Student ID: 000101025
TR Identity No: 50380582078
Given Name: ŞAZİMET
Surname: KESKİN
Date of Birth: 01/10/1982

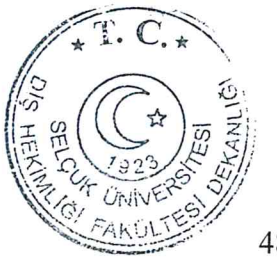
COURSE CODE	COURSE NAME	DURATION (SEMESTER)	HOURS (WEEKLY)		CREDIT
			T	P	
0101301	HISTOLOGY EMBRIOLOGY	Second year (2 Semesters)	2	2	3

LANGUAGE	COURSE STATUS	
Turkish	Required (X)	Elective

METHODS OF ASSESSMENT			
	ACTIVITY	NUMBER	PERCENTAGE
MID-TERM	Written and practical Exam	2	% 50
FINAL	Written and practical Exam	1	% 50

COURSE OBJECTIVES AND CONTENT	The aim of this course is to provide a comprehensive histology and embryology education to dentistry students. The course covers following topics: Introduction to histology and methods of histology, the cytoplasm, the nucleus, epithelial tissue, connective tissue, adipose tissue, cartilage, bone cells, nerve tissue, muscle tissue, circulatory system, blood, hemopoiesis, the immune system and lymphoid organs, digestive tract, digestive tract associated organs, the respiratory system, skin, the urinary system, endocrine glands, the male reproductive system, the female reproductive system, eye and ear, embriology, first to eighth weeks of human development, fetal period, placenta and fetal membranes, body cavities, mesenteries, and diaphragm, pharyngeal apparatus, face, and neck, alimentary system, urogenital system, cardiovascular system, skeletal system, muscular system, development of limbs, nervous system, development of eyes and ears, integumentary system, human birth defects, stem cells.
TEACHING METHODS	Presentation and application
TEXTBOOKS	The developing human: clinically oriented embryology, Moore K, Persaud TVN, Torchia MG, 6th edition, 1998, Basic Histology: Text & Atlas, Junqueira C, Carnerio J, 9th Edition, 1998 Color Atlas of Histology, Gartner LP, Hiatt JL, 2nd edition, 1994; Illustrated dental embriyology, histology and anatomy-Balogh MB, Fehrenbach MJ, 1997; lecturers own notes
PRACTICAL APPLICATIONS:	The use of microscope, preparation of tissue samples, cell and its structure, gametogenesis, embryologic development, evaluation of single and multi-layer epithelial tissue, gland epithelium, types of connective tissue and its fibers, connective tissue cells, bone marrow and blood smear, preparates (cartilage tissue, muscle tissue, bone tissue, palate sections, spinal cord and cerebellum sections, vascular system, pituitary gland, ovary, uterus thymus and spleen, epiglottis, larynx, trachea, tonsilla palatina, olfactory mucosa, lip, tongue and teeth, stomach, intestines, liver, gallbladder and pancreas kidney, genital system, brain and skin, epiglottis, trachea, lung, eye and ear)

CURRICULUM	
WEEK	**SUBJECTS/TOPICS**
1	Introduction to histology and methods of histology: Terminology, Tissue preparation, Fixation, Embedding, Sectioning, Staining, Light Microscopy, Bright-Field Microscopy, Fluorescence Microscopy, Phase-Contrast Microscopy, Confocal Microscopy, Polarizing Microscopy, Electron Microscopy, Transmission Electron Microscopy, Scanning Electron Microscopy, Autoradiography, Cell and Tissue Culture, Enzyme Histochemistry, Immunohistochemistry, Hybridization Techniques.
2	The cytoplasm: Cell Differentiation, Cytoplasmic Organelles, Plasma Membrane, Transmembrane Proteins, Membrane Transport, Vesicular Transport, Endocytosis, Exocytosis, Signal Reception, Transduction, ribosomes, endoplasmic reticulum, golgi apparatus, Secretory granules, lysosomes, Proteasomes, Mitochondria, Peroxisomes, The Cytoskeleton, Microtubules, Microfilaments, Intermediate Filaments



3	The nucleus: Components, Nuclear Envelope, Chromatin, Nucleolus, The Cell Cycle, Mitosis, Stem Cells, Meiosis, Apoptosis. Epithelial tissue: Characteristic Features, Basement Membranes, Intercellular Adhesion, occluding junctions, Adherent junctions, Hemidesmosomes, Gap junctions, Apical cell surface, Microvilli, Stereocilia, cilia, Types of Epithelia, Covering Epithelia, Secretory Epithelia and Glands, exocrine and endocrine glands, Transport and Renewal of Epithelial Cells
4	Connective tissue: Connective Tissue cells, Fibroblasts, Adipocytes, Macrophages, the Mononuclear Phagocyte System, Mast Cells, Plasma Cells, Leukocytes, Fibers, Collagen, Reticular Fibers, Elastic Fibers, Ground Substance, Types Of Connective Tissue, Connective Tissue Proper, Loose connective tissue, Dense irregular connective tissue, Dense regular connective tissue, Reticular Tissue, Mucoid Tissue
5	Adipose tissue: Storage and Mobilization of Lipids, White Adipose Tissue, Brown Adipose Tissue Cartilage: Hyaline Cartilage, Matrix, Chondrocytes, Perichondrium, Elastic Cartilage, Fibrocartilage, Cartilage Formation, Growth, Repair
6	Bone Cells: Osteoblasts, Osteocytes, Osteoclasts; Bone Matrix; Periosteum, Endosteum, Lamellar Bone, Woven Bone, Intramembranous Ossification, Endochondral Ossification, Bone Growth, Remodeling, Repair, Joints, Synostoses, Syndesmoses, Symphyses, Macrophage-like synovial cells, Fibroblastic synovial cells, Intervertebral discs
7	Nerve Tissue: Neurons, Multipolar, bipolar neurons, unipolar and pseudounipolar neurons, Cell body, Dendrites, Axons, Nerve impulses, Synaptic Communication, Glial Cells, Oligodendrocytes, Astrocytes, Ependymal Cells, Microglia, Schwann Cells, Central Nervous System, Meninges, Dura mater, arachnoid, Pia mater, Blood-brain barrier, Choroid Plexus, Peripheral Nervous System, Nerve Fibers, myelinated fibers, Unmyelinated Fibers, Ganglia, Sensory Ganglia, Autonomic Ganglia, Neural Plasticity and Regeneration
8	Muscle tissue: Skeletal Muscle, Muscle Fibers, Sarcoplasmic Reticulum, Transverse Tubule System, Contraction, Innervation, Muscle Spindles, Tendon Organs, Cardiac Muscle, Smooth Muscle, Regeneration. Circulatory system: Heart, tissues of vascular wall, vasculature, elastic arteries, arterial sensory structures, muscular arteries, arterioles, capillary beds, Continuous and discontinuous capillaries, Fenestrated capillaries, venules, veins, lymphatic vascular system
9	Blood: plasma composition, albumin, alpha, beta and gamma globulins, fibrinogen, complement proteins, erythrocytes, Leukocytes, Neutrophils, Eosinophils, basophils, Lymphocytes, Monocytes, Platelets Hemopoiesis: Stem Cells, Growth Factors, Hemopoietic Stem Cells, Progenitor and Precursor Cells, Bone Marrow.
10	The Immune System and Lymphoid Organs: Innate and Adaptive Immunity, Cytokines, Antigens, Antibodies, Antigen Presentation, Antigen-Presenting Cells, Lymphocytes, T Lymphocytes, B Lymphocytes, Thymus, Mucosa-Associated Lymphoid Tissue, Lymph Nodes, Spleen.
11	Digestive tract: oral cavity, tongue, Filiform papillae, Fungiform papillae, Foliate papillae, Vallate, Taste buds; oral mucosa, basic tissues, Teeth, dentin, predentin, odontoblast, dentinal tubules, enamel, enamel rods, enamel organ, ameloblasts, periodontium, cementum, periodontal ligament, pulp, dentin-pulp complex, orofacial structures, alveolar bone, gingiva, gingival sulcus, junctional epithelium, Esophagus, stomach, small intestine, Enterocytes, Goblet cells, Paneth cells, Enteroendocrine cells, microfold cells, large intestine, anal canal
12	Digestive Tract associated organs: Salivary glands, Serous cells, Mucous cells, Myoepithelial cells, Parotid glands, Submandibular glands, Sublingual glands, intercalated ducts, striated ducts, excretory ducts, striated ducts Pancreas, Liver, Hepatocytes & Hepatic Lobules, Structure & Function in the Liver, Biliary Tract & Gallbladder
13	The Respiratory System: Nasal Cavities, Respiratory Epithelium, Olfactory Epithelium, Paranasal Sinuses, Nasopharynx, Larynx, Trachea, Bronchial Tree, Lung, Bronchi, Bronchioles, Respiratory Bronchioles, Alveolar Ducts, Alveoli, Regeneration, Lung Vasculature and Nerves, Pleural Membranes, Respiratory Movements
14	Skin: Epidermis, basal layer, spinous layer, granular layer, stratum lucidum, stratum corneum, Nails, Melanocytes, Langerhans Cells, Merkel Cells, Dermis, papillary layer, reticular layer, subpapillary plexus, Subcutaneous Tissue, Sensory Receptors, free nerve endings, root hair plexuses, Meissner corpuscles, Lamellated corpuscles, Krause end bulbs, Ruffini corpuscles, Hair, Nails, Skin Glands, Sebaceous Glands, Sweat Glands, Repair and wound healing, inflammation, epithelization, granulation tissue, remodeling, scar tissue The urinary system: Kidneys, Blood circulation, Renal function, Renal corpuscles, proximal convoluted tubule, loop of henle, Distal convoluted tubule, juxtaglomerular apparatus, Ureters, bladder, urethra

15	Endocrine Glands: Pituitary gland, hypothalamic-hypophyseal tract, blood supply, adenohypophysis, anterior pituitary, posterior pituitary, adrenal glands, adrenal cortex, adrenal medulla, pancreatic islets, neuroendocrine systems, thyroid gland, thyroid hormone, parathyroid glands, pineal glands.
16	The male reproductive system: Testes, Interstitial Tissue, Seminiferous Tubules, Spermatogenesis, Male Germ Cells, Spermiogenesis, Sertoli Cells, Intratesticular Ducts, Excretory Genital Ducts, Epididymis, Ductus Deferens, Accessory Glands, Seminal Vesicles, Prostate Gland, Bulbourethral Glands, Penis
17	The female reproductive system: Ovary, Ovarian Follicles, Follicular Atresia, Corpus Luteum, Corpus Albicans, Oogenesis, Fertilization, Oviducts, Uterus, Menstrual Cycle, Vagina, External Genitalia, Mammary Glands, Lactation
18	Eye and ear: Eyes, fibrous layer, vascular layer, lens, vitreous body, retina, accessory structures of the eye, ears, external ear, middle ear, internal ear
19	Embriology: Human Development: Developmental Periods: Stages of Embryonic Development, Postnatal Period, Infancy, Childhood, Puberty, Adulthood, Genetics and Molecular Biology of Human Development, Human Biokinetic Embryology, terminology. Human Development (first week): gametogenesis, meiosis, spermatogenesis, oogenesis, gametes; uterus, uterine tubes and ovaries, female reproductive cycles, ovarian cycle, follicular development, ovulation, corpus luteum, menstrual cycle, oocyte and sperm transport, sperms maturation, gametes, fertilization, zygote cleavage, blastocysts formation.
20	Human Development (second week): Blastocyst, Amniotic Cavity, Embryonic Disc, Umbilical Vesicle, Chorionic Sac, Implantation. Human Development (third week): Gastrulation, Primitive Streak, Notochordal Process, Notochord, Allantois, Neurulation, Neural Plate, Neural Tube, Neural Crest, Somites, Intraembryonic Coelom, Development of Cardiovascular System, Chorionic Villi.
21	Human Development (Fourth to Eighth Weeks): Phases of Embryonic Development, Folding of Embryo, Germ Layer Derivatives, Control of Embryonic Development, Estimation of Embryonic Age. Fetal Period: Fetal Age, Trimesters of Pregnancy, of Fetuses, Nine to thirty-Eight Weeks
22	Fetal Period: Factors of Fetal Growth, Smoking, Multiple Pregnancy, Alcohol, Drugs, Blood Flow, Genetic Factors and Growth Retardation, Procedures for Assessing Fetal Status, Ultrasonography, Diagnostic Amniocentesis, Alpha-Fetoprotein Assay, Spectrophotometric techniques, Chorionic Villus Sampling, Chromosomal Analysis, Noninvasive Prenatal Diagnosis, Fetal Transfusion, Fetoscopy, Percutaneous Umbilical Cord Blood Sampling, Magnetic Resonance Imaging, Fetal Monitoring.
23	Placenta and Fetal Membranes: Placenta, Decidua, Placental Circulation, Placental Endocrine Synthesis and Secretion, Uterine Growth, Parturition, Labor stages, Fetal Membranes, Maternal and Fetal Surface of Placenta, Umbilical Cord, Amnion and Amniotic Fluid, Umbilical Vesicle, Allantois, Multiple Pregnancies, Dizygotic Twins, Monozygotic Twins, Neonatal Period
24	Body Cavities, Mesenteries, and Diaphragm: Embryonic Body Cavity, Mesenteries, Diaphragm, Septum Transversum, Pleuroperitoneal Membranes, Dorsal Mesentery of Esophagus, Muscular Ingrowth
25	Pharyngeal Apparatus, Face, and Neck: Pharyngeal Arches, Pharyngeal Pouches, Pharyngeal Grooves, Pharyngeal Membranes, development of thyroid Gland, Tongue, Lingual Papillae and Taste Buds, Nerve Supply of Tongue, Development of Salivary Glands, Face, Nasal Cavities, Paranasal Sinuses, Palate, Primary Palate, Secondary Palate Respiratory System: Respiratory Primordium, Development of Larynx, Trachea, Bronchi and Lungs
26	Alimentary System: Foregut, Development of Esophagus, Stomach, Omental Bursa, Duodenum, Liver and Biliary Apparatus, Pancreas, Spleen, Midgut, Herniation, Rotation, Retraction of Intestinal Loops, Cecum and Appendix, Hindgut, Cloaca, Anal Canal. Urogenital System: Development of Urinary System, Kidneys and Ureters, Urinary Bladder, Urethra, Suprarenal Glands, Genital System, Gonads, Genital Ducts, Male and Female Genital Ducts and Glands, Vagina, External Genitalia, Male and Female External Genitalia, Inguinal Canals, Testes and Ovaries, Testicular and Ovarian Descent
27	Cardiovascular System: Early and late Development of Heart and Blood Vessels, Veins, Embryonic Heart, Primordial Heart, Sinus Venosus, Birth Defects of Heart and Great Vessels, Pharyngeal Arch arteries, Fetal and Neonatal Circulation, Development of Lymphatic System, Lymph Sacs, Lymphatic Ducts, Thoracic Duct, Lymph Nodes, Lymphocytes, Spleen, Tonsils.

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28	Skeletal System: Development of Bone and Cartilage, Intramembranous Ossification, Endochondral Ossification, Development of Joints, Fibrous Joints, Cartilaginous Joints, Synovial Joints, Development of Axial Skeleton, Vertebral Column, Ribs, Sternum, Cranium, Cranium of Neonate, Postnatal Growth of Cranium, Development of Appendicular Skeleton
29	Muscular System: Development of Skeletal Muscle, Myotomes, Pharyngeal Arch Muscles, Ocular Muscles, Tongue Muscles, Limb Muscles, Development of Smooth and Cardiac Muscle. Development of Limbs: Limb Development, Innervation, Blood Supply, Birth Defects,
30	Nervous System: Development of Nervous System, Spinal Cord, Spinal Ganglia, Spinal Meninges, Myelination, Development of Brain, Brain Flexures, Hindbrain, Choroid Plexuses and Cerebrospinal Fluid, Midbrain, Forebrain, Birth Defects of Brain, Development of Peripheral and autonomic Nervous System, Spinal Nerves, Cranial Nerves, Sympathetic and Parasympathetic Nervous System
31	Development of Eyes and Ears: Development, Retina, Ciliary Body, Iris, Lens, Aqueous Chambers, Cornea, Choroid and Sclera, Eyelids, Lacrimal Glands, Development of Ears: Internal Ears, Middle Ears, External Ears, Integumentary System: Development of Skin and Appendages, Epidermis, Dermis, Glands, Hairs, Nails, Teeth, Bud stage of tooth development, cap stage of tooth development, bell stage of tooth development, tooth eruption, abnormalities of tooth, development of root, primary root- eruption and shedding, permanent root, eruption.
32	Human Birth Defects: Classification, Teratology, Genetic Factors, Numeric Chromosomal Abnormalities, Structural Chromosomal Abnormalities, Mutant Genes, Signaling Pathways, Environmental Factors, teratogenesis, Human Teratogens, Multifactorial Inheritance Stem Cells: Differentiation, Pluripotency

* The duration of this course is 32 weeks.
* One lecture hour corresponds to 50 minutes.

