

## İÜ ECZACILIK FAKÜLTESİ İNGİLİZCE LİSANS DERSLERİ

<b><u>COURSE NAME/ECTS Credits</u></b>	GENERAL CHEMISTRY / 6
<b><u>FACULTY / DEPARTMENT</u></b>	FACULTY OF PHARMACY / DEPARTMENT OF ANALYTICAL CHEMISTRY
<b><u>SEMESTER</u></b>	1 <sup>th</sup> semester
<b><u>CONTENT</u></b>	Matter and Basic Units, Atomic Theories, Chemical Reactions and Chemical Kinetic, Gases, Thermochemistry, Electronic Structure of Atom, Periodic Table, Chemical Bonds, Liquids and Solids, Acid-base Theories, Redox Reactions, Nuclear Chemistry, Representative Elements, Transition Elements
<b><u>NAME AND CONTACT INFORMATION OF PROFESSOR (EMAIL / PHONE)</u></b>	Prof.Dr.Ufuk KOLAK <a href="mailto:kolak@istanbul.edu.tr">kolak@istanbul.edu.tr</a> 0090212 440 02 58 0090212 440 00 00 - 13502

<b><u>COURSE NAME/ECTS Credits</u></b>	PHYSICS / 6
<b><u>FACULTY / DEPARTMENT</u></b>	FACULTY OF PHARMACY
<b><u>SEMESTER</u></b>	1 <sup>th</sup> semester
<b><u>CONTENT</u></b>	Physics and Measurement, Motion in One Dimension, Vectors, Motion in Two Dimensions, The Laws of Motion, Circular Motion and Other Applications of Newtons Laws, Work and Kinetic Energy, Potential Energy and Conservation of Energy, Electric Fields, Electrical Potential, Capacitance and Dielectrics, Current and Resistance, Direct Current Circuit
<b><u>NAME AND CONTACT INFORMATION OF PROFESSOR (EMAIL / PHONE)</u></b>	Prof. Dr. Deniz Değer ULUTAŞ Yard.Doç.Dr. Alev ER <a href="mailto:deger@istanbul.edu.tr">deger@istanbul.edu.tr</a> / 15292 Faculty of Science, Physics Department, General Physics Division <a href="mailto:alever@istanbul.edu.tr">alever@istanbul.edu.tr</a> / 15234 Faculty of Science, Physics Department, Atomic and Molecular Physics Division

<b><u>COURSE NAME/ECTS Credits</u></b>	MEDICAL BIOLOGY / 5
<b><u>FACULTY/DEPARTMENT</u></b>	FACULTY OF PHARMACY/ DEPARTMENT OF BIOCHEMISTRY
<b><u>SEMESTER</u></b>	1 <sup>th</sup> semester

<u>CONTENT</u>	<ol style="list-style-type: none"> <li>1. Introduction to medical biology.</li> <li>2. General features of the cell, procaryotic and eucaryotic cells.</li> <li>3. Structure of the cell: cytosol, cytoskeleton.</li> <li>4. Structure of the cell membrane, transport systems in the cell membrane.</li> <li>5. Membrane differentiation and cell mobility.</li> <li>6. Mitochondria, electron transfer system, mitochondrial genom and related diseases.</li> <li>7. Nucleus, nukleolus, DNA, RNA structure and replication.</li> <li>8. Endoplasmic reticulum, ribosomes and protein biosynthesis.</li> <li>9. Golgi apparatus, peroxisomes, post translational modifications in proteins.</li> <li>10. Lysosomes, lysosomal enzymes and related diseases</li> <li>11. Inter- and intra-cellular signal communication, autocrine, paracrine and endocrine effects.</li> <li>12. Cell division, cell cycle and its regulation, cell differentiation.</li> <li>13. Cell surface receptors, adhesion molecules.</li> <li>14. Genel properties of enzymes.</li> </ol>
<u>NAME AND CONTACT INFORMATION OF PROFESSOR (EMAIL/PHONE)</u>	<p>Prof.Dr. Ayşe Can (aysecan@istanbul.edu.tr/ +902124400273)</p> <p>Prof.Dr. Nuriye Akev (nakev@istanbul.edu.tr/ +902124400274)</p> <p>Doç.Dr. Nurten Özsoy (nozsoy@istanbul.edu.tr/ +902124400000/13478)</p> <p>Doç.Dr. Pınar Aksoy Sağırlı ((pinaraksoy22@yahoo.com/ +902124400000/13475)</p> <p>Yard.Doç.Dr. Özlem Kurt Şirin (ozlemk@istanbul.edu.tr/ +902124400000/13411)</p> <p>Yard.Doç.Dr. Tuğba Yılmaz Özden ((tugbay@istanbul.edu.tr/ +902124400000/13411)</p>

<b>COURSE NAME /ECTS CREDITS</b>	BIOSTATISTICS /4
<b>FACULTY /DEPARTMENT</b>	FACULTY OF PHARMACY/ DEPARTMENT OF PHARMACEUTICAL TECHNOLOGY
<b>SEMESTER</b>	2 <sup>th</sup> semester
<b>CONTENT</b>	Introduction to Biostatistics. Descriptive statistics, Probability and theoretical Distribution, Introduction to Hypothesis tests-parametric and nonparametric-, Measures of association and simple linear regression, Sampling and sampling methods, Determination of sample size, Statistical methods for evaluation of diagnostics test
<b>NAME AND CONTACT INFORMATION OF</b>	Yard.Doç. Dr. Sevim Özdem Purisa <a href="mailto:purisa@istanbul.edu.tr">purisa@istanbul.edu.tr</a>

<b>PROFESSOR (EMAIL/PHONE)</b>	00902124400000-13490
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<b><u>COURSE NAME/ECTS Credits</u></b>	PHARMACEUTICAL TERMINOLOGY/ 2
<b><u>FACULTY / DEPARTMENT</u></b>	FACULTY OF PHARMACY
<b><u>SEMESTER</u></b>	2 <sup>th</sup> semester
<b><u>CONTENT</u></b>	<ol style="list-style-type: none"> <li>1. Elements of Latin language, articles, nouns, verbs and their declinations, adjectives, adverbs, prepositions and terms used in Pharmaceutical Botany.</li> <li>2. Some prefixes and suffixes important for Pharmaceutical Terminology, explanation about some medical terms frequently encountered, technical terms in English, Latin terms and abbreviations used in prescriptions, terms used in Biochemistry and some Latin phrases used in English.</li> <li>3. Latin nomenclature of plants and terms often used in Pharmacognosy.</li> <li>4. Words used in Pharmacology.</li> </ol>
<b><u>NAME AND CONTACT INFORMATION OF PROFESSOR (EMAIL / PHONE)</u></b>	Associate Professor Dr. Şükran Kültür s_kultur@istanbul.edu.tr/4400000/13576

<b><u>COURSE NAME/ECTS Credits</u></b>	ANALYTICAL CHEMISTRY I / 7
<b><u>FACULTY / DEPARTMENT</u></b>	FACULTY OF PHARMACY / DEPARTMENT OF ANALYTICAL CHEMISTRY
<b><u>SEMESTER</u></b>	2 <sup>th</sup> semester
<b><u>CONTENT</u></b>	Introduction to Analytical Chemistry, Chemical Analysis, Units of Concentration, Electrolytes, Activity, Balancing Chemical Equations, Solubility and Balance, Balancing Complex Reactions, pH and Buffer Solutions, Introduction to Electrochemistry, Essentials of the Quantitative Analysis, Statistical Evaluation of Analytical Data and Errors, Gravimetry, Introduction to Titrimetry, Acid-Base Titrations, Argentometric Titrations, Redox Titrations
<b><u>NAME AND CONTACT INFORMATION OF PROFESSOR (EMAIL / PHONE)</u></b>	Prof. Dr. Serap SAĞLIK ASLAN ssaglik@istanbul.edu.tr 0090212 440 02 64 0090212 440 00 00 - 13588

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<b><u>COURSE NAME/ ECTS Credits</u></b>	PHARMACEUTICAL MICROBIOLOGY /7
<b><u>FACULTY/ DEPARTMENT</u></b>	FACULTY OF PHARMACY/ DEPARTMENT OF PHARMACEUTICAL MICROBIOLOGY
<b><u>SEMESTER</u></b>	3 <sup>th</sup> semester
<b><u>CONTENT</u></b>	Information about saprophytic and pathogen microorganisms and their importance regarding individual, communal and environmental health; infections caused by microorganisms and the antibiotics that are used to treat them; effects of microorganisms on pharmaceutical industry and the standarts by which pharmaceuticals are produced, concerning microorganisms; methods used for protection against harmful microorganisms.
<b><u>NAME AND CONTACT INFORMATION OF PROFESSOR (EMAIL/ PHONE)</u></b>	Prof.Dr.Gülten Ötük <a href="mailto:gulnotenuk@yahoo.com">gulnotenuk@yahoo.com</a> / 0 212 440 0000-13524

<b><u>COURSE NAME/ECTES Credits</u></b>	PLANT MORPHOLOGY/2 Credits
<b><u>FACULTY/DEPARTMENT</u></b>	FACULTY OF PHARMACY/DEPARTMENT OF PHARMACEUTICAL BOTANY
<b><u>SEMESTER</u></b>	3 <sup>th</sup> semester
<b><u>CONTENT</u></b>	General structure of the plant cell, components and plant macromolecules ( Plant cell division (mitosis and meiosis) Plant tissue types, development of primary and secondary tissues, and structure of vegetative organs with emphasis on Gymnosperms and angiosperms. Angiospermae, type of fruits and seed dispersal. Plant vegetative root, stem, leaf) and reproductive (flower, fruit, seed) morphology, forms and functions.
<b><u>NAME AND CONTACT INFORMATION OF PROFESSOR (E-MAIL/PHONE)</u></b>	Prof. Dr. Emine Akalın, Doç.Dr. Şükran Kültür <a href="mailto:akaline@istanbul.edu.tr">akaline@istanbul.edu.tr</a> , <a href="mailto:sukrankultur@hotmail.com">sukrankultur@hotmail.com</a> 212 440 00 00 / 13402 and 13576

<b><u>COURSE NAME/ECTS Credits</u></b>	ORGANIC CHEMISTRY / 6
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<b><u>FACULTY/DEPARTMENT</u></b>	FACULTY OF PHARMACY / DEPARTMENT OF PHARMACEUTICAL CHEMISTRY
<b><u>SEMESTER</u></b>	3 <sup>th</sup> semester
<b><u>CONTENT</u></b>	Properties of organic compounds, isomerism, functional groups nomenclature, preparation and reactions of functional groups.
<b><u>NAME AND CONTACT INFORMATION OF PROFESSOR (E-MAIL/PHONE)</u></b>	Prof. Dr. NESRİN CESUR (cesurnsr@istanbul.edu.tr / x13456)

<b><u>COURSE NAME/ECTS Credits</u></b>	ANALYTICAL CHEMISTRY II / 7
<b><u>FACULTY / DEPARTMENT</u></b>	FACULTY OF PHARMACY / DEPARTMENT OF ANALYTICAL CHEMISTRY
<b><u>SEMESTER</u></b>	3 <sup>th</sup> semester
<b><u>CONTENT</u></b>	Introduction to Analytical Chemistry 2, Electrochemistry, Spectroscopic Methods, Introduction to Separation Methods, Chromatographic Methods, Method Validation, Thermal Analysis Methods, Analysis of Radiopharmaceuticals
<b><u>NAME AND CONTACT INFORMATION OF PROFESSOR (EMAIL / PHONE)</u></b>	Prof. Dr. Serap SAĞLIK ASLAN ssaglik@istanbul.edu.tr 0090212 440 02 64 0090212 440 00 00 - 13588

