

TOKAT GAZİOSMANPAŞA UNIVERSITY

TOKAT HEALTH CARE SERVICES VOCATIONAL SCHOOL

DEPARTMENT OF MEDICAL SERVICES AND TECHNIQUES

MEDICAL LABORATORY TECHNIQUES PROGRAM

(4-SEMESTER COURSE PLAN)

1st Semester (Fall Semester) Course Plan

Course Code	Course Title	C/E	Theory	Practice	ECTS
ALT101	Atatürk's Principles and History of Turkish Revolution I	Compulsory	2	0	2
ANA101	Anatomy	Compulsory	2	0	3
ENF100	Information Technologies and Office Software	Compulsory	2	0	3
ING101	Foreign Language I	Compulsory	2	0	2
FIZ101	Physiology	Compulsory	2	0	3
TD101	Turkish Language I	Compulsory	2	0	2
TLT113	Medical Biology and Genetics	Compulsory	2	0	3
TLT115	Use and Maintenance of Laboratory Equipment	Compulsory	2	1	4
ILK101	First Aid	Compulsory	2	0	3
ILK121	Microbiology I	Compulsory	2	0	3
TLT123	Histology	Compulsory	2	0	2
	TOTAL		22	1	30

2nd Semester (Spring Semester) Course Plan

Course Code	Course Title	C/E	Theory	Practice	ECTS
ALT102	Atatürk's Principles and History of Turkish Revolution II	Compulsory	2	0	2
ING101	Foreign Language II	Compulsory	2	0	2
LG104	Laboratory Safety	Compulsory	2	0	3
TD102	Turkish Language II	Compulsory	2	0	2
TLT102	Laboratory Chemistry	Compulsory	2	0	3
TLT114	Hematology	Compulsory	2	1	5
TLT118	Molecular Biological Methods	Compulsory	2	0	2
TLT128	Microbiology II	Compulsory	2	1	4
KRY102	Career Planning	Elective	1	0	2
SEÇ104	University Elective Course – Our Values	Compulsory	2	0	2
TLT130	Biochemistry	Compulsory	2	0	3
	TOTAL		21	1	30

3rd Semester (Fall Semester) Course Plan

Course Code	Course Title	C/E	Theory	Practice	ECTS
TLT213	Hormone Biochemistry	Compulsory	2	0	3
TLT217	Parasitology	Compulsory	2	0	3
TLT225	Clinical Biochemistry	Compulsory	2	2	7
TLT227	Basic Laboratory Practices I	Compulsory	0	16	17
	TOTAL		6	18	30

4th Semester (Spring Semester) Course Plan

Course Code	Course Title	C/E	Theory	Practice	ECTS
TLT214	Medical Laboratory Organization	Compulsory	2	0	4
TLT216	Immunological Methods	Compulsory	2	0	3

TLT224	Blood Bank and Transfusion	Compulsory	2	0	4
TLT226	Basic Laboratory Practices II	Compulsory	0	16	17
SEÇ202	Elective Courses	Compulsory	2	0	2
	TOTAL		8	16	30

Elective Courses

Course Code	Course Title	C/E	Theory	Practice	ECTS
MES204	Professional Ethics	Elective	2	0	2
TRM202	Medical Terminology	Elective	2	0	2
AKY202	Disaster and Crisis Management	Elective			
KHB202	Chronic Diseases	Elective			
GKM202	Food Chemistry	Elective	2	0	2
ARŞ202	Scientific Research Techniques	Elective	2	0	2
ÇEV202	Environmental Health	Elective	2	0	2
DAV202	Behavioral Sciences	Elective	2	0	2
DKM202	Medical Documentation	Elective	2	0	2
EMB202	General Embryology	Elective	2	0	2
HİS202	Special Histology	Elective	2	0	2
HUK202	Health Law	Elective	2	0	2
İLT202	Communication	Elective	2	0	2
İMH202	Immunohistochemistry	Elective	2	0	2
İSG202	Occupational Health and Safety	Elective	2	0	2
KMY202	Current Chemicals and Drugs	Elective	2	0	2
MNT202	Monitoring	Elective	2	0	2
PRZ202	Parasitology	Elective	2	0	2
PSK202	Healthcare Worker and Patient Psychology	Elective	2	0	2
RDY202	Radiation Protection	Elective	2	0	2
SSH202	Systemic Diseases	Elective	2	0	2
STT202	Special Cytotechnology	Elective	2	0	2
TAY202	Medical Waste Management	Elective	2	0	2

