

Near East University, Faculty of Pharmacy

1. Course Descriptions List

ENG 101 English Language I - Yabancı Dil I - 2 Credits

The primary aim of this course is to help students use the four language skills of English; listening, speaking, reading, and writing. This will broaden their knowledge in English and improve their overall performance. The course will be appropriate for the students of Pharmacy because it will focus on specific language skills and specific purpose of language usage. This course will help students to build vocabulary for the discipline besides grammatical structures and other key features of Academic English.

PHA 101 Anatomy - Anatomi - 3 Credits

Introduction to Anatomy, General terminology and concepts, Upper Extremity; Lower Extremity; Thorax Anatomy and Diaphragm; Heart and Circulatory System, Nose, Larynx; Trachea and Lungs, Anterior Abdominal Wall and Peritoneum, Oral cavity, Pharynx; Esophagus, Stomach, Small and Large Intestines, Liver, Bile duct and Portal System; Pancreas, and Spleen; Male and Female Genital Organs, Urinary System; Skeleton of Head; Facial Anatomy; Scalp, Mimic Muscles, Anterior and Lateral Regions of Neck, Introduction to Nervous System, Bulbus Medulla Spinalis, Pons and Mesencephalon, Cerebellum, Cranial Nerves, Diencephalon, Telencephalon, Cerebrospinal Fluid, Ventricles, Meninges and Sinuses of the Brain, Blood Supply of Central Nervous System, Introduction to Autonomic Nervous System, Autonomic Nervous System; Sympathetic-Parasympathetic Nervous System; Orbit and its structure, Eye and Visual Pathways, Ear, Hearing, Balance and Auditory Pathways, Endocrine Glands.

CHM 111 General Chemistry - Genel Kimya - 3 Credits

This course aims to teach the basic concepts and principles in chemistry to students. The basic concepts and calculations will be learned by the students. Introduction to General Chemistry, Atoms and Atom Theory, Chemical Compounds, Chemical Reactions, Aqueous Solution Reactions, Gases, Thermochemistry, Electronic Structure of Atom, Periodic Table and some Atom Properties, Chemical Bond, Intermolecular Forces, Chemical Kinetic, Chemical Equilibrium, Acids and Bases, Acid-Base Equilibria.

PHY 105 Physics - Fizik - 3 Credits

(After covering the following content of the course you will have had adequate and basic information about fluid mechanics and technology courses). Measurement and units, vectors, one-dimensional motion, and motion in the plane; particle dynamics and Newton's Laws, work, energy, electric field, Coulomb's law, Gauss's Law and electric potential; condensers and dielectrics, current and resistance, magnetic field.

MTH 133 Mathematics - Matematik - 3 Credits

Function, types of Functions, Arithmetic sequences and series, Limit and continuity, Derivatives and applications of Derivatives; Logarithms, Logarithmic and exponential functions and their properties; Integral and techniques of integration; Integral applications, Differential equations, Matrix Algebra, Determinants and Linear equations, systems of Linear equations and their solutions.

PHA 105 Physiology - Fizyoloji - 3 Credits

Cell Physiology, Blood Physiology, Muscle Physiology, Physiology of the Nervous System, Circulatory Physiology, Respiratory Physiology; Excretory Physiology, Digestive Physiology, Endocrine Physiology, Sensory Physiology.

TUR 101 Turkish Language I - Türk Dili I - 2 Credits

Definition and importance of Language; relationship between language and culture; written language and its characteristics; external structure and rules in written expression; spelling and punctuation rules; planning and outlining, theme, point of view, supporting ideas, paragraph writing in writing essays; concept of composition, rules and planning in writing compositions; framework of composition writing based on selected samples, theme, paragraph analysis, error analysis in composition writing, general ambiguity and incoherency, writing genres (memoirs, anecdotes, stories, criticisms, novels, etc...), formal writing (CV, petition, report, bibliography, presentation, scientific writing, articles, etc...); studies on introduction/development/conclusion parts of articles, note taking and summarizing skills and techniques.

PHA 108 Medical & Molecular Biology - Tıbbi ve Moleküler Biyoloji - 2 Credits

Structure and properties of water, macromolecules, cell structure, biological membranes and transport, introduction to metabolism, cell communication, cell cycle, mitosis and meiosis, Mendel and chromosomes, DNA structure and replication, protein synthesis, gene expression and DNA technology.

CHM 122 Organic Chemistry I - Organik Kimya I - 3 Credits

This course provides a broad perspective on carbon compounds, chemical bonds, molecular structure, intermolecular interactions, organic reactions and mechanisms, acids and bases, alkanes and cycloalkanes, conformational analysis, stereochemistry: chiral molecules, substitution and elimination reactions of alkyl halides, alkenes and alkynes (addition reactions), alcohols and ethers, aromatic compounds and reactions, aldehydes and ketones, carboxylic acids and amines.

CHM123 Organic Chemistry II - Organik Kimya II - 3 Credits

This course is a central link between physical and biological sciences and introduces a fundamental basis in organic structures, properties and synthesis. This course provides a broad perspective about carbon compounds, alcohols, ethers, epoxides, aldehydes and ketones, nucleophilic addition to the carbonyl group, aldol reactions, carboxylic acids and derivatives, nucleophilic addition elimination at the acyl carbon and amines.