<b><u>COURSE NAME/ECTS Credits</u></b>	VOCATIONAL ENGLISH I / 2 (ELECTIVE COURSE)
<b><u>FACULTY / DEPARTMENT</u></b>	FACULTY OF PHARMACY
<b><u>SEMESTER</u></b>	3 <sup>th</sup> semester
<b><u>CONTENT</u></b>	Text analysis (in English) syntax, translation, grammar, lexis reading, writing, speaking and listening skills
<b><u>NAME AND CONTACT INFORMATION OF</u></b>	Erhan TECİMEN Mobile: 0535 277 91 45

<b><u>PROFESSOR (EMAIL / PHONE)</u></b>	erhantecimen@gmail.com
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<b><u>COURSE NAME/ECTS Credits</u></b>	CULTURE OF DISASTER / 2 (ELECTIVE COURSE)
<b><u>FACULTY / DEPARTMENT</u></b>	FACULTY OF PHARMACY
<b><u>SEMESTER</u></b>	3 <sup>th</sup> semester
<b><u>CONTENT</u></b>	What is culture of disaster? General aspects, risk and disaster management. How to prevent disasters? Understanding disasters: Earthquakes, floods and landslides, tsunami, volcanos, fire, avalanche, urbanisation. Search and rescue (SAR), Medical intervention: first aid and triage. Disasters in future: global warming and drought, pandemics, etc.
<b><u>NAME AND CONTACT INFORMATION OF PROFESSOR (EMAIL / PHONE)</u></b>	Assoc. Prof. Dr. H. Sibel ÖZESEN ÇOLAK <a href="mailto:aquasibel@hotmail.com">aquasibel@hotmail.com</a> internal 16451 GSM: +905332178485

<b><u>COURSE NAME/ECTS Credits</u></b>	INTRODUCTION TO PHARMACEUTICAL TECHNOLOGY/4
<b><u>FACULTY / DEPARTMENT</u></b>	FACULTY OF PHARMACY / DEPARTMENT OF PHARMACEUTICAL TECHNOLOGY
<b><u>SEMESTER</u></b>	4 <sup>th</sup> semester
<b><u>CONTENT</u></b>	The course provides a general introduction to pharmaceutical technology, including fundamental theories as well as recent developments in the area.
<b><u>NAME AND CONTACT INFORMATION OF PROFESSOR (EMAIL / PHONE)</u></b>	Yrd.Doç.Dr.Sedef Erdal <a href="mailto:serdal@istanbul.edu.tr">serdal@istanbul.edu.tr</a> 00902124400000-13492

<b><u>COURSE NAME/ECTS Credits</u></b>	BIOCHEMISTRY / 8
<b><u>FACULTY/DEPARTMENT</u></b>	FACULTY OF PHARMACY / DEPARTMENT OF BIOCHEMISTRY
<b><u>SEMESTER</u></b>	4 <sup>th</sup> semester
<b><u>CONTENT</u></b>	1. TOPICS OF BIOCHEMISTRY. IMPORTANCE OF BIOCHEMISTRY FOR PHARMACY PROFESSION. STRUCTURE OF THE CELL. SOME PHYSICOCHEMICAL PRINCIPLES RELATED TO

BIOCHEMICAL EVENTS. Intermolecular forces -disperse systems - diffusion - transport systems in the cell membrane - dialysis-osmosis - isotonic solution.

2. ACID - BASE BALANCE OF THE ORGANISM. Main buffers of the organism - acid-base imbalance of the organism. INORGANIC SUBSTANCES AND THEIR METABOLISMS.

3. ENZYMES. ENZYME STRUCTURE. EFFECT OF ENZYMES ON THEIR REACTION RATES. ENZYME BINDING WITH SUBSTRATE. ENZYME KINETICS. Enzymatic reaction rate. ENZYME INHIBITORS. Reversible inhibition - irreversible inhibition - other inhibitors.

4. METABOLISM REACTIONS IN HUMAN ORGANISM. Hydrolytic degradation (hydrolysis)- Condensation - Oxido - reduction reactions - Transphosphorylation – Transamination - Transacylation – Transmethylation - Carboxylation and Decarboxylation. METABOLISM OF XENOBIOTICS. Phase I reactions - Phase II reactions.

5. CARBOHYDRATES. Classification - Monosaccharide nomenclature - Stereoisomerism. Optical isomers and optical activity - Hemiacetal forms of monosaccharide (pyranose and furanose). MONOSACCHARIDES. Some feature of monosaccharides - Monosaccharide derivatives. OLIGOSACCHARIDES. POLYSACCHARIDES.

Homopolysaccharides - Heteropolysaccharides (Glycosaminoglycans, mucopolysaccharides).

6. METABOLISM OF CARBOHYDRATES. DIGESTION AND ABSORPTION OF

CARBOHYDRATES. Digestion of starch - Digestion of saccharose - Digestion of lactose - Digestion of cellulose - Monosaccharides absorption - Fate of the absorbed monosaccharides. GLYCOGENESIS.

GLYCOGENOLYSIS. DEGRADATION OF GLUCOSE.

GLYCOLYSIS. GLUCONEOGENESIS. PYRUVATE (PYRUVIC ACID) METABOLISM. Oxidative

decarboxylation of pyruvic acid. MUSCLE

CONTRACTION. TRICARBOXYLIC ACID CYCLE.

PENTOSE PHOSPHATE PATHWAY. EFFECT OF

HORMONES ON CARBOHYDRATE METABOLISM.

Pancreatic hormones - Adrenal medulla hormones -

Adrenal cortex hormones - Thyroid hormones - Anterior

pituitary hormones. DEFECTS OF THE

CARBOHYDRATE METABOLISM.

7. LIPIDS. FATTY ACIDS. Fatty acids nomenclature and numbering - Classification of fatty acids -Triacylglycerols

(triglycerides, neutral lipids). PHOSPHOLIPIDS

(phosphatids) glycerol - based phospholipids -

Phosphosphingolipids - inositol phospholipids.

GLYCOLIPIDS. Cerebrosides -Gangliosides. ISOPRENE-BASED LIPIDS. Isoprenoids - Steroids - Classification of steroids.

8. METABOLISM OF LIPIDS. DIGESTION AND ABSORPTION OF LIPIDS. Digestion - Absorption-De novo synthesis of triacylglycerols and phosphatids in intestinal mucosa cells - Secretion of lipids from intestinal mucosa cells. TRANSPORT OF LIPIDS.

LIPOPROTEINS. Alterations in plasma lipoproteins. USE OF DIETARY LIPIDS BY TISSUE. MOBILIZATION OF STORED FAT (LIPOLYSIS). ROLE OF THE LIVER ON LIPID METABOLISM AND FATTY LIVER DISEASE. FATTY ACIDS DEGRADATION BY OXIDATION.

Beta-oxidation of fatty acids - Beta-oxidation of unsaturated fatty acids - Beta-oxidation of fatty acids with an odd number of carbon atom - Alpha-oxidation of fatty acids. KETONE BODIES METABOLISM.

BIOSYNTHESIS OF FATTY ACIDS. De novo synthesis of fatty acids in cytosol - Hydrogenation and dehydrogenation of fatty acids in the liver.

BIOSYNTHESIS OF TRIACYLGLYCEROLS.

BIOSYNTHESIS OF CHOLESTEROL. EFFECT OF HORMONES ON LIPID METABOLISM. DEFECTS IN LIPID METABOLISM.

9. PROTEINS. AMINO ACIDS. Classification of amino acids - aliphatic amino acids - cyclic amino acids. AMINO ACID METABOLISM. Transamination. PEPTIDES.

Some peptides in human organism. STRUCTURE OF PROTEINS. Primary structure - Secondary structure - Tertiary structure-Globular proteins - Fibrillar proteins - Quaternary structure. CLASSIFICATION OF PROTEINS.

Simple proteins - Conjugated Proteins. SOME IMPORTANT PROTEINS. Blood plasma and serum proteins - Muscle proteins - Milk proteins - Egg proteins. SOME FEATURE OF PROTEINS.

10. PROTEIN METABOLISM. DIGESTION AND ABSORPTION OF PROTEINS. UREA CYCLE (ORNITHINE CYCLE).

11. PORPHYRINS AND THEIR COMPOUNDS. Main porphyrins in nature - Biosynthesis of Heme-porphyrin metabolism defects - Hemoglobin structure, feature and their compounds - Functions of hemoglobin - Hemoglobin types - Hemoglobin metabolism defects - Degradation of hemoglobin.

12. NUCLEOPROTEINS AND NUCLEIC ACIDS.

Nucleic acids-pyrimidines - purines - Pentoses - Nucleosides - Nucleotides - Structure of nucleic acids - Structure and biofunction of DNA - Structure and biofunction of RNA - Some important free nucleotides.

NUCLEOPROTEIN AND NUCLEIC ACID

	<p>METABOLISM. Digestion and absorption -degradation of nucleosides in tissues - purin degradation - Pyrimidine degradation - Biosynthesis of purins and pyrimidines - Biosynthesis of nucleic acids. BIOSYNTHESIS OF PROTEINS.</p> <p>13. VITAMINS. FAT - SOLUBLE VITAMINS. Vitamin A-Vitamin D - Vitamin E - Vitamin K. WATER - SOLUBLE VITAMINS. Vitamin B -Vitamin C (ascorbic acid).</p> <p>14. HORMONES. CLASSIFICATION OF HORMONES. GENERAL MECHANISMS OF HORMONE ACTION. Action mechanism of hormones bound to the receptor (peptide hormones) -Action mechanism of hormones which effect intracellularly. HORMONES OF HYPOTHALAMUS. PITUITARY HORMONES. Anterior pituitary hormones - Posterior pituitary hormones - Intermediate lobe pituitary hormones. SEX HORMONES. Estrogenic hormones (female sex hormones) -androgenic hormones (male sex hormones) -Progesterone (female sex hormones) - Relaxin. ADRENAL CORTEX HORMONES. Glucocorticoids - Mineralocorticoids. ADRENAL MEDULLA HORMONES. THYROID HORMONES. PARATHYROID HORMONE (parathormone, PTH). PANCREATIC HORMONES. Insulin - Glucagon-Somatostatin - Pancreatic polypeptide (PP). EPIPHYSIS (PINEAL GLAND) HORMONES. Melatonin. KIDNEY HORMONE. Erythropoietin. PLACENTAL HORMONES. GASTRO-INTESTINAL HORMONES. Gastrin - Secretin – Cholecystokinin - pancreozymin (CCK-PZ). TISSUE HORMONES WITH LOCAL ACTION. Renin - angiotensin system.</p>
<p><b><u>NAME AND CONTACT INFORMATION OF PROFESSOR (EMAIL/PHONE)</u></b></p>	<p>Prof.Dr. Ayşe Can (aysecan@istanbul.edu.tr/ +902124400273)  Prof.Dr. Nuriye Akev (nakev@ istanbul.edu.tr/ +902124400274)  Doç.Dr. Nurten Özsoy (nozsoy@ istanbul.edu.tr/ +902124400000/13478)  Doç.Dr. Pınar Aksoy Sağırlı ((pinaraksoy22@yahoo.com/ +902124400000/13475)  Yard.Doç.Dr. Özlem Kurt Şirin (ozlemk@ istanbul.edu.tr/ +902124400000/13411)  Yard.Doç.Dr. Tuğba Yılmaz Özden ((tugbay@ istanbul.edu.tr/ +902124400000/13411)</p>

<p><b><u>COURSE NAME/ ECTS Credits</u></b></p>	<p>PUBLIC HEALTH /3</p>
<p><b><u>FACULTY/ DEPARTMENT</u></b></p>	<p>FACULTY OF PHARMACY/ DEPARTMENT OF PHARMACEUTICAL MICROBIOLOGY</p>
<p><b><u>SEMESTER</u></b></p>	<p>4<sup>th</sup> semester</p>