COURSE LEARNING OUTCOMES	
Students understand the normal structure of cells, tissues and organs microscopic structure and use a light microscope; have information about general human embryology and embryological origins and development of organs; establish a link between the structure and function of the human organism; tell organs and tissues of the digestive tracts(especially the oral cavity and teeth) histology and their developmental disorders and their effects; tell the histology of organs and tissues that are at the other systems to be established by defining developmental disorders and their effects; have information about stem cells.	**Contribution** Very Good

T. C. SELÇUK ÜNİVERSİTESİ 1975 DİŞ HEKİMLİĞİ FAKÜLTESİ DEKANLIĞI

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Given Name: ŞAZİMET
Surname: KESKİN
Date of Birth: 01/10/1982

COURSE CODE	COURSE NAME	DURATION (SEMESTER)	HOURS (WEEKLY)		CREDIT
			T	P	
0101303	PHYSIOLOGY	Second year (2 semesters)	2	2	3

LANGUAGE	COURSE STATUS	
Turkish	Required (X)	Elective

METHODS OF ASSESSMENT			
	ACTIVITY	NUMBER	PERCENTAGE
MID-TERM	Written and practicalExam	2	% 50
FINAL	Written and practical Exam	1	% 50

COURSE OBJECTIVES AND CONTENT	The aim of this course is to provide a comprehensive fundamental physiology education to dental students. This course covers following topics: blood cells, immunity, and blood coagulation (red blood cells, anemia and polycythemia, defence against infections, blood type, transfusion and transplantation, hemostasis and blood coagulation), respiration (pulmonary ventilation, pulmonary circulation, pulmonary edema, pleural fluid,principles of gas exchange, transport of gases in body fluids, regulation of respiration, respiratory insufficiency), the nervous system (introduction to nervous system, sensory receptors, physiology of sensory organs, somatic sensations, tactile and position senses ,eye, sense of hearing, chemical senses, smell, spinal cord and cord reflexes, cortical and brain stem control of motor function, cerebral cortex, limbic system and hypothalamus, autonomic nervous system and adrenal medulla, cerebral blood flow, cerebrospinal fluid, and brain metabolism), gastrointestinal physiology (gastrointestinal function principles, propulsion and mixing of food, secretory functions of the alimentary tract, digestion and gastrointestinal absorption, physiology of gastrointestinal disorders), Metabolism and temperature regulation (carbohydrate metabolism and ATP formation, lipid metabolism, protein metabolism, the liver, vitamins and minerals, energetics and metabolic rate, body temperature regulation and fever), endocrinology and reproduction (introduction to endocrinology, pituitary hormones and their control, adenocortical hormone, insulin, glucagon, and diabetes mellitus, parathyroid hormone, calcitonin, calcium and phosphate metabolism, vitamin d, bone, and teeth , teeth physiology, male and female physiology, pregnancy and lactation, fetal and neonatal physiology), Sports and exercise physiology
TEACHING METHODS	Presentation and application
TEXTBOOKS	Textbook of Medical Physiology, Guyton AC&Hall JE, 9h edition, 1996, lecturers own notes
PRACTICAL APPLICATIONS	Heart muscles mechanics, Hematocrit Measurement, Hemoglobin Calculation, Peripheral Smear Preparation and Staining, Blood Groups, reflexes, EEG, visual and auditory physiology.

CURRICULUM	
WEEK	**SUBJECTS/TOPICS**
1	Blood Cells, Immunity, and Blood Coagulation: Red Blood Cells, Anemia and Polycythemia: Erythrocytes and their production, hemoglobin formation, iron metabolism, anemia and its effects on circulatory system, effect of polycythemia on circulatory system.
2	Defence against Infections: neutrophils, macrophages, phagocytosis, monocyte-macrophage cell system, inflammation, eosinophils, leukopenia, basophils, leukemias, acquired immunity, t and b lymphocytes, t cells, immunization, passive immunity, allergy, hypersensitivity, delayed-reaction allergy, anaphylaxis, urticaria, hay fever.
3	Blood Type, Transfusion and Transplantation: Antigenicity, immune reactions of blood, O-A-B blood types, agglutinogens, agglutinins, agglutination and transfusion, blood typing, Rh blood types, Rh immune response, mismatched blood types, tissues and organ transplantation, immune reactions and transplanted tissue

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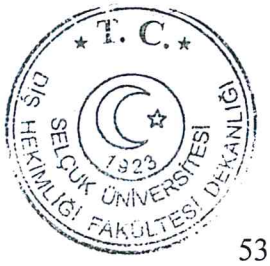
4	Hemostasis and Blood Coagulation: Hemostasis, coagulation mechanisms, clot formation, positive feedback of clot formation, causes of excessive bleeding, decreased prothrombin, factor VII, IX, X and vitamin K deficiency, haemophilia, thrombocytopenia, femoral venous thrombosis, massive pulmonary embolism, clinical use of anticoagulants, heparin, coumarins, ex vivo blood coagulation prevention, blood coagulation tests, bleeding time, clotting time, prothrombin time, international normalized ratio.
5	Respiration: Pulmonary Ventilation: Mechanics of pulmonary ventilation, pulmonary volumes and capacities, alveolar ventilation. Pulmonary Circulation, Pulmonary Edema, Pleural Fluid: physiological anatomy of the pulmonary circulatory system, pressures, lung blood volume, blood flow and its distribution, hydrostatic pressure and regional pulmonary blood flow, pulmonary capillary dynamics
6	Principles Of Gas Exchange: pressure difference and net, alveolar air composition, atmospheric air composition, gas diffusion and respiratory membrane, respiratory membrane diffusing capacity, factors affecting gas diffusion rate
7	Transport of gases in body fluids: oxygen transport, oxygen diffusion, carbon dioxide diffusion, role of hemoglobin in oxygen transport, O_2 combination with hemoglobin, oxygen metabolism, carbon dioxide transport, carbon dioxide dissociation curve, respiratory exchange ratio.
8	Regulation Of Respiration: respiratory center, chemical control of respiration, peripheral chemoreceptor system, regulation of respiration during exercise. Respiratory Insufficiency: Methods of Respiratory Abnormality detection, Pathophysiology of Pulmonary Abnormalities, Hypoxia, Oxygen Therapy, Hypercapnia, Artificial Respiration.
9	The Nervous System: Introduction to Nervous System: Neuron, sensory receptors, effectors, information processing, synapses, memory, central nervous system function, central nervous system synapses, types and physiological anatomy of synapses, chemical substances as synaptic transmitters, electrical events and neuronal inhibition, dendrite functions, synaptic transmission.
10	Sensory Receptors: Sensory receptors types, detection of the stimuli, sensory stimuli transduction, receptor adaptation, spatial and temporal summation, signals transmission and processing, instability and stability of neuronal circuits.
11	Somatic Sensations: The tactile and position senses, classification of somatic senses, detection and transmission of tactile sensations, sensory pathways of transmitting somatic signals, medial lemniscal system, somatosensory association areas, anterolateral pathway, pain, headache, and thermal sensations, fast pain and slow pain, pain receptors and their stimulation, dual pathways for transmission of pain signals into the central nervous system, analgesia system in the brain and spinal cord, referred pain, visceral pain, thermal sensations.
12	Eye: Principles of optics, eye optics, fluid system of the eye-intraocular fluid, receptor and neural function of the retina, vision photochemistry, neural function of the retina, central neurophysiology of vision, visual cortex, analysis of the visual image, eye movements and their control. Sense Of Hearing: Tympanic membrane and the ossicular system, cochlea, central auditory mechanisms
13	Chemical Senses: Taste sense, primary sensations of taste, threshold for taste, the taste bud and its function, transmission of taste signals into the central nervous system, taste preference, diet control, sense of smell, olfactory membrane, olfactory cell stimulation, smell signals transmission into the central nervous system. Spinal Cord and Cord Reflexes: Spinal Cord, muscle sensory receptors, flexor reflex, withdrawal reflexes, crossed extensor reflex, reciprocal inhibition and reciprocal innervation, reflexes of posture and locomotion.
14	Cortical and Brain Stem Control of Motor Function: Motor cortex, corticospinal tract, primary motor cortex, premotor area, supplementary motor area, signals transmission to the muscles, the red nucleus, motor function control and the brain stem, body support against gravity, vestibular sensations, maintenance of equilibrium, the cerebellum, basal ganglia and motor control, total motor control system.
15	Cerebral Cortex: Physiological anatomy, functions, the corpus callosum, anterior commissure and thought transfer, memories, training, thoughts, consciousness, and memory. Limbic System and Hypothalamus: Limbic system, the hypothalamus, functions of the limbic system, brain activity states, sleep, brain waves, epilepsy, psychoses, dementia.
16	Autonomic Nervous System and Adrenal Medulla: organization, characteristics of sympathetic and parasympathetic function, stimulation of discrete organs, mass stimulation. Cerebral Blood Flow, Cerebrospinal Fluid, and Brain Metabolism.



17	Gastrointestinal Physiology:Gastrointestinal function principles: General principles of gastrointestinal motility, enteric nervous system, hormonal control of gastrointestinal motility, movements types in the gastrointestinal tract, splanchnic circulation.
18	Propulsion and mixing of food: Food ingestion, motor functions of the stomach, movements of the small intestine and colon, other autonomic reflexes. Secretory functions of the alimentary tract: General Principles Of Alimentary Tract Secretion, Gastric Secretion, Pancreatic Secretion, Bile Secretion By The Liver, Secretions Of The Small Intestine, Secretion Of Mucus By The Large Intestine.
19	Digestion And Gastrointestinal Absorption: food digestion by hydrolysis, principles of gastrointestinal absorption, absorption in the small and large intestine, formation of feces.
20	Physiology of gastrointestinal disorders: disorders of swallowing, esophagus and stomach, peptic ulcer, disorders of the Small and Large Intestine, General Disorders of the Gastrointestinal Tract, Nausea, Gastrointestinal Obstruction
21	Metabolism and Temperature Regulation:carbohydrate metabolism and atp formation: free energy, adenosine, glucose and carbohydrate metabolism, glucose transport, glucose phosphorylation, glycogenesis, glycolytic pathway, pyruvic acid, acetyl coenzyme a, citric acid cycle (krebs cycle), oxidative phosphorylation, glycolysis, glucose oxidation, anaerobic glycolysis, pentose phosphate pathway, gluconeogenesis, blood glucose.
22	lipid metabolism: triglycerides, lipids transport in body fluids, fat deposits, lipoproteins, triglycerides and energy, cholesterol, atherosclerosis. Protein Metabolism: properties of proteins, transport and storage of amino acids, roles of the plasma proteins, proteins and energy, Required degradation of proteins, hormonal regulation of protein metabolism
23	The Liver: physiological anatomy and metabolic functions of the liver, hepatic vascular and lymph systems, fat metabolism, protein metabolism, bilirubin measurement, regulation of feeding and obesity. Vitamins and Minerals: food intake regulation and associated factors, neural centers, obesity, inanition, anorexia, cachexia, starvation, vitamins, daily requirements of vitamins, storage of vitamins in the body, vitamin d, b12, k, e, c, b2, b6, pantothenic acid, folic acid, b1, niacin, mineral metabolism, calcium, phosphorus, importance trace elements, iodine, zinc, fluorine
24	Energetics and metabolic rate: atp and metabolism, anaerobic energy, aerobic energy, control of energy release in cells, metabolic rate. body temperature regulation and fever: normal body temperatures, regulation of body temperature, abnormalities, fever
25	Endocrinology and Reproduction: Introduction to Endocrinology: chemical messengers, chemical structure, hormone action and synthesis mechanism, hormone secretion, transport and clearance. pituitary hormones and their control: pituitary gland and hypothalamus, growth hormone, the thyroid metabolic hormones and regulation
26	adenocortical hormones: corticosteroids, mineralocorticoids, glucocorticoids, androgens, adrenocortical hormones, mineralocorticoide-aldosterone,
27	Insulin, Glucagon, and Diabetes Mellitus: Insulin And Its Metabolic Effects, Insulin Chemistry And Synthesis, effect of insulin on carbohydrate, fat and protein metabolism, mechanisms and control of insulin secretion, glucagon and its functions, blood glucose regulation, diabetes mellitus, physiology and diagnosis of diabetes mellitus, treatment of diabetes, insulinoma-hyperinsulinism, insulin shock and hypoglycemia.
28	Parathyroid Hormone, Calcitonin, Calcium and Phosphate Metabolism, Vitamin D, Bone, and Teeth : calcium and phosphate regulation, inorganic phosphate in the extracellular fluids, bone, extracellular calcium and phosphate, precipitation and absorption of calcium and phosphate in bone-equilibrium, calcium exchange, bone remodeling, vitamin d, parathyroid hormone, calcitonin, calcium ion concentration control.
29	teeth physiology: enamel, dentin, pulp, cementum, dentition, teeth formation, teeth eruption, teeth development, metabolic factors and teeth development, mineral exchange in teeth, dental abnormalities, caries, bacteria, fluoride, malocclusion
30	Male and Female Physiology: Spermatogenesis, Male sexual act, testosterone and other hormones, female sexual organs, oogenesis, follicular development, female hormonal system, monthly ovarian cycle, ovarian hormones, regulation of the female monthly rhythm, female sexual act.
31	Pregnancy and Lactation: ovum, early nutrition of the embryo, anatomy and function of the placenta, hormonal factors in pregnancy, parturition, lactation.
32	Fetal and Neonatal Physiology: growth and functional development of the fetus, development of the organ systems, extrauterine life, fetal circulation changes, neonate nutrition, immunity, endocrine and other problems,, growth and

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	development of the Child. Sports and Exercise Physiology: muscles, body heat, body fluids and cardiovascular system in exercise, others.

* The duration of this course is 32 weeks.
* One lecture hour corresponds to 50 minutes

COURSE LEARNING OUTCOMES	
To define blood and respiratory systems physiology. To explain the physiological aspect of digestive system in combination with the mouth and teeth physiology. To define endocrine system physiology. To explain reproductive and urinary systems physiology.To explain sports and exercise physiology.To define sensory organ physiology.	**Contribution** Very Good

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COURSE CODE	COURSE NAME	DURATION (SEMESTER)	HOURS (WEEKLY)		CREDIT
			T	P	
0101304	ANATOMY	Second year (2 Semesters)	2	2	3

LANGUAGE	COURSE STATUS	
Turkish	Required (X)	Elective

METHODS OF ASSESSMENT			
	ACTIVITY	NUMBER	PERCENTAGE
MID-TERM	Written and practical Exam	2	% 50
FINAL	Written and practical Exam	1	% 50

COURSE OBJECTIVES AND CONTENT	The aim of this course it to teach organs and systems of human body. This course covers following topics: terminology, digestive system, respiratory system, urogenital system, endocrine glands, Circulatory system, heart, fetal circulation, general circulation, arteries of the head and neck, arteries of the upper and lower extremities, arteries of the trunk, venous system, lymphatic system, peripheral nervous system, cranial nerves, spinal nerves, anterior and posterior branches, autonomic nervous system, sympathetic system, parasympathetic system, central nervous system, divisions of the nervous system, central nervous system, spinal cord, gray matter, white matter, anterior, lateral, and posterior funiculi and their pathways, afferent pathways, efferent pathways, brain, rhombencephalon, medulla oblongata, pons, cerebellum, pathways of the cerebellum, fourth ventricle, mesencephalon, reticular formation, prosencephalon, third ventricle, white and gray matter of the brain hemisphere, lateral ventricles, limbic lobe and limbic system, cranial nerves, meninges, blood vessels of the brain, dural venous sinuses, sensory organs, eye, ear, taste organ, olfactory organ, skin, appendages of the skin.
TEACHING METHODS	Presentation and application
TEXTBOOKS	Anatomy, Arıncı K, Elhan A, 2nd edition, 1997 (Book in Turkish); Sobotta, Atlas of Human Anatomy, Putz R, Pabst R, Taylor A.N, 12th edition, 1997; lecturers own notes
PRACTICAL APPLICATIONS:	Practice on models and cadaver. Three-dimensional practice for organs, digestive system, Respiratory system, Urogenital System, Endocrine glands, Circulatory System, Lymphatic system, Peripheral Nervous System, Central nervous system and Sensory organs, skin.

