

# LABORATORY TECHNOLOGY COURSE CONTENTS (2020-2021)

## YEAR ONE

### 1st TERM COURSE PLAN

**ATA101 Principles of Atatürk and History of Revolutions I (T+P:2+0, Credit:2 ECTS:3)** The basic concepts, Reasons for the collapse of the Ottoman State, Modernization movements in Turkey, First World War, National Independence War.

**INGU101 English I (T+P:3+0, Credit:3, ECTS:3)**  
This is an elementary English course designed for beginners of English language. The learners are expected to develop four basic language skills; listening, speaking, reading and writing through various kinds of teaching techniques and practices. The learners are exposed to basic language structures and vocabulary with the help of authentic materials within real life context.

**LBT101 General Chemistry I (T+P:2+0, Credit:2, ECTS:4)**  
Matter, Elements, Compounds, Mixtures, Measurements and Mole Concept, Finding Chemical Formulas, Redox Reactions, Calculations Based on Chemical Reactions, Atom: Atom Models, Proton, Neutron, Electron, Electromagnetic Radiation, Bohr Atom Theory, Periodic Table, Quantum Numbers, Atom Radius, Ionization Energy, Electron Affinity, Electronegativity, Structure of Atomic Nucleus, Chemical Bonds: Ionic and Covalent Bonds, Exceptions of Octet Rule, Chemical Bonding Theory.

**LBT103 General Biology (T+P:2+0, Credit:2, ECTS:4)**  
Chemical content of the cell, the difference of prokaryotic and eukaryotic cells, cell organelles, cell passage through cell membrane, cell division (mitosis and meiosis), metabolism, classification of living organisms, reproduction and development of plants and animals, and their relationships with environments.

**LBT111 Laboratory Techniques I (T+P:2+2, Credit: 3, ECTS:6)**  
Laboratory General and Personal Safety Measures, Materials and Devices Used, Cleaning of Materials, Measurement Techniques, Calculation and Preparation of Solutions, General Analysis Methods, Separation and Purification Methods, Physical Analysis Methods, pH Concept and Measurement, Using Microscope.

**LBT113 Laboratory Safety (T+P:2+0, Credit:2, ECTS:3)**  
Safety Principles in the Laboratory, Laboratory, Personal Safety Measures in Laboratory, Laboratory Accidents in First Aid, Safety Precautions Against Chemical, Security Measures Against Biological Agents, Waste Management, Disinfectants and disinfectant, sterilization.

**TURK101 Turkish Language I (T+P:2+0, Credit:2, ECTS:3)**  
The course will help students to gain consciousness of language; inclination and habit of reading; proper usage of fundamental spelling and punctuation; and to gain a larger vocabulary set utilization.

**MAT101 Basic Mathematics (T+P:2+0, Credit:2, ECTS:3)**  
Numbers, Bibliographical Numbers, Root Numbers, Absolute Value, Division of Factors, Rate Proportion, Equations, 1 Unknown Unknown Equations, Uncertain 2 Equations, Inequalities, Functions, Sets.

**RKUL101 University Culture I (T+P:0+2, Credit:1, ECTS:1)**  
14 seminars will be held throughout the week, conferences, panels, workshops and singing Includes've frame Academics at the university, student council it recommends a program of student clubs of his era.

### 2nd TERM COURSE PLAN

**ATA102 Principles of Atatürk and History of Revolutions II (T+P: 2+0, Credit:2, ECTS:3)**  
Events in the genesis and development of modern Turkey, ideas and principles; Turkish Foreign Policy in Atatürk Era, Atatürk's Revolutions, The Basic principles of Turkish Revolution.

**INGU102 English II (T+P:3+0, Credit:3, ECTS:3)**  
This is an elementary English course designed for beginners of English language. The learners are expected to develop four basic language skills; listening, speaking, reading and writing through various kinds of teaching techniques and practices. The learners are exposed to basic language structures and vocabulary with the help of authentic materials within real life context.