<b><u>CONTENT</u></b>	Definition of health; health-threatening factors; national and international health organizations; studies on public health; epidemiology; environmental health; personal hygiene; nutrition; protection against diseases.
<b><u>NAME AND CONTACT INFORMATION OF PROFESSOR (EMAIL/ PHONE)</u></b>	Prof.Dr.Gülten Ötük <a href="mailto:gultenotuk@yahoo.com">gultenotuk@yahoo.com</a> / 0 212 440 0000-13524

<b><u>COURSE NAME/ECTES Credits</u></b>	PHARMACEUTICAL BOTANY / 5
<b><u>FACULTY/DEPARTMENT</u></b>	FACULTY OF PHARMACY/DEPARTMENT OF PHARMACEUTICAL BOTANY
<b><u>SEMESTER</u></b>	4 <sup>th</sup> semester
<b><u>CONTENT</u></b>	Plant nomenclature, classification and identification rules of the plants. The groups of algae, fungi and plant. Important medicinal plants and families in pharmacy and pharmaceutical sciences (general characteristics, uses, the main bioactive compounds, their effects and distribution). Useful plants as well as poisonous and harmful plants. Flora of Turkey, herbaria, preparation and preservation of herbarium material. Important medicinal plants in Turkey, cultivation and trade of them.
<b><u>NAME AND CONTACT INFORMATION OF PROFESSOR (E-MAIL/PHONE)</u></b>	Prof. Dr. Emine Akalın, Doç.Dr. Şükran Kültür <a href="mailto:akaline@istanbul.edu.tr">akaline@istanbul.edu.tr</a> , <a href="mailto:sukrankultur@hotmail.com">sukrankultur@hotmail.com</a> 212 440 00 00 / 13402 and 13576

<b><u>COURSE NAME/ETCS Credits</u></b>	ETHNOBOTANY / 2 (ELECTIVE COURSE)
<b><u>FACULTY/DEPARTMENT</u></b>	FACULTY OF PHARMACY/DEPARTMENT OF PHARMACEUTICAL BOTANY
<b><u>SEMESTER</u></b>	4 <sup>th</sup> semester
<b><u>CONTENT</u></b>	Methods used in ethnobotanical studies <ul style="list-style-type: none"> <li>• The Biological Approach</li> <li>• Anthropological Study Method</li> <li>• Ecological Approach</li> <li>• Analysis of The ethnobotanical data</li> <li>• Preparation of herbarium specimens</li> </ul> Cultivated plants Psychoactive Plants Medicinal plants

	Wild Plants for Food Spices Oil plants Poisonous plants <ul style="list-style-type: none"> <li>• Poisonous Indoor Plants;</li> <li>• Poisonous plants in Turkey</li> </ul> Dye Plants Plants used for cosmetic purposes Traditional Treatment Methods
<b>NAME AND CONTACT INFORMATION OF PROFESSOR (EMAIL/PHONE)</b>	Prof. Dr. Emine Akalın, Doç.Dr. Şükran Kültür <a href="mailto:akaline@istanbul.edu.tr">akaline@istanbul.edu.tr</a> , <a href="mailto:sukrankultur@hotmail.com">sukrankultur@hotmail.com</a> 212 440 00 00 / 13402 and 13576

<b>COURSE NAME/ETCS Credits</b>	PHARMACOLOGY I / 4
<b>FACULTY/DEPARTMENT</b>	FACULTY OF PHARMACY/DEPARTMENT OF PHARMACOLOGY
<b>SEMESTER</b>	4 <sup>th</sup> semester
<b>CONTENT</b>	Introduction to Pharmacology and Basic Principles Pharmacological Experimental Techniques & New Drug Development Routes of Drug Administration Introduction to Pharmacokinetics, Drug Absorption Distribution of Drugs Biotransformation of Drugs Excretion of Drugs The concept of receptor and signal transduction mechanisms Mechanisms of drug action Dose-concentration-effect relationship Factors that change the effects of drugs Toxic effects of drugs Evaluation Rules of the Prescription and Rational Drug Use Drug Interactions
<b>NAME AND CONTACT INFORMATION OF PROFESSOR (EMAIL/PHONE)</b>	Prof.Dr. Sönmez UYDEŞ DOĞAN <a href="mailto:sonmezuydesdogan@gmail.com">sonmezuydesdogan@gmail.com</a> +90 2125266476

<b><u>COURSE NAME/ECTS Credits</u></b>	FOOD ANALYSIS / 3
<b><u>FACULTY / DEPARTMENT</u></b>	FACULTY OF PHARMACY / DEPARTMENT OF ANALYTICAL CHEMISTRY
<b><u>SEMESTER</u></b>	4 <sup>th</sup> semester
<b><u>CONTENT</u></b>	Proximate Analysis, Proteins and Related Analysis, Lipids and Related Analysis, Carbohydrates and Related

	Analysis, Vegetables and Fruits, Alcoholic and Nonalcoholic Beverages and Related Analysis, Water Analysis, Food Conservation Methods, Conservation Compounds and Related Substances, Harmful Compound in Foods
<b><u>NAME AND CONTACT INFORMATION OF PROFESSOR (EMAIL / PHONE)</u></b>	Prof. Dr. Serap SAĞLIK ASLAN ssaglik@istanbul.edu.tr 0090212 440 02 64 0090212 440 00 00 - 13588

<b><u>COURSE NAME/ECTS Credits</u></b>	CHROMATOGRAPHIC ANALYSIS / 3
<b><u>FACULTY / DEPARTMENT</u></b>	FACULTY OF PHARMACY / DEPARTMENT OF ANALYTICAL CHEMISTRY
<b><u>SEMESTER</u></b>	4 <sup>th</sup> semester
<b><u>CONTENT</u></b>	Separation and Chromatography, Chromatographic Techniques, Paper Chromatography, TLC and Its Applications, HPLC and Related Parameters, Separation Mechanism in HPLC, Parts of HPLC Instrument, Use of MS Detector in LC, GC and Related Parameters, Parts of GC Instrument, Use of MS Detector in GC, GC-MS System and Applications
<b><u>NAME AND CONTACT INFORMATION OF PROFESSOR (EMAIL / PHONE)</u></b>	Prof. Dr. Serap SAĞLIK ASLAN ssaglik@istanbul.edu.tr 0090212 440 02 64 0090212 440 00 00 - 13588

<b><u>COURSE NAME/ECTS Credits</u></b>	INTRODUCTION TO HETEROCYCLIC CHEMISTRY / 1
<b><u>FACULTY/DEPARTMENT</u></b>	FACULTY OF PHARMACY / DEPARTMENT OF PHARMACEUTICAL CHEMISTRY
<b><u>SEMESTER</u></b>	4 <sup>th</sup> semester
<b><u>CONTENT</u></b>	Structure, nomenclature, preparation and reactions of selected heterocycles.

<b><u>NAME AND CONTACT INFORMATION OF PROFESSOR (E-MAIL/PHONE)</u></b>	Prof. Dr. NESRİN CESUR (cesurnsr@istanbul.edu.tr / x13456)
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<b><u>COURSE NAME/ECTS Credits</u></b>	MOLECULAR BIOLOGY / 1 (ELECTIVE COURSE)
<b><u>FACULTY/DEPARTMENT</u></b>	FACULTY OF PHARMACY / DEPARTMENT OF BIOCHEMISTRY
<b><u>SEMESTER</u></b>	4 <sup>th</sup> semester
<b><u>CONTENT</u></b>	<ol style="list-style-type: none"> <li>1. Introduction to molecular biology.</li> <li>2. Structures of DNA and RNA</li> <li>3. Organization of eukaryotic genome.</li> <li>4. Structure of the gene.</li> <li>5. DNA replication.</li> <li>6. Transcription.</li> <li>7. Translation.</li> <li>8. DNA damage and DNA repair mechanisms.</li> <li>9. Genetic of cancer.</li> <li>10. Introduction to recombinant DNA technology.</li> <li>11. Methods of recombinant DNA technology.</li> <li>12. Gene therapy and human genome project.</li> <li>13. Medical biotechnology.</li> <li>14. Apoptosis and aging.</li> </ol>
<b><u>NAME AND CONTACT INFORMATION OF PROFESSOR (EMAIL/PHONE)</u></b>	<p>Prof.Dr. Ayşe Can (aysecan@istanbul.edu.tr/ +902124400273)</p> <p>Prof.Dr. Nuriye Akev (nakev@istanbul.edu.tr/ +902124400274)</p> <p>Doç.Dr. Nurten Özsoy (nozsoy@istanbul.edu.tr/ +902124400000/13478)</p> <p>Doç.Dr. Pınar Aksoy Sağırlı ((pinaraksoy22@yahoo.com/ +902124400000/13475)</p> <p>Yard.Doç.Dr. Özlem Kurt Şirin (ozlemk@istanbul.edu.tr/ +902124400000/13411)</p> <p>Yard.Doç.Dr. Tuğba Yılmaz Özden ((tugbay@istanbul.edu.tr/ +902124400000/13411)</p>

<b><u>COURSE NAME/ECTS Credits</u></b>	VOCATIONAL ENGLISH II
<b><u>FACULTY / DEPARTMENT</u></b>	FACULTY OF PHARMACY
<b><u>SEMESTER</u></b>	4 <sup>th</sup> semester
<b><u>CONTENT</u></b>	Text analysis (in English) syntax, translation, grammar, lexis reading, writing, speaking and listening skills

<b><u>NAME AND CONTACT INFORMATION OF PROFESSOR (EMAIL / PHONE)</u></b>	Erhan TECİMEN Mobile: 0535 277 91 45 erhantecimen@gmail.com
<b><u>COURSE NAME/ECTS Credits</u></b>	PHARMACOGNOSY I / 7
<b><u>FACULTY / DEPARTMENT</u></b>	FACULTY OF PHARMACY / DEPARTMENT OF PHARMACOGNOSY
<b><u>SEMESTER</u></b>	5 <sup>th</sup> semester
<b><u>CONTENT</u></b>	Carbohydrates: Monosaccharides, Oligosaccharides, Polysaccharides from microorganisms and fungi, Algae polysaccharides, Homogeneous polysaccharides, Heterogeneous polysaccharides, Cyanogenetic glycosides, Glucosinolates, Enzymes. Phenolics: Phenols and phenolic acids, Coumarins, Lignans, Phenylpropanes, Flavonoids, Anthocyanins, Tannins, Antraquinones, Saponins, Iridoids, Cardiac glycosides.
<b><u>NAME AND CONTACT INFORMATION OF PROFESSOR (EMAIL / PHONE)</u></b>	Prof. Dr. Afife Mat <a href="mailto:afifemat@istanbul.edu.tr">afifemat@istanbul.edu.tr</a> 0 212 440 02 53

<b><u>COURSE NAME/ECTS CREDITS</u></b>	PHARMACEUTICAL TECHNOLOGY I
<b><u>FACULTY/DEPARTMENT</u></b>	FACULTY OF PHARMACY / DEPARTMENT OF PHARMACEUTICAL TECHNOLOGY
<b><u>SEMESTER</u></b>	5 <sup>th</sup> semester
<b><u>CONTENT</u></b>	The course introduces the fundamental concepts as pharmaceutical water, solutions and dissolutions, reology and colloids, suspensions and emulsions, aerosoles, and definition of semi-solid drug forms, formulation and their control.
<b><u>NAME AND CONTACT INFORMATION OF PROFESSOR (EMAIL/PHONE)</u></b>	Doç.Dr. Erdal Cevher <a href="mailto:erdalcevher@gmail.com">erdalcevher@gmail.com</a> 00902124400000-13496

