts of community and collective service practices and social responsibility projects, the importance of collective service practices and social responsibility projects. In addition, they will be able to identify the target audience problem and produce a solution proposal for the identified problems. They also will learn the collective service applications about public service organizations and social responsibility projects.

ECZ527 Art Literacy (011)

At the end of this course students will acquire artistic knowledge. They will be able to transfer the artistic knowledge to their performance skills and thus contribute to art literacy studies.

Faculty Elective VI (203)

Pharmacy related elective course focused to specific areas in pharmacy

University Elective IV (203)

Course related to a field not directly related to pharmacy.

ECZ592 Graduation Project X (088)

In this course, students are given a research topic to work on throughout their 5-year education. Students are expected to complete their literature search, laboratory work, ideally publish their work in a scientific journal, and finally submit their research report before they graduate.