BAU TIP

BAHÇEŞEHİR UNIVERSITY SCHOOL OF MEDICINE

"scientia et amore vitae"

BAHÇEŞEHİR UNIVERSITY

SCHOOL OF MEDICINE

CLASS 2

ACADEMIC PROGRAMME

2024-2025

Dean	Merter Yalçınkaya, Prof.
Vice Dean	Melike Yavuz, Assoc. Prof.
Class 2 Coordinator	Betilay Topkara Arslan, Assist. Prof.

SECOND YEAR					
3. Semester					
CODE	**COURSE**	**T**	**P**	**C**	**E**
MED2011	Medical Genetics I	2	0	2	2
TLL1003	Turkish Language and Literature I	2	0	2	2
HST1001	Atatürk's Principles and History of Turkish Republic I	2	0	2	2
	Departmental Elective	2	0	2	2
	Departmental Elective	2	0	2	2
TMED2000					
MED2001	Tissue damage and Host response	3	2	4	5
MED2003	Infectious Agents and Mechanisms, Immunologic Disorders	3	2	4	5
MED2005	Musculoskeletal System Disorders	3	2	4	5
MED2007	Circulatory and Respiratory System Disorders	3	2	4	5
		22	**8**	**26**	**30**
4. Semester					
CODE	**COURSE**	**T**	**P**	**C**	**E**
MED2012	Medical Genetics II	2	0	2	2
TLL1004	Turkish Language and Literature II	2	0	2	2
HST1002	Atatürk's Principles and History of Turkish Republic II	2	0	2	2
	Departmental Elective	2	0	2	2
	Departmental Elective	2	0	2	2
TMED2000					
MED2002	Hematology and Oncology	3	2	4	5
MED2004	Gastrointestinal System and Metabolism Disorders	3	2	4	5
MED 2006	Neurological and Psychiatric Disorders	3	2	4	5
MED2008	Endocrinology and Urogenital System Disorders	3	2	4	5
		22	**8**	**26**	**30**

	COURSE 1		COURSE 2		COURSE 3		COURSE 4		COURSE 5		COURSE 6		COURSE 7		COURSE 8		TOTAL
	T	***P***	***T***	***P***	***T***	***P***	***T***	***P***	***T***	***P***	***T***	***P***	***T***	***P***	***T***	***P***	
Anatomy (Topographic)	*8*	-	*8*	-	*10*	-	*8*	-	*8*	-	*8*	-	*8*	-	*8*	-	**66**
Biophysic	3	-	4	-	-	-	-	-	9	-			6	1	-	-	**23**
Biochemistry	4	-	8	-	9	2	11	-	12	2	16	-	4	-	13	2	**83**
Embryology	3	-	-	-	3	-	5	-	-	-	3	-	3	-	4	-	**21**
Evidence Based Medicine and Statistics	*4*	-	*3*	-	-	-	-	-	-	-	-	-	-	-	-	-	**7**
Medical Microbiology	13	1	9	1	17	1	16	1	17	1	16	1	16	2	11	-	**123**
Pathology	*24*	*2*	*24*	*2*	*12*	*2*	*22*	*4*	*11*	*2*	*16*	*4*	*16*	*2*	*28*	*4*	**175**
Pharmacology	22	-	14	-	10	-	22	-	10	-	11	-	24	-	20	-	**133**
Physiology	-	-	-	-	-	-	4	4	3	-	2	-	-	-	2	-	**15**
Plastic Reconstructive and Aesthetic Surgery	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	-	**2**
Psychiatry	-	-	-	-	-	-	-	-	-	-	-	-	3	-	-	-	**3**
Public Health	-	-	*2*	-	*1*	-	-	-	*3*	-	*1*	-	-	-	-	-	**7**
Cardiology	-	-	-	-	-	-	6	-	-	-	-	-	-	-	-	-	**6**
Dermatology	-	-	*2*	-	-	-	-	-	-	-	-	-	-	-	-	-	**2**
Gastroenterology	-	-	-	-	-	-	-	-	-	-	*2*	-	-	-	-	-	**2**
Infectious Diseases	-	-	*2*	-	-	-	-	-	-	-	-	-	-	-	-	-	**2**
Orthopedics and Traumatology	-	-	-	-	*4*	-	-	-	-	-	-	-	-	-	-	-	**4**
Physical Therapy And Rehabilitation	-	-	-	-	*6*	-	-	-	-	-	-	-	-	-	-	-	**6**
Pulmonary Diseases	-	-	-	-	-	-	*4*	-	-	-	-	-	-	-	-	-	**4**
Clinical Skills	*1*	*1*	*1*	*1*	*1*	*1*	*1*	*1*	*1*	*1*	*1*	*1*	*1*	*0*	*1*	*1*	**15**
TOTAL	*82*	*4*	*77*	*4*	*73*	*6*	*99*	*10*	*74*	*6*	*77*	*6*	*81*	*5*	*89*	*7*	**700**
STUDY TIME	*48*	-	*75*	-	*77*	-	*46*	-	*47*	-	*46*	-	*48*	-	*35*	-	**422**
Medical Genetics	*8*	-	*8*	-	*8*	-	-	-	*2*	-	*10*	-	*10*	-	*8*	-	**54**