<b><u>COURSE NAME/ ECTS Credits</u></b>	IMMUNOLOGY/ 4
<b><u>FACULTY/ DEPARTMENT</u></b>	FACULTY OF PHARMACY/ DEPARTMENT OF PHARMACEUTICAL MICROBIOLOGY
<b><u>SEMESTER</u></b>	5 <sup>th</sup> semester
<b><u>CONTENT</u></b>	Introduction to immunolgy, natural (nonspecific) and acquired (specific) immunity, the immune system cells

	and organs, antigens, structures, functions and synthesis of immunoglobins, antigen-antibody reactions, cytokines, complement system, hypersensitivity reactions, acquired immunity via active and passive ways, active immunity and vaccines, passive immunity, tolerance and autoimmunity.
<b><u>NAME AND CONTACT INFORMATION OF PROFESSOR (EMAIL/ PHONE)</u></b>	Yard.Doç.Dr.Sibel Döşler <a href="mailto:sibeldosler@hotmail.com">sibeldosler@hotmail.com</a> / 0 212 440 0000-13523

<b><u>COURSE NAME/ECTS Credits</u></b>	PHARMACEUTICAL CHEMISTRY I / 7
<b><u>FACULTY/DEPARTMENT</u></b>	FACULTY OF PHARMACY / DEPARTMENT OF PHARMACEUTICAL CHEMISTRY
<b><u>SEMESTER</u></b>	5 <sup>th</sup> semester
<b><u>CONTENT</u></b>	Physicochemical and structural properties of drugs and their effects on drug activity, drug-receptor interactions, drug metabolism and the importance of these considerations in drug design and development.
<b><u>NAME AND CONTACT INFORMATION OF PROFESSOR (E-MAIL/PHONE)</u></b>	Prof. Dr. ZAFER CESUR (cesurzfr@istanbul.edu.tr / x13454)

<b><u>COURSE NAME/ETCS Credits</u></b>	PHARMACOLOGY II / 5
<b><u>FACULTY/DEPARTMENT</u></b>	FACULTY OF PHARMACY/DEPARTMENT OF PHARMACOLOGY
<b><u>SEMESTER</u></b>	5 <sup>th</sup> semester
<b><u>CONTENT</u></b>	Introduction to autocooids, Histamine and antihistaminics Autocooids I (angiotensin II, endothelin-1, nitric oxide) Autocooids II (prostaglandins, serotonin, bradikinin) Introduction to the autonomic nervous system Parasympathomimetic drugs Parasympatholytic drugs Sympathomimetic drugs Sympatholytic drugs Neuromuscular blockers, Ganglion blockers Local antesthetics Diuretic drugs Antihypertensive drugs Congestive heart failure and its treatment

	Antianginal drugs Antithrombotic drugs Antiarrhythmics Hypolipidemics Introduction to the endocrine system pharmacology Pituitary and hypothalamus hormones Thyroid hormones and antithyroid drugs Sex hormones, agonists and antagonists Insulin and oral hypoglycemic drugs Glucocorticoids and ACTH Calcium regulating hormones (parathyroid hormone, vitamin D, calcitonin)
<b>NAME AND CONTACT INFORMATION OF PROFESSOR (EMAIL/PHONE)</b>	Prof.Dr. Sönmez UYDEŞ DOĞAN <a href="mailto:sonmezuydesdogan@gmail.com">sonmezuydesdogan@gmail.com</a> +90 2125266476

<b><u>COURSE NAME/ECTS Credits</u></b>	PHARMACOGNOSY II / 5
<b><u>FACULTY / DEPARTMENT</u></b>	FACULTY OF PHARMACY / DEPARTMENT OF PHARMACOGNOSY
<b><u>SEMESTER</u></b>	6 <sup>th</sup> semester
<b><u>CONTENT</u></b>	Alkaloids: Generalities, Alkaloids derived from Ornithine and Lysine; Tropane alkaloids, Pyrrolizidine alkaloids, Quinolizidine alkaloids, Piperidine alkaloids. Alkaloids derived from Nicotinic acid. Alkaloids derived from phenylalanine and tyrosine; Phenethylamines, Simple isoquinolines, Benzyltetrahydroisoquinolines, Morphinan alkaloids, Curares, Phenethylisoquinolines, Amaryllidaceae alkaloids, Monoterpenoid isoquinolines. Alkaloids derived from tryptophan; Tryptamines, $\beta$ -Carboline alkaloids, Ergoline alkaloids, Monoterpenoid Indole alkaloids, Diterpenoid alkaloids. Purine bases.
<b><u>NAME AND CONTACT INFORMATION OF PROFESSOR (EMAIL / PHONE)</u></b>	Prof. Dr. Afife Mat <a href="mailto:afifemat@istanbul.edu.tr">afifemat@istanbul.edu.tr</a> 0 212 440 02 53

<b><u>COURSE NAME/ECTS Credits</u></b>	PHARMACEUTICAL TECHNOLOGY II/7
<b><u>FACULTY/DEPARTMENT</u></b>	FACULTY OF PHARMACY / DEPARTMENT OF PHARMACEUTICAL TECHNOLOGY
<b><u>SEMESTER</u></b>	6 <sup>th</sup> semester
<b><u>CONTENT</u></b>	The course describe the basic concepts of isotonic solutions with the calculations, formulation of eye,ear, nasal drug forms, design of sterile drug preparation

	areas with current approaches of the quality assurance under GMP regulations.
<b>NAME AND CONTACT INFORMATION OF PROFESSOR (EMAIL/PHONE)</b>	Prof.Dr. Yıldız Özsoy Erginer <a href="mailto:yozyoy@istanbul.edu.tr">yozyoy@istanbul.edu.tr</a> 00902124400000-13499

<b><u>COURSE NAME/ECTS Credits</u></b>	PHARMACEUTICAL CHEMISTRY II / 8
<b><u>FACULTY/DEPARTMENT</u></b>	FACULTY OF PHARMACY / DEPARTMENT OF PHARMACEUTICAL CHEMISTRY
<b><u>SEMESTER</u></b>	6 <sup>th</sup> semester
<b><u>CONTENT</u></b>	Parasympathomimetics, parasympatholytics, sympatho-mimetics, sympatholytics, centrally active sympatholytics, ACE inhibitors, antianginal drugs, calcium channel blockers, organic nitrates, antiarrhythmics, antihyperlipidemics, anticoagulants, antiparkinsonian drugs, muscle relaxants, gastrointestinal system drugs, general and local anesthetics, sedatives and hypnotics, antiepileptics, psychoactive drugs, neuroleptics, antidepressants, psychoanaleptics
<b><u>NAME AND CONTACT INFORMATION OF PROFESSOR (E-MAIL/PHONE)</u></b>	Prof. Dr. NURAY GÜZELDEMİRÇİ (nulusoy@istanbul.edu.tr / 00902124400000-13459)

<b><u>COURSE NAME/ETCS Credits</u></b>	PHARMACOLOGY III / 3
<b><u>FACULTY/DEPARTMENT</u></b>	FACULTY OF PHARMACY/DEPARTMENT OF PHARMACOLOGY
<b><u>SEMESTER</u></b>	6 <sup>th</sup> semester
<b><u>CONTENT</u></b>	Introduction to Central Nervous System Pharmacology Drugs Used in the Treatment of Depression and Mania Neuroleptics Anxiolytic-hypnotic drugs Antiparkinson drugs Antiepileptic drugs Narcotic analgesics, general anesthetics Drugs used in the treatment of Alzheimer's Disease Introduction to chemotherapy, Penicillins, cephalosporins, aminoglycoside antibiotics, Gyrase Inhibitors Sulfonamides, Tetracyclines, Amphenicols Lincosamides, Glycopeptide antibiotics, Macrolide antibiotics

	Antiviral drugs Drug addiction and abuse Nonsteroidal Antiinflammatory Drugs
<b>NAME AND CONTACT INFORMATION OF PROFESSOR (EMAIL/PHONE)</b>	Prof.Dr. Sönmez UYDEŞ DOĞAN <a href="mailto:sonmezuydesdogan@gmail.com">sonmezuydesdogan@gmail.com</a> +90 2125266476

<b>COURSE NAME /ECTS CREDITS</b>	COSMETOLOGY /3
<b>FACULTY /DEPARTMENT</b>	FACULTY OF PHARMACY/ DEPARTMENT OF PHARMACEUTICAL TECHNOLOGY
<b>SEMESTER</b>	6 <sup>th</sup> semester
<b>CONTENT</b>	Depending on legal regulations; giving information about production, raw material and excipients, types and properties of the products, points to be attended, conservation conditions, stability and analysis on cosmetic products
<b>NAME AND CONTACT INFORMATION OF PROFESSOR (EMAIL/PHONE)</b>	Prof.Dr.Gülgün Yener <a href="mailto:gulyen@superonline.com">gulyen@superonline.com</a> 00902124400000-13491

<b><u>COURSE NAME/ECTS Credits</u></b>	PHARMACOGNOSY III / 5
<b><u>FACULTY / DEPARTMENT</u></b>	FACULTY OF PHARMACY / DEPARTMENT OF PHARMACOGNOSY
<b><u>SEMESTER</u></b>	7 <sup>th</sup> semester
<b><u>CONTENT</u></b>	Terpenoids: Monoterpenes, Sesquiterpenes, Essential Oils, Oleoresins, Pyrethrins, Sesquiterpenoid Lactones, Diterpenes, Triterpenes, Carotenoids
<b><u>NAME AND CONTACT INFORMATION OF PROFESSOR (EMAIL / PHONE)</u></b>	Prof. Dr. Afife Mat <a href="mailto:afifemat@istanbul.edu.tr">afifemat@istanbul.edu.tr</a> 0 212 440 02 53

<b><u>COURSE NAME/ECTS Credits</u></b>	PHARMACEUTICAL TECHNOLOGY III/7
<b><u>FACULTY/DEPARTMENT</u></b>	FACULTY OF PHARMACY/ DEPARTMENT OF PHARMACEUTICAL TECHNOLOGY
<b><u>SEMESTER</u></b>	7 <sup>th</sup> semester
<b><u>CONTENT</u></b>	This course entails an advanced study of the pharmaceutical technology, including drug form, drug preparations, drug control and applications, agricultural drugs, modern therapeutical systems, stability and reaction kinetics.