PHA 110 Analytical Chemistry I - Analitik Kimya I - 3 Credits

General concepts in analytical chemistry, aqueous solution chemistry, solubility, selective precipitation, gravimetric analysis, acids, bases, buffers, the principles of volumetric analysis, acid-base titrations, carbonate-bicarbonate titrations, precipitation titrations, reduction-oxidation titration, complexometric titrations.

PHA 111 Analytical Chemistry I Laboratory - Analitik Kimya I Lab. - 1 Credit

Aim of this course is to promote practical knowledge on basic principles of quantitative and qualitative analysis used in analytical chemistry. Analysis of Group I Cations, Group II Cations, Group III Cations, Group IV Cations and Group V Cations, Analysis of Anions, Volumetric Analysis, Determination of HCl content with titration, Determination of citric acid content with titration, Determination of Carbonate-bicarbonate content with titration, Determination of potassium bromide – precipitation titration, Iodometry – Determination of Ascorbic Acid, Permanganometry (oxidation – reduction titration), Complexometric Titration – Determination of Calcium and Water Hardness, Calibration of glassware.

TUR 102 Turkish Language II - Türk Dili II - 2 Credits

Oral Expression and the importance of speech in human life, accurate and effective speaking techniques, diction and its importance, speaking varieties, introduction to the types of verbal

expressions, prepare speeches for important days. Conference, interview, speech, discussion, debate, panel, forum, symposium and open session and realizing one of the mentioned activities.

PHA 113 Pathology - Patoloji - 3 Credits

Introduction to Pathology; inflammation and reparation; cellular respond to pathogenic factors, pathology of circulatory disorders and hypertension, neoplasia, drug effects.

ENG 102 English Language II - Yabancı Dil II - 3 Credits

The primary aim of this course is to help students use the four language skills of English; listening, speaking, reading, and writing. This will broaden their knowledge in English and improve their overall performance. The course will be appropriate for the students of Pharmacy because it will focus on specific language skills and specific purpose of language usage. This course will help students to build vocabulary for the discipline besides grammatical structures and other key features of Academic English.

PHA 116 Histology - Histoloji - 2 Credit

To help students acquire the basis of histology and to correlate this knowledge with other science branches. To demonstrate knowledge of the structural and functional characteristics of the cell and the four basic tissues, the systems and their related organs and to relate their structural features with their functional properties. Introduction to Histology and Terminology, Microscopes and Microscopic Techniques, The cell and its organelles, The cell membrane, The nucleus, Intracellular transport systems, Cytoskeleton, Epithelial Tissue, Connective Tissue, Cartilage Tissue, Bone Tissue, Muscle Tissue, Nervous Tissue, The basic features of Systems; Blood and The Cardiovascular System; Respiratory System, Gastrointestinal System, Endocrine and Genital Systems, Urinary System.

PHA 117 Social Pharmacy – Sosyal Eczacılık - 2 Credits

The aim of the course is that students acquire basic knowledge of pharmacy, especially social pharmacy. This course is a survey of topics in the social sciences as they apply to pharmacy. The goal of the course is to give you a deeper and more detailed appreciation of how social and behavioral sciences, especially medical anthropology, are applied to problems in pharmacy, health/illness and culture. The course emphasizes patients' perspective in the context of culture. There will be some discussion of the broad, social factors that influence the health of populations, including gender, ethnicity, education, and occupation. Social Pharmacy is the basic discipline which is generally interested in position of pharmacy in society. It is an interdisciplinary subject which helps to understand relation of interaction of drugs versus society. In this course, we give a brief overview of

this field. We identify key questions addressed in Social Pharmacy researches and introduce its major theories, concepts, and research methods. The base of this course's structure will be "Medical Anthropological" point of view. Knowledge in subjects as pharmacovigilance, pharmacoepidemiology, pharmacovigilance, pharmacoanthropology, clinical pharmacy, and economics of health systems is request; students should get general view on drug and its position in society/culture.

PHA 118 Introduction to Pharmacy-Eczacılığa Giriş- 0 Credit

In this course, information about the history of pharmacy, pharmacy education and pharmacy departments, and internships will be given. The rules of the faculty and the university, as well as career opportunities in pharmacy, will be explained.

ENG 201 English Language - Yabancı Dil III - 3 Credits

The primary aim of this course is to help students use the four language skills of English; listening, speaking, reading, and writing. This will broaden their knowledge in English and improve their overall performance. The course will be appropriate for the students of Pharmacy because it will focus on specific language skills and specific purpose of language usage. This course will help students to build vocabulary for the discipline besides grammatical structures and other key features of Academic English.

PHA 201 Analytical Chemistry II - Analitik Kimya II – 3 Credits

Basic principles of *Spectroscopic* (UV-visible spectroscopy, fluorescence spectroscopy, IR spectroscopy, atomic spectroscopy, etc.), *Chromatographic* (thin layer, paper, column chromatography, gas chromatography and liquid chromatography, etc.), and *Electrochemical* (polarography, amperometry, potentiometry, conductometry, etc.) methods.

PHA 202 Analytical Chemistry II Laboratory - Analitik Kimya II Lab. - 1 Credit

Various chromatographic, spectroscopic, and electrochemical methods, both qualitative and quantitative analysis of organic and inorganic substances.