BAHCESEHIR UNIVERSITY SCHOOL OF MEDICINE 2024 – 2025 ACADEMIC CALENDAR FOR THE SECOND YEAR	
2024 – 2025 ACADEMIC YEAR FALL SEMESTER	
September 16, 2024	Orientation Seminar
September 16-October 11, 2024	1st Block - Tissue Damage and Host Response
October 14-November 15, 2024	2nd Block- Infectious Agents and Mechanisms, Immunologic Disorders
November 18-December 20, 2024	3rd Block - Musculoskeletal System Disorders
December 23, 2024-January 24, 2025	4th Block - Circulatory and Respiratory System Disorders
October 29, 2024, Tuesday	Republic Day
January 01, 2025, Wednesday	New Year Holiday
January 27– February 07, 2025	Semester Break
February 10-14, 2025, Monday	Make-up Exams for Fall Committees
2024 – 2025 ACADEMIC YEAR SPRING SEMESTER	
February 10-March 7, 2025	5th Block- Hematology and Oncology
March 10-April 4, 2025	6th Block - Gastrointestinal System and Metabolism Disorders
April 07-May 9, 2025	7th Block - Neurological and Psychiatric Disorders
May 12-June 13, 2025	8th Block- Endocrinology and Urogenital System Disorders
March 30 -April 1, 2025	Ramadan Feast Holiday
April 23, 2025, Wednesday	National Sovereignty and Children's Day
May 01, 2025, Thursday	Labor and Solidarity Day
May 19, 2025, Monday	Commemoration of Ataturk Youth and Sports Day
June 6-9, 2025	Feast of Sacrifice Holiday
June 16-20, 2025	Make-up Exams for Spring Committees
July 1, 2025, Tuesday	Final Exam
July 16, 2025, Wednesday	Resit Exam for the Final exam

BAHÇEŞEHİR UNIVERSITY SCHOOL OF MEDICINE CLASS II (2024-2025) EVALUATION SYSTEM										
		EXAM 1 (Theoretical Exam)		**EXAM 2 (Practical Exam)**		**AVERAGE OF COMMITTEE GRADES**	**EXAM 3 (FINAL EXAM) (MS TEAMS-ONLINE)**		**YEAREND GRADE**	**PASSING GRADE**
	Committee Names	**Method**	**%**	**Method**	**%**		**Method**	**%**		
YEAR 2	Committee 1: Tissue Damage and Host Response	MCQ (100 questions)	90 %	PRACTICAL EXAMS	10 %	**(C1 + C2+ C3+ C4+ C5+ C6+ C7+ C8) / 8**	MCQ (200 questions)	100%	AVERAGE OF COMMITTEE GRADES (60%) + FINAL EXAM SCORE(40%)	YEAREND GRADE (95%) + CLINICAL SKILLS SCORE (3%)+ PBL (2%)
	Committee 2: Infectious Agents and Mechanisms, Immunologic Disorders	MCQ (100 questions)	90 %	PRACTICAL EXAMS	10 %					
	Committee 3: Musculoskeletal System Disorders	MCQ (100 questions)	90 %	PRACTICAL EXAMS	10 %					
	Committee 4: Circulatory and Respiratory System Disorders	MCQ (100 questions)	90 %	PRACTICAL EXAMS	10 %					
	Committee 5: Hematology and Oncology	MCQ (100 questions)	90 %	PRACTICAL EXAMS	10 %					
	Committee 6: Gastrointestinal System and Metabolism Disorders	MCQ (100 questions)	90 %	PRACTICAL EXAMS	10 %					
	Committee 7: Neurological and Psychiatric Disorders	MCQ (100 questions)	90 %	PRACTICAL EXAMS	10 %					
	Committee 8: Endocrinology and Urogenital System Disorders	MCQ (100 questions)	90 %	PRACTICAL EXAMS	10 %					
	Clinical Skills	Average of Clinical Skills Evaluation Forms	100%	Problem-Based Learning (PBL)	100 %					

CLINICAL SKILLS EVALUATION: 2024-2025

	Satisfactory	Needs Improvement	Poor
A- Professionalism			
Always on time and has no unexcused tardiness/absence	**2**	**1**	**0**
Appearance is appropriate: respects dress code, wears name tag	**2**	**1**	**0**
Has teamwork ability	**2**	**1**	**0**
Shows effective time management	**2**	**1**	**0**
Obeys clinical skills laboratory rules	**2**	**1**	**0**
TOTAL			
B- Medical Knowledge and Clinical Reasoning			
Demonstrates theoretical knowledge	**2**	**1**	**0**
Demonstrates analytical thinking	**2**	**1**	**0**
TOTAL			
C-Interpersonal and Communication Skills			
Demonstrate the ability to communicate effectively with the lecturer and friends	**2**	**1**	**0**
TOTAL			
D- Clinical Skills			
Performs steps of the clinical skill in the guideline appropriately	**2**	**1**	**0**
Applies standard precautions for infection prevention and control	**2**	**1**	**0**
TOTAL			

THE NAMES OF PROBLEM-BASED LEARNING SCENARIOS 2023-2024 and EVALUATION

- "The kite in my dream"
- "Barley-Wheat become Tsetse"
- "You will understand as tears fill your eyes"