<b><u>NAME AND CONTACT INFORMATION OF PROFESSOR (EMAIL/PHONE)</u></b>	Prof. Dr. Yıldız ERGİNER <a href="mailto:yozsoy@istanbul.edu.tr">yozsoy@istanbul.edu.tr</a> 00902124400000-13499
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<b><u>COURSE NAME/ECTS Credits</u></b>	CLINICAL BIOCHEMISTRY/( ECTS: 3)
<b><u>FACULTY/DEPARTMENT</u></b>	FACULTY OF PHARMACY/ DEPARTMENT OF BIOCHEMISTRY
<b><u>SEMESTER</u></b>	7 <sup>th</sup> semester
<b><u>CONTENT</u></b>	<p>1. GENERAL VIEW ON CLINICAL DIAGNOSIS. Medical laboratory in medicinal science world - Types of biological material - Evaluation of tests results - Errors that can influence test results - Incontrolable errors and factors - Methodology - Test group examples.</p> <p>2. CLINICAL ESTIMATION OF WATER AND ELECTROLYTE METABOLISM AND ACİD-BASE BALANCE - Total body water - The water balance in the body - Ionic composition of body fluids - Movement of fluids through the body - Regulation of body fluids - Kidneys - Renin - angiotensin - aldosteron system - Regulation of urine osmolarity - Sodium - Potassium - Chloride - Bicarbonate - Acid-base balance - Acidosis – Alkalosis.</p> <p>3. DISORDERS OF CARBOHYDRATE METABOLISM. Diabetes, importance, history, types of diabetes, tests used in the diagnosis of diabetes - Oral glucose tolerance test - Diabetic ketoacidosis.</p> <p>4. DISORDERS OF CARBOHYDRATE METABOLISM. Glycosylated proteins - Diabetic complications - Hypoglycemia - Other diseases related with carbohydrate metabolism - Proceeding and treatment.</p> <p>5. DISORDERS OF LIPID METABOLISM. Role of lipids in living organisms - Classification of lipids - Lipoproteins, definition and structure - Transport of exogenous and endogenous lipids.</p> <p>6. DISORDERS OF LIPID METABOLISM. Transport of cholesterol from extrahepatic tissues to liver (reverse cholesterol transport) - Lipoprotein metabolism disorders - Hyperlipoproteinemias.</p> <p>7. DISORDERS OF LIPID METABOLISM. Hypolipoproteinemias - The medical treatment of hyperlipoproteinemias.</p> <p>8. ENZYMES OF DIAGNOSTIC SIGNIFICANCE. Brief look on enzymes - Test results and clinical findings- Determination of isoenzymes - Serum</p>
<b><u>COURSE NAME/ECTS Credits</u></b>	PHARMACEUTICAL CHEMISTRY III / 6

	<p>enzymes in diseases: myocardial infarct - Muscle diseases - Liver diseases - Bone diseases.</p> <p>9. ENZYMES OF DIAGNOSTIC SIGNIFICANCE. Enzymes and diseases: Alkaline phosphatase (ALP) - Amylase - Alanine aminotransferase (ALT) - Aspartate aminotransferase (AST) - Gamma glutamyl transferase (GGT) - Creatine kinase (CK) - Lactate dehydrogenase (LDH).</p> <p>10. BIOCHEMICAL PARAMETERS IN LIVER DISEASES. Functions of the liver - Bilirubin and liver functions - Liver enzymes - Clinical relevance of changes in liver enzymes - Bile acids - Serum proteins used in the diagnosis of liver diseases.</p> <p>11. BIOCHEMICAL PARAMETERS IN LIVER DISEASES. Liver diseases: Acute viral hepatitis - Hepatic cirrhosis - Liver and alcohol - Hepatic encephalopathy (kernicterus) - Chronic hepatitis- Neonatal icterus - Primary biliary cirrhosis - Reye syndrome - Hemochromatosis - Wilson disease - General evaluation of liver functions- Useful plants for liver- Nutrition in liver diseases.</p> <p>12. HEREDITARY DISEASES (INBORN ERRORS OF METABOLISM). Biochemical causes of the diseases - Clinical symptoms - Diagnosis of enzyme abnormalities - Treatment of inborn errors of metabolism - Amino acid metabolism disorders: Alkaptonuria - Phenylketonuria - Fanconi syndrome - Cystic fibrosis.</p> <p>13. HEREDITARY DISEASES (INBORN ERRORS OF METABOLISM). Lysosomal storage diseases: Mucopolysaccharidosis - Sphingolipidoses. Hereditary diseases of carbohydrate metabolism: Glycogen storage diseases- Favism - Disorders of fructose and galactose metabolisms.</p> <p>14. HEREDITARY DISEASES (INBORN ERRORS OF METABOLISM). Hereditary blood diseases: Thalassemia - Hemoglobinopathies - Porphyrrias - Prevention and treatment of hereditary diseases.</p>
<p><b><u>NAME AND CONTACT INFORMATION OF PROFESSOR (EMAIL/PHONE)</u></b></p>	<p>Prof.Dr. Ayşe Can (aysecan@istanbul.edu.tr/ +902124400273)</p> <p>Prof.Dr. Nuriye Akev (nakev@istanbul.edu.tr/ +902124400274)</p> <p>Doç.Dr. Nurten Özsoy (nozsoy@istanbul.edu.tr/ +902124400000/13478)</p> <p>Doç.Dr. Pınar Aksoy Sağırılı ((pinaraksoy22@yahoo.com/ +902124400000/13475)</p> <p>Yard.Doç.Dr. Özlem Kurt Şirin (ozlemk@istanbul.edu.tr/ +902124400000/13411)</p>

	Yard.Doç.Dr. Tuğba Yılmaz Özden (tugbay@istanbul.edu.tr/ +902124400000/13411)
<b><u>FACULTY/DEPARTMENT</u></b>	FACULTY OF PHARMACY / DEPARTMENT OF PHARMACEUTICAL CHEMISTRY
<b><u>SEMESTER</u></b>	7 <sup>th</sup> semester
<b><u>CONTENT</u></b>	Focused training on antihistaminic drugs, ulcer therapy, antidiabetic and steroidal drugs, thyroid hormones and antithyroid drugs, osteoporosis, analgesic and antitussive drugs, prostaglandins, gout and migraine drugs and vitamins.
<b><u>NAME AND CONTACT INFORMATION OF PROFESSOR (E-MAIL/PHONE)</u></b>	Prof. Dr. NİLGÜN LÜTFİYE KARALI (karalin@istanbul.edu.tr / x13457) Prof. Dr. GÜLTAZE ÇAPAN (capang@istanbul.edu.tr / x13455)

<b><u>COURSE NAME/ETCS Credits</u></b>	PHARMACOTHERAPY I / 5
<b><u>FACULTY/DEPARTMENT</u></b>	FACULTY OF PHARMACY/DEPARTMENT OF PHARMACOLOGY
<b><u>SEMESTER</u></b>	7 <sup>th</sup> semester
<b><u>CONTENT</u></b>	Basic Principles of Pharmacotherapy Nausea-Vomiting, and its Treatment Peptic Ulcer, Gastroesophageal Reflux, and its Treatment Constipation-Diarrhea, and its Treatment Vaginitis and its Treatment Acne and Dermatitis, and its Treatment Asthma and COPD, and its Treatment Obesity and its Treatment Erectile Dysfunction and its Treatment Menstrual Cycle Disorders, PCOS, Menopause, and their Treatments Pregnancy Prevention Methods and Hormonal Contraceptives Drug Use in Pregnancy and Lactation Periods
<b><u>NAME AND CONTACT INFORMATION OF PROFESSOR (EMAIL/PHONE)</u></b>	Prof.Dr. Sönmez UYDEŞ DOĞAN <a href="mailto:sonmezuydesdogan@gmail.com">sonmezuydesdogan@gmail.com</a> +90 2125266476

<b><u>COURSE NAME/ECTS Credits</u></b>	PHARMACY MANAGEMENT /2
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<b><u>FACULTY/ DEPARTMENT</u></b>	FACULTY OF PHARMACY/DEPARTMENT OF PHARMACY MANAGEMENT
<b><u>SEMESTER</u></b>	7 <sup>th</sup> semester
<b><u>CONTENT</u></b>	The Definition Of Business, Business Functions, Management And Administrative Concepts, Pharmacies As A Pharmacy, Pharmaceutical Supply Chain, Financial Statements, Expenditure, Income And Expenditure Concepts, Financial Statement Analysis, Cash Flow Statement, Card Stock, Costing Methods, Inventory Management In Pharmacies, Drug Manufacturers Companies, Planning And Budgeting, Research And Development Expenditures, Investment Decisions
<b><u>NAME AND CONTACT INFORMATION OF PROFESSOR (EMAIL/PHONE)</u></b>	PROF. Dr. Ahmet Oğul ARAMAN <a href="mailto:aaraman@gmail.com">aaraman@gmail.com</a> / +90-212-440 00 00

<b><u>COURSE NAME/ECTS Credits</u></b>	PHYTOTHERAPY / 4
<b><u>FACULTY / DEPARTMENT</u></b>	FACULTY OF PHARMACY / DEPARTMENT OF PHARMACOGNOSY
<b><u>SEMESTER</u></b>	8 <sup>th</sup> semester
<b><u>CONTENT</u></b>	Introduction to phytotherapy: Medicinal herbs, preparations and extracts, standardization of extracts, phytomedicines. Medicinal teas, various forms of medicinal teas, guidelines for tea preparation. Aromatherapy, Homeopathy and homeopathic medicine. Phytotherapeutics used for Respiratory system, Phytotherapeutics used for Cardiovascular system, Phytotherapeutics used for Central Nervous System, Phytotherapeutics used for Digestive System, Phytotherapeutics used for Urinary Tract, Phytotherapeutics used for Gynecologic Indications, Phytotherapeutics used for Skin, Trauma, Rheumatism and Pain, Adaptogens, Immune Stimulants. Dosage, adverse effects and risks of phytomedicines.
<b><u>NAME AND CONTACT INFORMATION OF PROFESSOR (EMAIL / PHONE)</u></b>	Prof. Dr. Afife Mat <a href="mailto:afifemat@istanbul.edu.tr">afifemat@istanbul.edu.tr</a> 0 212 440 02 53

<b><u>COURSE NAME/ECTS Credits</u></b>	BIOPHARMACEUTICS AND PHARMACOKINETICS / 2
<b><u>FACULTY/DEPARTMENT</u></b>	FACULTY OF PHARMACY / DEPARTMENT OF PHARMACEUTICAL TECHNOLOGY
<b><u>SEMESTER</u></b>	8 <sup>th</sup> semester
<b><u>CONTENT</u></b>	The course conveys basic concepts in the field of biopharmaceutics and pharmacokinetics, including bio-availability and bio-equivalence.
<b><u>NAME AND CONTACT INFORMATION OF PROFESSOR (EMAIL/PHONE)</u></b>	Assoc.Prof. Sevgi Güngör <a href="mailto:sgungor@istanbul.edu.tr">sgungor@istanbul.edu.tr</a> 00902124400000-13493

<b><u>COURSE NAME/ECTS Credits</u></b>	PHARMACEUTICAL BIOTECHNOLOGY / 2
<b><u>FACULTY/DEPARTMENT</u></b>	FACULTY OF PHARMACY / DEPARTMENT OF PHARMACEUTICAL TECHNOLOGY
<b><u>SEMESTER</u></b>	8 <sup>th</sup> semester
<b><u>CONTENT</u></b>	It contains recombinant DNA technology, gene expression in prokaryotic and eukaryotic cells, recombinant biopharmaceuticals I: monoclonal antibodies, vaccines and adjuvants, cytokines; cell culture, fermentation technology biopharmaceuticals II: insulin, therapeutic hormones, enzymes and clotting factors for therapeutics; structure of proteins, properties of proteins, protein purification and approaches about preparing forms of the biopharmaceuticals: ultrafiltration-advanced purification by chromatography; degradation and physical stability of peptides-proteins, parenteral formulations of peptides and proteins, oral formulations of peptides and proteins, targeting of peptides and proteins, ethic of biotechnological drugs, security and patent, applications of new therapeutic systems with peptides and proteins, vaccine delivery systems and plant biopharmaceuticals (the history of plant and tissue culture, secondary metabolites and their obtaining).
<b><u>NAME AND CONTACT INFORMATION OF PROFESSOR (EMAIL/PHONE)</u></b>	Prof.Dr. Yıldız Özsoy Erginer <a href="mailto:yozsoy@istanbul.edu.tr">yozsoy@istanbul.edu.tr</a> 00902124400000-13499

<b><u>COURSE NAME/ECTS Credits</u></b>	PHARMACY LAW AND ETHICS / 2
<b><u>FACULTY/ DEPARTMENT</u></b>	FACULTY OF PHARMACY / DEPARTMENT OF PHARMACY MANAGEMENT
<b><u>SEMESTER</u></b>	8 <sup>th</sup> semester
<b><u>CONTENT</u></b>	Ethics Basic Concepts, Relationship with Other Sciences; Ethical Theories, Ethical Dilemmas Ethics in Health Care; CASE- events, Legislation Hierarchy; Turkish Pharmacists Deontology