PHA 203 Biochemistry - Biyokimya I - 3 Credits

To study the structure, function, and the chemical structures and also the chemical interactions taking place in the cellular components of the living organism. Carbohydrates, Classification of carbohydrates, Glucose Metabolism, Glycogen Metabolism, Gluconeogenesis, Digestion of Carbohydrates, Metabolic disorders of carbohydrates, Lipids, Classification of Lipids, Lipid

Metabolism, Digestion of Lipids, Metabolic disorders of lipids, Amino acid, Proteins, Digestion of proteins, Metabolic Disorders of Proteins, Properties of Enzymes, Use of enzymes, Vitamins and Coenzymes, Hormones, Effects of Hormones, Classification of Hormones, Nucleic Acids and Water and Minerals.

PHA 223 Pharmacology I – Farmakoloji I – 3 Credits

Introduction to pharmacology, drugs permeation through biological membranes, routes of drug administration, drug biotransformation, excretion and elimination kinetics of drugs, dose-concentration-effect relationship, mechanism of drug action, pharmacogenetics, drugs for acute drug intoxication, prescribing rules and rational drug use.

AIT/YIT 101 History I - Atatürk İlke ve İnk. Tar. I - 2 Credits

Late Ottoman history and early 1900 history including economic and sociologic evaluations.

Definition of revolution and the Turkish Revolution, the collapse of the Ottoman Empire, the National Struggle Period, the wars of National Movements, conventions, and agreements made relations with other countries in Western cultures as a result of the encounter with the Turkish culture, political, economic, cultural and socio-psychological problems across the to find a solution within the framework of the Ottoman Empire began to unravel and collapse the empire reform movements and political events in the process of nation-state and the transition to the national struggle under the leadership of Mustafa Kemal Atatürk, the establishment of the Republic of Turkey to be addressed as a result.

PHA 207 Pharmaceutical Botany - Farmasötik Botanik - 2 Credits

Modern medicine has turned to nature for the isolation of novel active compounds for the production of new drugs. The aim of this course is to teach the pharmacists-to-be about plants that have medical and economical importance as well as those plants that are poisonous, in a scientific manner. General concepts: Classification and naming of plants; identification of medicinal plants and drugs, biologically active compounds and their use; cryptogam plants that are used in the production of vaccines, serum and antibiotics and their classification (Bacteriophyta, Cyanophyta, Mycophyta, Pteridophyta, Spermatophyta); Gymnospermae and Angiospermae; monocotyl and dicotyl plant characteristics and their comparison; plant families important for pharmacy such as Gymnospermae and Angiospermae-Magnoliophytina plants, drugs, active compounds and their use; importance of medicinal plants in pharmacy; use of the Turkish medicinal plants.

PHA 208 Pharmaceutical Botany Laboratory - Farmasötik Botanik Lab. -1 Credit

The goal of this course is for students to gain laboratory expertise in the characterization of morphology and anatomy of medicinal plants and classification of their plant families and to be able to study medicinal plants in a scientific manner. Characterization and naming of plants, identification of morphological characteristics, herbarium preparation and preservation of plant specimens, concepts concerning identification of plants with pharmaceutical value; diagnosis of medicinal plants; identification of Coniferae and Angiospermae plant families, which are found in the flora of Turkey and Northern Cyprus and their importance in the field of Pharmacy.

PHA 210 Pharmacy Regulations and Deontology - Eczacılık Mevzuatı ve Deontoloji - 2 Credits

Laws and regulations on pharmacy practice and deontology.

PHA 323 Pharmacology II – Farmakoloji II – 3 credits

Infections, diseases, chemotherapy and chemotherapeutic drugs, effects, adverse effects. Students and the factors that cause infections, infectious diseases, the basic principles of chemotherapy and issues that should be considered during treatment with chemotherapeutic agents, is to teach the common side effects with drugs used for this purpose.

PHA 212 Clinical Biochemistry - Klinik Biyokimya - 2 Credits

To aid the diagnosis of metabolic diseases, and monitoring of therapy and also to understand the biology of diseases. Topics to include Diabetes, Liver function and Clinical Endocrinology. Carbohydrate metabolic disorders, Lipid Metabolic Disorders, Protein Metabolism Disorders, Iron, Porphrin and Hemeprotein Disorders, Trace elements Disorders, Kidney and Liver Function Tests, Enzymes in Diagnosis and Hereditary Diseases and their Biochemistry.

AIT/YIT 102 History II - Atatürk İlke ve İnk. Tar. II - 2 Credits

Ataturk's principles and Turkish Revolution. Relations and treaties with foreign states from the Lausanne Peace Treaty, the legal, political and social reforms in the areas of education and culture, Turkish foreign policy in the period of Mustafa Kemal Ataturk's principles and the principles an integral parallel to the establishment of the Republic of Turkey and the transfer of Kemalist thought contemporary Turkish society in order to level the nations within the framework of the principles and revolutions of Ataturk, the restructuring of the state and society in our society that occurred as a result of political, social, economic and cultural development and to changes in the internal and external evaluation of the political events in the light of present-day problems.