CURRICULUM	
WEEK	**SUBJECTS/TOPICS**
1	Terminology, Digestive system: oral cavity, hard palate, soft palate, teeth, tooth eruption times, tongue, taste buds, tongue muscles, salivary glands, parotid gland, submandibular gland, sublingual gland
2	Digestive system II: pharynx, palatine tonsil, pharynx, muscles of the pharynx, esophagus, stomach, small intestines, duodenum, jejunum, ileum, differences between jejunum and ileum, large intestines, caecum, appendix vermiformis, ascending colon, transverse colon, descending colon, sigmoid colon, rectum
3	Digestive system III: anal canal, defecation, pancreas, liver, edges and projection of the liver, liver lobes, fine structure of the liver, gallbladder and bile ducts, abdomen, topographic regions of the anterior abdominal wall, abdominal organs, peritoneum, omentum minus, omentum majus, bursa omentalis, mesentery peritoneal folds, special regions of the peritoneum.
4	Respiratory system: lungs, bronchopulmonary segments, branching of bronchi and bronchioles, structure of bronchi and bronchioles, pulmonary acini, structure of alveoli, blood vessels, thoracic cavity, pleura, projection of lungs, projection of pleural folds, mediastinum, lobar and segmental bronchi.
5	Respiratory system II: nose, nasal cartilages, nasal cavity, paranasal sinuses, frontal sinus, ethmoidal cells, sphenoidal sinus, maxillary sinus, larynx, laryngeal cartilages, joints and ligaments of the larynx, muscles of the larynx, trachea, tracheotomy

6	Urogenital System: urinary system, kidneys, renal capsules, renal canal system, urinary tracts, ureters, bladder, bladder in children, male genital organs, male external genital organs, penis, fascias of the penis, erection, male urethra, sphincters of the male urethra, female, micturition, scrotum
7	Urogenital System II: male internal genital organs, testis, epididymis, ductus deferens, spermatic cord , specific glands of the male genital organs, prostate, seminal vesicle, bulbourethral gland, female genital organs: ovary, uterine tube, uterus, structures supporting the uterus , menstrual cycle, vagina, female external genital organs, vaginal vestibule, clitoris, vestibule bulb, greater vestibular gland
8	Endocrine glands: thyroid gland, parathyroid gland, thymus, adrenal gland, chromaffin system, paraganglia, paraaortic bodies, carotid body, jugular glomus, coccygeal glomus
9	Circulatory System: types of blood vessels, arteries, veins, heart: external and internal surface of the heart, right heart, left heart, heart wall structure, frontal projection of the heart on the chest wall, pericardium, heart's blood vessels, heart's lymphatic drainage, heart's conduction system, heart's nerves
10	Fetal circulation: circulation at birth, general circulation, truncus pulmonalis and its branches, pars ascendens aortae and its branches, coronary arteries, arcus aortae and its branches, truncus brachiocephalicus and its branches
11	Arteries of the head and neck: A. carotis communis, a. carotis externa and its branches, triangle regions in the neck, a. carotis interna and its branches, a. subclavia and its branches, fossa axillaris
12	Arteries of the upper extremity: A. axillaris and its branches, a. brachialis and its branches, a. radialis and its branches, a. ulnaris and its branches, arteries of the trunk: pars thoracica aortae and its branches, pars abdominalis aortae and its branches, a. iliaca interna and its branches, a. iliaca externa and its branches, arteries of lower extremity: a.femolarlis and its branches, a.poplitea and its branches, fossa poplitea, a.tibialis anterior and its branches, a.tibialis posterior and its branches
13	Systemic Veins: heart's veins, head and neck veins, facial veins, cranial veins, brain veins, cerebellar veins, dural sinuses, diploic veins, emissary veins, neck veins, v. axillaris and its branches, v. subclavia and its branches, thoracic cavity veins, thoracic veins
14	Systemic Veins: V. brachiocephalica, abdominal and pelvic veins, v. cava inferior and its branches, pelvis and perineum veins, v. iliaca interna and its branches, v. iliaca externa and its branches, lower extremity veins, v.poplitea, v. femoralis, hepatic portal system, v. portae hepatis, spleen, thymus
15	Lymphatic system: thoracic duct, right lymphatic duct, lymphatics of the head and neck, lymphatic vessels of the pelvis, lymph nodes of the pelvis, lymphatic vessels of the neck, lymph nodes of the neck, upper extremity lymphatics, lymphatic vessels of the upper extremity, lymph nodes of the upper extremity, nodi lymphatici axillares, lymphatics of the trunk
16	Lymphatic system: lymphatic vessels and nodes of the chest wall, lymphatic vessels and nodes of the chest organs, lymphatic vessels and nodes of the abdominal and pelvic wall, lymphatic vessels of the abdominal and pelvic organs, urinary organs and genital organs, lymph nodes of the abdominal and pelvic organs, lower extremity lymphatics, lymphatic vessels and nodes of the lower extremity, inguinal lymph nodes
17	Peripheral nervous system: peripheral nerve endings, sensory nerve endings in organs, general visceral receptors, special visceral receptors, sections of the peripheral nervous system, cranial nerves, nervi olfactorii, nervus opticus, nervus oculomotorius, nervus trochlearis, nervus trigeminus, nervus ophthalmicus, nervus maxillaris, nervus mandibularis, nervus abducens, nervus facialis, nervus vestibulocochlearis, nervus cochlearis, nervus vestibularis, nervus glossopharyngeus, nervus vagus, nervus accessorius, nervus hypoglossus,
18	Peripheral nervous system: cervical spinal nerve posterior branches, thoracic spinal nerve posterior branches, lumbar spinal nerve posterior branches, sacral and coccygeal spinal nerve posterior branches, cervical spinal nerve anterior branches, plexus cervicalis, plexus brachialis, anterior branches of thoracic spinal nerves, anterior branches of lumbar spinal nerves, plexus lumbosacralis, plexus lumbalis , anterior branches of sacral and coccygeal spinal nerves, plexus sacralis, plexus pudendalis, plexus coccygeus
19	Peripheral nervous system: efferent division of the autonomic nervous system, sympathetic system, truncus sympathicus, divisions of the sympathetic system, cranial division, cervical division, thoracic division, abdominal division , pelvic division
20	Peripheral nervous system: divisions of the parasympathetic system, cranial division innervation of some organs by the parasympathetic system, sacral (pelvic) division, major plexuses of the autonomic system, thoracic division, abdominal division pelvic division, higher centers controlling the autonomic nervous system, innervation of some organs by the autonomic system, important reflexes involving the autonomic nervous system, afferent division of

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	the autonomic nervous system (visceral afferents), influence of sympathetic and parasympathetic systems on certain organs
21	Central nervous system: nerve cell (neuron), types of neurons, senses, sensory classification, general information of senses, receptors, classification of receptors, location-based classification of receptors, structural classification of receptors, functional classification of receptors
22	Central nervous system: spinal cord, external appearance of the spinal cord, segments of the spinal cord, internal structure of the spinal cord, gray matter of the spinal cord (substantia grisea), laminar organization of the gray matter, cell groups in the posterior column, anterior column and lateral column, reticular formation, white matter of the spinal cord (substantia alba)
23	Central nervous system: pathways in the anterior funiculus (descending, ascending, intersegmental pathways), pathways in the lateral funiculus (descending, ascending, intersegmental pathways), pathways in the posterior funiculus (descending, ascending, intersegmental pathways)
24	Central nervous system: motor cortex, somatomotor fiber classification, efferent pathways, pyramidal pathways, extrapyramidal pathways, intersegmental pathways in the spinal cord, reflex arcs
25	Central nervous system: bulbus (myelencephalon), internal structure of bulbus, olivary nucleus complex, vestibular nucleus complex, pons (metencephalon), internal structure of pons, proximity and significance of pons, cerebellum (little brain), lobes, internal structure, nuclei, pathways of the cerebellum, afferent pathways, efferent pathways, function, functional anatomy
26	Central nervous system: fourth ventricle, rhomboidea fossa, mesencephalon, internal structure, nuclei, pathways reticular formation, prosencephalon, diencephalon, epithalamus, metathalamus, thalamus, internal structure, nuclei, ventral thalamus, hypothalamus, nuclei, afferent pathways, efferent pathways, function, third ventricle telencephalon
27	Central nervous system: structure of the cerebral cortex, functional areas of the cerebral cortex, cortical areas in the frontal lobe, cortical areas in the parietal lobe, cortical areas in the occipital lobe, cortical areas in the temporal lobe, white matter of the brain hemispheres, projection pathways, commissural pathways, basal ganglia (nuclei basales), caudate nucleus, lentiform nucleus, claustrum, amygdaloid body
28	Central nervous system: lateral ventricles, rhinencephalon, limbic lobe and limbic system, limbic lobe, olfactory system, hippocampal formation, function of the limbic system, types of fibers in cranial nerves, olfactory nerve, optic nerve, oculomotor nerve, trochlear nerve, trigeminal nerve, abducens nerve, facial nerve,
29	Central nervous system: vestibulocochlear nerve, glossopharyngeal nerve, vagus nerve, accessory nerve, hypoglossal nerve, dura mater, nerves, pia mater, arachnoid mater, subarachnoid cistern, cerebrospinal fluid arteries of the brain, veins of the brain, dura mater sinuses
30	Sensory organs: eyeball, layers of the eyeball, tunica fibrosa bulbi, tunica vasculosa bulbi, tunica nervosa bulbi, structures bending light, accessory structures of the eye (eye muscles or musculi bulbi, bulbar fascia or fascia bulbi, periorbita, eyebrow or supercilium, eyelids or palpebrae, eyelashes or cilia, conjunctiva, tear apparatus or apparatus lacrimalis, lacrimal gland or glandula lacrimalis), optic nerve and visual pathways
31	Sensory organs: external ear, tympanic membrane, auditory tube, malleus, incus, stapes, articulations of the auditory ossicles, articulatio incudostapedius, syndesmosis tympanostapedialis, ligamenta ossiculorum auditorium, musculi ossiculorum auditorium, musculus tensor tympani, musculus stapedius, tunica mucosa cavitatis tympanicae, inner ear: labyrinthus osseus, vestibulum, canales semicirculares ossei, cochlea, meatus acusticus internus, labyrinthus membranaceus, utriculus, sacculus, ductus semicirculares, ductus cochlearis, organum spirale , pathways of balance and hearing, nervus vestibularis, nervus cochlearis
32	Sensory organs: taste organ, smell, olfactory pathways, rhinencephalon, skin: epidermis, dermis, subcutaneous tissue, appendages of the skin: nail, hair, skin glands breast, lymph drainage of the breast

* The duration of this course is 32 weeks.
* One lecture hour corresponds to 50 minutes.

T.C. SELÇUK ÜNİVERSİTESİ DİŞ HEKİMLİĞİ FAKÜLTESİ DEKANLIĞI 1823

Student ID: 000101025
TR Identity No: 50380582078
Given Name: ŞAZİMET
Surname: KESKİN
Date of Birth: 01/10/1982

COURSE LEARNING OUTCOMES	
Students learn Circulatory system, heart, fetal circulation, general circulation, arteries of the head and neck, arteries of the upper and lower extremities, arteries of the trunk, venous system, lymphatic system, peripheral nervous system, cranial nerves, spinal nerves, anterior and posterior branches, autonomic nervous system, sympathetic system, parasympathetic system, central nervous system, divisions of the nervous system, central nervous system, spinal cord, gray matter, white matter, anterior, lateral, and posterior funiculi and their pathways, afferent pathways, efferent pathways, brain, rhombencephalon, medulla oblongata, pons, cerebellum, pathways of the cerebellum, fourth ventricle, mesencephalon, reticular formation, prosencephalon, third ventricle, white and gray matter of the brain hemisphere, lateral ventricles, limbic lobe and limbic system, cranial nerves, meninges, blood vessels of the brain, dural venous sinuses, sensory organs, eye, ear, taste organ, olfactory organ, skin, appendages of the skin.	**Contribution** Very Good

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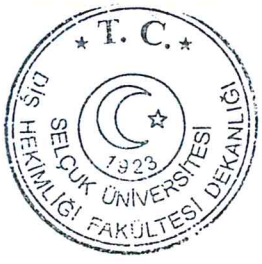
COURSE CODE	COURSE NAME	DURATION (SEMESTER)	HOURS (WEEKLY)		CREDIT
			T	P	
0101305	MICROBIOLOGY-BACTERIOLOGY	Second year (2 Semesters)	2	2	3

LANGUAGE	COURSE STATUS	
Turkish	Required (X)	Elective

METHODS OF ASSESSMENT			
	ACTIVITY	NUMBER	PERCENTAGE
MID-TERM	Written Exam	2	% 50
FINAL	Written Exam	1	% 50

COURSE OBJECTIVES AND CONTENT	The aim of this course is to give comprehensive and detailed information about medical microbiology. The course content covers bacterial classification, aerobic gram-positive, cocci, aerobic gram-positive bacilli, aerobic gram-negative cocci, coccobacilli and bacilli, anaerobic gram-positive and gram-negative bacteria, gram-positive cocci, gram-negative cocci, gram-positive bacilli, gram-negative bacilli, bacterial morphology, cell wall structure and synthesis, bacterial metabolism and growth, bacterial genetics, viral classification, structure, and replication, fungal classification, structure, and replication, parasitic classification, structure, and replication, commensal and pathogenic microbial flora (respiratory tract and head, eye, ear, gastrointestinal tract, genitourinary system, skin), sterilization, disinfection, and antisepsis, sterilization and hygiene methods, host protective response, The Humoral Immune Response, Immune Responses to Infectious Agents, Immune Responses to Bacteria and Viruses, parasites and fungi, Antigen-Specific Immunity, antimicrobial vaccines, laboratory diagnosis, microscopic applications, examination methods, molecular diagnosis, serologic diagnosis, bacterial pathogenesis, host defense escaping mechanisms, antibacterial agents, laboratory diagnosis of bacterial diseases, staphylococcus, streptococcus, enterococcus and other gram-positive cocci, bacillus, listeria, erysipelothrix, corynebacterium and other gram positive bacilli, neisseria, enterobacteriaceae, vibrio, aeromonas, and plesiomonas, campylobacter and helicobacter, pseudomonas and related organisms, bordetella, francisella, and brucella, pasteurellaceae, legionella, bartonella, eikenella, cardiobacterium, kingella, capnocytophaga, streptobacillus, spirillum, calymmatobacterium, anaerobic gram-positive bacilli, clostridium, anaerobic gram-negative bacilli, nocardia, rhodococcus, and related actinomycetes, mycobacterium, treponema, borrelia, and leptospira, mycoplasma and ureaplasma, rickettsia, orientia, ehrlichia, and coxiella, chlamydia, role of bacteria in disease, viral pathogenesis, laboratory diagnosis of viral diseases, papovaviruses, adenoviruses, human herpesviruses, poxviruses, parvoviruses, picornaviruses, paramyxoviruses, orthomyxoviruses, reoviruses, rhabdoviruses, togaviruses and flaviviruses, bunyaviridae, retroviruses, HIV, hepatitis viruses, prions, coronaviruses, calicivirus and other small, round gastroenteritis viruses, filoviruses, arena viruses, role of viruses in disease, Mycology, fungal pathogenesis, superficial, cutaneous, and subcutaneous mycoses, systemic mycoses, opportunistic mycoses, Parasitology, parasitic disease, laboratory diagnosis of parasitic diseases, intestinal and urogenital protozoa, blood and tissue protozoa, nematodes, trematodes, cestodes, arthropods, oral habitat, the oral microflora, acquisition, adherence, distribution and metabolism of the oral microflora, resident oral microflora detection methods, dental plaque, dental caries, periodontal diseases, acute bacterial infections, chronic oral infections, oral viral infections, oral fungal infections, antimicrobial therapy and prophylaxis for oral infections, hygiene and cross-infection control.
TEACHING METHODS	Presentation and application
TEXTBOOKS	Medical microbiology, Murray PR, Rosenthal KS, Kobayashi GS, Pfaller MA, 3th edition 1998 Oral microbiology, Marsh P, Martin MV, 4th edition, 1999; lecturers own notes



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PRACTICAL APPLICATIONS	Laboratory safety and rules, usage of microscopes, culture medium preparation, staining methods, collection and culture of microbial samples and antibiogram, identification of gram positive and gram negatives, learning disinfection, sterilization, decontamination and antisepsis, diagnosis of hepatitis and HIV, viral diagnostic tests.

CURRICULUM	
WEEK	**SUBJECTS/TOPICS**
1	Bacterial classification: Phenotypic, analytic and genotypic classification; aerobic, Gram-Positive Cocci (Catalase-Positive and Catalase-Negative); Aerobic, Gram-Positive Bacilli, Actinomycetes with or without Cell Wall Mycolic Acid, Miscellaneous Gram-Positive Bacilli (Arcanobacterium, Bacillus, Brevibacterium, Erysipelothrix, Gardnerella, Listeria, Turicella), Aerobic, Gram-Negative Cocci, Coccobacilli and Bacilli; Anaerobic Gram-Positive and Gram-Negative Bacteria: Cocci (gram positive or negative), bacilli (Gram positive or negative), Miscellaneous Gram-Positive Bacilli (Mycoplasmataceae, Spirochaetaceae, Leptospiraceae, Chlamydiaceae, Coxiella, Ehrlichia, Orientia, Rickettsia).
2	Bacterial Morphology, Cell Wall Structure and Synthesis: Eukaryotes, Prokaryotes, Bacterial Ultrastructure, Cell Wall, Gram positive and negative bacteria, External Structures, Bacterial cell wall dynamics, Peptidoglycan, Teichoic Acid, Lipopolysaccharide, Cell Division, Spores. Bacterial Metabolism and Growth: Metabolic Requirements, Metabolism, Energy, Tricarboxylic Acid Cycle, Pentose Phosphate Pathway, Biosynthesis, Nucleic Acid Synthesis, Transcription and translation, Bacterial Growth. Bacterial Genetics: DNA, DNA Replication, Transcriptional Control, Mutation, Repair, Recombination, Prokaryotic Reproduction, Genetic Transfer, Conjugation, Transduction, Recombination.
3	Viral Classification, Structure, and Replication: Virion Structure, Capsid Viruses, Enveloped viruses, DNA and RNA viruses, Poxviridae, Herpesviridae, Adenoviridae, Hepadnaviridae, Papovaviridae, Parvoviridae, Paramyxoviridae, Orthomyxoviridae, Coronaviridae, Arenaviridae, Rhabdoviridae, Filoviridae, Bunyaviridae, Retroviridae, Reoviridae, Picornaviridae, Togaviridae, Flaviviridae, Caliciviridae, Delta, Viral replication and genetics. Fungal Classification, Structure, and Replication: Phylum Zygomycota and Dikaryomycota, Subphylum Ascomycotina, Subphylum Basidiomycotina, Deuteromycotina.
4	Parasitic Classification, Structure, and Replication: Protozoa, Sarcomastigophora, Ciliophora, Apicomplexa, Microspora, Metazoa, helminths, Arthropods, Intestinal protozoa, urogenital protozoa, nematodes, trematodes, cestodes) Commensal and Pathogenic Microbial Flora: Respiratory Tract and Head (Acinetobacter, Prevotella, Actinobacillus, Propionibacterium, Actinomyces, Staphylococcus, Cardiobacterium, Streptococcus, Corynebacterium, Stomatococcus, Eikenella, Treponema, Enterobacteriaceae, Veillonella, Eubacterium, Fusobacterium, Haemophilus, Kingella, Moraxella, Mycoplasma, Neisseria, Peptostreptococcus, Candida, Entamoeba, Trichomonas),eye, ear, gastrointestinal tract, genitourinary system, skin.
5	Common Sterilization, Disinfection, and Antisepsis: Germicide, Sporicide, Disinfection methods (Heat, Liquid (Glutaraldehyde, Hydrogen peroxide, Formaldehyde, Chlorine dioxide, Peracetic acid, Chlorine compounds, Alcohol (ethyl, isopropyl), Phenolic compounds, Iodophor compounds, Quaternary ammonium compounds). Sterilization and hygiene Methods (Physical Sterilants (steam, Dry heat, Filtration, Ultraviolet radiation, Ionizing radiation), Gas Vapor Sterilants (Ethylene oxide, Formaldehyde vapor, Hydrogen peroxide vapor, Plasma gas, Chlorine dioxide gas), Chemical Sterilants (Peracetic acid, Glutaraldehyde), Antiseptic agents (Alcohol (ethyl, isopropyl), Iodophors, Chlorhexidine, Parachlorometaxylenol, Triclosan, others.
6	Host Protective Response: Activators and Stimulators of Immune Function, immune response cells. The Humoral Immune Response (Immunogens, Antigens, and Epitopes, Immunoglobulin (IgG, IgM, IgA, IgD, IgE), Antibody response, Complement), Cellular Immune Responses (T cells, NK cells, Monocyte-Macrophage Lineage), Immune Responses to Infectious Agents (Antibacterial Responses, Chemotaxis, Leukocyte Migration, Phagocytes, Phagocytosis, Acute phase reactants, Immune Responses to Bacteria and Viruses, parasites and fungi, Antigen-Specific Immunity, Humoral immunity, Immunodeficiency) Antimicrobial Vaccines: Immunization types, Passive and active immunization, Immune serum globulin, specific immunoglobulins, monoclonal antibodies, Vaccines (Inactivated, live, viral, bacterial),
7	Laboratory Diagnosis: preparation of materials for sample collection, transport media selection, handling of materials, setting up cultures. Microscopic Applications: Microscopy (Brightfield (Light), Darkfield, Phase-