	Regulation; 6197 Law on Pharmacists and Pharmacies; Specialist Pharmacist, Drug Tracking System, European Pharmacopoeia, Turkish Codex; Regulation on Pharmacists and Pharmacies, Patient Rights, Turkish Pharmacists' Association (TEB) Act 6643, TEB Regulation, Regulation on Monitoring and Evaluation of Safety of Medicinal Products; Inpatient Treatment Institutions Businesses Regulations, Regulation About Human Promotional Activities of Medicinal Products; 2313 Law on Control of Narcotic Drugs; Good Pharmacy Practice; Occupational Health and Safety Law, Employees in Health, Health Care Professionals, and Other Professionals Regulation on Job Description
<b><u>NAME AND CONTACT INFORMATION OF PROFESSOR (EMAIL/PHONE)</u></b>	PROF. Dr. Ahmet Oğul ARAMAN <a href="mailto:aaraman@gmail.com">aaraman@gmail.com</a> / +90-212 440 00 00

<b><u>COURSE NAME/ECTS CREDITS</u></b>	RADIOPHARMACEUTICALS/2
<b><u>FACULTY/DEPARTMENT</u></b>	FACULTY OF PHARMACY / DEPARTMENT OF PHARMACEUTICAL TECHNOLOGY
<b><u>SEMESTER</u></b>	8 <sup>th</sup> semester
<b><u>CONTENT</u></b>	The course introduces basic concepts in radiopharmacy, radiopharmaceutic dosage forms and their preparations, radiochemical processes and problems.
<b><u>NAME AND CONTACT INFORMATION OF PROFESSOR (EMAIL/PHONE)</u></b>	Prof.Dr. Yıldız Özsoy Erginer <a href="mailto:yozsoy@istanbul.edu.tr">yozsoy@istanbul.edu.tr</a> 00902124400000-13499

<b><u>COURSE NAME / ECTS Credits</u></b>	PHARMACEUTICAL TOXICOLOGY / 4
<b><u>FACULTY / DEPARTMENT</u></b>	FACULTY OF PHARMACY / DEPARTMENT OF PHARMACEUTICAL TOXICOLOGY
<b><u>SEMESTER</u></b>	8 <sup>th</sup> semester
<b><u>CONTENT</u></b>	Basic principles of toxicology, absorption, distribution, metabolism and elimination of toxic compounds, toxicity mechanisms, principles of first aid and precautions in acute poisonings, systematic toxicological analysis, toxicity of several xenobiotics.

<b><u>NAME AND CONTACT INFORMATION OF PROFESSOR (EMAIL / PHONE)</u></b>	Prof. Dr. Buket Alpertunga <a href="mailto:tunga@istanbul.edu.tr">tunga@istanbul.edu.tr</a> / 0212 440 02 70
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<b><u>COURSE NAME/ECTS Credits</u></b>	PHARMACEUTICAL CHEMISTRY IV / 3
<b><u>FACULTY/DEPARTMENT</u></b>	FACULTY OF PHARMACY / DEPARTMENT OF PHARMACEUTICAL CHEMISTRY
<b><u>SEMESTER</u></b>	8 <sup>th</sup> semester
<b><u>CONTENT</u></b>	Antibacterial drugs, sulfonamides, antimycobacterials, Beta-lactam antibiotics, penicillins, Beta-lactamase inhibitors, cephalosporins, carbapenems, monobactams, inhibitors of bacterial protein synthesis, DNA gyrase inhibitors, antifungal drugs, antiviral drugs, anticancer drugs
<b><u>NAME AND CONTACT INFORMATION OF PROFESSOR (E-MAIL/PHONE)</u></b>	Prof. Dr. NİLGÜN LÜTFİYE KARALI (karalin@istanbul.edu.tr / x13457)

<b><u>COURSE NAME/ETCS Credits</u></b>	PHARMACOTHERAPY II / 5
<b><u>FACULTY/DEPARTMENT</u></b>	FACULTY OF PHARMACY/DEPARTMENT OF PHARMACOLOGY
<b><u>SEMESTER</u></b>	8 <sup>th</sup> Semester
<b><u>CONTENT</u></b>	Allergic rhinitis, otitis media, pharyngitis, sinusitis and their treatments Migraine and other type of headaches and their treatments Neoplastic diseases and its treatments Fungal infections and its treatment Gastrointestinal and biliary insufficiency; choleric and chologogue drugs and digestans Cold, Antitussive and expectorant drugs Rheumatic disease and treatments Osteoporosis and its treatment Anemia and its treatment Smoking and health Epilepsy and its treatment

<b>NAME AND CONTACT INFORMATION OF PROFESSOR (EMAIL/PHONE)</b>	Prof.Dr. Sönmez UYDEŞ DOĞAN <a href="mailto:sonmezuydesdogan@gmail.com">sonmezuydesdogan@gmail.com</a> +90 2125266476
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<b>COURSE NAME/ETCS Credits</b>	PHARMACEUTICAL CARE / 2
<b>FACULTY/DEPARTMENT</b>	FACULTY OF PHARMACY/DEPARTMENT OF PHARMACOLOGY
<b>SEMESTER</b>	8 <sup>th</sup> Semester
<b>CONTENT</b>	<p>Principles of Pharmaceutical Care I. Description of Pharmaceutical Care, detection of the problems in drug treatments of chronic diseases and preparation of patient records.</p> <p>Principles of Pharmaceutical Care II. Collecting and evaluating patient data.</p> <p>Principles of Pharmaceutical Care III. Developing patient care plan</p> <p>Importance of Pharmaceutical Care in helminth and parasite infestations.</p> <p>Importance of Pharmaceutical Care in hypertension (Instrument usage, measurement of systolic and diastolic blood pressure and pulse)</p> <p>Importance of Pharmaceutical Care in asthma and COPD (Drug and instrument usage: turbohaler, discus, nebulizer and other preparations)</p> <p>Importance of Pharmaceutical Care in fungal infections (Drug and pharmaceutical preparation usage: ovules, applicators and antifungal polish)</p> <p>Importance of Pharmaceutical Care in diabetes (Drug and instrument usage: insulin pens and application methods, glucometer usage)</p> <p>Pharmaceutical Care Practices: Developing patient communication skills, ensuring compliance of the patient in the treatment of chronic diseases.</p> <p>Pharmaceutical care practice with examples of prescriptions</p>
<b>NAME AND CONTACT INFORMATION OF PROFESSOR (EMAIL/PHONE)</b>	Prof.Dr. Sönmez UYDEŞ DOĞAN <a href="mailto:sonmezuydesdogan@gmail.com">sonmezuydesdogan@gmail.com</a> +90 2125266476

<b>COURSE NAME/ECTS CREDITS</b>	PHARMACEUTICAL ENGINEERING / 3
<b>FACULTY/DEPARTMENT</b>	FACULTY OF PHARMACY / DEPARTMENT OF PHARMACEUTICAL ENGINEERING
<b>SEMESTER</b>	8 <sup>th</sup> semester
<b>CONTENT</b>	Basic concepts of pharmaceutical engineering. Electrotechnic/Mechatronics, PAT, QbD

	applications, Quality control from engineering aspect, Quality management and Systems
<b>NAME AND CONTACT INFORMATION OF PROFESSOR (EMAIL/PHONE)</b>	Prof. Dr. Ahmet Oğul Araman <a href="mailto:aaraman@gmail.com">aaraman@gmail.com</a> 00902124400000-13400

<b><u>COURSE NAME/ECTS Credits</u></b>	TRADITIONAL AND COMPLEMENTARY THERAPY METHODS / 3 (ELECTIVE COURSE)
<b><u>FACULTY / DEPARTMENT</u></b>	FACULTY OF PHARMACY / DEPARTMENT OF PHARMACOGNOSY
<b><u>SEMESTER</u></b>	9 <sup>th</sup> semester
<b><u>CONTENT</u></b>	The definition and the use of traditional and complementary medicine. Introducing the systems as homeopathy, acupuncture, hirudotherapy, osteopathy, chiropractic, apitherapy, ayurveda and hypnosis.
<b><u>NAME AND CONTACT INFORMATION OF PROFESSOR (EMAIL / PHONE)</u></b>	Prof. Dr. Afife Mat <a href="mailto:afifemat@istanbul.edu.tr">afifemat@istanbul.edu.tr</a> 0 212 440 02 53

<b><u>COURSE NAME/ECTS Credits</u></b>	NARCOTIC HALLUCINOGENIC POISONOUS PLANTS AND FUNGI / 3 (ELECTIVE COURSE)
<b><u>FACULTY / DEPARTMENT</u></b>	FACULTY OF PHARMACY / DEPARTMENT OF PHARMACOGNOSY
<b><u>SEMESTER</u></b>	9 <sup>th</sup> semester
<b><u>CONTENT</u></b>	Narcotic, Halluginogenic and Poisonous Plants, Hallucinogens in primitive societies, Use in Modern Western World, Distribution of Hallucinogens, Chemical composition, How Hallucinogens are taken. Introduction to Poisonous plants, how plants cause harm, Risks of poisonous plants, the most toxic plants. The poisonous fungi, origin and distribution, morphological characters, active compounds, toxicity, symptoms of intoxication.
<b><u>NAME AND CONTACT INFORMATION OF PROFESSOR (EMAIL / PHONE)</u></b>	Prof. Dr. Afife Mat <a href="mailto:afifemat@istanbul.edu.tr">afifemat@istanbul.edu.tr</a> 0 212 440 02 53

<b>COURSE NAME/ECTS CREDITS</b>	MEDICAL AND BIOMEDICAL DEVICES AND PRODUCTS / 2
<b>FACULTY/DEPARTMENT</b>	FACULTY OF PHARMACY / DEPARTMENT OF PHARMACEUTICAL TECHNOLOGY
<b>SEMESTER</b>	9 <sup>th</sup> semester
<b>CONTENT</b>	This course covers a wide range of topics such as legal procedures of biomedical products, the classification of medical devices, CE certificate procedures, the responsibilities of notified bodies, drugstore inventory, hospital inventory, medical accessories, medical and biomedical devices, combination products, stents, quality control procedures of medical devices, and their procedures.
<b>NAME AND CONTACT INFORMATION OF PROFESSOR (EMAIL/PHONE)</b>	Assoc.Prof. Sevgi Güngör <a href="mailto:sgungor@istanbul.edu.tr">sgungor@istanbul.edu.tr</a> 00902124400000-13493

<b>COURSE NAME/ECTS CREDITS</b>	DRUG PATENTS / 3
<b>FACULTY/DEPARTMENT</b>	FACULTY OF PHARMACY / DEPARTMENT OF PHARMACEUTICAL TECHNOLOGY
<b>SEMESTER</b>	9 <sup>th</sup> semester
<b>CONTENT</b>	Basic concepts in patenting and importance of patenting. History of patents in the World and in Turkey. International agreements in patents, Intellectual and industrial copyrights basics. Patent files preparation. Samples of international patent applications. International patent resource. Patent application, research and investigation basics.
<b>NAME AND CONTACT INFORMATION OF PROFESSOR (EMAIL/PHONE)</b>	Prof.Dr. Yıldız Özsoy Erginer <a href="mailto:yozyoy@istanbul.edu.tr">yozyoy@istanbul.edu.tr</a> 00902124400000-13499

<b>COURSE NAME/ECTS CREDITS</b>	AUTHORIZATION OF DRUGS / 2
<b>FACULTY/DEPARTMENT</b>	FACULTY OF PHARMACY / DEPARTMENT OF PHARMACEUTICAL TECHNOLOGY
<b>SEMESTER</b>	9 <sup>th</sup> semester
<b>CONTENT</b>	The course teaches aim, definitions and contents of drug licensing. Licensing application procedure and documentation. Abbreviated drug application, drug licensing in European countries and licensing process flow. CTD content and criteria during CTD preparation. Modul 1-3 content and documentation subjects.
<b>NAME AND CONTACT INFORMATION OF PROFESSOR (EMAIL/PHONE)</b>	Prof.Dr. Yıldız Özsoy Erginer <a href="mailto:yozyoy@istanbul.edu.tr">yozyoy@istanbul.edu.tr</a>