COURSE CONTENTS

AlİT101	ATATÜRK'S PRINCIPLES AND HISTORY OF TURKISH REVOLUTION I	Compulsory	2	0	2
Course objectives and resources; basic concepts related to the course and the Principle of Reformism: reform, revolution, evolution, improvement/reform, rebellion and coup; Atatürk's Principle of Reformism and characteristics of the Turkish Revolution. Internal causes of Ottoman decline: problems in state administration, education, economy and public morality. External causes: colonialism, Industrial Revolution and imperialism; Western ambitions regarding the Ottoman Empire, the Eastern Question and partition projects. Basic concepts of the modern world: Enlightenment, democracy, secularism, nationalism, liberalism and socialism. Ottoman modernization movements: Tulip Era; reforms of Selim III and Mahmud II; Tanzimat and Reform Era; Young Ottomans and constitutional movements. Intellectual movements in the late Ottoman period: Westernism, Ottomanism, Islamism and Turkism. Collapse of the Ottoman Empire: Tripolitanian and Balkan Wars, World War I and the Armenian issue; end of World War I, Armistice of Mudros, occupations and separatist activities. National Struggle: proposed solutions, peaceful and mandate views, regional resistance, national associations and National Forces; Atatürk's arrival in Anatolia, congresses and organization; Chamber of Deputies, National Pact and occupation of Istanbul; opening of the Grand National Assembly of Türkiye and its characteristics.					
İNG101	ENGLISH I	Compulsory	2	0	2
This course includes basic English grammar together with reading comprehension, writing, listening comprehension and speaking skills. Verb 'to be'; subject pronouns; possessive adjectives; object pronouns; asking and telling the time; Simple Present Tense I; Wh- questions; Present Simple Tense II; jobs and related verbs; there is/there are; this/that/these/those; quantifiers; can/can't; was/were; Simple Past Tense (affirmative sentences).					
TD101	TURKISH LANGUAGE I	Compulsory	2	0	2
Course objectives and resources. The concept of language and the place of Turkish among world languages; languages in terms of structure and origin; language-culture relationship; the place of language in social life; punctuation; spelling rules; meaning at word and sentence level; expression techniques; official correspondence; auxiliary and basic elements of the sentence; language errors at word and sentence level.					
ANA101	ANATOMY	Compulsory	2	0	3
Introduction to anatomy, general concepts and terminology, including anatomical parts, regions and cavities of the human body. Skeletal system: appendicular and axial skeleton. Joint system: joints of the upper and lower extremities, head-neck, trunk and vertebral column. Muscular system: functional classification of muscles; muscles of the head, neck, trunk, upper and lower extremities. Circulatory system: anatomy of the heart, vessels, arterial and venous circulation, lymphatic system. Respiratory system: nose, pharynx, trachea, bronchi, lungs and mediastinum. Nervous system: central nervous system, spinal cord, brain, peripheral nervous system, spinal and cranial nerves, autonomic nervous system. Digestive system: digestive-tract organs and accessory organs, peritoneum and overview of the abdominal region. Urinary system: kidneys, ureters, urinary bladder and urethra. Female and male reproductive systems. Endocrine system: topographic anatomy of endocrine structures. Sense organs: skin, olfactory organ, taste organ, eye and ear.					
FİZ101	PHYSIOLOGY	Compulsory	2	0	3
Introduction to physiology, general concepts and terminology. Cell and membrane physiology. Locomotor-system physiology. Circulatory-system and blood physiology. Respiratory-system physiology. Nervous-system physiology. Digestive-system physiology. Urinary-system physiology. Endocrine-system physiology. Reproductive physiology. Sensory physiology.					
TLT123	HISTOLOGY	Compulsory	2	0	2
Introduction to tissues. Histology of epithelial tissue and epithelial tissue types. Histological structure of connective tissue and its components; types of connective tissue. Histological structure and types of cartilage. Histological structure of bone tissue. Blood-tissue histology. Muscle-tissue histology; cardiac and smooth muscle. Nervous tissue I-II. Integumentary system.					
TLT130	BIOCHEMISTRY	Compulsory	2	0	3
Scope of biochemistry. Biomolecules and cell structures. Properties of water and aqueous solutions. Proteins I-II-III. Enzymes I-II. Carbohydrates I-II. Lipids and membrane structures. Nucleotides. Vitamins. Metabolism and bioenergetics.					
TLT113	MEDICAL BIOLOGY AND GENETICS	Compulsory	2	0	3
Cell structure and the importance of cellular integrity; cell membrane and transport of substances; cell cycle and control mechanisms; DNA and RNA structure and replication; central dogma, transcription and translation; protein synthesis and regulation; cellular energy metabolism; mutations, adaptation, modification and repair; chromosomes and cytogenetic analyses; Mendelian genetics and types of inheritance; hereditary diseases and clinical examples; epigenetic mechanisms and their clinical importance; general review and professional integration.					
TLT115	USE AND MAINTENANCE OF LABORATORY EQUIPMENT	Compulsory	2	1	4
Glassware, plastics and other materials; cleaning of glassware, plastics and other materials. Microscopes. Centrifugation and its types. Heating blocks, shakers and incubators. Autoclave and sterilizer. Methods for obtaining purified water. Autoanalyzers in biochemistry and hematology. Spectrophotometric and nephelometric methods. Turbidimetric and fluorometric methods. Chromatographic and electrophoretic methods. Flame photometry and atomic absorption spectrophotometry methods. Automation in laboratory applications.					
ENF100	INFORMATION TECHNOLOGIES AND OFFICE SOFTWARE	Compulsory	2	0	3
Computer hardware structure and units; shortcuts; general Windows operations; internet and e-mail operations. Word processing: File, Home, Insert, Draw, Design, Layout, References, Mailings, Review and View tabs; scientific writing rules and general practice. Presentation software: File, Home, Insert, Draw, Design, Transitions, Animations, Slide Show, Record, Review and View tabs; general practice. Spreadsheets: File, Home, Insert, Page Layout, Formulas, Data, Review, View and Automate tabs; general practice.					
AlİT102	ATATÜRK'S PRINCIPLES AND HISTORY OF TURKISH REVOLUTION II	Compulsory	2	0	2
National Struggle: uprisings against the Grand National Assembly, Treaty of Sèvres, Eastern, Southern and Western fronts and their results; treaties ending the war, Mudanya Armistice and Treaty of Lausanne. Establishment of the Republic of Türkiye: abolition of the Sultanate, proclamation of the Republic, abolition of the Caliphate and Atatürk's Principle of Republicanism. Democratization of the Republic: People's Party, Progressive Republican Party, Liberal Republican Party, Democratic Party and later					