	Contrast, Fluorescent, Electron). Examination Methods: Direct examination (wet mount, 10% KOH, India ink, lugol's iodine), Differential stain (gram stain, iron hematoxylin, methenamine silver, toluidine blue O, trichrome, wright-giemsa), Acid-fast stain (ziehl-neelsen, kinyoun, auramine-rhodamine, modified acid-fast), Fluorescent stain (acridine orange, auramine-rhodamine, calcofluor white, direct fluorescent antibody). Molecular Diagnosis: Microbial Genetic Material Detection, DNA and Restriction Fragment Length Polymorphism, Genetic Probes, Protein Detection. Serologic Diagnosis: Antibodies, Precipitation and Immunodiffusion Techniques, immunohistology, ELISA, serological testing, rapid antigen testing,others.
8	Bacterial Pathogenesis: Entry into the Human Body and preventive approaches for prevention (Ingestion, Inhalation, Trauma, Needle Stick, Arthropod Bite, Sexual Transmission, Colonization, Adhesion, Invasion, contact, droplet), Pathogenic Actions of Bacteria (Tissue Destruction, Toxins, Endotoxins and Other Cell Wall Components, Exotoxins), Host Defense escaping mechanisms (Encapsulation, Antigenic Mimicry, Antigenic Masking, Antigenic Shift, Anti-Immunoglobulin Proteases production, Phagocytes Destruction, Chemotaxis Inhibition, Phagocytosis Inhibition, Phagolysosome Fusion Inhibition, Resistance to Lysosomal Enzymes, Intracellular Replication). Antibacterial Agents: Cell Wall Synthesis Inhibition, Protein Synthesis Inhibition, Nucleic Acid Synthesis Inhibition, Others.
9	Laboratory Diagnosis of Bacterial Diseases: Specimen collection, Cerebrospinal Fluid, Blood, Sterile fluids (abdominal, chest, synovial, pericardial), Catheter, Respiratory (throat, epiglottis, sinuses, lower airways), Eye, Ear, Exudate, Wounds, Tissue, Urine, Genital, Feces, transport system, blood culture bottle, heparinized tube, capped needleless syringe, Inoculate plates, urine container, swabs, amies transport medium, stuart's transport medium, Buffered Glycerol Salt Solution, Brain Heart Infusion (BHI) Transport Medium, Thioglycollate Broth, other broths, handling and transfer of materials to the lab, analysis of speciments. Staphylococcus: Staphylococcus spp. (S. aureus, S.epidermidis others) Peptidoglycan, Teichoic Acids, Protein A, Coagulase, Other Surface Proteins, Cytoplasmic Membrane, Toxins, Enzymes, Epidemiology, Diseases (Staphylococcal Scalded Skin Syndrome, Staphylococcal Food Poisoning, Toxic Shock, Cutaneous Infections, Bacteremia, Endocarditis, Pneumonia, Empyema, Osteomyelitis, Septic Arthritis, Endocarditis, Catheter and Shunt Infections, Prosthetic Joint Infections, Urinary Tract Infections), Laboratory Diagnosis, Treatment, Prevention,Control
10	Streptococcus: Streptococcus spp (S.mutans, S.salivarius, S.mitis and others), physiology, structure, Capsule, virulence factors (capsule, Lipoteichoic acid, others), Suppurative and nonussuppurative Streptococcal Disease, Rheumatic fever, Early-Onset Neonatal Disease, Pneumonia, Sinusitis, Otitis Media, Meningitis, Bacteremia, Laboratory Diagnosis, epidemiology, Treatment, Prevention, and Control. Enterococcus and Other Gram-Positive Cocci: Enterococcus, Abiotrophia, Leuconostoc, Pediococcus, Lactococcus, Aerococcus, Allolococcus, Facklamia, Gemella, Globicatella, Helcococcus, Virulence factors, Epidemiology, Aggregation substance, Clinical diseases, Laboratory Diagnosis, Treatment, Prevention, and Control.
11	Bacillus: (B. anthracis, others) Species, physiology and structure, pathogenesis, diseases, anthrax, gastroenteritis, opportunistic infections, virulence factors, Laboratory Diagnosis, Treatment, Prevention, Control. Listeria and Erysipelothrix: virulence factors, physiology and structure, diseases, Neonatal Disease, Meningitis, bacteremia, Laboratory Diagnosis, Treatment, Prevention, Control. Corynebacterium and other gram positive bacilli: Corynebacteria, (C.diphtheriae and others) Arcanobacterium, Brevibacterium, Oerskovia, Turicella, A-B exotoxin, Diphtheria, Laboratory Diagnosis, Treatment, Prevention, Control.
12	Neisseria: (N. gonorrhoeae, N. meningitidis, others), physiology and structure virulence factors, Meningitis, Meningococcemia, Laboratory Diagnosis, Treatment, Prevention, Control. Enterobacteriaceae: (Escherichia coli, Klebsiella pneumoniae, Salmonella enterica, Shigella sonnei and flexneri, Yersinia pestis, physiology, structure, virulence factors, Antimicrobial Resistance, diseases, Septicemia, Urinary Tract Infection, Neonatal Meningitis, Gastroenteritis, laboratory Diagnosis, Treatment, Prevention, Control. Vibrio, Aeromonas, and Plesiomonas: (V. cholerae and others) Physiology, Structure, Pathogenesis, Immunity, Virulence, cholera toxin, Aeromonas, Plesiomonas, Cholera, Treatment, Prevention, Control.
13	Campylobacter and Helicobacter: (C. jejuni, and others), (H. pylori and others) Virulence, Epidemiology, Treatment, Prevention, and Control. Pseudomonas and Related Organisms: P. aeruginosa, physiology and structure, virulance factors, Burkholderia, Stenotrophomonas maltophilia, Moraxella, Acinetobacter, Primary Skin Infections, Bacteremia and Endocarditis, Treatment, Prevention, Control. Bordetella, Francisella, and Brucella: (B. pertussis and others) (Francisella Tularensis and others), tularemia, Brucella melitensis, diseases, abortus, suis, canis, Pathogenesis, Immunity, laboratory Diagnosis, Treatment, Prevention, Control.

14	Pasteurellaceae: Haemophilus (H. influenzae and others), Pasteurella, (P. canis and others), Actinobacillus actinomycetemcomitans and others, diseases, Epiglottitis, Cellulitis, Arthritis, Meningitis, Otitis, Sinusitis, Conjunctivitis, others, Pathogenesis and Immunity, laboratory Diagnosis, Treatment, Prevention, Control. Legionella, Bartonella, Eikenella, Cardiobacterium, Kingella, Capnocytophaga, Streptobacillus, Spirillum, Calymmatobacterium: Legionnaires' Disease, Virulence, Pathogenesis and Immunity, epidemiology, laboratory Diagnosis, Treatment, Prevention, Control. Anaerobic Gram-Positive Cocci and Non-Spore-Forming Bacilli: Actinomyces spp., Propionibacterium. spp., Mobiluncus spp. Lactobacillus spp., Eubacterium spp., Bifidobacterium spp., Virulence, Pathogenesis and Immunity, epidemiology, laboratory Diagnosis, Treatment, Prevention, Control.
15	Clostridium: (C. tetani, C. Difficie, C. Botulinum, C. perfringens and others), Toxins and virulence, diseases, Food Poisoning, Septicemia, botulism, clostridial myonecrosis, Pathogenesis, Immunity, epidemiology, laboratory Diagnosis, Treatment, Prevention, Control. Anaerobic Gram-Negative Bacilli: Bacteroides ureolyticus, B. fragilis and others, Fusobacterium spp. (F. nucleatum and necrophorum), Porphyromonas gingivalis and asaccharolytica, (Prevotella intermedia, P melaninogenica), Veillonella parvula, Prevotella bivia, P disiens, diseases, Brain Abscess, Intra-Abdominal Infections, Gynecologic Infections, oral infections, Bacteremia, Pathogenesis, Immunity, laboratory Diagnosis, Treatment, Prevention, Control.
16	Nocardia, Rhodococcus, and Related Actinomycetes: Actinomycetes with or without Mycolic Acids (Nocardiacea, Corynebacteriaceae, Mycobacteriaceae, Thermophilic actinomycetes, Actinomadura, Nocardiopsis, and Streptomyces, others) Bronchopulmonary infections, virulence factors, structure, laboratory Diagnosis, Treatment, Prevention, Control. Mycobacterium: M. tuberculosis Complex (M. Tuberculosis, M. Leprae, others), Runyon group I, II, III, IV, Pathogenesis, Immunity, disease, tuberculosis, leprosy, laboratory Diagnosis, Treatment, Prevention, and Control.
17	Treponema, Borrelia, and Leptospira: structure, pathogenesis, Syphilis, Lyme Disease, Relapsing Fever, Pathogenesis, Immunity, laboratory Diagnosis, Treatment, Prevention, Control. Mycoplasma and Ureaplasma: (M. pneumoniae, M. hominis, others) Pathogenesis, Immunity, epidemiology, laboratory Diagnosis, Treatment, Prevention, Control. Rickettsia, Orientia, Ehrlichia, and Coxiella: Groups (Spottted fever, typhus, scrup typhus ,ehrlichia organism, Ehrlichia-sennetsu), (Rickettsia rickettsia others, Coxiella burnetii). Pathogenesis, Immunity, laboratory Diagnosis, Treatment, Prevention,Control
18	Chlamydiaceae: Chlamydia and Chlamydophila (C. trachomatis, C Pneumonia, others), diseases, Conjunctivitis, Pathogenesis, laboratory Diagnosis, Treatment, Prevention, Control. Viral Pathogenesis: Cytopathogenesis, Lytic and Nonlytic Infections, Oncogenic Viruses, Host Defenses Against Viral Infection, Immunopathology, Viral Disease, Exposure, Transmission of Viruses (respiratory, fecal-oral, contact, zoonoses, blood, sexual, maternal-neonatal, genetic), Viral Spread control, maintenance of virus in populations, Outbreaks, Epidemics, Pandemics. Antiviral Agents, nucleoside analogues, Non-Nucleoside Polymerase Inhibitors, Anti-Influenza Drugs, Interferon.
19	Laboratory Diagnosis of Viral Diseases: Cytology, Electron Microscopy, Viral Isolation, Growth, specimens (Respiratory Tract, Gastrointestinal Tract, Maculopapular Rash, Vesicular Rash, CNS, Urinary Tract, Blood), stool washing, swab, sputum, scraping, handling and transfer of materials, viral transport medium, MEM, HBSS, PBS, other mediums, Cell Culture, Viral Protein Detection, Serology, Serologic Test Methods, (electrophoresis, western blot, IF, ELISA, DNA, RNA, PCR, dot blots). Papovaviruses: Human Papillomaviruses, Polyomavirus (BK, JC), diseases, Warts, Benign Head and Neck Tumors, Cervical Dysplasia, Neoplasia, Laboratory Diagnosis, Treatment, Prevention, Control. Adenoviruses: Structure, Replication, adenovirus proteins (E1A, others), pathogenesis, immunity, Acute Febrile Pharyngitis, Pharyngoconjunctival Fever, Acute Respiratory Tract Disease, Conjunctivitis, Gastroenteritis, Diarrhea, Laboratory Diagnosis, Treatment, Prevention, Control, Gene Replacement Therapy.
20	Human Herpesviruses: Human herpesvirus (1 to 7), Herpes simplex type 1 and type 2, Varicella-zoster virus, Epstein-Barr virus, Kaposi's sarcoma-related virus, Cytomegalovirus, Herpes lymphotropic virus, Pathogenesis, Immunity, chickenpox, Heterophile Antibody-Positive Infectious Mononucleosis, Hairy Oral Leukoplakia, Cytomegalovirus, and parvoviruses (Epidemiology, Laboratory Diagnosis, Treatment, Prevention, Control). Poxviruses: Smallpox, Vaccinia, Orf, Cowpox, Monkeypox, Molluscum Contagiosum. Picornaviruses: Enteroviruses (Poliovirus, Coxsackie A and B, Echovirus, Rhinovirus, Cardiovirus, Aphthovirus, Heparnavirus, Hepatitis A virus), Infections, Hand-foot-and-mouth disease, Herpangina, Myocardial and pericardial infections, Viral meningitis, Fever, rash, cold-like symptoms, Laboratory Diagnosis, Treatment, Prevention, Control.

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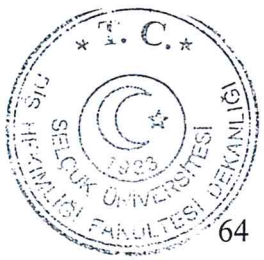
21	Paramyxoviruses: Measles, Parainfluenza, Mumps, Respiratory syncytial, Nipah and Hendra, Laboratory Diagnosis, Treatment, Prevention, Control. Orthomyxoviruses: influenza A, B, C virus, Laboratory Diagnosis, Treatment, Prevention, Control. Reoviruses: Orbivirus/coltivirus, Rotavirus, diseases, Laboratory Diagnosis, Treatment, Prevention, Control. Rhabdoviruses: Rabies virus, laboratory Diagnosis, Treatment, Prevention, Control. Togaviruses and Flaviviruses: Alphaviruses, Flaviviruses, Rubella, Arboviruses, Hepatitis C virus, Laboratory Diagnosis, Treatment, Prevention, Control. Bunyaviridae: Bunyavirus, Phlebovirus, others, Clinical and Laboratory Diagnosis, Treatment, Prevention, Control.
22	Retroviruses: Oncovirinae, B, C, D, Lentivirinae, Spumavirinae, Endogenous viruses, Human Immunodeficiency Virus-1, HIV-2, Epidemiology, Indicator Diseases, Lymphadenopathy and Fever, opportunistic infections, Oral infective lesions associated with HIV infection, candida, Hairy leukoplakia, Angular cheilitis, Periodontal infections, malignancies, HIV transmission, Laboratory Analysis, Antiviral Therapies, Treatment, Prevention, Control, Education, Blood and Blood Product Screening, Vaccine Development, Human T-Lymphotropic Virus. Hepatitis Viruses: Hepatitis A, B, C, G , D, E Virus, acute and chronic infection, Pathogenesis, Clinical Syndromes, Laboratory Diagnosis, Treatment, Primary Hepatocellular Carcinoma, Prevention, Control.
23	Prions: structure, Clinical Syndromes, Laboratory Diagnosis, Treatment, Primary Hepatocellular Carcinoma, Prevention, Control. Coronaviruses, Calicivirus, filoviruses, arena viruses: structure, epidemiology, Clinical Syndromes, Laboratory Diagnosis, Treatment, Prevention, and Control. Mycology (Fungal Pathogenesis): Mycotoxicoses, Ergot Alkaloids, Psychotropic Agents, Aflatoxins, Hypersensitivity Diseases, Colonization and Diseases, Fungal Pathogenesis, Antifungal Agents, complications, management, Laboratory Diagnosis, specimen collection, transport medium, Sabouraud's dextrose agar, Brain Heart Infusion (BHI) Broth, Mycological Transport Medium, Potato Dextrose Agar, other agars, handling of materials, Diagnostic Procedures, microscopy.
24	Superficial, Cutaneous, and Subcutaneous Mycoses: Superficial Mycoses, Pityriasis Versicolor, Tinea Nigra, Black piedra, white piedra, Cutaneous Mycoses, Microsporum, Epidermophyton, Trichophyton, Subcutaneous Mycoses, Lymphocutaneous Sporotrichosis, Chromoblastomycosis, Pathogenesis, Laboratory Diagnosis, Treatment. Systemic Mycoses: Histoplasmosis, Blastomycosis, Paracoccidioidomycosis, Coccidioidomycosis, Cryptococcosis, Laboratory Diagnosis, clinical syndromes, treatment. Opportunistic Mycoses: Candidiasis, (C. Albicans, C. tropicalis, others), Aspergillosis, Zygomycosis, Pneumocystis carinii Pneumonia, Laboratory Diagnosis, diseases (acute pseudomembranous, acute erythematous, chronic plaque like and nodular, chronic erythematous, Chronic pseudomembraneous treatment, Angular cheilitis (Chronic mucocutaneous, Cheilo-candidosis)
25	Parasitology (Parasitic Disease): Exposure, Entry (ingestion, direct, transplacental or organism-directed penetration) Adherence, Replication, Damage, Disruption, Evasion, Host Defense inactivation, Antiparasitic Agents, Antiprotozoal Agents. Laboratory Diagnosis, Macroscopic and microscopic examination (Wet mount, Permanent stains, Stool concentrates), Serologic examination, Nucleic acid hybridization, Culture, Animal inoculation, Fecal Specimen Collection, venipuncture, aspirates, smear, waxed container formalin PVA, Schaudinn's smears, Saline swab, Blood Films.
26	Intestinal and Urogenital Protozoa: Amebae, Entamoeba histolytica, Flagellates, Giardia lamblia, Trichomonas vaginalis, Dientamoeba fragilis, Ciliates, Coccidia, Sarcocystis Species, Cryptosporidium parvum and C. cayetanensis, Microsporidia, Pathogenesis, Laboratory Diagnosis, diseases, Treatment, prevention, control. Blood and Tissue Protozoa: Plasmodium Species (P.vivax,others),Babesia Species, Toxoplasma gondii, Sarcocystis lindemanni, Free-Living Amebae, Leishmanias (L.donovanii), Trypanosomes (T. brucei gambiense, others), Pathogenesis, Laboratory Diagnosis, diseaes, Treatment, prevention, control
27	Nematodes: Enterobius vermicularis, Ascaris lumbricoides, Toxocara canis and Toxocara cati, Trichuris trichiura, Hookworms, Strongyloides stercoralis, Trichinella spiralis, Wuchereria bancrofti and Brugia malayi, Loa loa, Mansonella Species, Onchocerca volvulus, Dirofilaria immitis, Dracunculus medinensis, Pathogenesis, Laboratory Diagnosis, Clinical Syndromes, Treatment, prevention, control. Trematodes: Fasciolopsis buski, Fasciola hepatica, Opisthorchis sinensis, Paragonimus westermani, Schistosomes, diseases Cercarial Dermatitis, Pathogenesis, Laboratory Diagnosis, Treatment, prevention, control.
28	Cestodes (Taenia (solium, saginata), Cysticercosis, Diphyllobothrium latum, Sparganosis, Echinococcus (granulosus, multilocularis), Hymenolepis (nana, diminuta), Dipylidium caninum Arthropods: Chilopoda, Pentastomida, Crustacea, Copepods, Decapods, Arachnida, spider, Scorpions, Mites, Ticks, Insecta, Bloodsucking Diptera, Horseflies, Deer Flies, Myiasis-Causing Flies, Fleas, Stinging Insects