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<b><u>COURSE NAME/ECTS Credits</u></b>	PLANT DRUG SOURCES OF TURKEY / 3 (ELECTIVE COURSE)
<b><u>FACULTY / DEPARTMENT</u></b>	FACULTY OF PHARMACY / DEPARTMENT OF PHARMACOGNOSY
<b><u>SEMESTER</u></b>	9 <sup>th</sup> semester
<b><u>CONTENT</u></b>	The history of herbal drugs in Turkey. Medicinal plants cultivated in Turkey, the plants exported from Turkey. The history of Opium in Turkey, the importance of <i>Papaver</i> , <i>Colchicum</i> , <i>Galanthus</i> , <i>Crataegus</i> , <i>Hypericum</i> , <i>Vaccinium</i> , <i>Rosa</i> species.
<b><u>NAME AND CONTACT INFORMATION OF PROFESSOR (EMAIL / PHONE)</u></b>	Prof. Dr. Afife Mat <a href="mailto:afifemat@istanbul.edu.tr">afifemat@istanbul.edu.tr</a> 0 212 440 02 53

<b><u>COURSE NAME/ ECTS Credits</u></b>	RATIONAL USE OF ANTIBIOTICS AND ANTIMICROBIC MATERIALS /2 (ELECTIVE COURSE)
<b><u>FACULTY/ DEPARTMENT</u></b>	FACULTY OF PHARMACY / DEPARTMENT OF PHARMACEUTICAL MICROBIOLOGY
<b><u>SEMESTER</u></b>	9 <sup>th</sup> semester
<b><u>CONTENT</u></b>	Antibiotics; antiseptic and disinfectant materials; their effects and resistance mechanisms; criteria and methods to determine their activities; Importance of the postantibiotic effect as a pharmacodynamic parameter, Combination use of antibiotics, Immunomodulator effects of antibiotics; principles for the correct use of these materials.
<b><u>NAME AND CONTACT INFORMATION OF PROFESSOR (EMAIL/ PHONE)</u></b>	Doç.Dr.Ayşe Seher Birteksöz-Tan <a href="mailto:seherbirteksoz@hotmail.com">seherbirteksoz@hotmail.com</a> / 0 212 440 0000-13523

<b><u>COURSE NAME/ ECTS Credits</u></b>	INFECTIOUS DISEASES AND THEIR AGENTS/ 3 (ELECTIVE COURSE)
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<b><u>FACULTY/ DEPARTMENT</u></b>	FACULTY OF PHARMACY / DEPARTMENT OF PHARMACEUTICAL MICROBIOLOGY
<b><u>SEMESTER</u></b>	9 <sup>th</sup> semester
<b><u>CONTENT</u></b>	<p>Various types of infectious diseases and their factors' ethiology, epidemiology, pathogenesis, diagnosis, treatment, protection and control.</p> <p>1)Respiratory tract infections  2)Continue to Respiratory tract infections  3)Eye infections  4)Urinary system infections  5)Veneral diseases  6)Gastrointestinal system infections  7)Obstetric and perinatal infections  8)Central nervous system infections  9)Factors of skin, muscle,joint diseases  10)Factors of general virus infections  11)Infections via the vectors  12)Continue to Infections via the vectors  13)Zoonosis  14)Infections of immunocompromised patients</p>
<b><u>NAME AND CONTACT INFORMATION OF PROFESSOR (EMAIL/ PHONE)</u></b>	Doç.Dr.Berna Özbek-Çelik <a href="mailto:bernaozbek@hotmail.com">bernaozbek@hotmail.com</a> / 0 212 440 0000-13525

<b>COURSE NAME / ECTS Credits</b>	CLINICAL TOXICOLOGY / 3 (ELECTIVE COURSE)
<b>FACULTY / DEPARTMENT</b>	FACULTY OF PHARMACY / DEPARTMENT OF PHARMACEUTICAL TOXICOLOGY
<b>SEMESTER</b>	9 <sup>th</sup> semester
<b>CONTENT</b>	Intoxications by drugs, addictive substances, household products, alcohols, heavy metals, pesticides and principles of first aid and precautions in acute poisonings.
<b>NAME AND CONTACT INFORMATION OF PROFESSOR (EMAIL / PHONE)</b>	Doç. Dr. Sibel Özden <a href="mailto:stopuz@istanbul.edu.tr">stopuz@istanbul.edu.tr</a> / 0212 440 00 00 - 13567

<b>COURSE NAME/ETCS Credits</b>	CLINICAL PHARMACY / 4 (ELECTIVE COURSE)
<b>FACULTY/DEPARTMENT</b>	FACULTY OF PHARMACY/DEPARTMENT OF PHARMACOLOGY

<b>SEMESTER</b>	9 <sup>th</sup> Semester
<b>CONTENT</b>	<p>Introduction to the Clinical Pharmacy and Basic Principles,  Clinical Pharmacy Practice in Hospital  Basic Pharmacokinetics and Pharmacokinetic Calculations  Clinical Pharmacokinetics  Drug Use in Special Patient Groups (Children and Elderly/Hepatic and Renal Insufficiency)  Calculations of Pharmacokinetic Parameters from Urine Data, Volume of Distribution; Calculation and Evaluation of Renal Clearance and Hepatic Clearance  Therapeutic Drug Monitoring (TDM)  Preparation to Clinical Rounds in Hospital (an update of antiepileptic, antiasthmatic and cardiovascular drugs )  General information for the hospital practice, Information for the preparation of patient epicrisis, Information about the devices (spirometry, blood gases, nebulizer, EEG, EMG)  Evaluation of Clinical Laboratory Data  Oncology Pharmacy; Preparation of Parenteral Solutions in Hospital  Electrolyte Imbalances and Clinical Significance  The solutions expanding plasma volume, blood and plasma products, drugs used in acid - base imbalance (acidosis - alkalosis)  Clinical rounds in Thoracic Diseases, Cardiology and Neurology Departments</p>
<b>NAME AND CONTACT INFORMATION OF PROFESSOR (EMAIL/PHONE)</b>	<p>Prof.Dr. Sönmez UYDEŞ DOĞAN  <a href="mailto:sonmezuysesdogan@gmail.com">sonmezuysesdogan@gmail.com</a>  +90 2125266476</p>

<b><u>COURSE NAME/ECTS Credits</u></b>	CASE STUDIES IN PHARMACEUTICAL CHEMISTRY / 2 (ELECTIVE COURSE)
<b><u>FACULTY/DEPARTMENT</u></b>	FACULTY OF PHARMACY / DEPARTMENT OF PHARMACEUTICAL CHEMISTRY
<b><u>SEMESTER</u></b>	9 <sup>th</sup> semester
<b><u>CONTENT</u></b>	<p>Drug development, lead modification, rational drug design, development of ACEinhibitors, stereochemistry and drug action, structure-activity relationships, soters and bioisosters, development of H<sub>2</sub>-receptor antagonists, development of sumatriptan, development of oxamniquine, development of oseltamivir</p>

<b><u>NAME AND CONTACT INFORMATION OF PROFESSOR (E-MAIL/PHONE)</u></b>	Prof. Dr. GÜLTAZE ÇAPAN (capang@istanbul.edu.tr / x13455)
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<b><u>COURSE NAME/ETCS Credits</u></b>	RATIONAL DRUG USE / 3 (ELECTIVE COURSE)
<b><u>FACULTY/DEPARTMENT</u></b>	FACULTY OF PHARMACY/DEPARTMENT OF PHARMACOLOGY
<b><u>SEMESTER</u></b>	9 <sup>th</sup> Semester
<b><u>CONTENT</u></b>	<p>Basic Principles in Rational Drug Use and Role of Pharmacists</p> <p>Rational Drug Use in the Treatment of Cardiovascular Disease</p> <p>Rational Use of Hypolipidemic and Antithrombotic Drugs</p> <p>Rational Use of Antidepressant and Antipsychotic Drugs</p> <p>Rational Use of Antibiotics</p> <p>Rational Use of Analgesics</p> <p>Rational Drug Use in Children and Elderly</p> <p>Rational Drug Use in Special Patient Groups</p> <p>Rational Drug Use in the Treatment of Endocrine System Diseases</p> <p>Rational Drug Use in Gastrointestinal Diseases</p> <p>Rational Drug Use in the Treatment of Cough</p> <p>Rational Use of Hormonal Contraceptives</p> <p>Clinically Significant Drug Interactions</p> <p>Rational Use of Vitamins and Dietary Supplements</p>
<b><u>NAME AND CONTACT INFORMATION OF PROFESSOR (EMAIL/PHONE)</u></b>	<p>Prof.Dr. Sönmez UYDEŞ DOĞAN</p> <p><a href="mailto:sonmezuydesdogan@gmail.com">sonmezuydesdogan@gmail.com</a></p> <p>+90 2125266476</p>

<b><u>COURSE NAME /ECTS Credits</u></b>	COSMECEUTICS/2 (ELECTIVE COURSE)
<b><u>FACULTY /DEPARTMENT</u></b>	FACULTY OF PHARMACY/ DEPARTMENT OF PHARMACEUTICAL TECHNOLOGY
<b><u>SEMESTER</u></b>	9 <sup>th</sup> semester
<b><u>CONTENT</u></b>	To prepare cosmeceutics which contain active substance and are accepted semi-drug, are separated from classical cosmetics as effecting on structure and functions of skin and its derivatives, to provide developing and optimization processes, quality-control and assurance of products, to investigate their compatibility on skin and to contain information about effectivity tests.

<b><u>NAME AND CONTACT INFORMATION OF PROFESSOR (EMAIL/PHONE)</u></b>	Prof.Dr.Gülgün Yener <a href="mailto:gulyen@superonline.com">gulyen@superonline.com</a> 00902124400000-13491
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<b><u>COURSE NAME / ECTS Credits</u></b>	INTRODUCTION TO FORENSIC TOXICOLOGY / 3 (ELECTIVE COURSE)
<b><u>FACULTY / DEPARTMENT</u></b>	FACULTY OF PHARMACY / DEPARTMENT OF PHARMACEUTICAL TOXICOLOGY
<b><u>SEMESTER</u></b>	9 <sup>th</sup> semester
<b><u>CONTENT</u></b>	Isolation and selection of samples for toxicological analysis in forensic cases, qualitative and quantitative analysis methods, the frequently observed intoxications.
<b><u>NAME AND CONTACT INFORMATION OF PROFESSOR (EMAIL / PHONE)</u></b>	Prof. Dr. Buket Alpertunga <a href="mailto:tunga@istanbul.edu.tr">tunga@istanbul.edu.tr</a> / 0212 440 02 70

<b><u>COURSE NAME / ECTS Credits</u></b>	FOOD TOXICOLOGY / 2 (ELECTIVE COURSE)
<b><u>FACULTY / DEPARTMENT</u></b>	FACULTY OF PHARMACY / DEPARTMENT OF PHARMACEUTICAL TOXICOLOGY
<b><u>SEMESTER</u></b>	9 <sup>th</sup> semester
<b><u>CONTENT</u></b>	Natural compounds having toxic potential in food and their toxicities, toxic compounds occurred depending on production, preparation, storage conditions and their toxicities, risk groups and food allergic, toxicological risk assessment of food additives and contaminants, the related regulations and legislations.
<b><u>NAME AND CONTACT INFORMATION OF PROFESSOR (EMAIL / PHONE)</u></b>	Doç. Dr. Gül Özhan <a href="mailto:gulozhan@istanbul.edu.tr">gulozhan@istanbul.edu.tr</a> / 0212 440 00 00 - 13566