PHA 215 Microbiology - Mikrobiyoloji - 3 Credits

Introduction to microbiology, bacterial cell wall structure and metabolism of bacteria, bacteria to manufacture, bacterial genetics, pathogenesis of bacterial infections in the human body's normal flora, sterilization, antiseptics and disinfection, and the mechanisms of action of antibiotics, antibiotic resistance mechanisms, some of medically important bacteria and infections, rickettsial and chlamydiae, mycology introduction, structure and properties of fungi, some of medically important fungi and infections, introduction to virology, viruses, morphological and chemical structure, classification of viruses, viruses replication, pathogenesis of viral diseases, parasitology introduction, and their diseases protozoa, helminths, and their diseases , Introduction to immunology, antigens and antibodies, cellular and humoral immunity, immunoprophylaxis, hypersensitivity reactions.

PHA 216 Pharmaceutical Information Management - Farmasötik Bilgi Yönetimi I - 2 Credits

The aim of the course is to develop a clear understanding of the fundamentals of pharmaceutical and medicinal information; students to be able to gain knowledge and experience about foundations of pharmaceutical and medicinal information management. Main concepts and definitions about pharmaceutical and medicinal information management, information needs and information-seeking behaviors in pharmacy and medical sciences, information sources, information Technology in pharmaceutical and medicinal information management, information and knowledge management in pharmacy and medical sciences, developing professional and managerial skills, developments in pharmaceutical and medicinal information management, medical information in the pharmaceutical industry, research information in the pharmaceutical industry, legal and ethical requirements in pharmaceutical and medicinal information management and career development in pharmaceutical and medicinal information management.

ENG 202 English Language IV - Yabancı Dil IV - 3 Credits

The primary aim of this course is to help students use the four language skills of English; listening, speaking, reading, and writing. This will broaden their knowledge in English and improve their overall performance. The course will be appropriate for the students of Pharmacy because it will focus on specific language skills and specific purpose of language usage. This course will help students to build vocabulary for the discipline besides grammatical structures and other key features of Academic English.

PHA 219 Communication Skills in Pharmacy - Eczacılıkta İletişim Becerileri - 1 Credit

Providing accurate communication between pharmacy staff, other health professionals physicians and different patient groups in a pharmacy.

PHA 222 First Aid in the Pharmacy - İlk Yardım - 1 Credits

Basic concepts and application of First Aid for pharmacy students.

First aid in the human body and systems; respiratory system and first aid, the circulatory system and first aid, and first aid bleeding, shock and first aid, personal injury and first aid, and first aid fractures, burns, freezes and first aid; electric shock and first aid; poisoning and first aid, loss of consciousness and first aid, other first aid emergencies.

PHA 290 Pharmacy Practice I - Staj I - 2 Credits

Students must consult with her/his adviser and enroll at the beginning of the 2nd year's Fall term (Third semester). This internship can be carried out only at community Pharmacies. Internship period is one month (at least 20 working days) and practiced during the Summer Term.

PHA 301 Pharmacognosy I - Farmakognozi I - 2 Credits

To teach the anatomical structure of powder drugs, identification, and quantification of secondary metabolites. Theoretical description of microscopical analysis, measurements using microscopes; plant cell and tissue, microscopic analysis: ergastic substances; leaf epidermal components, root, rhizome, fruit and seeds; analysis of drugs; saponins, antranoids, cyanogenetic glycosides, tannins; identification of proteins and enzymes, chromatography application.

PHA 302 Pharmacognosy I Laboratory - Farmakognozi I Lab. - 1 Credit

To teach the anatomical structure of powder drugs, identification and quantification of secondary metabolites. Theoretical description of microscopical analysis, measurements using microscopes; plant cell and tissue, microscopic analysis: ergastic substances; leaf epidermal components, root, rhizome, fruit and seeds; analysis of drugs; saponins, antranoids, cyanogenetic glycosides, tannins; identification of proteins and enzymes, chromatography application.

PHA 303 Pharmaceutical Technology I - Farmasötik Teknoloji I - 3 Credits

The objectives of this course are, to achieve that students could. Comprehend the meaning of Pharmaceutical Technology, understand the basic terms and processes required for preparation of a drug formulation and administration, solve the problems and calculations required for preparing a formulation, comprehend the concept of dose and maxima dose terms and calculate them, cognize water which is one of the basic contents of drug preparation and get the knowledge of information of the other excipients, explain solution and types of solution and have the skills to prepare a solution, learn all the techniques required to prepare and control one-phased systems, comprehend

the pediatric and geriatric aspects of pharmaceuticals formulations, understand the Preformulation studies, know the veterinary pharmaceutical dosage forms, understand the drug packaging materials and required properties and European aspects of the regulation of drug products to development pharmaceuticals.

PHA 304 Pharmaceutical Technology I Laboratory - Farmasötik Teknoloji I Lab. - 1 Credit

The objectives of this course are, to achieve that students could prepare a pharmaceutical prescription and understand basic processes. Besides, to understand dose and maximal dose terms, to do necessary calculations and maximal dose calculations are other aims of this course. In addition; students should have knowledge about solution, aromatic water, syrup, lemonade, infusion and decoction type of prescriptions and also they should have skills for to prepare these kind of formulations. Demonstration, Pharmaceutical Calculations, Balances, Aromatic Water, Solution for Inhalation, Iodine Solutions-I, Iodine Solutions-II, Diluted Hydrogen Peroxide Solution, Anhydrous Phosphate (Joulie's) Oral Solution, Lemonades, Syrups, Elixirs, Infusion, Decoction and Homework presentations.