29	Oral microbiology: The composition, distribution, metabolism and dominant species of oral microflora in health and disease (Streptococcus, Staphylococcus, Porphyromonas, Actinomyces and others) Ecological terminology, teeth, mucosal surfaces, saliva, gingival crevicular fluid, factors affecting the growth of microorganisms in the oral cavity, temperature, anerobiosis, ph, nutrients, Acquisition adherence, agglutination, Antimicrobial agents, inhibitors, host defense, genetics, Ageing and the oral microflora, ecological, allogenic and autogenic succession
30	Oral microbiology: Resident oral microflora detection methods: Sample taking, transport, dispersion, cultivation, enumeration, identification, microscopy, in situ models. Resident oral microflora distribution: lips, palate, cheek, tongue, teeth, factors affecting microbial adhesion to oral surfaces, factors impacting the distribution of oral microorganisms, host receptors, bacterial adhesins, climax community, colonization resistance, metabolism of oral bacteria, carbohydrate metabolism, acid tolerance, polysaccharide production, nitrogen metabolism, oxygen metabolism, oral malodour (halitosis)
31	Oral microbiology: Dental plaque: Dental plaque, microbial biofilms and properties, development, formation, pellicle, species of oral supragingival and subgingival plaque, plaque sampling. Dental Caries: species of bacteria in different types of dental caries, carigenic bacteria and its pathogenicity. Common Oral bacterial and viral and fungal infections: dento-alveolar abscesses, Ludwig's angina, pericoronitis, periodontal and periapical abscesses, osteomyelitis, dry sockets, periimplantitis, endodontic infections, actinomycosis, tuberculosis, salivary gland infections, gonorrhoea, Herpes virus infections, measles, papilloma, coxsackie viruses, Hand, foot and mouth disease, herpangina, infections in medically compromised patients, oral fungal infections, candidiasis, angular cheilitis.
32	Antimicrobial therapy and prophylaxis for oral infections: Antimicrobial resistance, Colonization resistance, antimicrobial usage for acute oral infections, prophylaxis, Infective endocarditis (pathogenesis, patients at risk from infective endocarditis). Hygiene and Cross-infection control: Universal precautions, personal protection, hand, eye and face production, surgery clothing, inoculation injuries, needlestick injuries, surgery design, surface and instrument disinfection, dental unit water supplies, clinical waste disposal, disinfectants used in dentistry, management of operating room hygiene, prevention of air related infections in operating rooms, hygiene for dental office staff, management of contamination, prevention from infection in dentistry, management of post-exposure prophylaxis (HBV, HCV, HIV, tetanosis, needlestick injuries, bite injuries, other injuries)

* The duration of this course is 32 weeks.
* One lecture hour corresponds to 50 minutes.

COURSE LEARNING OUTCOMES	
Classifies the microorganisms, explains morphology, genetics, physiology, and metabolism of microorganisms. Knows pathogenesis, transmission of microorganisms and prevention from them. Defines sterilization and disinfection methods and application methods. Knows parasitology, mycology, virology and bacteriology. Describes causative agents of human infectious diseases, their virulence, transmission and ways of prevention. Knows antibiotics, antiviral, antiparasitic and antifungal drugs and mechanism of action and side effects of drugs. Define the components of the innate immune system and the mechanisms of innate immunity. Identifies the differences of the acquired immune response from the innate immune response. Distinguish the differences between humoral and cellular immune responses. Knows oral microbiology and hygiene and cross-infection control.	**Contribution** Very Good

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Surname: KESKİN
Date of Birth: 01/10/1982

COURSE CODE	COURSE NAME	DURATION (SEMESTER)	HOURS (WEEKLY)		CREDIT
			T	P	
0101306	CONSERVATIVE DENTISTRY	Second year (2 Semesters)	2	X	2

LANGUAGE	COURSE STATUS	
Turkish	Required (X)	Elective

METHODS OF ASSESSMENT			
	ACTIVITY	NUMBER	PERCENTAGE
MID-TERM	Written Exam	2	% 50
FINAL	Written Exam	1	% 50

COURSE OBJECTIVES AND CONTENT	The aim of this course is to provide information about conservative dentistry. This course covers following contents: oral histology, physiology, biochemistry and the embryology of tooth and related structures, dental caries, cavity preparation principles, hand tools and rotary tools, Restorative dental materials, bonding systems and adhesion, amalgam, composites, cements, cavity liners, varnishes, cements and bases, Inlays and onlays, Sterilization and disinfection systems in dentistry, Infection control in dentistry, Pin systems in dentistry, Dental Control Unit Water Systems and Handpiece Asepsis, Isolation of operative field, Dental embryology and anomalies.
TEACHING METHODS	presentation
TEXTBOOKS	The art and science of operative dentistry Sturdevant CM, Roberson TM, Heyman HO, Sturdevant JR, 3th edition, 1995; Illustrated dental embriyology, histology and anatomy, Balogh MB, Fehrenbach MJ, 1997; Notes on dental materials, Combe EC, Grant AA, 6th edition, 1992; Restorative dental materials, Craig RG, Powers JM, 10th edition, 1997; Fundamentals of operative dentistry: a contemporary approach: Schwartz RS, Summitt JB, Robbins WJ, 1st edition, 1996; Pickard's manual of operative dentistry, Kidd EAM et al. 7th edition, 1996 , Lecturer's own notes,

CURRICULUM	
WEEK	SUBJECTS/TOPICS
1	Oral Histology, physiology and biochemistry of tooth and related structures: structure of enamel, inorganic and organic components of enamel, chemical composition, calcium, phosphate, enamel apatite, amelogenin, ameloblastin, enamelin, tufttelin, Structure and composition of dentin (organic and inorganic components), collagen and its biosynthesis, elastic fibers, non-collogenous proteins.
2	Dental caries: plaque bacteria, caries terminology (enamel caries, approximal surface caries, fissure caries, rampant caries, early (sub-surface) demineralization), lesion progression, recurrent (secondary) caries, microbiological tests in the prediction of caries activity, root surface caries, bacterial invasion, pathogenic determinants of cariogenic bacteria, approaches for the control of dental caries, antimicrobial agents, vaccination, passive immunization.
3	Cavity preparation principles: Definition, objective and need of tooth preparation, stages and steps of tooth preparation, factors effecting tooth preparation, location, rate and extent of caries, grooves and fissures, enameloplasty, sealant, prophylactic odontomy, affected and infected dentin, non-caries tooth defects terminology, abrasion, erosion, abfraction, attrition, fractures
4	Cavity preparation principles: Tooth preparation terminology: Simple, compound, and complex tooth preparations, descriptions of tooth preparations, Tooth preparation walls, Tooth preparation angles, Dentinoenamel junction, Cementoenamel junction, Enamel margin strength, Vertical (longitudinal) and horizontal (transverse) terminology, intracoronal and extracoronal preparations, anatomic and clinic crown.
5	Cavity preparation principles: Classification of tooth preparations: Class I-II-III-IV-V-VI restorations
6	Cavity preparation principles: Initial and final stages of tooth preparation, Initial tooth preparation stage (outline form and initial depth, primary resistance, retention and convenience form, Final tooth preparation stage (Removal

	of any remaining enamel pit or fissure, infected dentin, and/or old restorative material, Pulp protection. Secondary resistance and retention forms.
7	Cavity preparation principles: external walls of the tooth preparation finishing. Final procedures (cleaning, inspecting, and sealing), Additional concepts in tooth preparation, Amalgam box-only and amalgam tunnel tooth restorations, adhesive amalgam restorations, composite box-only and tunnel restorations, slot preparation, sandwich techniques, bonded restorations for weakened tooth structure
8	hand tools and rotary tools: anterior and posterior matrix systems, Hand instruments for cutting: Hand Instruments for Cutting (Materials, Terminology and Classification, Cutting Instrument Applications, Hand Instrument Techniques, Sharpening Hand Instruments, Sterilization and Storage of Hand Cutting Instruments), Powered Cutting Equipment (Rotary Equipment, Rotary Speed Ranges, Laser Equipment, Other Equipment)
9	Rotary Cutting Instruments (Design Characteristics, Dental Burs, Diamond Abrasive Instruments, Other Abrasive Instruments, Cutting Mechanisms, Evaluation of Cutting, Bladed Cutting, Abrasive Cutting, Cutting Recommendations), Hazards with Cutting Instruments (Pulpal Precautions, Soft Tissue Precautions, Eye Precautions, Ear Precautions, Inhalation Precautions)
10	Restorative dental materials: Amalgam: Terminology, Classification, Composition, silver-tin alloy, amalgamation process, structure, and properties, manipulation of amalgam, selection of alloy, alloy mercury preparation, amalgam mixing and condensation, finishing amalgam, bonding of amalgam, amalgam toxicity, Mercury management, Amalgam waste management, failure in amalgam restorations
11	Composite Restorative Materials: All-Purpose Composites, Composition, Setting Reaction, Packaging of Composites, Properties of Composites, Overview, Physical Properties, Mechanical Properties, Clinical Properties, Manipulation of Composites, Pulpal Protection, Etching and Bonding, Dispensing, Insertion, Polymerization, Finishing and Polishing, Composites for Special Applications, Microfilled Composites
12	Composite Restorative Materials: Packable Composites, Flowable Composites, Compomers, Composition and Setting Reaction, Properties, Manipulation, Light-Curing Units, Overview, Quartz-Tungsten-Halogen (QTH) Light-Curing Units, Plasma-Arc Light-Curing Units, Light-Emitting diotes
13	Bonding systems: Principles of Adhesion (Adhesive Joints, Adhesion Versus Bond Strength, Interface Formation for Adhesion, Mechanisms of Interfacial Debonding), Measurements of Bond Strength, Characterization of Human Enamel and Dentin (Structure and Morphology of Enamel and Dentin)
14	Bonding systems: Enamel and Dentin Bonding Agents for Direct Composites (Composition, Properties, Manipulation), the smear layer, Primer and bonding application, acid etching, resin adhesives, first generation, second generation, third generation, fourth and fifth generation, sixth generation (self-etching primers), conditioning of resins, primers, resin tag formation, smear layer modifying and removing adhesives, smear layer dissolving adhesives, lightning and curing systems
15	Bonding systems: Advantages of enamel adhesion, Challenges in Dentin Bonding, Development of Dentin Bonding Systems, Role of the Hybrid Layer, Moist Versus Dry Dentin Surfaces, Role of Proteins in Dentin Bonding, Microleakage, Biocompatibility, Relevance of In Vitro Studies, Clinical Factors in Dentin Adhesion, New Clinical Indications for Dentin Adhesives
16	Bonding Systems for Other Substrates (Amalgam, Laboratory Composites, Ceramic, Composite Bonded to Cast Alloys, Repair of Composite, Ceramic, and Porcelain-Fused-to-Metal Restorations)
17	Cements: Composition, Setting Reaction, Manipulation of Zinc Phosphate Cement, Zinc Oxide-Eugenol (ZOE) and Non-Eugenol Cements, Composition, Zinc Polyacrylate Cement, Glass Ionomer Cement, Hybrid Ionomer Cement
18	Cements: Properties, Applications, Compomers, Composition, Setting Reaction, Manipulation, Properties, Composites and Adhesive Resins, Cavity Varnishes,
19	Cavity liners and bases: Cavity liners: Composition, Manipulation, Properties, Terminology and classification, objectives for pulpal protection , structure and properties of liners, clinical considerations.
20	Cavity varnishes: Composition, Manipulation, Properties, Applications, Low-Strength Bases, Composition and Chemistry of Setting, Manipulation, Properties, Zinc Oxide-Eugenol Bases, calcium hydroxide bases, High-Strength Bases, Properties, direct and indirect pulp capping
21	Fluoride Varnishes, Pit-and-Fissure Sealants (Resin Sealants, Glass Ionomer Sealants, Cast gold restorations
22	Inlays and onlays: preparation, general considerations, bases and liners, provisional restorations, adhesive cementation, preparing the restoration and tooth for bonding, maintenance, resin composite inlays and onlays, direct/indirect resin inlays, indirect resin onlays,

23	CAD/CAM inlays/onlays, cast metal and gold restorations, wear, longevity, finishing and polishing, common problems and repair of inlays and onlays
24	Sterilization and disinfection systems in dentistry: Exposure risks and effect of infections on dentistry: Environment of the Dental Operatory, Hepatitis B and C, HIV and AIDS, postoperative prophylaxis and precautions
25	Infection control in dentistry: HIV and viral hepatitis transmission, risks for personnel and patients, HIV and hepatitis related infection control, epidemiology of other infections and risks
26	Sterilization and disinfection systems in dentistry: Exposure assessment protocol, medical history, disposal clinical waste, needle disposal, precautions, Aseptic techniques, operatory asepsis, Procedures, materials and devices for cleaning instruments before sterilization
27	Dental Control Unit Water Systems and Handpiece Asepsis: Handpiece Surface Contamination Control, Turbine Contamination Control, Water Retraction System Correction, Inherent Water System Contamination, Control of Contamination from Spatter and Aerosol, Sterilization of Handpieces and Related Rotary Equipment, Steam Sterilization of Handpieces, Other Methods of Handpiece Sterilization
28	Pin systems in dentistry: application, indications and contraindications, The twist drill, the retentive pin, dentin as an anchorage medium, mismatch between drill and pin size, pulpal penetration, periodontal perforation, troubleshooting, bending pins, enlarged size numbers and location of pins, cemented pins, variations and atypical uses
29	Isolation of operative field: Goals of isolation, rubber dam isolation, cotton-roll isolation, cellulose wafers, throat shields, high-volume evacuators and saliva ejectors, retraction cord, mouth props, drugs, mirror and evacuator tip retraction
30	Dental embryology: tooth development, initiation stage, bud stage, cup stage, bell stage, apposition stage, maturation stage, ameloblasts, odontoblasts, cementoblasts, osteoblasts, odontoclasts, osteoclasts, comparison of dental hard tissues, enamel organ, dental papilla, dental sac, succedaneous, nonsuccedaneous, root development, root-dentin formation, cementum and pulp formation, development of periodontium and alveolar bone, primary and permanent dentition
31	Dental embryology and anomalies: anodontia, supernumerary teeth, macrodontia, microdontia, dens in dente, gemination, fusion, tubercle, enamel pearl, enamel and dentinal dysplasia, concrescence, multirooted teeth, dilaceration, dentigerous cyst
32	Dental embryology and anomalies: amelogenesis imperfecta, dentinogenesis imperfecta, ectodermal dysplasia, dens evaginatus, dens invaginatus, molar hypoplasia, molar hypomineralization, osteogenesis imperfecta, amorphous tooth, turner tooth, taurodontism,others

* The duration of this course is 32 weeks.
* One lecture hour corresponds to 50 minutes.

COURSE LEARNING OUTCOMES	
Knows Histology, biochemistry, physiology and embryology of tooth and dental anomalies. Describes and knows cavity preparation principles Knows hand tools and rotary tools, Restorative dental materials, bonding systems and adhesion, amalgam, composites, cements, cavity liners, varnishes and bases, Inlays and onlays, Pin systems in dentistry Knows and describes sterilization and disinfection systems in dentistry. Knows isolation of operative field.	**Contribution** Very Good

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COURSE CODE	COURSE NAME	DURATION (SEMESTER)	HOURS (WEEKLY)		CREDIT
			T	P	
0101307	CONSERVATIVE DENTISTRY (PRECLINICAL)	Second year (2 semesters)	X	4	2

LANGUAGE	COURSE STATUS	
Turkish	Required (X)	Elective

METHODS OF ASSESSMENT			
	ACTIVITY	NUMBER	PERCENTAGE
MID-TERM	Practical Exam	1	% 25
	Homework	8	%25
FINAL	Practical Exam	1	% 50

COURSE OBJECTIVES AND CONTENT	The aim of this course is to teach the cavity preparation and restorative procedures on models, phantom units and extracted human teeth. This practical course covers following applications: applications of black cavity techniques; application of composite and amalgam restorations on phantom teeth; Restorations of extracted human teeth with deep carious lesions; application of aesthetic restorative techniques and minimal cavity principles on extracted human teeth; application of inlay and onlay restorations, application of cavity liners, cements, bases, etching and bonding, rubber dam applications; application of placement of various matrix bands on teeth.
TEACHING METHODS	Application
TEXTBOOKS	The art and science of operative dentistry Sturdevant CM, Roberson TM, Heyman HO, Sturdevant JR, 3th edition, 1995; Fundamentals of operative dentistry: a contemporary approach: Schwartz RS, Summitt JB, Robbins WJ, 1st edition, 1996; Pickard's manual of operative dentistry, Kidd EAM et al. 7th edition, 1996 , lecturers own notes
PRACTICAL APPLICATIONS	Application of black cavity techniques; Application of composite and amalgam restorations on phantom teeth; Restorations of extracted human teeth with deep carious lesions; Application of aesthetic restorative techniques and minimal cavity principles on extracted human teeth; inlay and onlay restorations, rubber dam applications, Placement of various matrix bands on teeth, etching, bonding, cement, cavity liners and bases application.