**LBT108 Laboratory Techniques II (T+P:2+0, Credit:2, ECTS:4)**  
Dilution and concentration of solutions, Buffer solutions and their preparation, Introduction to instrument analysis methods, Spectroscopy types and uses, Spectroscopic analysis methods (IR, Raman, NMR, Atomic Absorption), Ultraviolet-Visible field spectroscopy (UV-Vis), creating calibration curve, Mass Spectrometry (MS), Chromatographic methods and their classification (paper, thin layer chromatography, column, ion exchange chromatography), Liquid Chromatography and Application Areas (HPLC), Liquid Chromatography-Mass Spectrometry (LC / MS) and Application Fields, Gas Chromatography-Mass Spectrometry (GC-MS) and Application fields

**LBT110 General Chemistry II (T+P:2+0, Credit:2, ECTS:4)**

The concept of acid base, salts and properties, solution and solution types, solution preparation and calculations, chemical kinetics and chemical equilibrium, organic chemistry; alkan / alkene / alkynes, alcohols and ethers, aldehydes and ketones, esters and acids and amides.

**LBT112 Environmental Impact Assessment (T+P:2+0, Credit:2, ECTS:4)**

1. Definition of EIA, 2. EIA regulation, 3. EIA regulation and sample EIA report review, 4. EIA regulation, sufficiency statement, 5. Regulations and EIA report relation, 6. Regulation on Hazardous Chemicals, 7. Control of solid wastes, 8. Control of hazardous wastes, 9. Water pollution control regulation, 10. Soil Pollution Control Regulation, 11. Air Quality Control Regulation, 12. Environmental Control Regulation, 13. EIA Reports, 14. General review.

**LBT114 Soil and Water Pollution (T+P:2+0, Credit:2, ECTS:3)**

It learns the causes, effects and consequences of environmental pollution, which has become one of the most important problems of our time. Ability to comment on pollutants. Understand the importance of agricultural activities to soil pollution. Learn about water quality.

**TURK102 Turkish Language II (T+P:2+0; Credit:2, ECTS:3)**

The course will help students to gain consciousness of language; inclination and habit of reading; proper usage of fundamental spelling and punctuation; and to gain a larger vocabulary set utilization.

**BIK101 Biochemistry (T+P:2+0, Credit:2, ECTS:2)**

Subject and history of biochemistry, biomolecules, cell structure, Properties of water and aqueous solutions, Amino Acids, Peptides, Proteins, Enzymes, Nucleic Acids, Carbohydrates, Lipids and Membranes, Vitamins, Trace elements.

**RKUL102 University Culture II (T+P:0+2, Credit:1, ECTS:1)**

14 seminars will be held throughout the week, conferences, panels, workshops and singing Includes've frame Academics at the university, student council it recommends a program of student clubs of his era.

**RPSI209 Positive Psychology and Communication Skills (T+P:2+0, Credit:2, ECTS:3)**

1-definition of positive psychology, basic concepts, theoretical foundations and applications, 2-emotional experiences and examine the brain behavior of the system's behavior, 3-yourself and recognize others, 4-psikososyal life skills and problem solving skills, 5-motivation and planning, 6-anger, aggression, violence, 7-relationship management, healthy decision-making, 8-sebatkarlık and agreeableness

## YEAR TWO

### 3th TERM COURSE PLAN

**LBT201 Standardization and Quality (T+P:2+0, Credit:2, ECTS:4)**

Quality and definition, standardization and definition, for business standardization, benefits for the consumer and for the economy, the standardization work carried out in Turkey, international standardization activities and examples, quality approaches, total quality management, quality assurance, ISO 9000 standards, professional quality standards

**LBT211 Water Analysis (T+P:2+0, Credit:2, ECTS:3)**

1. Water and its structure, 2. Quality criteria and quality classification of irrigation waters, 3. General physical and chemical properties of water, 4. Salinity problems in the water, 5. The need for washing and washing, 6. Healing of saline and sodium soils. 7. Gravimetric and titration methods. 8. Determination of the physical properties of the water 9. pH measurement in water 10. In irrigation water; determination of anions, anions and analytical methods in water, 11. Determination of Carbonate and Bicarbonate in the Water, 12. Chloride Reagent in the Water 13. Sulphate Reagent in the Water 14. Determine Sodium and Potassium in the Water.