PHA 305 Pharmaceutical Chemistry I - Farmasötik Kimya I - 2 Credits

The purpose of this course is to give a basic concept on general features, mode of action, structure-activity relationship, synthesis, and biotransformation of the drugs affecting on central nervous system (CNS). General anesthetics, sedatives-hypnotics, tranquilizers, neuroleptics, antidepressants, anticonvulsants antiepileptics, analeptic drugs. Analgesics, narcotic antagonists and Narcotic Analgesic Drugs.

PHA 306 Pharmaceutical Chemistry I Laboratory - Farmasötik Kimya I Lab. - 1 Credit

Laboratory safety, preparation of organic compounds and synthesis of active pharmaceutical compounds filtration, crystallization, extraction, distillation and other laboratory techniques, esterification, acylation, nitration, bromination, diazotisation and other reaction types.

PHA 307 Public Health – Halk Sağlığı – 2 Credit

Public Health is a subject that focuses on improving global health. It uses the latest research, education, and public policies to make sure we all stay healthy and safe from epidemics, food or water poisoning, or other health risks. Students learn to research public health issues, create, and support health policies, and undertake educational activities to promote healthy living. Students also discover how to evaluate the overall health of communities, taking into consideration medical, social, and economic factors that impact wellbeing. So, studying a degree in Public Health can be as much

about politics and lobbying as it is about ensuring all levels of society have access to proper medical care, or even researching and implementing new cures for unexpected health hazards.

PHA 333 Pharmacology III – Farmakoloji III – 3 Credits

Introduction to autonomic nervous system drugs, central nervous system drugs, autocoids, drugs used in respiratory system diseases, endocrine systems and drugs used in endocrine diseases.

PHA 310 Pharmacognosy II - Farmakognozi II - 2 Credits

The objective of this course is to teach steroids and terpenoids and emphasize their therapeutic activities. Definition of plant secondary metabolites such as steroids and terpenoids, their physical and chemical properties, identification and isolation techniques, their activities, drugs that are rich in these components and their biological and pharmaceutical applications.

PHA 311 Pharmacognosy II Laboratory - Farmakognozi II Lab. - 1 Credit

The goal of this course is to teach students about techniques of solid and volatile oil isolation and qualitative and quantitative pharmacopoeia analysis. To familiarise students with isolation techniques, qualitative and quantitative analysis methods, application of chromatography techniques to plant chemistry.

PHA 312 Pharmaceutical Technology II - Farmasötik Teknoloji II - 2 Credits

The objectives of this course are, to achieve that students could define two-phased drug release systems, know the formation theories of these formulations, comprehend the structure of the two-phased systems, ingredients involved and rheological behaviors, design the formulation of these systems and prepare them, determine the required properties of two-phased systems with characterization methods, explain the stability of these systems and evaluate this phenomenon by different techniques, list the quality control parameters of the obtained systems and evaluate the quality of the systems and define the suppositories, ovules and inserts.

PHA 313 Pharmaceutical Technology II Laboratory - Farmasötik Teknoloji II Lab. - 1 Credit

The objectives of this course are, to achieve that students could understand the terms of semi solid dosage forms and modern drug delivery systems and also their preparation techniques. In addition; students should have knowledge about lotion, lipstick, suspension, emulsion, gel, liniment, ointment, ovule and suppository type of prescriptions and also, they should have skills for to prepare these kinds of formulations. Demonstration, Preparation of lotion, Preparation of suspension, Preparation of oral emulsion, Determination of emulsion Type, Preparation of liniment, Preparation of gel,

Preparation of ointment, Preparation of cold cream, Preparation of cream stearate, Preparation of ovule, Preparation of imhausen base suppository, Preparation of aftershave lotion, Preparation of lipstick, Preparation of cleaning cream and Homework presentations.

PHA 314 Pharmaceutical Chemistry - Farmasötik Kimya II - 2 Credits

The purpose of this course is to give a basic concept on general features, mode of action, structure-activity relationship, synthesis, and biotransformation of the drugs affecting on cardiovascular system. Cardiac glycosides, antiarrhythmics, antianginal and vasodilatory agents, antihypertensives, antihyperlipidemics, coagulant and anticoagulant agents, antianemic drugs, trombolitics, antiaggregan agents and diuretics. Other chapters are Vitamins, Aminoacids, Carbohydrates, Lipids, Enzymes and Diagnostics. Hormones, Thyroid Hormones and Related Compounds.

PHA 315 Pharmaceutical Chemistry Laboratory - Farmasötik Kimya II Lab. - 1 Credit

Separation of solid-solid and liquid-liquid mixtures. Determination of some physical parameters such as density, boiling point and melting point, measurement of index of refraction and determination of specific rotation. High pressure liquid chromatography techniques and their applications in drug analysis. Pharmacopoeia analysis.

PHA 316 Toxicology - Toksikoloji - 3 Credits

Description and the classification of toxicology. Basic information about the exposure, toxicity mechanisms and the therapeutic procedures of xenobiotics and the therapeutic substances. Introduction to basic toxicology, definitions and classification of toxic effects, therapeutic monitoring and adverse drug reactions, toxic alcohols and solvents, drug abuse and hallucinogenic agents, toxicity of sympathomimetics, toxic gases and particles, toxicity of metals, pathological pathogenic toxins, and chemical agents as threats to public safety, toxicity of NSAIDs, phytotoxicology and natural toxins, toxicity of pesticides and risk assessment and regulatory toxicology.