CURRICULUM	
WEEK	SUBJECTS/TOPICS
1	Black I cavity on phantom teeth
2	Black I cavity on phantom teeth
3	Black II cavity on phantom teeth
4	Black II cavity on phantom teeth
5	Black II slot cavity on phantom teeth
6	Black III cavity on phantom teeth
7	Black III cavity on phantom teeth
8	Black IV cavity on phantom teeth
9	Black IV cavity on phantom teeth
10	Black V cavity on phantom teeth
11	Black V- VI cavity on phantom teeth
12	Cement application on cavities on phantom teeth
13	Cavity liners and bases application on cavities on phantom teeth
14	Composite restoration on phantom teeth
15	Composite restoration on phantom teeth

16	Amalgam restoration on phantom teeth
17	Amalgam restoration on phantom teeth
18	Caries removal on extracted human teeth
19	Caries removal on extracted human teeth
20	Caries removal on extracted human teeth
21	Placement of various matrix bands and rubber dam on teeth
22	Cement, cavity liners and bases and etching and bonding applications on extracted human teeth
23	Composite restorations on extracted human teeth
24	Composite restorations on extracted human teeth
25	Composite restorations on extracted human teeth
26	Amalgam restorations on extracted human teeth
27	Amalgam restorations on extracted human teeth
28	Amalgam restorations on extracted human teeth
29	Inlay preparation and restoration on teeth
30	Inlay preparation and restoration on teeth
31	Onlay preparation and restoration on teeth
32	Onlay preparation and restoration on teeth

* The duration of this course is 32 weeks.
* One lecture hour corresponds to 50 minutes.

COURSE LEARNING OUTCOMES	
Knows and apply Tooth Structures, cavity preparation, caries removal, amalgam and composite restorations, inlay and onlay restorations, matrix systems and rubber dam, cement, base, liner, etching and bonding.	**Contribution**
	Very Good

T.C. SELÇUK ÜNİVERSİTESİ 1823 DİŞ HEKİMLİĞİ FAKÜLTESİ DEKANLIĞI

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Given Name: ŞAZİMET
Surname: KESKİN
Date of Birth: 01/10/1982

COURSE CODE	COURSE NAME	DURATION (SEMESTER)	HOURS (WEEKLY)		CREDIT
			T	P	
0101308	PROSTHODONTIC DENTAL TREATMENT	Second year (2 semesters)	2	X	2

LANGUAGE	COURSE STATUS	
Turkish	Required (X)	Elective

METHODS OF ASSESSMENT			
	ACTIVITY	NUMBER	PERCENTAGE
MID-TERM	Written Exam	2	% 50
FINAL	Written Exam	1	% 50

COURSE OBJECTIVES AND CONTENT	The aim of this course is to provide knowledge about fundamental and common prosthetic applications. This course covers preparation of complete cast crown; metal ceramic crowns, partial veneer crowns; inlay and onlay preparations; ceramic restorations and laminate veneers; periodontal considerations in prosthodontics; pontic design; the epidemiology, physiology, terminology and classification of partially edentulous arches; biomechanics of removable partial dentures; clasp-retained partial denture; major and minor connectors; rests and rest seats; direct and indirect retainers; precision attachments, bars, studs and magnets, denture base; removable partial denture design; surveying in removable partial dentures; preparation of abutment teeth for removable partial dentures; impression for removable partial dentures; support for distal extension denture base in removable partial dentures; occlusal relationships for removable partial prosthesis; laboratory procedures for removable partial prosthesis; initial placement, adjustment, and servicing of the removable partial denture; relining and rebasing the removable partial denture and temporary removable partial dentures.
TEACHING METHODS	presentation
TEXTBOOKS	Contemporary fixed prosthodontics, Rosenstiel SF, Land MF, Fujimoto J, 2nd edition 1995, Fundamentals of Fixed Prosthodontics, Shillingburg HT, Hobo S, Whitest LD, Jacobi R, Bracket SE, 3rd edition, 1997; Lecturer's own notes, Clinical removable partial prosthodontics, Stewert KL, Rudd KD, Kuebker WA, 2nd edition, 1992; McCraken's Removable partial prosthodontics, Macgvney KP, Carr AB, 10th edition, 2000, own notes;

CURRICULUM	
WEEK	**SUBJECTS/TOPICS**
1	Complete cast crown preparation and Metal ceramic crown preparation: Armamentarium, Advantages, indications, disadvantages, contraindications, preparation, finishing, evaluation, aftercare
2	The partial veneer crowns, inlay and onlay preparations: Armamentarium, Advantages, indications, disadvantages, contraindications, preparation, finishing, evaluation, aftercare
3	All ceramic restoration preparation:Armamentarium, Complete ceramic crowns, ceramic inlay and onlays, Advantages, indications, disadvantages, contraindications, preparation, finishing, evaluation, aftercare
4	Periodontal considerations in prosthodontics: Anatomy, periodontium, disease of periodontium and treatment, examination, diagnosis, treatment planning, strategic tooth removal, stabilization of mobile teeth, minor tooth movement, furcations, root anatomy, prosthesis for root resections, maintenance, prognosis
5	Pontic design: Pretreatment assessment, pontic classification (hygenic, modified hygenic, saddle-ridge lap, modified ridge lap, conical, ovate), biological, mechanical, esthetic considerations, pontic fabrication, metal-seramic, metal and fiber-reinforced all resin pontics, edentulous ridge and classification, pontic modification
6	Partially edentulous dentures: Epidemiology, physiology, and terminology, tooth loss and age, consequences of tooth loss, functional restoration of prostheses, current removable partial denture use, indications, contraindications, terminology, aftercare

	Classification of partially edentulous arches: Kennedy classification, Applegate's rules for applying the Kennedy classification
7	Biomechanics of Removable Partial Dentures: Biomechanics and Design Solutions, Biomechanical Considerations, Possible Movements of Partial Denture Clasp-Retained Partial Denture: Tooth-Supported, Tooth- and Tissue-Supported, Six Phases, Education of Patient, Diagnosis, Treatment Planning, Design, Treatment Sequencing, and Mouth Preparation, Support for Distal Extension Denture Bases, Establishment and Verification of Occlusal Relations and Tooth Arrangements, Initial Placement Procedures
8	Major and Minor Connectors: Major Connectors, Location, Maxillary and mandibular Major Connectors, Palatal bar, Palatal strap, Anteroposterior palatal bar, Horseshoe, Anteroposterior palatal strap, Complete palate, lingual bar and plate, Kennedy bar, labial bar.
9	Major and Minor Connectors: Minor Connectors and 4 types, Functions, Form and Location, Tissue Stops, Finishing Lines, Reaction of Tissue, Rigid connectors, nonrigid connectors (dovetail, split pontic,cross-pin and wing)
10	Rests and Rest Seats: Occlusal Rest and Rest Seat, Extended Occlusal Rest, Interproximal Occlusal Rest Seats, Intracoronal Rests, Support for Rests, Lingual Rests, Incisal Rests and Rest Seats
11	Retentive Clasps, Amount of Retention, Size of Distance, Length,Diameter and cross-sectional form of Clasp Arm, Material, Stabilizing-Reciprocal Cast Clasp Arm
12	Direct Retainers: Criteria and basic principles for Clasp Design, Reciprocal Arm Functions, Types of Clasp Assemblies, Other Types of Retainers, Lingual Retention, path of withdrawal
13	Direct Retainers: fabrication of a crown for an existing partial removable prosthesis, attachments, (extracoronal and intracoronal) Precision attachments, bars, studs and magnets: semi precision attachment (laboratory made or custom made, intracoronal/internal attachment, extracronal/external attachment, radicular/intraradicular stud type attachments, solid/rigid types, resilient types, non-resilient types, frictional retention, mechanical retention, frictional and mechanical retention, magnetic retention, suction types, bars, stud, magnets
14	Indirect Retainers: Factors, Auxiliary Functions and Forms of Indirect Retainers, Auxiliary Occlusal Rest, Canine Rests, Canine Extensions from Occlusal Rests, Cingulum Bars and Linguoplates, Modification areas, Rugae support
15	Denture Base: Functions, Tooth-Supported, Distal Extension Partial Denture Base, Methods, Materials, Advantages, Accuracy and Permanence, Comparative Tissue Response, Thermal Conductivity, Weight and Bulk, Porcelain or Acrylic Resin Artificial Teeth, Porcelain or Resin Tube Teeth and Facings, Metal Teeth, Chemical Bonding, relining, Stress-breakers
16	Removable Partial Denture Design: Prosthesis Support and Influence on Design, Impression Registration, Essentials and Components of Design, Tooth Support, Ridge Support, Major and Minor Connectors, Direct Retainers, Stabilizing Components, Guiding Plane, Indirect Retainers,
17	Removable Partial Denture Design: Class III Removable Partial Denture, Kennedy Class I, Bilateral, Distal Extension Removable Partial Dentures, Kennedy Class II removable partial dentures, Additional considerations (splint bar, internal clip attachment, overlay abutment, component partial)
18	Surveying in removable partial dentures: Description, Purpose Surveying the Diagnostic Cast, Contouring Wax Patterns, Surveying Ceramic Veneer Crowns, Placement of Intracoronal Retainers and Internal Rest Seats, Machining Cast Restorations, Surveying the Master Cast, factors for path of placement and removal
19	Surveying in removable partial dentures: surveying diagnostic casts, (guiding planes, retentive areas interference, esthetics), final path of placement, Recording Relation of Cast to Surveyor, Measuring Retention, Blocking Out the Master Cast, Relieving the Master Cast, Parallel Blockout, Shaped Blockout, Arbitrary Blockout, and Relief
20	Preparation of abutment teeth for removable partial dentures: Classification Sequence, conservative restorations, crowns, Ledges, Spark erosion, Veneers for clasp support arms, Splinting, isolated teeth as abutments, Temporary crowns, Cementation, Fabricating restorations
21	Impression for removable partial dentures: Rigid materials, thermoplastic materials, elastic materials (silicone, polyether, alginate), impression, precautions, technique, troubleshooting, individual impression trays and technique
22	Support for distal extension denture base in removable partial dentures: Distal extension, factors influencing support, anatomic form impression, methods for obtaining functional support (selective tissue placement impression, functional impression technique

23	Occlusal relationships for removable partial prosthesis: Desirable occlusal contact, methods for establishing occlusal relationship (direct apposition of casts, Interocclusal records with posterior teeth remaining, occlusion rims on record bases, Jaw relation records on occlusion rims
24	Occlusal relationships for removable partial prosthesis: Establishing occlusion by the recording of occlusal pathways, Materials for artificial posterior teeth, Establishing jaw relations for a mandibular removable partial denture opposing a maxillary complete denture
25	Laboratory procedures for removable partial prosthesis: Duplicating a stone casts, Waxing the framework (Forming the wax pattern for a mandibular class II removable partial denture framework, Attaching wrought-wire retainer arms by soldering, Waxing metal bases),
26	Laboratory procedures for removable partial prosthesis:Spruing, Investing the sprued pattern, Burnout, Casting, Removing the casting from the investment, Finishing and polishing.
27	Laboratory procedures for removable partial prosthesis: Making record bases, Occlusion rims, Making a stone occlusal template from a functional occlusal record, Arranging posterior teeth to an opposing cast or template, Posterior tooth forms
28	Laboratory procedures for removable partial prosthesis: Types of anterior teeth, Waxing and investing the removable partial denture, Processing the denture
29	Laboratory procedures for removable partial prosthesis: Remounting and occlusal correction to an occlusal template, Precautions, Polishing the denture.
30	Initial placement, adjustment, and servicing of the removable partial denture Adjustments of denture bases and occlusion, Occlusal interference, Instructions to the patient, Follow-up
31	Relining and rebasing the removable partial denture: Relining tooth-supported denture bases, distal extension denture bases, Methods of reestablishing occlusion
32	Temporary removable partial dentures: Appearance, Space maintenance, Reestablishing occlusal relationships, Conditioning teeth and residual ridges, Interim restoration during treatment, Conditioning the patient for wearing a prosthesis, Clinical procedure for placement, aftercare

* The duration of this course is 32 weeks.
* One lecture hour corresponds to 50 minutes.

COURSE LEARNING OUTCOMES	
Student knows and describes the preparation of complete cast crown, metal ceramic crowns, partial veneer crowns, inlay and onlay preparations, ceramic restorations and laminate veneers; periodontal considerations in prosthodontics; pontic design; the epidemiology, physiology, terminology and classification of partially edentulous arches; biomechanics of removable partial dentures; clasp-retained partial denture; major and minor connectors; rests and rest seats; direct and indirect retainers; precision attachments, bars, studs and magnets denture base; removable partial denture design; surveying in removable partial dentures; preparation of abutment teeth for removable partial dentures; impression for removable partial dentures; support for distal extention denture base in removable partial dentures; occlusal relationships for removable partial prosthesis; laboratory procedures for removable partial prosthesis; initial placement, adjustment, and servicing of the removable partial denture; relining and rebasing the removable partial denture and temporary removable partial dentures	**Contribution** Very Good

Student ID: 000101025
TR Identity No: 50380582078
Given Name: ŞAZİMET
Surname: KESKİN
Date of Birth: 01/10/1982

COURSE CODE	COURSE NAME	DURATION (SEMESTER)	HOURS (WEEKLY)		CREDIT
			T	P	
0101309	PROSTHODONTIC DENTAL TREATMENT (PRECLINICAL)	Second year (2 Semesters)	X	8	4

LANGUAGE	COURSE STATUS	
Turkish	Required (X)	Elective

METHODS OF ASSESSMENT			
	ACTIVITY	NUMBER	PERCENTAGE
MID-TERM	Homework	8	%25
	Practical exam	1	% 25
FINAL	Practical exam	1	% 50

COURSE OBJECTIVES AND CONTENT	The aim of this course to teach Prosthodontics and construction techniques for fixed and removable dentures in preclinical settings and to prepare preclinic students to clinical conditions. This course content covers: Practice in preclinics for fabrication of bridges of maxillary and mandibular teeth (metal with acrylic facing) (ridge-lap and saddle pontic)(preparation, retraction, impression, obtaining bite records, temporary restoration, stone casting, die modeling, transferring to articulator, wax modeling, spruing and investing, dental casting with lost wax technique, trimming, finishing, polishing, try in and adjustment), Removable partial dentures (preparing rest seats, Bending and casting clasps, base plate construction, occlusal rims, transferring to articulator, arrangement of teeth, Wax contouring, denture flasking, packing and curing acrylic resin dentures, Denture deflasking, Trimming, polishing and finishing of dentures, Controlling occlusion in articulators), Complete denture processing (acrylic tray fabrication, primary impression, border moulding, final impression, Record base and occlusal rims construction, Transferring to articulator, Tooth selection and arrangement of teeth, Wax contouring, Denture flasking by using split cast method, Elimination of wax and mould preparation, Packing and curing acrylic dentures, Denture deflasking, Trimming, polishing, controlling occlusion in articulators), management of common problems in dentures (relining, rebasing, management of fractures, adding clasp to removable partial dentures, adding teeth to removable partial dentures and others)
TEACHING METHODS	Application
TEXTBOOKS	Contemporary fixed prosthodontics, Rosenstiel SF, Land MF, Fujimoto J, 2nd edition 1995, Fundamentals of Fixed Prosthodontics, Shillingburg HT, Hobo S, Whitest LD, Jacobi R, Bracket SE, 3rd edition, 1997; Lecturer's own notes, Boucher's Prosthodontic Treatment for Edentulous Patients Zarb GA, Carlsson GE, Bolender CL, Boucher CO, 11th Edition, 1997; Fixed and removable prosthodontics: Barclay CW, Walmsley AD, 2nd edition, 1998, McCraken's Removable partial prosthodontics, Macgvney KP, Carr AB, 10th edition, 2000,lecturers own notes.
PRACTICAL APPLICATIONS	Practice in preclinics for fabrication of bridges of maxillary and mandibular teeth (metal with acrylic facing) (ridge-lap and saddle pontic)(preparation, retraction, impression, obtaining bite records, temporary restoration, stone casting, die modeling, transferring to articulator, wax modeling, spruing and investing, dental casting with lost wax technique, trimming, finishing, polishing, try in and adjustment), Removable partial dentures (preparing rest seats, Bending and casting clasps, base plate construction, occlusal rims, transferring to articulator, arrangement of teeth, Wax contouring, denture flasking, packing and curing acrylic resin dentures, Denture deflasking, Trimming, polishing and finishing of dentures, Controlling occlusion in articulators), Complete denture processing (acrylic tray fabrication, primary impression, border moulding, final impression, Record base and occlusal rims construction, Transferring to articulator, Tooth selection and arrangement of teeth, Wax contouring, Denture flasking by using split cast method, Elimination of wax and mould preparation, Packing and curing acrylic dentures, Denture deflasking, Trimming, polishing, controlling occlusion in articulators), management of common problems in dentures (relining, rebasing, management of

	fractures, adding clasp to removable partial dentures, adding teeth to removable partial dentures and others)

CURRICULUM	
WEEK	**SUBJECTS/TOPICS**
1	Teeth preparation in phantom jaws (bridge fabrication of maxillary teeth (ridge-lap and saddle pontic)
2	Teeth preparation in phantom jaws (bridge fabrication of maxillary teeth) (ridge-lap and saddle pontic)
3	Retraction and impression in teeth of phantom jaws, Obtaining bite records
4	Construction of temporary restorations
5	Study cast construction and master cast construction with dies, Transferring to articulator
6	Wax modelling in laboratory
7	Dental casting with lost wax technique
8	Trimming, Finishing and polishing, Try-in and adjustment
9	Complete dentures: Anatomic and denture landmarks, acrylic tray fabrication for edentulous trays
10	Primary Impression making for complete dentures, border moulding and final impression making
11	Record base and occlusal rims construction, Transferring to articulator
12	Tooth selection and arrangement of anterior and posterior teeth
13	Wax contouring
14	Denture flasking by using split cast method, Elimination of wax and mould preparation, Packing and curing acrylic dentures
15	Denture deflasking, Trimming, polishing and finishing of dentures
16	Controlling occlusion in articulators
17	Removable partial dentures: preparing rest seats
18	Removable partial dentures: bending and casting clasps in Cl 1-2-3-4
19	Removable partial dentures: bending and casting clasps in Cl 1-2-3-4
20	Removable partial dentures: On Maxillary Cl-1 mandibular Cl-3 base plate construction
21	Occlusal rims
22	transferring to articulator
23	Arrangements of artificial teeth over maxillary and mandibular casting major connectors
24	Arrangements of artificial teeth over maxillary and mandibular casting major connectors
25	Wax contouring, denture flasking, packing and curing acrylic resin dentures
26	Wax contouring, denture flasking, packing and curing acrylic resin dentures
27	Denture deflasking, Trimming, polishing and finishing of dentures
28	Denture deflasking, Trimming, polishing and finishing of dentures
29	Controlling occlusion in articulators
30	Controlling occlusion in articulators
31	Common problems and troubleshooting in laboratory applications (relining, rebasing, management of fractures, adding clasp to removable partial dentures, adding teeth to removable partial dentures and others)
32	Common problems and troubleshooting in laboratory applications (relining, rebasing, management of fractures, adding clasp to removable partial dentures, adding teeth to removable partial dentures and others)

* The duration of this course is 32 weeks.
* One lecture hour corresponds to 50 minutes.