Evaluation of Parameters	GRADES
Identifying of hypotheses	1 | 2 | 3 | 4
Linking and explaining hypothesis to the problems using prior knowledge	1 | 2 | 3 | 4
In the inquiry process, asking questions by using evidence; questioning the accuracy of the information; research, etc.	1 | 2 | 3 | 4
Active participation in questioning the case, examining it, requesting the necessary tests	1 | 2 | 3 | 4
Contribution to the setting of learning goals	1 | 2 | 3 | 4
Able to discuss the case with its biological, social, behavioral, and ethical dimensions	1 | 2 | 3 | 4
Get ready by using classical resources and appropriate resources in the independent work hours	1 | 2 | 3 | 4
Sharing information with the group, creating drawings, diagrams, and concept maps	1 | 2 | 3 | 4
Communication Skills (active listening, making clear explanations, expressing herself/himself; supporting group dynamics; encouraging; upholding rights; making appropriate explanations where the group is blocked, etc.)	1 | 2 | 3 | 4
Evaluation Skills (evaluation of: herself/himself, group, training guide, the scenario in an objective, content-oriented, supportive of development manner)	1 | 2 | 3 | 4
TOTAL GRADE	

CLASS 2

AIM: The purpose of the Class 2 Program is to provide knowledge about the environmental, metabolic, genetic, developmental, infectious, autoimmune, and traumatic causes that may affect the normal physiological structure and their effects on systems; get skills necessary for the most basic medical practices and attitudes for being a medical doctor.

LEARNING OBJECTIVES:

At the end of this class, the students should be able to:

KNOWLEDGE:

1. Define environmental, metabolic, genetic, developmental, infectious, autoimmune, and traumatic causes that may affect the normal physiological structure and their effects on systems.
2. Define the changes caused by diseases on tissue and organ systems.
3. Get knowledge about microbiological, pathological and pharmacological general concepts.
4. Get scientific knowledge about the human topographic anatomy.
5. Get knowledge about the role of genetics in medicine.

SKILLS:

6. Perform venipuncture and peripheral intravenous cannulation.
7. Perform blood culture test.
8. Dress a wound properly
9. Take measures to stop/limit external bleeding.
10. Transport a patient with a spine board.
11. Apply an elastic bandage and splint.
12. Get skills about how to take an arterial blood gas.
13. Perform a simple interrupted suture
14. Insert a nasogastric tube on mannequins
15. Insert a Foley Catheter on mannequins.
16. Learn how to do lumbar puncture
17. Communicate effectively with the colleagues.
18. Understand the importance of effective communication between a patient and a doctor.

ATTITUDES:

19. Have the perception that medicine is an honorable and respected profession, reflect this on his/her behavior.
20. Observe the rules of professional ethics in his/her relations with colleagues.
21. Realize the importance of following the working principles and rules in multidisciplinary and clinical skills laboratories.
22. Realize the importance of hand hygiene in preventing diseases.
23. Realize the importance of introducing himself/herself to the patient, giving information about the interventions to be made, and getting approval.
24. Gain the program evaluation culture.

MED 2001: TISSUE DAMAGE AND HOST RESPONSE				
Course Date	September 16-October 11, 2024			
Exam Dates	Practical Exams: October 9, 2024 Theoretical Exam: October 10, 2024			
Course Coordinators:	Betilay Topkara Arslan			
Academic Unit	**Academic Staff**	**Theoretical hours**	**Practical Hours**	**Total**
Anatomy (Topographic)	Uğur Baran Kasırga, Assist. Prof.	8	-	8
Biochemistry	Yeşim Neğiş, Assoc. Prof.	4	-	4
Biophysics	Bircan Dinç, Assist. Prof. Serdar Durdağı, Prof. Duygu Tarhan, Assist. Prof.	3	-	3
Embryology	Yasemin Ersoy Çanıllıoğlu,Assoc. Prof.	3	-	3
Evidence Based Medicine and Statistics	Cüneyd Parlayan, Assist. Prof.	4	-	4
Medical Microbiology	Gülden Çelik,Prof. Rabia Can Sarınoğlu, Assoc. Prof. Melda Özdamar, Assoc. Prof. Seyda İğnak Tarlığ, Assist. Prof.	13	1	14
Pathology	Özlem Yapıcier, Prof. Zehra Affan, Assist. Prof.	24	2	26
Pharmacology	Kevser Erol, Prof. Fatih Özdener, Assoc. Prof. Zülfiye Gül, Assoc. Prof.	22	-	22
Clinical Skills	Özlem Unay Demirel, Assoc. Prof.	1	1	2
TOTAL		82	4	86
Medical Genetics	Timuçin Avşar, Assoc. Prof.	8	-	8
STUDY TIME				48

COURSE AIM:

The aim of this course is:

- to explain what kind of alterations in structure and functions of the body may manifest as disease;
- to provide knowledge about microbiological, pathological and pharmacological general concepts;
- to provide knowledge about the medically important bacteria, their properties, the disorders they cause and the prevention, diagnosis and the treatment of these infectious diseases;
- to provide detailed knowledge about the viscerocranium, temporomandibular joint, and salivary glands;
- to get skills about venipuncture and peripheral Intravenous cannulation;
- to get skills about working as a part of a team.