PHA 318 Cosmetic – Kozmetik – 2 Credits

Introduction to cosmetology, cosmetic formulations, and applications.

PHA 320 Toxicology Laboratory - Toksikoloji Lab – 1 Credit

Giving basic toxicology laboratory knowledge, application of analytical, invivo and invitro toxicity testing methods. Introduction, laboratory animals and acute toxicity test systems, analysis of toxic compounds in water, analysis of toxic compounds in dairy milk, teratogenic effect of Diazinon on

chick embryo, evaluation of the experimental results of teratogenicity, determination of cyanide in samples and Group Studies.

PHA 390 Pharmacy Practice II - Staj II (Summer) - 2 Credits

Students must consult with her/his adviser and enrol at the beginning of the 3rd year's Fall term (5th semester). This internship can be carried out only at community Pharmacies. Internship period is one month (at least 20 working days) and practiced during the Summer Term.

PHA 400 Pharmaceutical Technology III - Farmasötik Teknoloji III - 3 Credits

Solid dosage forms and modern drug delivery systems, the general properties and processes of the powders as the building stones of these systems, definition of all the formulations involved, demonstration of all the ingredients including the excipients of these formulations and preparation techniques including related calculations, design and preparation of different formulations for different administration routes, conduction of the control tests on the final products and their evaluation and explaining the factors affecting the stability of these systems and evaluating them with the techniques involved.

PHA 402 Pharmacognosy III - Farmakognozi III - 2 Credits

There are many preparations on the market that contain natural and/or synthetic forms of alkaloids. This course aims to teach students on alkaloid-containing medicines, their biosynthesis, and their use. Alkaloids, alkaloid biosynthesis and reactions; protoalkaloids and related drugs; piperidine and piperidine alkaloids and their derivation; tropane alkaloids and their derivation; quinoline alkaloids and their derivation; opium alkaloids; aporphine, pyrrolizidine and quinolizidine alkaloids and their derivation; purine alkaloids and their derivation; steroidal and terpenic alkaloids and their derivation for medicinal purposes.

PHA 403 Pharmacognosy III Laboratory - Farmakognozi III Lab. - 1 Credit

The goal of this course is to teach students the isolation of active compounds from natural sources and perform pharmacopoeia analysis of plant medicines. Alkaloids, related reactions, Solanaceae alkaloid colorimetric measurements, total alkaloid measurements at *C. chinensis*, isolation of caffeine from black tea and its pharmacopoeia analysis, activity measurement of antibiotics, qualitative analysis of herbal teas. .

PHA 404 Phytotherapy - Fitoterapi - 2 Credits

Plants used in phytotherapy, phytotheraphic drugs, toxicity and side effects, points to consider in phytotherapy applications. Alternative therapies using plants, plants used in phytotherapy, preparation techniques, interaction of phytotheraphic drugs, toxicity and side effects, points to consider in phytotherapy applications. Choice and preparation of plants for phytotheraphic use.

PHA 406 Pharmaceutical Chemistry III - Farmasötik Kimya III - 2 Credits

The aim of this course is to give basic information on: antiinfective drugs, antiseptics and disinfectants, antifungal and antihelminthic drugs, antibacterial drugs, antimycobacterial drugs, antibiotics, antiviral drugs, antineoplastic drugs

PHA 407 Pharmaceutical Chemistry III Laboratory - Farmasötik Kimya III Lab. - 1 Credit

Qualitative structural analysis of organic compounds with chemical reactions. Structural determination of drugs and organic molecules with ultraviolet (UV), infrared (IR), nuclear magnetic resonance (NMR) and mass spectroscopy (MS). Spectral analysis.

PHA 409 Clinical Pharmacy I - Klinik Eczacılık I – 2 Credits

Describe the concepts of clinical pharmacy and patient-oriented pharmacy, and the roles of the clinical pharmacist at rational drug use and successful pharmacotherapy. Introduction and History of Clinical Pharmacy, Patient Oriented Pharmacy, Current Status in World, Roles and Responsibilities of Clinical Pharmacist, Systematic Approach to Drug Therapy - Case Study, Patient Counselling and Compliance in Clinical Pharmacy Practice and Patient Education Techniques, Hospital Pharmacy and Pharmacy and Therapeutic Committee, Clinical Pharmacists' Approach to Pain Cases and Role of the Pharmacist in Treatment, Clinical Pharmacists' Approach to Fever Cases and Role of the Pharmacist in Treatment, Pharmacists' Approach to Diarrhoea and Constipation and Role of the Clin. Pharmacist in Treatment, Proper Use of Pharmaceutical Dosage Forms, Drug Use in Pregnancy and Lactation - Clinical Pharmacists' Approach, Upper Respiratory System Infect. and Cl. Pharmacist - Update on Common Cold, Flu and Vaccination and Upper Respiratory System Infections and Cl. Pharmacist - Sinusitis, Pharyngitis and Otitis media

PHA 411 Pharmaceutical Technology III Laboratory - Farmasötik Teknoloji III Lab. - 1 Credit

The objectives of this course are, to achieve that students could understand the terms of solid dosage forms and modern drug delivery systems and also their preparation techniques. In addition; students should have knowledge about tablet, capsule, lozenge, microcapsules, effervescent granule type of prescriptions and also they should have skills for to prepare these kind of formulations. Demonstration, Controls of Powder Samples, Direct Compression Process of Tablet Formulation, Dry

Granulation Process, Wet Granulation Process, Process of Tablet Formulation and Controls, Efervecent Granule, Bioadhesive Tablet, Chewable Tablet, Controlled Release Tablet, Hard Lozenges, Dissolution Tests and Tablet Coating, Capsule Preparation and Controls, Microcapsules and Homework presentations.