<b><u>COURSE NAME/ECTS Credits</u></b>	QUALITY CONTROL ANALYSIS, METHOD DEVELOPMENT AND VALIDATION/ 3 (ELECTIVE COURSE)
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<b><u>FACULTY / DEPARTMENT</u></b>	FACULTY OF PHARMACY / DEPARTMENT OF ANALYTICAL CHEMISTRY
<b><u>SEMESTER</u></b>	9 <sup>th</sup> semester
<b><u>CONTENT</u></b>	Quality Control (QC) Analysis in Pharmaceutical Industry, Analytical Method Development and Validation.
<b><u>NAME AND CONTACT INFORMATION OF PROFESSOR (EMAIL / PHONE)</u></b>	Prof. Dr. Serap SAĞLIK ASLAN ssaglik@istanbul.edu.tr 0090212 440 02 64 0090212 440 00 00 - 13588

<b><u>COURSE NAME/ECTES Credits</u></b>	BEE PRODUCTS, PLANTS AND HEALTH / 3 (ELECTIVE COURSE)
<b><u>FACULTY/DEPARTMENT</u></b>	FACULTY OF PHARMACY/DEPARTMENT OF PHARMACEUTICAL BOTANY
<b><u>SEMESTER</u></b>	9 <sup>th</sup> semester
<b><u>CONTENT</u></b>	Terminology and History Bees and beekeeping in the history of the world and Turkish history Important Terms For Bee Products Crystallization and fermentation in honey Beeswax and Propolis Royal jelly and sting poison Bee pollen Flowers and nectar Honey Plants Herbarium <ul style="list-style-type: none"> <li>• Honey plant concept</li> <li>• Usages of the herbarium Plant honey</li> <li>• Preparation of Herbarium Specimens</li> </ul>
<b><u>NAME AND CONTACT INFORMATION OF PROFESSOR (E-MAIL/PHONE)</u></b>	Yard. Doç.Dr. Mine Koçyiğit <a href="mailto:minekocyigit@hotmail.com">minekocyigit@hotmail.com</a> , <a href="mailto:mkocyigit@istanbul.edu.tr">mkocyigit@istanbul.edu.tr</a> 212 440 00 00 / 13580

<b><u>COURSE NAME / ECTS Credits</u></b>	DRUG SAFETY AND PHARMACOVIGILANCE / 3 (ELECTIVE COURSE)
<b><u>FACULTY / DEPARTMENT</u></b>	FACULTY OF PHARMACY / DEPARTMENT OF PHARMACEUTICAL TOXICOLOGY
<b><u>SEMESTER</u></b>	9 <sup>th</sup> semester

<b>CONTENT</b>	Importance of drug safety, pharmacovigilance regulations and processes in Turkey and in the world.
<b>NAME AND CONTACT INFORMATION OF PROFESSOR (EMAIL / PHONE)</b>	Öğr. Gör. Dr. Eren Özçağlı <a href="mailto:erenozcagli@gmail.com">erenozcagli@gmail.com</a> / 0212 440 00 00 - 13562

<b><u>COURSE NAME/ECTES</u></b> <b><u>Credits</u></b>	SAFELY USES OF MEDICINAL PLANTS IN PHARMACY / 3 (ELECTIVE COURSE)
<b><u>FACULTY/DEPARTMENT</u></b>	FACULTY OF PHARMACY/DEPARTMENT OF PHARMACEUTICAL BOTANY
<b><u>SEMESTER</u></b>	9 <sup>th</sup> semester
<b><u>CONTENT</u></b>	<p>The herbal preparations sold in pharmacies, general information about them.</p> <p>The plants in herbal products sold in pharmacies/ What are the mistakes made in these plants</p> <p>The morphological features of Turkish plants which in herbal products sold in pharmacies</p> <ul style="list-style-type: none"> <li>• The plants which used for weight reduction</li> <li>• The plants which used for cold</li> <li>• The plants which used strengthen for immune system</li> <li>• The plants which used as laxatives</li> <li>• The plants which used as sedative</li> <li>• The plants which used for diabetes</li> <li>• Plants used for cosmetic purposes</li> </ul> <p>The evaluation of the data, determining the most-used herbs in herbal preparations, the reasons</p> <p>The methods used to determinate easily the most used herbs in herbal preparations</p>
<b><u>NAME AND CONTACT INFORMATION OF PROFESSOR (E-MAIL/PHONE)</u></b>	Prof. Dr. Emine Akalın, Doç.Dr. Şükran Kültür <a href="mailto:akaline@istanbul.edu.tr">akaline@istanbul.edu.tr</a> , <a href="mailto:sukrankultur@hotmail.com">sukrankultur@hotmail.com</a> 212 440 00 00 / 13402 and 13576

<b><u>COURSE NAME/ECTS Credits</u></b>	GOOD LABORATORY PRACTICES / 2 (ELECTIVE COURSE)
<b><u>FACULTY / DEPARTMENT</u></b>	FACULTY OF PHARMACY / DEPARTMENT OF ANALYTICAL CHEMISTRY
<b><u>SEMESTER</u></b>	9 <sup>th</sup> semester
<b><u>CONTENT</u></b>	The principle of Good Laboratory Practice (GLP), The relationship between GLP and OECD, Quality Assurance (QA) system, Standard Operating Procedures
<b><u>NAME AND CONTACT INFORMATION OF</u></b>	Prof. Dr. Serap SAĞLIK ASLAN <a href="mailto:ssaglik@istanbul.edu.tr">ssaglik@istanbul.edu.tr</a>

<b><u>PROFESSOR (EMAIL / PHONE)</u></b>	0090212 440 02 64 0090212 440 00 00 - 13588
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<b><u>COURSE NAME/ECTS Credits</u></b>	BIOCHEMISTRY OF CANCER/ 2 (ELECTIVE COURSE)
<b><u>FACULTY/DEPARTMENT</u></b>	FACULTY OF PHARMACY / DEPARTMENT OF BIOCHEMISTRY
<b><u>SEMESTER</u></b>	9 <sup>th</sup> semester
<b><u>CONTENT</u></b>	<ol style="list-style-type: none"> <li>1. Introduction to carcinogenesis.</li> <li>2. Molecular mechanisms of viral and chemical carcinogenesis.</li> <li>3. Properties of cancer cells and carcinogenesis.</li> <li>4. Role of oncogenes in normal cell growth, development, and differentiation-I.</li> <li>5. Role of oncogenes in normal cell growth, development, and differentiation-II.</li> <li>6. Tumor suppression genes and carcinogenesis.</li> <li>7. Cell cycle and carcinogenesis.</li> <li>8. Apoptosis mechanism in cancer cells.</li> <li>9. Cell signaling pathways in cancer-I.</li> <li>10. Cell signaling pathways in cancer-II.</li> <li>11. Cell signaling pathways in cancer-III.</li> <li>12. Biochemical basis of cancer chemotherapy.</li> <li>13. Tumor markers-I.</li> <li>14. Tumor markers-II.</li> </ol>
<b><u>NAME AND CONTACT INFORMATION OF PROFESSOR (EMAIL/PHONE)</u></b>	Doç.Dr. Pınar Aksoy Sağırılı ((pinaraksoy22@yahoo.com/+902124400000/13475)

<b><u>COURSE NAME / ECTS Credits</u></b>	INDIVIDUAL DIFFERENCES IN DRUG TOXICITY / 2 (ELECTIVE COURSE)
<b><u>FACULTY / DEPARTMENT</u></b>	FACULTY OF PHARMACY / DEPARTMENT OF PHARMACEUTICAL TOXICOLOGY
<b><u>SEMESTER</u></b>	9 <sup>th</sup> semester
<b><u>CONTENT</u></b>	Drug toxicity, individual/ethnic differences in drug toxicity and pharmacokinetic and pharmacodynamic factors at the genetic level, toxicogenetics in the development of drugs, genotypic biomarkers in drug toxicity.
<b><u>NAME AND CONTACT INFORMATION OF</u></b>	Doç. Dr. Gül Özhan <a href="mailto:gulozhan@istanbul.edu.tr">gulozhan@istanbul.edu.tr</a> / 0212 440 00 00 - 13566

<b>PROFESSOR (EMAIL / PHONE)</b>	
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<b><u>COURSE NAME/ ECTS Credits</u></b>	THE CAUSE OF NOSOCOMIAL INFECTION/ 3 (ELECTIVE COURSE)
<b><u>FACULTY/ DEPARTMENT</u></b>	FACULTY OF PHARMACY / DEPARTMENT OF PHARMACEUTICAL MICROBIOLOGY
<b><u>SEMESTER</u></b>	9 <sup>th</sup> semester
<b><u>CONTENT</u></b>	Nosocomial infections, pathogenesis and etiology of effective microorganisms in nosocomial infections: diagnosis and treatment. Prevention and control of nosocomial infections.
<b><u>NAME AND CONTACT INFORMATION OF PROFESSOR (EMAIL/ PHONE)</u></b>	Doç.Dr.Berna Özbek-Çelik <a href="mailto:bernaozbek@hotmail.com">bernaozbek@hotmail.com</a> / 0 212 440 0000-13525

<b><u>COURSE NAME/ ECTS Credits</u></b>	VACCINES / 2 (ELECTIVE COURSE)
<b><u>FACULTY/ DEPARTMENT</u></b>	FACULTY OF PHARMACY / DEPARTMENT OF PHARMACEUTICAL MICROBIOLOGY
<b><u>SEMESTER</u></b>	9 <sup>th</sup> semester
<b><u>CONTENT</u></b>	Position of vaccines for protection from infectious diseases, type of vaccines, characteristics, preparation and applications of vaccines. childhood vaccines, adult vaccines, non-routine vaccines.
<b><u>NAME AND CONTACT INFORMATION OF PROFESSOR (EMAIL/ PHONE)</u></b>	Yard.Doç.Dr.Çağla Bozkurt-Güzel <a href="mailto:caglabozkurt@hotmail.com">caglabozkurt@hotmail.com</a> / 0 212 440 0000-13525

<b><u>COURSE NAME/ ECTS Credits</u></b>	PROBIOTICS AND PREBIOTICS/ 2 (ELECTIVE COURSE)
<b><u>FACULTY/ DEPARTMENT</u></b>	FACULTY OF PHARMACY / DEPARTMENT OF PHARMACEUTICAL MICROBIOLOGY
<b><u>SEMESTER</u></b>	9 <sup>th</sup> semester
<b><u>CONTENT</u></b>	Importance of the natural microbiota in health and disease, biology and replacement therapy of probiotic

	microorganisms as effector: Lactobacilli, Bifidobacterium, Saccharomyces spp, Streptococcus, <i>Escherichia coli</i> . Prebiotics and carbohydrates which act as prebiotics. Genomics and proteomics of lactic acid bacteria, importance of the treatment of symbiotic, probiotic and prebiotics, viral strategies: phage treatment
<b><u>NAME AND CONTACT INFORMATION OF PROFESSOR (EMAIL/ PHONE)</u></b>	Doç.Dr.Ayşe Seher Birteksöz-Tan <a href="mailto:seherbirteksoz@hotmail.com">seherbirteksoz@hotmail.com</a> / 0 212 440 0000-13523

<b>Course Name/ECTS Credits</b>	BEHAVIORAL SCIENCES /2 (ELECTIVE COURSE)
<b>Faculty/Department</b>	FACULTY OF PHARMACY
<b>Semester</b>	9 <sup>th</sup> semester
<b>Content</b>	The content of the course includes focusing on the dynamics of individual behavior in organizations with a multi-disciplined approach. The subjects of the course are as followed:  Fundamentals of Behavioral Sciences / Perception / Emotions and Memory / Learning / Motivation / Attitude / Personality / Individual Differences / Stress / Coping / Groups / Social Institutions / Power / Leadership
<b>Name and Contact Information of Professor (E-mail / Phone)</b>	Assist. Prof. Ayşegül Karaeminoğulları aysegulk@istanbul.edu.tr 0090212 473 70 70 (Ext: 18274)