LEARNING OUTCOMES:

At the end of this lesson, the student will be able to:		
KNOWLEDGE		
DEP.	**TOPIC**	**LEARNING OUTCOMES**
TOPOGRAPHIC ANATOMY	Viscerocranium I - superficial structures, facial skeleton (T-2)	1. Explain surface structures of face 2. Differentiate muscles of facial expression 3. Describe superficial structures of face 4. Explain vessels of face 5. Describe motor and sensory innervation of face 6. Explain anatomical structures of each bone of facial skeleton 7. Describe the relationship of bones of facial skeleton with each other.
	Viscerocranium - II: temporomandibular joint, glandula parotis, Gl. Submandibularis, Gl. Sublingualis (T-2)	1. Explain temporomandibular joint 2. Describe structures related with the parotid gland 3. Explain structures related with submandibular and sublingual glands 4. Describe autonomic innervation of salivary glands 5. Describe deep structures of the face
	Regio orbitalis: bone structure of orbita, bulbus oculi; muscles, glandula lacrimalis (T-2)	1. Explain bony structure of the orbit 2. Describe bulbus oculi and subdivisions of it 3. Explain muscles related with the eyeball 4. Explain vessels and nerves of the orbit 5. Explain lacrimal apparatus 6. Interpret autonomic innervation of eyeball and lacrimal gland
	Regio nasalis: Cavitas nasi, os nasale, sinus paranasales; Pharynx, spatium lateropharyngeum (T-2)	1. Define the morphological aspects of the nose 2. Differentiate the vessels and nerves of the nose 3. Explain morphological aspects of the paranasal sinuses 4. Differentiate the vessels and nerves of the paranasal sinuses 5. Discuss the the morphological aspects of the pharynx 6. To break down parts of the pharynx and spatium lateropharyngeum

At the end of this lesson, the student will be able to:		
KNOWLEDGE		
DEP.	**TOPIC**	**LEARNING OUTCOMES**
BIOCHEMISTRY	Plasma Proteins and Acute Phase Reactants (T-3)	1. Describe the functions of the principal proteins found in plasma 2. Describe the basic principles of electrophoresis and define electrophoretic patterns of plasma proteins 3. Describe acute phase response 4. Classify positive and negative acute phase reactants and discuss their major functions 5. Describe the major functions of albumin and prealbumin and discuss the changes in their concentrations during disease states 6. Describe the major functions of α1-Globulins (e.g. α1-Antitrypsin, α-fetoprotein, α1-acid glycoprotein) and discuss the changes in their concentrations during disease conditions 7. Describe the major function of in α2-Globulins (e.g. ceruloplasmin, haptoglobin, α_2-macroglobulin) and discuss the changes in their concentrations during disease conditions 8. Describe the major function of in β-Globulins (e.g. CRP, transferrin, β_2-microglobulin) and discuss the changes in their concentrations during disease conditions 9. Describe the major function of in γ—Globulins (Immunoglobulins) and discuss the changes in their concentrations during disease conditions
	Patterns of Plasma Protein Abnormalities (T-1)	1. Define the normal pattern of serum protein electrophoresis 2. Explain the abnormal patterns of protein electrophoresis in response to nutritional status or tissue injury 3. Explain the abnormal patterns of protein electrophoresis are characteristic of specific diseases primarily involving changes in liver, kidney or inflammatory states. 4. Explain the use of serum protein electrophoresis in screening patients with suspected monoclonal gammopathies

At the end of this lesson, the student will be able to:		
KNOWLEDGE		
DEP.	**TOPIC**	**LEARNING OUTCOMES**
BIOPHYSICS	Biomaterials (T-1)	1. Define common use biomaterials as metals, ceramics and polymers and its chemical structure, properties, and morphology 2. Explain methods to modify surfaces of biomaterials and choose material for desired biological response. 3. Describe interactions between biomaterials, proteins, and cells. 4. Define the interaction between biomaterial and tissue for short-term and long-term implantations and distinguish between blood and tissue reactions. 5. Explain methods to repair and regenerate injured or lost functional tissue with materials, autologous cells, or stem cells.
	Electromagnetic Radiation (T-1)	1. Describe what electromagnetic radiation is 2. Explain the relationship between wavelength, frequency and speed 3. Define electromagnetic spectrum 4. Describe Planck equation 5. Discuss what photoelectric effect is 6. Discuss quantum numbers in a wave function
	Crystal Lattices and X-Ray (T-1)	1. Describe the determination of crystal structure by X-Ray diffraction 2. Discuss the usage of X-Ray data to determine an atomic radius 3. Describe crystal structure and crystal lattices 4. Describe unit cells in the cubic crystal system 5. Discuss how the densities can be calculated from the dimensions of the unit cells.

At the end of this lesson, the student will be able to:		
KNOWLEDGE		
DEP.	**TOPIC**	**LEARNING OUTCOMES**
EMBRIYOLOGY	Development of Head and Neck (T-3)	1. Define the components of the pharyngeal apparatus 2. Describe the main structures derived from the pharyngeal arches, pouches, grooves and membrane 3. Explain the importance of the pharyngeal arches, pouches, grooves, membrane in head and neck development 4. Define about the contributions of the pharyngeal arches, pouches, and grooves to head and neck structures with particular emphasis on innervation patterns and gland development. 5. Define the development of palate and tongue. 6. Explain in what way the derivatives of the pharyngeal apparatus are important for the normal anatomic development of the head and neck region. 7. Explain how deviations from the normal development of the head and neck can result in congenital anomalies in these regions. 8. Describe some of the molecular mechanisms involved normal and abnormal face and pharyngeal arch development.