PHA 412 Pharmacokinetics and Biopharmaceutics - Farmakokinetik ve Biyofarmasötik - 1 Credit

Learning definitions of bioavailability and bioequivalence to be informed of methods of determination of bioavailability, the test criteria of bioavailability, factors that effect bioavailability, bioequivalence, generics and getting information about: pharmacokinetics: compartment models, graphic models, linear regression, peeling method, calculation of area under the curve, calculation of pharmacokinetic parameters, application of intravenous infusion, loading dose, continuation dose. Learning definitions of bioavailability and bioequivalence to be informed of methods of determination of bioavailability, the test criteria of bioavailability, factors that effect bioavailability, bioequivalence, generics and getting information about: pharmacokinetics: compartment models, graphic models, linear regression, peeling method, calculation of area under the curve, calculation of pharmacokinetic parameters, application of intravenous infusion, loading dose, continuation dose.

PHA 413 Pharmaceutical Technology IV - Farmasötik Teknoloji IV - 3 Credits

The objectives of this course are, to achieve that students could define parenteral preparations, other sterile solutions and dialysis solutions, classify them, demonstrate related physical and physiological concepts, explain all ingredients including excipients, comprehend the preparation techniques, design and prepare them, understand all the equations involved and solve the problems, priority of isotonicity, comprehend the mechanism of sterilization methods, know the sterilization techniques, make a formulation sterile, evaluate the control tests conducted on the final product, explain on the factors affecting the stability of these systems and evaluate them with the techniques involved, understand what a medical device is, know the basic materials and preparation techniques and explain the factors affecting the stability of drug formulation and evaluate them with the techniques involved.

PHA 414 Pharmaceutical Technology IV Laboratory - Farmasötik Teknoloji IV - 1 Credit

The objectives of this course are, to achieve that students could understand the terms of parenteral dosage forms and ear, nasal, ophthalmic drug delivery systems and also their preparation techniques. In addition; students should have knowledge about ear, nasal, ophtalmic drops, eye wash, parenteral nutrition, irrigation solutions, infusion solutions, dialysis solutions, ampules and vials type of prescriptions and also they should have skills for to prepare these kinds of formulations.

Demonstration, Ear Preparations, Nasal Preparations, Ophthalmic Preparations, Large Volume Parenteral Preparations (parenteral nutrition), Large Volume Parenteral Preparations (irrigation solutions), Small Volume Parenteral Preparations (ampules), Small Volume Parenteral Preparations (vials) and Homework presentations.

PHA 415 Pharmacy Management & Accounting - Eczane İşletmeciliği ve Muhasebe - 2 Credits

Pharmacy business and pharmacy accounting lecture.

PHA 416 Clinical Pharmacy II - Klinik Eczacılık II – 2 Credits

Describing the roles of the clinical pharmacist in pharmacotherapy of and monitoring in acute and chronic diseases; and providing hospital settings for clinical observations. Clinical Use of Glucocorticosteroids, The Role of Clinical Pharmacist in Hypertension Treatment, Pharmacotherapy of Congestive Heart Failure and Role of the Clin. Pharmacist in Digoxin Monitoring, Peptic Ulcer and Helicobacter pylori, What Clinical Pharmacist should be known about Gastroesophageal Reflux Disease, Clinical Pharmacists' Approach to Lower Respiratory System Infections, Role of the Clinical Pharmacist in Asthma Management and Monitoring, Chronic Obstructive Respiratory Disease and Inhaler Devices, Approach to Meningitis Cases, Diabetes and Clinical Pharmacist, Recent Advance in Hyperlipidemia Treatment and Clinical Pharmacists' Role and Clinical Use of Anticoagulants.

PHA 419 Pharmaceutical Care – Farmasötik Bakım 1 Credit

Drug therapy, written information, patient care plan preparation and implementation, observation and evaluation of treatment results, pharmacovigilance, side effect reporting, patient registration and preservation of patient information, collaborative pharmacy, drug-related problems and pharmacist intervention, therapeutic target, patient-specific therapeutic plan creation, care of asthma patients, care of cardiovascular patients, care of gynecology patients, care of self-medicated patients, care of psychiatric patients.

PHA 490 Pharmacy Practice III - Staj III - 2 Credits

Students must consult with her/his adviser and enroll at the beginning of the 4th year's fall term (7th semester). This internship can be carried out only at Near East University Hospital's Pharmacy. Internship period is two semesters (Fall and Spring terms) and at least 20 working days.

PHA 491 Pharmacy Practice IV - Staj IV (Yaz) - 2 Credits

This internship can be carried out at any hospital pharmacy, private pharmacy, scientific research centre, drug industry, or official health organisation. Internship period is one month (at least 20 working days) and practiced during the 4th year's Summer Term.