developments; expansion of the right to vote and stand for election; Principle of Populism. Secularization of administration, law and education; Principle of Secularism. Principle of Nationalism: national state, Turkish Historical Society, Turkish Language Association. Principle of Statism: İzmir Economic Congress, nationalization of the economy, support for private enterprise, state-led development and planned economy. Reactions to reforms: Sheikh Said Rebellion, assassination attempt against Atatürk in İzmir and Menemen Incident. Turkish constitutions of 1876, 1909, 1921, 1924, 1961 and 1982. Educational reform: Law on the Unification of Education, alphabet reform, People's Houses, Village Institutes and university reform. Social reforms: clothing reform, prohibition of religious orders, Surname Law and adoption of international calendar, measurement and numeral systems. Foreign policy of the Republic of Türkiye during and after Atatürk's era.

ING102	ENGLISH II	Compulsory	2	0	2
Simple Past Tense II; polite requests; linking words and writing; count and uncount nouns; social and shopping expressions; have got/has got; comparative adjectives; superlative adjectives; prepositions of place; relative pronouns; Present Continuous Tense I-II; Present Perfect Tense I-II.					

TD102	TURKISH LANGUAGE II	Compulsory	2	0	2
Phonetics. Sentence types according to meaning and structure. Word classes: nouns and noun phrases, pronouns, adjectives and adjective phrases, adverbs, verbs, auxiliary/copular verbs, verbals, prepositions and conjunctions. Types of written and oral expression.					

TLT121	MICROBIOLOGY I	Compulsory	2	0	3
Introduction to and history of microbiology. Taxonomy and nomenclature of microorganisms. Bacteria and their characteristics I-II-III. Nutrition and cultivation of microorganisms. Microbial genetics. Effects of the external environment on microorganisms. Viruses, fungi and parasites: characteristics and methods of control. Relationships among microorganisms, environment and organisms. Chemotherapeutic agents.					