**LBT225 General Microbiology (T+P:2+2, Credit:3, ECTS:7)**

The history and development of microbiology and fundamental concepts, Working rules at laboratories, The equipments and microscopes used in microbiology, Identification and classification of microorganisms and general properties, The structure of bacterium, their production and metabolisms, The genetics of bacterium and antimicrobial materials, Infections and infectious ways , sterilisation and disinfection, The production environment of microorganisms, colors and painting methods, Staphylococcus, Streptococcus, pneumococcus, bacillus and general information about fungus; general information about viruses and some important viral illnesses; Normal floras and sampling technics; Introduction to immunology, antigen-antibody reactions; Microbiologic diagnosis methods

**LBT223 Plant and Soil Analysis (T+P:2+2, Credit:3, ECTS:7)**

Soil basic materials, decomposition in soil formation, soil formation factors, soil profile, physical properties of soil, soil minerals, organic matter, soil organisms, chemical properties of soil, soil water, soil fertility, classification of soil, organic compounds, plant nutrients, fertilizers and fertilizer types.

**LBT227 Food Analysis (T+P:2+2, Credit:3, ECTS:7)**

1. Basic concepts in foods, 2. Food Analysis Principles, 3. Quality criteria and properties in foods. 4. Sensory properties in foods 5. Evaluation of Analytical Methods in Food Analysis 6. Sampling, storage and analysis for foodstuffs 7. Protein analysis in foods 8. Fat analysis in foods 9. Carbohydrate analysis in foods 10. Acidity and pH Analysis in Foods 11. Vitamin Determination in Foods 12. Alcohol Determination in Foods 13. Analysis of Food Additives 14. Microbiological analysis in foods.

#### **4th TERM COURSE PLAN**

**LBT204                    Agricultural Drugs and Analysis (T+P:2+0, Credit:2, ECTS:4)**

Agricultural drugs, uses, benefits and losses, agricultural drug residues and methods of analysis.

**LBT210                    Agricultural Ecology (T+P:2+0, Credit:2, ECTS:4)**

Ecology, ecosystem, agroecosystems, agriculture and environmental factors, light, temperature, air movements, effects of humidity and precipitation on plants, climate and agriculture, agriculture and soil relationship, soil fertility are the content of the course.

**LBT220                    Laboratory Technologys Applications (T+P:0+8, Credit:4, ECTS:8)**

The aim of this course is to provide practical training for the analysis of plant, soil, water and food samples in laboratories where chemical, biochemical and microbiological analyzes are performed. Sample acceptance, preparation of samples for analysis, general analysis methods, instrumental analysis methods, measurement methods, evaluation and recording of results.

**LBT999                    Summer Internship (T+P:0+0, Credit:0, ECTS:9)**

To practice the theoretical knowledge.

**ILK101                    First Aid (T+P:2+0, Credit:2, ECTS:3)**

General Briefing Information, Human Body, Patient / Injured and Scene Assessment, Basic Life Support, Respiratory Cramps, Hemorrhages and Shocks, Injuries, Burns, Frosts, Hot Strike, Consciousness Disorders (Consciousness Losses, Remittances, Blood Sugar Loss, Pain, Poisonings, Animal Bites, Eye-Ear-Burina Obstacle Abduction, Drowning, Fractures, Dislocations, Buckles, Transportation Techniques.

**LBT218                    Medical Analysis Techniques (T+P:2+0, Credit:2, ECTS:4)**

Sample acceptance, sampling errors and factors affecting analysis result, blood analysis, urine analysis, function tests, hormone analysis, tumor marker analysis, gaita and blank analysis, urine system analysis.