At the end of this lesson, the student will be able to:		
KNOWLEDGE		
DEP.	**TOPIC**	**LEARNING OUTCOMES**
EVIDENCE BASED MEDICINE AND STATISTICS	Identifying variables (T-1)	1. Explain what variables and concepts are and how they are different 2. Explain how to turn concepts into operational variables 3. Explain the types of variables from the viewpoint of: Causation The study design The unit of measurement
	Types of measurement scale (T-1)	1. Explain the nominal or classificatory scale 2. Explain the ordinal or ranking scale 3. Explain the interval scale 4. Explain the ratio scale
	Measures of central tendency and dispersion, asymmetry (T-2)	1. Explain the essential understanding of data and information 2. Understand how data is dispersed and by which factors and parameters are effecting the data distribution 3. Lean how data input is plotted or laid out on graphical settings and what are reason of symmetricity and asymmetricity

At the end of this lesson, the student will be able to:		
KNOWLEDGE		
DEP.	**TOPIC**	**LEARNING OUTCOMES**
MEDICAL MICROBIOLOGY	Bacterial Structure & Classification (T-1)	1. List the main groups of medically important microorganisms 2. Explain the Taxanomic methods for bacterial classifications 3. Define the basic structure of bacteria 4. Define the functions of the basic structural parts of bacteria
	Bacterial Pathogenesis (T-1)	1. Define the concepts; pathogen/non-pathogen, virulence and opportunistic bacteria 2. List the ways of entry of bacteria into the body 3. Define colonization, adhesion, and invasion 4. Define the primary virulence factors of bacteria 5. Define the host defence mechanisms 6. Distinguish infection and stages
	Laboratory Diagnosis of Bacteria (T-1)	1. List the main basic methods in the laboratory diagnosis of bacteria 2. Explain the importance of bacterial identification for the diagnosis

		3. List the essential tools for isolation and identification 4. List the main advantages and disadvantages of the methods
	Advanced Microbiological Methods (T-1)	1. List the advanced methods in the laboratory diagnosis of bacteria 2. Explain the importance of novel techniques in the diagnosis 3. List the main advantages and disadvantages of these methods 4. Explain the future prospects for fast and precise diagnosis
	Antimicrobial Agents & Resistance (T-2)	1. Define antimicrobial agents 2. List antibiotics action mechanism and main targets in the bacteria 3. Classify antibiotics into the groups 4. Define antimicrobial resistance types 5. Describe different resistance mechanisms 6. Classify antimicrobial susceptibility test methods
	Sterilization, Disinfection, and Antisepsis (T-2)	1. Define sterilization, disinfection and antisepsis 2. Define the methods and devices for sterilization and list their use. 3. List the disinfectants and their use 4. List the antiseptics and their use.
	Staphylococcus (T-2)	1. Define Gram positive cocci 2. Classify Staphylococci genus 3. List important properties of Staphylococci 4. List clinical manifestations for Staphylococci 5. Describe the lab diagnosis of Staphylococci 6. Define the antibacterial resistance in Staphylococci 7. Describe prevention measures from Staphylococcal infections
	Streptococci (T-2)	1. Define Streptococci genus 2. Classify Streptococci genus 3. List important properties of Streptococci 4. List clinical manifestations of streptococcal infections 5. Describe the lab diagnosis of Streptococci 6. Define the antibacterial resistance in Streptococci 7. Describe prevention measures from streptococcal infections
	Enterococcus (T-1)	1. Define Enterococci genus 2. Classify Enterococci genus 3. List important properties of Enterococci 4. List the clinical manifestations of enterococcal infections 5. Describe the lab diagnosis of Enterococci 6. Define the antibacterial resistance in Enterococci 7. Describe prevention measures from enterococcal infections
	SKILLS	
	Laboratory safety, Sterilization, Disinfection (DRY LAB) (P-1)	1. Define the rules of working in a microbiology laboratory 2. List the devices in microbiology laboratory 3. List their functions in microbiology laboratory 4. Define sterilization and disinfection facilities 5. List the device used in sterilization for microbiology 6. List the most common disinfectants 7. List steps in applying sterilization by autoclave 8. Sign the informed consent

At the end of this lesson, the student will be able to:		
KNOWLEDGE		
DEP.	**TOPIC**	**LEARNING OUTCOMES**
PATHOLOGY	Introduction to pathology, tissue processing (T-1)	1. Describe pathology as a discipline 2. Describe various biopsy types 3. Get through to procedures used in diagnosis 4. Explain tissue processing in the pathology laboratory 5. Explain the mechanisms in the pathogenesis of various diseases