LG104	LABORATORY SAFETY	Compulsory	2	0	3
Introduction to laboratory safety and basic concepts. Safe-working rules in the laboratory. Concepts of hazard and risk. Biological hazards. Protection from hazards transmitted through blood and body fluids. Biological safety cabinets. Physical hazards. Chemical hazards I-II. Personal protective equipment. Signs and labels in laboratory safety. Waste. Emergencies.					

TLT118	MOLECULAR BIOLOGICAL METHODS	Compulsory	2	0	2
Nucleic-acid structure and functions. Homogenization methods. Separation, purification and analysis methods. DNA isolation, including isolation from organisms. Total RNA and mRNA isolation. Restriction enzymes and their properties. Nucleic-acid blotting techniques. Polymerase Chain Reaction (PCR) I-II. Overview of microarray technology and its areas of use.					

TLT114	HEMATOLOGY	Compulsory	2	1	5
Introduction to hematology. Blood collection and techniques. Complete blood count and peripheral smear. Erythrocytes. Leukocytes. Platelets. Anemias. Hemoglobin structure and function. Coagulation. Anticoagulants used in hematology. Blood diseases. Blood groups and determination. Hematological tests.					

KRY102	CAREER PLANNING	Compulsory	1	0	2
Career concept; discovering personal interests, abilities and values; individual career-development opportunities; expectations of the business world from graduates; CV preparation and sample practice; job interviews and sample simulation; career-planning process and career development; lifelong career planning; introduction to exchange programs; student-sector meetings.					

TLT102	LABORATORY CHEMISTRY	Compulsory	2	0	3
Basic rules to be followed in the laboratory; introduction to laboratory materials; points to consider when working with chemicals; planning an experiment, setting up apparatus and keeping a laboratory notebook; classification of matter; physical and chemical properties of matter I-II; solutions and their properties; concentration calculations and preparation of solutions I-II-III; acids and bases; buffer solutions and their preparation I-II.					

TOĞÜ0941	OUR VALUES	Elective	2	0	2
Definition, importance and scope of values education; helpfulness, love, tolerance, sensitivity, honesty, valuing family unity, responsibility, justice, diligence, respect, thrift, patriotism and general review.					

TLT205	PARASITOLOGY	Compulsory	2	0	3
Introduction to parasitology and general characteristics of parasites. Amoebae and intestinal protozoa. Trichomonas vaginalis. Malaria. Blood and tissue flagellates. Toxoplasma gondii. Intestinal nematodes. Tissue nematodes. Filarial nematodes. Intestinal cestodes. Echinococcosis. Trematodes. Arthropods of medical importance.					

TLT225	CLINICAL BIOCHEMISTRY	Compulsory	2	2	7
Introduction to clinical biochemistry: laboratory organization. Factors affecting laboratory analysis results. Laboratory evaluation in disorders of carbohydrate metabolism; laboratory diagnosis, treatment and follow-up of diabetes mellitus. Laboratory evaluation in disorders of lipid and protein metabolism. Plasma proteins and enzymes in diagnosis and follow-up of diseases. Vitamins and trace elements. Biochemistry of muscle and bone diseases. Liver functions and laboratory evaluation. Kidney functions and function tests. Sources of error in biochemical analyses.					

TLT216	IMMUNOLOGICAL METHODS	Compulsory	2	0	3
Introduction to the immune system. Innate immunity. Antigen capture and presentation to lymphocytes. Antigen recognition in the adaptive immune system. T-cell-mediated immunity. Functional mechanisms of cellular immunity. Humoral immune responses. Immunological tolerance and autoimmunity. Agglutination-based methods. Precipitation-based methods. ELISA. RIA. Chemiluminescence-based immunochemical methods.					

ILK101	FIRST AID	Compulsory	2	0	3
Basic concepts in first aid and emergency health services. First aid worldwide and in Türkiye. Emergency health services in disasters. Communication in first aid and emergency health services. Basic principles of first aid. Assessment of patients and injured persons. Cardiopulmonary resuscitation in adults, children and newborns. Special approaches to airway obstruction, the full-stomach patient, hypoxia, pediatric patients and allergic reactions. First aid in penetrating injuries, heat and cold exposure, drowning, burns, trauma, intoxication and bleeding. First aid for older adults, premature infants, newborns and children. Patient/injured-person transport techniques.					