T. C. SELÇUK ÜNİVERSİTESİ 1973 DİŞ HEKİMLİĞİ FAKÜLTESİ DEKANLIĞI

Student ID: 000101025
TR Identity No: 50380582078
Given Name: ŞAZİMET
Surname: KESKİN
Date of Birth: 01/10/1982

COURSE LEARNING OUTCOMES	
Student can produce bridges of maxillary and mandibular teeth (metal with acrylic facing) (ridge-lap and saddle pontic)(preparation, retraction, impression, obtaining bite records, temporary restoration, stone casting, die modeling, transferring to articulator, wax modeling, spruing and investing, dental casting with lost wax technique, trimming, finishing, polishing, try in and adjustment). Students can produce removable partial dentures (preparing rest seats, Bending and casting clasps, base plate construction, occlusal rims, transferring to articulator, arrangement of teeth, Wax contouring, denture flasking, packing and curing acrylic resin dentures, Denture deflasking, Trimming, polishing and finishing of dentures, Controlling occlusion in articulators). Students can produce and manage complete denture processing (acrylic tray fabrication, primary impression, border molding, final impression, Record base and occlusal rims construction, Transferring to articulator, Tooth selection and arrangement of teeth, Wax contouring, Denture flasking by using split cast method, Elimination of wax and mould preparation, Packing and curing acrylic dentures, Denture deflasking, Trimming, polishing, controlling occlusion in articulators). Students can produce occlusal splint production. Students can manage common problems in dentures (relining, rebasing, management of fractures, adding clasp to removable partial dentures, adding teeth to removable partial dentures and others)	**Contribution** Very Good

T.C. SELÇUK ÜNİVERSİTESİ 1823 DİŞ HEKİMLİĞİ FAKÜLTESİ DEKANLIĞI

Student ID: 000101025
TR Identity No: 50380582078
Given Name: ŞAZİMET
Surname: KESKİN
Date of Birth: 01/10/1982

COURSE CODE	COURSE NAME	DURATION (SEMESTER)	HOURS (WEEKLY)		CREDIT
			T	P	
0101310	BIOCHEMISTRY	Second year (2 Semesters)	1	1	1.5

LANGUAGE	COURSE STATUS	
Turkish	Required (X)	Elective

METHODS OF ASSESSMENT			
	ACTIVITY	NUMBER	PERCENTAGE
MID-TERM	Written and practical Exam	2	% 50
FINAL	Written and practical Exam	1	% 50

COURSE OBJECTIVES AND CONTENT	The aim of this course is to teach fundamental biochemistry to dentistry students. This course covers following contents: Integration of Metabolism: Provision of Metabolic Fuels, Metabolism of proteins and amino acids, Nutritionally Nonessential Amino Acids, Catabolism of Proteins and Amino Acid Nitrogen, Catabolism of carbon skeletons of amino acids, Conversion of Amino Acids to specialized products, Porphyrins and Bile Pigments, Structure, Metabolism of purine and pyrimidine, Nucleic Acid Structure and Function, DNA Organization, Replication and Repair, RNA, Synthesis, Processing, and Modification, Protein Synthesis and Genetic Code, Regulation of Gene Expression, Molecular Genetics, recombinant DNA, genomic technology, Biochemistry of extracellular and intracellular communication, Membranes, Endocrine System, Hormone action and signal transduction, Nutrition, Digestion and Absorption, Vitamins and Minerals, Intracellular Traffic and protein Sorting, Glycoproteins, The Extracellular Matrix, Muscle and the Cytoskeleton, Plasma Proteins and Immunoglobulins, Molecular immunology, Hemostasis and Thrombosis, Red and White Blood Cells, Xenobiotic metabolism, The Human Genome Project.
TEACHING METHODS	Presentation and application
TEXTBOOKS	Harper's Biochemistry, Murray RK et al. 24th edition, 1996, Medical biochemistry, 3th edition, Bhagavan NV, 1992; lecturers own notes
PRACTICAL APPLICATIONS	Laboratory Safety and Learning about Materials Used in Biochemistry, Preparation of Solutions, Quantitative analysis of sulfuric acid, Acid-Base Titration and Buffers, Quantification of Hydrogen Peroxide Using Iodometric Method, Experiment for Identifying Carbohydrates, Amino Acids, proteins and Lipids, Determination of Total Protein and Albumin in Serum, Colorimetric Determination of Urea and Creatinine, determination of bilirubin, Nucleic Acid Color Reaction.

CURRICULUM	
WEEK	SUBJECTS/TOPICS
1	Introduction to Biochemistry: methods used in biochemical laboratories (Salt fractionation, chromatography, electrophoresis, ultracentrifugation, elemantal analysis,)
2	Introduction to Biochemistry; UV and NMR spectroscopy, Mass spectrometry, sequencing methods, X-ray crystallography and others, sample preparation for biochemical analysis (animal and human, celli tissue slice, organ, homogenate, metabolites, enzymes, genes and others
3	Water and Ph: Water, acids, bases and buffer: dipoles, hydrogen bonds, covalent and noncovalent bonds, hydrophobic and electrostatic interactions, van der Waals forces, pH and hydrogen concentration, Gibbs-Donnan Equilibrium, Henderson-Hasselbalch Equation, functional groups, Weak Acids, Buffers, buffer systems, acid strength, pKa Value, bases
4	Structures and Functions of Proteins and Enzymes: Amino Acids and Peptides: Properties of aminoacids classification of aminocids, L-α-Amino Acids (glycine, alanine, valine, leucine, serine, aspartic acid, arginine, histidine, others), PKa values, isoelectric pH, α-R groups, peptide structures, polyelectrolytes, functional groups.

5	Proteins: Determination of Primary, secondary, tertiary and quarternary Structure, chromatography (column, partition, size exclusion, absorption, ion exchange, affinity,others)
6	Proteins II: PAGE, Isoelectric Focusing, Sanger, edman reaction, mass spectrometry, tandem mass, genomics, protein purification, sequence, proteomics and the proteome, bioinformatics
7	Structures and Functions of Proteins and Enzymes: Higher Orders of Structure, classification, construction, conformation, protein structure, protein folding, protein maturation, alpha helix, beta sheet, loops and bands, chaperons, x-ray crystallography, nuclear magnetic resonance spectroscopy (NMR), protein folding, chaperones, Protein Disulfide Isomerase, Proline-cis,trans-Isomerase, prions, collagen, nutritional and genetic disorders
8	Myoglobin and Hemoglobin: biological importance, heme, histidine, roles, properties, mutations, derivates of hemoglobin, Apomyoglobin, allosteric properties, oxygenation, Methemoglobin, Hemoglobin M, S, myoglobinuria, anemia, thalassemia, HbA1c
9	Enzymes:classification, prosthetic groups, cofactors, coenzymes, catalysis, biological importance, balanced equations, activation energy, kinetics of enzymatic catalysis, inhibition Enzymes, regulation, metabolite flow regulation,
10	Enzymes II: regulation of enzyme quantity and catalytic activity, proteases, protein phosphorylation, clinical applications, diagnosis and prognosis of diseases, enzymes as analytical and therapeutic agents, enzymes in signal transduction (Toll-like Receptors (TLRs) ve G-Protein Coupled Receptors (GPCRs), others)
11	ATP: bioenergetics, free energy, endergonic process, exergonic process, high energy phosphates, redox reactions, Biologic Oxidation: Biomedical importance, redox potential, oxidases, Oxidases Contain Copper, flavoproteins, dehydrogenases, hydroperoxidases, oxygenases, dioxygenases, monooxygenases, superoxide dismutase
12	The Respiratory Chain and Oxidative Phosphorylation: specific enzymes, the respiratory chain, mitochondrial membranes, coenzyme Q, FeS, poisons inhibiting respiratory chain, chemiosmotic theory and mechanisms of oxidative phosphorylation,
13	The Respiratory Chain and Oxidative Phosphorylation II: Mitchell's chemiosmotic theory, proton pump, chemiosmolic theory, mitochondrial membrane impermeability, ionophores, glycerophosphate and malate shuttle, creatine phosphate shuttle, MELAS
14	Carbohydrates: The Respiratory Chain and Oxidative Phosphorylation, Carbohydrates and Physiologic Significance, classification, polysaccharides, polysaccharides, oligosaccharides, monosaccharides, aldehyde and ketone derivates, glucose, sugars, D and L isomerism, mono sugars, deoxy sugars, maltose, starch, sucrose, lactose, glycoproteins, others, carbohydrates in cell membranes and lipoproteins and their roles
15	Lipids: classification, soluble in water, solumple in non polar solvents, simple lipids, fats, oils, waxes, complex lipids, phospholipids, glycerophospholipids, sphingophospholipids, Glycolipids, sulfolipids, aminolipids, precursor and derived lipids, fatty acids
16	Lipids II: saturated and unsaturated (mono, poly, eicosanoid) fatty acids and their significance, nonessential fatty acids, trans-fatty acids, cis double bonds, triglycerides, lecithin, Phosphatidylinositol, cardiolipin, plasmalogens, Sphingomyelins, steroids, cholesterol, atherosclerosis, ergosterol, lipid peroxidation, amphipathic lipids, oxidation.
17	Metabolism: biomedical importance, pathways of major products of digestion, carbonhydrate, lipid and aminoacid metabolism, metabolic pathways, the flux of metabolites, nonequilibrium reactions, Flux-Generating Reaction, allosteric and hormonal mechanisms.
18	The Citric Acid Cycle: The Catabolism of Acetyl-CoA, reactions of citric acid cycle, vitamins and citric acid cycle, riboflavin, niacin, thiamin, pantothetic acid, citric acid cycle and metabolism, role of ctric acid cycle in Gluconeogenesis, Transamination, and Deamination, fatty acid synthesis, phosphoenolpyruvate carboxykinase, Aminotransferase, Oxidized Cofactors
19	Glycolysis and Oxidation of Pyruvate: biomedical importance, glycolysis under anaerobic conditions, reactions of glycolysis, glucose utilization, lactate production by tissues, Nonequilibrium Reactions, regulation of glycolysis, the oxidation of pyruvate to Acetyl-CoA, pyruvate dehydrogenase, TCA cycle, lactic acidosis.
20	Metabolism of Glycogen: glycogenesis in muscle in river, branching enzyme, glycogenolysis, glycogen phosphorylase, glucose-6-phosphatase, cyclic AMP, phosphorylase, cAMP-dependent protein kinase, Protein Phosphatase-, glycogen synthase and phosphorylase, Glycogen Storage Diseases, clinical aspects.
21	Gluconeogenesis and Blood Glucose control: biomedical importance, Gluconeogenesis, thermodynamic bariers, pyruvate and phosphoenolpyruvate, fructose 1,6-bisphosphate, Fructose 2,6-Bisphosphate, fructose 6-phosphate,

22	Gluconeogenesis and Blood Glucose control II: glucose 6-phosphate, glucose 1-phosphate, glycolysis, gluconeogenesis pathway, reciprocal regulation, covalent modification, allosteric modification, blood glucose, glucokinase, insulin, glucagon, anterior pituitary gland, glucocorticoids, Epinephrine, glucosuria, hypoglisemia, glucose tolerance, clinical aspects.
23	The Pentose Phosphate Pathway and hexose metabolism: NAD^+, $NADP^+$, NADPH, Ribose Precursors, ribose phosphate, glutathione peroxidase, glucuronate, uronic acid pathway, fructose and galactose, hexosamines, Erythrocyte Hemolysis, pentosuria, hyperlipidemia, hyperuricemia, fructosuria, diabetic cataract, others.
24	Biosynthesis of Fatty Acids: biomedical importance, lipogenesis and its regulation, free palmitate, Malonyl-CoA, Fatty Acid Synthase Complex, block fatty acids, fatty acid elongase system, nutritional state, Acetyl-CoA Carboxylase.
25	Oxidation of Fatty Acids: free fatty acids, Ketogenesis, oxidation of fatty acids in mitochondria, beta-oxidation and acetyl coa, oxidation of unsaturated fatty acids, modifited beta oxidation pathway, FADH2 and NADH, Propionyl-CoA, peroxisomes, HMG-CoA, ketone body, Carnitine deficiency, ketoacidosis, others
26	Metabolism of Unsaturated Fatty Acids and Eicosanoids: biomedical importance, polyunsaturated fatty acids Linoleic and -linolenic acids, arachidonic acid, monounsaturated fatty acids, desaturase and elongase enzyme systems
27	Metabolism of Unsaturated Fatty Acids and Eicosanoids II: eicosanoids, trans fatty acids, the cyclooxygenase pathway and prostanoid synthesis, cyclooxygenase , leukotrienes and lipoxins and lipoxygenase pathway, clinical aspects, cystic fibrosis, Crohn's diseases, cirrhosis, alcoholism, SRS-A, others
28	Metabolism of Acylglycerols and Sphingolipids: triacylglycerols, phosphoglycerols, sphingolipids, Phosphatidate, glycerol ether phospholipids, Phospholipases, Glycosphingolipids, Respiratory Distress Syndrome, multiple sclerosis, lipidoses, tay-sachs disease, Fabry's Disease, Gaucher's Disease, Niemann-Pick Disease, other clinical aspects.
29	Lipid Transport and Storage: biomedical importance, lipids and lipoproteins, free fatty acids, triacylglycerol, phospholipids, cholesteryl ester, chylomicrons, LDS, HDL, cholesterol, chylomicrons, LDL, HDL, VLDL, α-, β-, and pre- β-lipoproteins, apolipoproteins.
30	Lipid Transport and Storage II: Remnant Lipoproteins, fatty liver, ethanol, adipose tissue, Glycerol 3-Phosphate, hormone and fat mobilization, hormones and lipolysis, brown adipose tissue, thermogenesis, lipoprotein associated diseases
31	Cholesterol Synthesis, Transport and Excretion: cholesterol and its synthesis, Mevalonate, isoprenoid units, lanosterol, Farnesyl Diphosphate, Dolichol, Ubiquinone HMG-CoA reductase, LDL receptor, cholesterol transportation and excretion, plasma LCAT, bile acids
32	Cholesterol Synthesis, Transport and Excretion II: Cholesteryl Ester Transfer Protein, bile acids, Enterohepatic Circulation, 7-α-hydroxylase reaction, atherosclerosis, coronary heart disease, diet, dyslipoproteinemias, other clinical aspects

* The duration of this course is 32 weeks.
* One lecture hour corresponds to 50 minutes.