	Histochemical/ immunohistochemical stains, frozen section (T-1)	1. Describe the histochemical/immunohistochemical stains 2. Explain frozen section and fine needle aspiration biopsy procedures 3. Explain the importance and meaning of intraoperative pathology consultation
	Overview of cellular responses to stress and noxious stimuli (T-1)	1. Get through to the response of cells to various types of stress 2. Describe the factors which have roles in cell injury with their mechanisms 3. Describe the morphological changes of reversible/irreversible cell injury and apoptosis and necrosis 4. Explain the types and mechanisms of the response of cell and tissue to the destructive factor associated with clinical examples
	Sequence of events in cell injury and cell death,Apoptosis, Autophagy (T-1)	1. Describe the reasons and mechanisms of basic cell injuries 2. Tell at least five examples of reversible and irreversible changes related with cell injury 3. Explain the clinical significance of apoptosis and autophagy
	Mechanisms of cell injury and death, Hypoxia and Ischemia, Oxidative Stress (T-1)	1. Explain the mechanisms of necrosis, ischemic and hypoxic injury, ischemia-reperfusion injury and chemical injury.
	Cellular Adaptations of Stress (Hypertrophy, hyperplasia, atrophy, metaplasia) (T-1)	1. Classify the types of adaptation mechanisms of the cell 2. Explain the adaptation mechanisms with their clinical significance 3. Tell at least three examples to each adaptation type
	Intracellular accumulations, pathologic calcification, cellular aging (T-1)	1. Get through to at least five important accumulating substances in the cell 2. Explain the pathogenesis and diseases related with intracellular accumulation of different types of substances
	Overview of inflammation and tissue repair (T-1)	1. Describe the proteins and phases of proliferation which take part into normal cell cycle and interpret their roles in tissue repair 2. Classify the components of extracellular matrix and characterize their roles in tissue repair 3. Classify the cells which participate in tissue repair and define their functions in tissue repair 4. Classify the tissues and cells according to their renewal capacity
	Acute inflammation/ Leukocyte recruitment and activation in inflammation (T-1)	1. Describe acute inflammation 2. Describe the mechanisms of formation of acute inflammation and define the cells which take part in acute inflammation 3. Explain the cardinal and morphological findings of acute inflammation
	Phagocytosis and clearance of the offending agent/Leukocyte-mediated tissue injury (T-1)	1. Tell the 6 affecting factors which play role in tissue renewal 2. Classify the features of cutaneous wound healing
	Mediators of inflammation (Vasoactive amines) (T-1)	1. Classify the chemical mediators which play role in acute and chronic inflammation 2. Describe the functions of vasoactive amines in inflammation 3. Correlate the pathogenesis of inflammation with clinical findings
	Mediators of inflammation (Cytokines and chemokines, Complement system, Other mediators) (T-1)	1. Describe the functions of cytokines and chemokines, complement system and other mediators in inflammation
	Outcomes of acute inflammation/ morphologic patterns (T-1)	1. Get through to the types, complications and prognosis of inflammation in consideration of various clinical examples 2. Correlate the complications and prognosis with generated clinical findings in acute inflammation 3. Define the inflammation with its types, pathogenesis and consequences
	Chronic inflammation (Causes, morphologic features , cells and mediators)	1. Define chronic inflammation 2. Describe the mechanisms of cellular functions of the cells which participate in chronic inflammation

	(T-1)	3. Describe the examples of chronic inflammation 4. Describe the complications and prognosis of chronic inflammation 5. Define the granulomatous inflammation with appropriate clinical examples
	Systemic effects of inflammation / Tissue Repair (T-1)	1. Explain the outcomes of chronic inflammation and correlate them with clinical findings
	Repair by scarring/factors that impair tissue repair (T-1)	1. Tell the types of the cells which are responsible in tissue renewal 2. Explain the functions of the cells which are responsible in tissue renewal
	Clinical examples of abnormal wound healing and scaring (T-1)	1. Describe the stages of scar formation 2. Define regeneration, healing and fibrosis 3. Describe the stages of primary and secondary cutaneous wound healing
	Hyperemia and congestion, edema, hemorrhage (T-1)	1. Define the morphological changes in tissues related with hemodynamic disorders 2. Define fluid, electrolyte and hemodynamic balance 3. Explain the pathogenesis and clinical consequences of hemodynamic disorders
	Normal Hemostasis (T-1)	1. Define hyperemia, congestion, edema and hemorrhage 2. Tell and group the pathophysiological mechanisms of generation of edema 3. Explain the reasons of edema, hyperemia and congestion and correlate them with clinical findings 4. Classify the types of hemorrhage
	Thrombosis and Embolism (T-1)	1. Define hemostasis and thrombosis and explain the mechanism of them 2. Explain the functions of endothelium, thrombocyte , coagulation and fibrinolytic cascades 3. Describe the formation of thrombosis by defining the morphology of thrombosis 4. Classify the types of thrombus 5. Define embolism by explaining its mechanism under the light of clinical examples 6. Differentiate pulmonary and systemic thromboembolism , fat and amniotic fluid embolism
	Infarction and shock (T-1)	1. Define the cardiovascular collapse 2. Differentiate the types and etiologies of shock 3. Describe the stages of shock and explain the morphologic findings of shock 4. Define the infarct, classify the reasons and types of infarct 5. Explain the macroscopic and microscopic findings of infarct 6. Group the factors which affect infarct formation
	Genetic diseases, nature of genetic abnormalities (T-1)	1. Explain the mechanisms of five genetic lesions with emphasizing of the clinical significance of them 2. List at least three diseases caused by single-gene defects with explaining mechanisms of them
	Complex Multigenic Disorders, Cytogenetic Disorders (T-1)	1. List at least three complex multigenic and cytogenetic disorders with explaining mechanisms of them
	Single-Gene Disorders With Atypical Patterns of Inheritance (T-1)	1. List at least three complex single-gene disorders with atypical patterns of inheritance with explaining mechanisms of them
	SKILLS	
	Pathology Laboratory-Practical Classes: (LAB-2)	1. Gain the ability to identify the pathological areas in normal tissues microscopically 2. Get through to hemorrhage, edema, congestion, acute and chronic inflammation, thrombus and types of necrosis microscopically