TLT128	MICROBIOLOGY II	Compulsory	2	1	4
Methods of collecting clinical specimens, conditions for transport to the laboratory and required procedures. Methods for examining microbiological morphology. Staphylococcus; Streptococcus and Streptococcus pneumoniae and diagnostic methods. Neisseria and Branhamella and diagnostic methods. Mycobacteriaceae (M. tuberculosis, M. leprae), Actinomyces and Nocardia and diagnostic methods. Enterobacteriaceae and diagnostic methods I-II-III. Pseudomonas, Legionella, Francisella, Brucella, Bordetella pertussis, Mycoplasma and Ureaplasma and diagnostic methods. Anaerobic bacteria, Leptospira, Borrelia and diagnostic methods. Treponema,					

Rickettsia and Chlamydia; Corynebacterium diphtheriae, Listeria, Bacillus anthracis and diagnostic methods.					
TLT214	MEDICAL LABORATORY ORGANIZATION	Compulsory	2	0	4
Laboratory specimen-acceptance rules. Quality-management systems in the laboratory. Establishment, duties, working procedures and principles of the Laboratory Commission. Establishment and licensing of medical laboratories. Classification, duties, working principles and physical conditions of medical laboratories. Duties and responsibilities of medical laboratory personnel. Equipment maintenance, repair and procurement. Laboratory work schedule, emergency analyses and panic values. Documentation: standards, instructions and workflows. Medical Laboratory Information System, data protection and ethical principles.					
TLT224	BLOOD BANK AND TRANSFUSION	Compulsory	2	0	4
Blood components I-II. Blood donation. Preparation, storage and transfer of blood and blood components. Transport, labeling and disposal of blood components. Devices used in the blood bank. Blood-grouping systems and methods. Screening tests in blood banking and their interpretation. Operation of the blood center. Blood groups and their proportions in Türkiye. Blood transfusion and reactions. Transfusion-transmitted infections. General biosafety.					
MES202	PROFESSIONAL ETHICS	Compulsory	2	0	2
Concepts of ethics and morality. Relationship between ethics and morality. Moral values. Concept of professional ethics. Professional ethical principles. Professional commitment. Ethical and unethical issues in working life. Ethical principles in business life. Ethical and unethical behaviors in management. Moral decision-making structure. Analysis and prevention of unethical workplace behavior. Influence of organizational culture on ethical behavior. Creating an ethical climate in the workplace. Working in an environment consistent with professional ethics. Effects of conditions consistent with business ethics on work and the workplace.					
TLT227	BASIC LABORATORY PRACTICES I	Compulsory	0	16	17
Specimen collection; specimen acceptance/rejection; specimen processing, transport and storage. Microscope use and maintenance. Pneumatic systems, modular systems, preanalytical modules and consolidated laboratory automation applications. Urinalysis laboratory applications. Mycological analyses. Parasitological analyses. Serological tests. Preparation of culture media. Molecular-biology laboratory applications. Gel electrophoresis and analysis. Genetics laboratory applications.					
TLT226	BASIC LABORATORY PRACTICES II	Compulsory	0	16	17
Hematology applications. Blood-bank applications I-II. Biochemistry laboratory applications I-II. Microbiology laboratory applications I-II-III. Bacteriology laboratory applications. Hormone laboratory applications I-II. Emergency laboratory applications.					
TLT213	HORMONE BIOCHEMISTRY	Compulsory	2	0	3
Organization of the endocrine system in mammals. General characteristics and classification of hormones. Mechanisms of hormone action. Hormone receptors and intracellular messenger substances. Gastrointestinal-system hormones. Thyroid hormones. Adrenal hormones. Pancreatic hormones. Sex hormones. Hormones regulating calcium and phosphorus metabolism. Other endocrine and regulatory systems mediated by cAMP. Disorders of hormonal systems. Hormone measurement methods.					

Note: This English version follows the course codes, compulsory/elective status, theory/practice hours, ECTS values and course-content associations as presented in the source PDF. Apparent inconsistencies in the source (including course-code differences between the semester plan and course-content section) were not silently corrected.