COURSE LEARNING OUTCOMES	
Integration of Metabolism: Provision of Metabolic Fuels, Metabolism of proteins and amino acids, Nutritionally Nonessential Amino Acids, Catabolism of Proteins and Amino Acid Nitrogen, Catabolism of carbon skeletons of amino acids, Conversion of Amino Acids to specialized products, Porphyrins and Bile Pigments, Structure, Metabolism of purine and pyrimidine, Nucleic Acid Structure and Function, DNA Organization, Replication and Repair, RNA, Synthesis, Processing, and Modification, Protein Synthesis and Genetic Code, Regulation of Gene Expression, Molecular Genetics, recombinant DNA, genomic technology, Biochemistry of extracellular and intracellular communication, Membranes, Endocrine System, Hormone action and signal transduction, Nutrition, Digestion and Absorption, Vitamins and Minerals, Intracellular Traffic and protein Sorting, Glycoproteins, The Extracellular Matrix, Muscle and the Cytoskeleton, Plasma Proteins and Immunoglobulins, Molecular immunology, Hemostasis and Thrombosis, Red and White Blood Cells, Xenobiotic metabolism, The Human Genome Project are learned.	**Contribution** Very Good

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Date of Birth: 01/10/1982

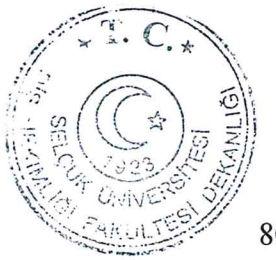
COURSE CODE	COURSE NAME	DURATION (SEMESTER)	HOURS (WEEKLY)		CREDIT
			T	P	
0101311	MATERIALS KNOWLEDGE	Second year (2 semestes)	2	X	2

LANGUAGE	COURSE STATUS	
Turkish	Required (X)	Elective

METHODS OF ASSESSMENT			
	ACTIVITY	NUMBER	PERCENTAGE
MID-TERM	Written Exam	1	% 50
FINAL	Written Exam	1	% 50

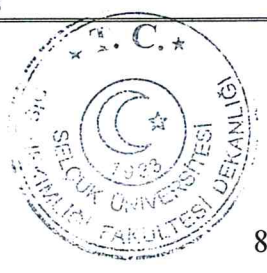
COURSE OBJECTIVES AND CONTENT	The aim of this course is to provide a comprehensive information about dental materials to students This course covers following contents; Gypsum Products and Investments, Finishing and polishing, Waxes, Noble dental alloys and solders Gold-Based Alloys for Porcelain-Metal Restorations, Cast and Wrought Base Metal Alloys, Casting and Soldering Procedures, Ceramics, Cements, Prosthetic Applications of Polymers, history of dental materials, Applied Surface Phenomena, Optical, Thermal, Electrical and Mechanical Properties of dental materials, Biocompatibility of Dental Materials, Metals and Metal Alloys, Polymers and Polymerization, Preventive Materials, Composite Restorative Materials, Bonding to Dental Substrates, Amalgam, Impression Materials, Gypsum Products and Investments, Finishing and polishing, Waxes, Noble Dental Alloys and Solders, Cast and Wrought Base Metal Alloys, Casting and Soldering Procedures, Ceramics, Ceramic-Metal Systems, Cements, Prosthetic Applications of Polymers, Augmentation materials, Plastic Facings for Crown and Bridge Applications, Temporary Crown and Bridge Restorations, Occlusal Splints, Inlay Patterns, Impression Trays, and Record Bases, Endodontic materials, rubber dam, biomechanical instrumentation, Irrigants and Chelating Agents, Materials and Instruments for Root Canal Obturation and adjunct materials.
TEACHING METHODS	Presentation
TEXTBOOKS	Restorative dental materials, Craig RG, Powers JM, 10th edition, 1997 Dental materials and their selection, Obrien WJ, 2nd edition, 1997 Philips science of dental materials; Anusavice KC, 10th edition, 1996, lecturers own notes

CURRICULUM	
WEEK	SUBJECTS/TOPICS
1	Gypsum Products and Investments: Chemical and Physical Nature of Gypsum Products, Manufacture of Dental Plaster, Stone, and High-Strength Stones, Chemical Reaction, Properties, Setting Time, Viscosity, Compressive Strength, Surface Hardness and Abrasion Resistance, Tensile Strength, Reproduction of Detail, Setting Expansion, Manipulation, Casting Investments, Properties Required of an Investment
2	Gypsum Products and Investments: Composition, Calcium Sulfate-Bonded Investments, Properties of Calcium Sulfate-Bonded Investments, Effect of Temperature on Investment, Hygroscopic Expansion of Calcium Sulfate-Bonded Investment , Hygroscopic-Thermal Gold Casting Investment, Investment for Casting High-Melting Alloys, Brazing Investment, Investment for All-Ceramic Restorations
3	Finishing and polishing: Benefits of Finishing and Polishing Restorative Materials, Principles of Cutting, Grinding, Bulk Reduction Process, Contouring, Finishing, Polishing, Biological Hazards of the Finishing Process, Abrasion and Erosion, Abrasion, Erosion, Hardness of Abrasives, Abrasive Instrument Design, Abrasive Grits, Bonded Abrasives, Coated Abrasive Disks and Strips, Nonbonded Abrasives, Abrasive Motion, Types of Abrasives, Arkansas Stone, Chalk, Corundum, Natural Diamond, Synthetic Diamond Abrasives



4	Finishing and polishing Emery, Garnet, Pumice, Quartz, Sand, Tripoli, Zirconium Silicate, Cuttle, Kieselguhr, Silicon Carbide, Aluminum Oxide, Rouge, Tin Oxide, Abrasive Pastes, Finishing and Polishing Procedures, Waxes: Waxes, Gums, Fats, and Resins, Natural Waxes, Synthetic Waxes, Gums, Fats, Resins, Characteristic Properties of Waxes, Melting Range, Thermal Expansion
5	Waxes: Mechanical Properties, Flow, Residual Stress, Ductility, Dental Waxes, Inlay Pattern Wax, Casting Wax, Resin Modeling Material, Baseplate Wax, Boxing Wax, Utility Wax, Sticky Wax, Corrective Impression Wax, Bite Registration Wax, Noble dental alloys and solders: Metallic elements used in dental alloys, noble metals, Base Metals, Binary Combinations of Metals, Casting Alloys, Types and Composition, Grain Size, Properties,
6	Noble dental alloys and solders Gold-Based Alloys for Porcelain-Metal Restorations, Wrought Alloys, Microstructure, Composition, Properties, Solders and Soldering Operations, Types of Solders, Microstructure of Soldered Joints
7	Cast and Wrought Base Metal Alloys: General Requirements of a Dental Alloy, Cobalt-Chromium and Nickel-Chromium Casting Alloys, ANSI/ADA Specification No. 14, Composition, Microstructure of Cast Base Metal Alloys, Heat Treatment of Base Metal Alloys, Physical Properties, Mechanical Properties, Corrosion, Crown and Bridge Casting Alloys, Other Applications of Cast Base Metal Alloys,
8	Cast and Wrought Base Metal Alloys: Titanium and Titanium Alloys, Commercially Pure Titanium, Titanium Alloys: General, Ti-6Al-4V, Cast Titanium, Dental Implants, Other Applications of Wrought Titanium, Wrought Stainless Steel Alloys, Composition
9	Cast and Wrought Base Metal Alloys: Function of Alloying Elements and Chemical Resistance, Stress-Relieving Treatments, Stainless Steel Orthodontic Wires, Stainless Steel Endodontic Instruments, Nickel-Titanium Endodontic Instruments, Base Metal Prefabricated Crowns, Wrought Cobalt-Chromium-Nickel Alloy, Composition, Processing and Manipulation, Properties, Wrought Nickel-Titanium Alloy, Composition and Shape-Memory Effect, Properties and Manipulation
10	Cast and Wrought Base Metal Alloys: Wrought Beta-Titanium Alloy, Composition and Microstructure, Manipulation, Properties, Other Orthodontic Wires, Some Other Alloys, Casting and Soldering Procedures: Casting, Lost-Wax Technique, Formation of the Wax Pattern, Spruing the Wax Pattern, Investing the Wax Pattern, Burnout of the Wax Pattern, Casting, Special Casting Situations, Casting Problems, Cleaning and Pickling Alloys
11	Casting and Soldering Procedures: Soldering Techniques, General Suggestions for Soldering, Infrared Soldering, Casting and Soldering Fluxes, Noble and High-Noble Alloys, Chromium-Containing Alloys, Ceramics: Classification of Dental Ceramics, Fusion Temperature, Applications, Fabrication Technique, Crystalline Phase, Metal-Ceramic Restorations , Composition, Manufacture, Processing
12	Ceramics: All-Ceramic Restorations, Sintered All-Ceramic Materials, Slip-Cast All-Ceramic Materials, Machinable All-Ceramic Materials, General Applications of Ceramics in Restorative Dentistry, Ceramic-Metal Crowns and Fixed Partial Dentures, All-Ceramic Crowns, Inlays, Onlays and Veneers,
13	Ceramics: Mechanical and Thermal Properties of Dental Ceramics, Test Methods, Comparative Data, Optical Properties of Dental Ceramics, Properties of Porcelain Denture Teeth, Ceramic-Metal Systems: Requirements for a Ceramic-Metal System, Ceramic-Metal Bonding, Evaluation of Ceramic-Metal Bonding, Ceramics for Ceramic-Metal Restorations, Alloys for Ceramic-Metal Restorations, Composition and Properties of Noble Metal Alloys, Composition and Properties of Base Metal Alloys, Preparation of Ceramic-Metal Restorations, Effect of Design on Ceramic-Metal Restorations
14	Cements: composition, manipulation, Consistency and film thickness, Viscosity, Setting time, Strength, Solubility and disintegration, Dimensional stability, Acidity, Thermal and electrical conductivity and application of Zinc Phosphate Cement, Zinc Oxide-Eugenol (ZOE) and Non-Eugenol Cements, Zinc Polyacrylate Cement, Glass Ionomer Cement, Hybrid Ionomer Cement, Compomers, Composites and Adhesive Resins, Cementation of Alloy Crowns and Bridges, Resin-Bonded Bridges, and Provisional Restorations, Bonding of Esthetic Restorations, Resin-Metal Bonding, Bonding of Orthodontic Brackets, composition, manipulation, properties and applications of cavity varnishes, cavity liners, low-strength bases (calcium hydroxide, zinc-oxide eugenol base), high strength bases
15	Prosthetic Applications of Polymers: Properties of Denture Base Materials, Physical Form and Composition, Other Denture Materials, Properties of Dental Plastics, Strength Properties, Thermal Characteristics, Other Properties of Denture Plastics, Manipulation and Processing of Denture Base Plastics, Heat-Accelerated Acrylic Denture Plastics, Chemically Accelerated Acrylic Denture Plastics-Compression Molding, Fluid Resin Acrylic

	Denture Plastics, Light-Cured Denture Plastic, Factors Involved in Denture Retention, Effect of Auxiliary Materials on Denture Plastics
16	Prosthetic Applications of Polymers: Repair Materials, Relining and Rebasing Dentures, Denture Teeth, Maxillofacial Materials, Poly (Methyl Methacrylate), Plasticized Polyvinylchloride, Polyurethane, Heat-Vulcanized Silicone, Room Temperature-Vulcanized Silicones, Other Elastomers, Fabrication of the Prostheses, Physical Properties ,Augmentation materials, Plastic Facings for Crown and Bridge Applications, Temporary Crown and Bridge Restorations, Occlusal Splints, Inlay Patterns, Impression Trays and Record Bases
17	Introduction to dental materials: Basic sciences applied to restorative materials, history of dental materials, Future developments in biomaterials. Applied Surface Phenomena: Characterization of solid surfaces, The colloidal state, Nature of colloids, Typical colloid systems, Gels, Syneresis, Emulsions, Diffusion through membranes and Osmotic pressure,
18	Applied Surface Phenomena: Adsorption, absorption, and Sorption, Surface tension and wetting, Capillary rise, Penetration coefficient, Isolated capillaries, Forces involved in denture Retention, Adhesion. Optical, Thermal, and Electrical Properties: Optical properties, Color, Measurement of color, instrumental technique, visual technic, surface finishing and thickness, Pigmentation, Metamerism, Fluorescence, Opacity, Translucency, and Transparency, Measurement of contrast ratio, Index of Refraction, Optical Constants, Scattering coefficient, Absorption coefficient, Light reflectivity, Contrast ratio
19	Optical, Thermal, and Electrical Properties: Thermal properties, Temperature, Transition Temperatures, Heat of Fusion, Thermal Conductivity, Specific Heat, Thermal Diffusivity, Coefficient of Thermal Expansion, Electrical properties, Electrical Conductivity and Resistivity, Dielectric Constant, Electromotive Force, Galvanism, Electrochemical Corrosion, Zeta-Potential, Tarnish and Discoloration, Water Sorption, Solubility and Disintegration, Setting Time, Shelf Life
20	Mechanical properties: Force, occlusal forces, forces on restorations, Stress, Types of Stress, Strain, Stress-Strain Curves, Proportional and Elastic Limits, Yield Strength, Ultimate Strength, Fracture Strength, Elongation, Elastic Modulus, Poisson's Ratio, Ductility and Malleability, Resilience, Toughness, Fracture Toughness, Properties and Stress-Strain Curves, Tensile Properties of Brittle Materials, Compressive Properties, Shear Strength, Bond Strength, Bending, Transverse Strength, Permanent Bending,
21	Mechanical properties: Torsion, Fatigue Strength, Viscoelasticity, Fluid Behavior and Viscosity, Viscoelastic Materials, Mechanical Models of Viscoelasticity, Creep Compliance, Dynamic Mechanical Properties, Dynamic Modulus, Impact Strength, Tear Strength and Tear Energy, Mechanical Properties of Composites, Surface Mechanical Properties, indentation Hardness, Brinell hardness test, Knoop hardness test, Vickers hardness test, rockwell hardness test, Friction, Wear, Stress Analysis and Design of Dental Structures, Two-Dimensional Photoelasticity, Finite Element Analysis, Specifications for restorative materials
22	Biocompatibility of dental materials: Anatomical and pathological aspects of oral tissues, The Tooth, Bone, Periodontium, Gingiva and Mucosa, Measuring Biocompatibility, In Vitro, Animal and Usage Tests, Standards of Biocompatibility, cytotoxicity tests, mutagenesis and other assays, dental pulp irritation test, dental implant tests, mucosa and gingiva usage tests, Biocompatibility of Dental Materials, Reactions of Pulp (microleakage, dentin bonding and bonding agents, resin based materials, amalgams and cast alloys, glass ionomers, liners varnishes and nonresin cements, bleaching agents and their toxicity ,Reaction of Other Oral Soft Tissues to Restorative Materials, Reaction of Bone and Soft Tissues to Implant Materials(ceramic, pure metal and alloys and others)
23	Metals and metal alloys: Chemical and atomic structure of metals, atomic structure, Physical Properties of Metals, Alloys and Principles of Metallurgy, Phase Diagrams and Dental Alloys, Metals and metal alloys: Properties of Alloys, Alloy Strengthening Mechanisms, Properties of Casting Alloys, Properties of Wrought Alloys
24	Polymers and polymerization: Basic Nature of Polymers, Chemical Composition, Molecular Weight, Spatial Structure, Preparation of Polymers, Addition Polymerization, Condensation Polymerization, Other Polymers
25	Preventive materials: Chemotherapeutic Agents, Toothpastes, Mouthwashes, Fluoride Varnishes, Pit-and- Fissure Sealants, Flowable Composites, Glass Ionomers and Hybrid Ionomers, Athletic Mouth Protectors (Properties, Fabrication of Custom-Made Protectors, Preparing a Mouth-Formed Mouth Protector, Care of Athletic Mouth Protectors, Other Applications for Vacuum-Forming)
26	Composite Restorative Materials: All-Purpose Composites, Composites for Special Applications, Microfilled Composites, Packable Composites, Flowable Composites, Laboratory Composites, core composites, Provisional Composites, Repair of Ceramic or Composite Compomers, Light-Curing Units



27	Bonding to Dental Substrates: Principles of Adhesion, Enamel and Dentin Bonding Agents for Direct Composites (Composition, Properties, Manipulation), Bonding Systems for Other Substrates, Amalgam, Laboratory Composites, Ceramic, Composite Bonded to Cast Alloys, Repair of Composite, Ceramic, and Porcelain-Fused-to-Metal Restorations , Hydrofluoric acid,Acidulated phosphate fluoride, silane, air abrasion, others, toxicity to staff and patients.
28	Amalgam: Dental Amalgam Alloys, Properties of Amalgam, Properties of Mercury, Manipulation of Amalgam, Selection of Alloy, Bonding of Amalgam, Mercury and Biocompatibility Issues, Sources of Mercury, Forms of Mercury, Concentrations of Mercury, Allergic Reactions and Disease, Risks to Dentists and Office Personnel, toxicology
29	Impression Materials: Purpose of Impression Materials, Desirable Qualities, Types of Impression Materials, Alginate Hydrocolloids, Composition and Chemistry, Proportioning and Mixing, Properties, Agar Hydrocolloids, Chemical Ingredients, Clinical Manipulation of the Sol-Gel, Properties
30	Impression Materials: Agar-Alginate Combination Impressions, Duplicating Impression Materials, Elastomeric Impression Materials, Consistencies, Mixing Systems, Impression Techniques, Composition and Reactions, Setting Properties, Mechanical Properties
31	Impression Materials: Wettability and Hydrophilization of Elastomeric Impression Materials, Disinfection of Elastomeric Impressions, Relationship of Properties and Clinical Application, Bite Registration Materials, Elastomeric Impression Materials, Zinc Oxide-Eugenol and Impression Plaster and others
32	Impression Materials: Wax Registrations, Impression Compound, Die, Cast, and Model Materials, Desirable Qualities of a Cast or Die Material, Dental Plaster (paris plasters, type I to V and Stone, Dies Formed by the Electrodeposition of Metal, Epoxy Die Materials, Comparison of Impression and Die Materials

* The duration of this course is 32 weeks.
* One lecture hour corresponds to 50 minutes.

COURSE LEARNING OUTCOMES	
Gypsum Products and Investments, Finishing and polishing, Waxes, Noble dental alloys and solders Gold-Based Alloys for Porcelain-Metal Restorations, Cast and Wrought Base Metal Alloys, Casting and Soldering Procedures, Ceramics, Cements, Prosthetic Applications of Polymers, history of dental materials, Applied Surface Phenomena, Optical, Thermal, Electrical and Mechanical Properties of dental materials, Biocompatibility of Dental Materials, Metals and Metal Alloys, Polymers and Polymerization, Preventive Materials, Composite Restorative Materials, Bonding to Dental Substrates, Amalgam, Impression Materials, Gypsum Products and Investments, Finishing and polishing, Waxes, Noble Dental Alloys and Solders, Cast and Wrought Base Metal Alloys, Casting and Soldering Procedures, Ceramics, Ceramic-Metal Systems, Cements, Prosthetic Applications of Polymers, Augmentation materials, Plastic Facings for Crown and Bridge Applications, Temporary Crown and Bridge Restorations, Occlusal Splints, Inlay Patterns, Impression Trays, and Record Bases, Endodontic materials, rubber dam, biomechanical instrumentation, Irrigants and Chelating Agents, Materials and Instruments for Root Canal Obturation and adjunct materials are learned.	**Contribution** Very Good