At the end of this lesson, the student will be able to:		
KNOWLEDGE		
DEP.	**TOPIC**	**LEARNING OUTCOMES**
PHARMACOLOGY	Introduction: The Nature of Drugs & Drug Development & Regulation (T-3)	1. Define and describe the terms receptor and receptor site. 2. Distinguish between a competitive inhibitor and an allosteric inhibitor. 3. Predict the relative ease of permeation of a weak acid or base from knowledge of its 4. pKa, the pH of the medium, and the Henderson-Hasselbalch equation. 5. List and discuss the common routes of drug administration and excretion. 6. Draw graphs of the blood level versus time for drugs subject to zero-order elimination and for drugs subject to first-order elimination. Label the axes appropriately. 7. Describe the major animal and clinical studies carried out in drug development. 8. Define carcinogenesis, mutagenesis, and teratogenesis.
	Drug Receptors & Pharmacodynamics (T-3)	1. Compare the efficacy and the potency of 2 drugs on the basis of their graded dose response curves. 2. Predict the effect of a partial agonist in a patient in the presence and in the absence of a full agonist. 3. Name the types of antagonists used in therapeutics. 4. Specify whether a pharmacologic antagonist is competitive or irreversible based on its effects on the dose-response curve and the dose-binding curve of an agonist in the presence of the antagonist. 5. Name 5 transmembrane signaling methods by which drug-receptor interactions exert their effects
	Pharmacokinetics & Pharmacodynamics: Rational Dosing & the Time Course of Drug Action (T-4)	1. Estimate the half-life of a drug based on its clearance and volume of distribution or from a graph of its plasma concentration over time. 2. Calculate loading and maintenance dosage regimens for oral or intravenous administration of a drug when given the following information: minimum therapeutic concentration, minimum toxic concentration, oral bioavailability, clearance, and volume of distribution. 3. Calculate the dosage adjustment required for a patient with impaired renal function
	Drug Biotransformation (T-2)	1. List the major phase I and phase II metabolic reactions. Know which P450 isoform is responsible for the greatest number of important reactions. 2. Describe the mechanism of hepatic enzyme induction and list 3 drugs that are known to cause it. 3. List 3 drugs that inhibit the metabolism of other drugs. 4. Describe some of the effects of smoking, liver disease, and kidney disease on drug elimination. 5. Describe the pathways by which acetaminophen is metabolized to harmless products if normal doses are taken and to hepatotoxic products if an overdose is taken.
	Pharmacogenomics (T-2)	1. Name 3 gene polymorphisms that increase or decrease drug efficacy or toxicity. 2. Name 3 drugs that may require dosage adjustments in specific genetic populations. 3. Name 1 drug that is more toxic due to a polymorphism. 4. Name 1 drug that is less effective due to a loss of function polymorphism
	Pharmacokinetics & Pharmacodynamics of Perinatal and Pediatric Drugs (T-1)	1. Describe the pediatric patient differs from an adult patient 2. Describe the pharmacokinetic and pharmacodynamic alterations on drug disposition and therapeutic outcome in the pediatric patient and pregnant women

		3. Apply this knowledge to the management of drug therapy in the pediatric patient and pregnant women 4. List the special pharmacokinetic factors operative in pregnant women and in rapidly maturing infants
	Pharmacokinetics & Pharmacodynamics of Geriatric Drugs (T-1)	1. Describe age-related changes that affect pharmacokinetic properties of medications. 2. Identify best current and updated resources or potentially inappropriate medications 3. Discuss the use of a systematic improvement framework to reduce potentially inappropriate medications for older adults
	Therapeutic and Toxic Potential of Drugs and Over-the-Counter Agents (T-2)	1. Select effective and safe OTC product formulations for their claimed for therapeutic use 2. Know the agents switched from prescription to OTC status. 3. Know ingredients of known efficacy for selected OTC classes. 4. Know classification of drug toxicity
	Dietary Supplements and Herbal Medications (T-1)	1. Contrast the regulations in the United States of botanicals and nutritional supplements with those of therapeutic drugs with regard to efficacy and safety. 2. List several of the most widely used botanical products, and describe their purported medical uses, adverse effects, and potential for drug interactions. 3. Describe the proposed medical uses and adverse effects of several purified nutritional supplements.
	Rational Prescribing and Prescription Writing (T-1)	1. Principles of prescription order writing and patient compliance 2. Contents of a prescription 3. Principles of rational prescribing 4. Make a specific diagnosis 5. Consider the pathophysiologic implications of the diagnosis 6. Select a specific therapeutic objective 7. Select an optimal drug of choice 8. Follow the therapy
	Important Drug Interactions and Their Mechanisms (T-2)	1. Describe the primary pharmacokinetic mechanisms that underlie drug interactions. 2. Describe how the pharmacodynamic characteristics of different drugs administered concomitantly may lead to additive, synergistic, or antagonistic effects. 3. Identify specific drug interactions that involve alcohol, antacids, cimetidine, ketoconazole, NSAIDs, phenytoin, rifampin, and warfarin. 4. Identify specific drug interactions that involve commonly used herbals

At the end of this lesson, the student will be able to:		
SKILLS		
DEP	**TOPIC**	**LEARNING OUTCOMES**
CLINICAL SKILLS	Venipuncture, peripheral Intravenous cannulation (T-1) (P-1)	1. Describe the anatomy relevant to venipuncture 2. List the contraindications to venipuncture 3. Describe the technique of venipuncture 4. Understand the safety aspects relating to venipuncture 5. Recognize the basic components of cannulas and their different gauges 6. Understand the relevant anatomy and common sites for peripheral iv cannulation 7. Have acquired a safe, methodical approach to peripheral iv cannulation

At the end of this lesson, the student will be able to:		
KNOWLEDGE		
DEP.	**TOPIC**	**LEARNING OUTCOMES**
MEDICAL GENETICS	Introduction to medical genetics (T-2)	1. Explain the organization of human genome 2. Define genetic disorders and medical genetics. 3. Explain the types of genetic disorders 4. Explain the content and structure DNA 5. Explain the mitochondrial genome structure and properties
	Introduction to human genome (T-6)	1. List and classify steps of cell cycle. 2. Explain the steps and different features of mitosis and meiosis. 3. Define the medical relevance of cell division 4. Explain the what is karyotype and how it is used in medical genetics 5. Explain human gametogenesis and fertilization with respect to differences between males and females 6. Explain pseudo autosomal segments on X and Y chromosomes. 7. Explain the medical relevance of mitosis and meiosis.