PHA 501 Graduation Project - Mezuniyet Projesi - 3 Credits

Each student works on a project and writes a thesis for graduation.

PHA 502 Rational Drug Use- Akılcı İlaç Kullanımı - 2 Credits

This course will focus on how to use drugs effectively, safely, and how to give information about rational drug use in the pharmacy and hospital setting. It aims in providing a comprehensive and efficient method to explore and develop the communication skills of the senior pharmacy students in professional relationships with patients, pharmacist colleagues and other health practitioners. The emphasis will be on the importance of pharmacovigilance studies.

PHA 503 Digital Pharmacy – Dijital Eczacılık- 1 Credits

The use of digital information and communication technologies to access health care services remotely and manage your health care.

PHA 504 Clinical Pharmacy Applications – Klinik Eczacılık Uygulamaları- 3 Credits

Pharmacists will be able to identify drug-related problems in patients with disease monitoring, provide patient presentation skills, develop patient-specific Pharmaceutical Care Plan, inform patients about drugs, provide drug terminology, laboratory findings and drug information sources in hospital and pharmacy environments.

PHA 590 Pharmacy Practice V - Staj V - 15 Credits

This internship can be carried out only in 10th semester (Spring term). Internship period is 3 months (at least sixty consecutive working days). This internship can be carried out only at Community Pharmacies or Hospital Pharmacies.

PHA 550 Pharmacy Management- Eczane Yönetimi- 2 Credits

Pharmacy business and pharmacy accounting according to TRNC, Türkiye and other countries' procedures lecture

PHA 551 Herbal Pharmaceutical Products- Bitkisel İlaç Ürünleri-2 Credits

This course will be done by case studies, in which the students will be using their knowledge about herbal pharmaceutical products while giving counselling services for patients on drugs and healthcare. Each case study group investigate the case disorders and the herbal products in pharmacies for these diseases. Each group will prepare a presentation about herbal pharmaceutical products in pharmacies for treatment and/or support the body for related diseases. When an indication is a subject in the course, the group of students (pharmacists) who were to prepare HPPs for that indication, answer the questions of other students, who are pretending to be patients. Through this practice, all the students experience a patient-pharmacist relationship, as each group member is acting as a patient to another group.

PHA 552 Cosmetic Toxicology- Kozmetik Toksikoloji-2 Credits

Cosmetic toxicology course improves students' knowledge of cosmetic substances, regulations and usage and the potential toxic effects on humans. During lecture hours, selected poisoning cases are also given to the students which might be related to traditional cosmetic substances or commonly used cosmetic products (ie. natural or synthetic origin).

PHA 554 Sport Pharmacy- Spor Eczacılığı -2 Credits

Sports pharmacy can examine the effects of sports on human health, the products used for athletes in this respect and the pharmaceutical products useful for reducing the harmful effects of the interactions of the drugs to be used in a possible situation and how their products should be.

PHA 560 Industrial Pharmacy- Endüstriyel Eczacılık-2 Credits

Course planned basically to define potential role in pharmaceutical industry. Explain R&D process, Registration steps, Supply chain process, Organisation charts and job descriptions, Marketing and Sales, Medical Department responsibilities, Pharmacovigilance, Change Control System, Good Manufacturing Practice (GMP), QbD, Process Validations, Bioequivalence, Bioavailability.

PHA 562 Global Regulatory Strategies- Küresel Düzenleyici Stratejiler-2 Credits

Awareness of global regulations. Learning how to monitor developments and changes within the dynamic structure of regulations. To be able to make judgements by gaining proficiency in regulations and guidelines related to chemical group regulations such as drugs, cosmetics, and food additives.

PHA 563 Quality Assurance Application And Validations- Kalite Güvence Uygulama ve Validasyonları-2 Credits

Giving some basic information on QA (Quality Assurance) issues for students who want to work in the pharmaceutical industry.

PHA 570 Hospital Pharmacy Services- Hastane Eczacılık Hizmetleri- 2 Credits

Hospitals and their classifications, hospital pharmacies and pharmacists, pharmacist's duties and responsibilities in hospital pharmacy, computer programs used in hospital pharmacy, preparation of orders, drug and medical equipment management, stock management, safe drug use, pharmacist duties and responsibilities in clinics, ethical responsibility of the hospital pharmacist, personnel and professional practices are the contents of hospital pharmacy services course.

PHA 573 Patient Counselling- Hasta Danışmanlığı- 2 Credits

Patient counseling refers to the process of providing information, advice, and assistance to help patients use their medication appropriately. According to the USP, drug counseling is an approach that focuses on developing patients' problem-solving skills with the aim of improving or maintaining their health and quality of life. During the patient counseling course, the pharmacist should be able to evaluate data on the patient's illness and treatment and provide patient-focused advice and information that will help the patient take their medication in the safest and most effective way.

PHA 576 Dermatology and Skincare - Dermatoloji ve Cilt Bakımı -2 Credits

Dermatology and skincare refer to describe the pathophysiology underlying common dermatological disorders and refer to describe the pharmacologic groups and the mechanism of action of drugs used to treat skin conditions such as acne, psoriasis, atopic dermatitis. Recognize the adverse effects of dermatological drugs and decision making about drug and dermo-cosmetic product selection.