MED 2003: INFECTIOUS AGENTS AND MECHANISMS, IMMUNOLOGIC DISORDERS				
Course Date	October 14-November 15, 2024			
Exam Dates	Practical Exams: November 13, 2024 Theoretical Exam: November 14, 2024			
Course Coordinators:	Betilay Topkara Arslan			
Academic Unit	**Academic Staff**	**Theoretical hours**	**Practical hours**	**Total**
Anatomy (Topographic)	Uğur Baran Kasırga, Assist. Prof.	8	-	8
Biochemistry	Yeşim Neğiş, Assoc. Prof. Özlem Unay Demirel, Assoc. Prof.	8	-	8
Biophysics	Serdar Durdağı, Prof. Bircan Dinç, Assist. Prof. Duygu Tarhan, Assist. Prof	4	-	4
Dermatology	Berna Aksoy, Assoc. Prof.	2	-	2
Evidence Based Medicine and Statistics	Cüneyd Parlayan, Assist. Prof.	3	-	3
Infectious Diseases	Dilek Arman, Prof. Ahmet Cem Yardımcı, Assoc. Prof.	2	-	2
Medical Microbiology	Gülden Çelik, Prof. Rabia Can Sarınoğlu, Assoc. Prof. Melda Özdamar, Assoc. Prof. Seyda İğnak Tarlığ, Assist. Prof.	9	1	10
Pathology	Özlem Yapicier, Prof. Zehra Affan, Assist. Prof.	24	2	26
Pharmacology	Kevser Erol, Prof. Fatih Özdener, Assoc. Prof. Zülfiye Gül, Assoc. Prof.	14	-	14
Public Health	Sebahat Dilek Torun, Prof.	2	-	2
Clinical Skills		1	1	2
TOTAL		77	4	81
Medical Genetics	Timuçin Avşar, Assoc. Prof.	8	-	8
STUDY TIME				77

COURSE AIM:

The aim of this course is:

- to explain the components and functions of the immune system and its disorders;
- to provide knowledge about the medically important bacteria, their properties, the disorders they cause and the prevention, diagnosis and the treatment of these infectious diseases;
- to provide detailed knowledge about the regio oralis including cavum oris, lingua and larynx, cervical region including regio colli anterior and laterale in terms of topographical anatomy;
- to get skills in wound care;
- to get skills about working as a part of a team.

LEARNING OUTCOMES:

At the end of this lesson, the student will be able to:		
KNOWLEDGE		
DEP.	**TOPIC**	**LEARNING OUTCOMES**
TOPOGRAPHIC ANATOMY	Regio oralis -I: Cavum oris, Diaphragma oris Regio oralis -I: Palatum (durum+molle), Tonsilla palatina (T-2)	1. Explain the borders of the regio oralis 2. Explain superficial structures of regio oralis 3. Differentiate subdivisions of cavum oris 4. Describe diaphragma oris 5. Describe the structures inside the cavum oris including the teeth 6. Explain palatum and subdivisons 7. Explain and classify the muscles of the soft palate 8. Distinguish the functions of each soft palate muscle 9. Define the sensory innervation and vessels of hard palate 10. Describe the motor and sensory innervation and vessels of soft palate in detail 11. Discuss the relationship of hard and soft palate with surrounding structures in detail 12. Describe the location, vessels and relationships of tonsilla palatina 13. Discuss the vessels, nerves and lymphatics of the cavum oris, diaphragma oris, palatum molle and palatum durum 14. Discuss the relationships of the structures of the regio oralis topographically. 15. Explain clinical significance of oral cavity, soft and hard palate and palatine tonsil
	Regio oralis -II: Lingua Regio oralis -II: Larynx (T-2)	1. Describe the location and anatomy of lingua 2. Explain and classify the muscles of lingua 3. Distinguish the functions of each muscle of lingua 4. Describe the motor and sensory innervation, vessels and lymphatics of lingua in detail 5. Discuss the relationship of lingua with surrounding structures topographically. 6. Explain the location and skeleton of the larynx 7. Define the cartilages and fibroelastic membrane of the larynx 8. Describe the internal aspect of the larynx and its subdivisions 9. Define the innervation and function of each laryngeal muscle 10. Explain the sensory and motor innervation of the larynx 11. Explain the lymphatics of the larynx 12. Discuss the relationship of larynx with surrounding structures topographically 13. Explain clinical significance of lingua and larynx
	Cervix I: Regio colli (cervicalis) anterior - Trigonum Submandibulare, Trigonum submentale, Trigonum musculare	1. Discuss the fasciae of the neck region 2. Describe the cutaneous innervation of the neck region 3. Explain the subdivisions of the regio colli

	Cervix I: Regio colli (cervicalis) anterior - Regio suprahyoidea, Regio infrahyoidea (T-2)	4. Describe trigonum submandibulare, trigonum submentale, trigonum caroticum, trigonum musculare 5. Discuss the structures in each trigonum 6. Define the relationships of the structures in each trgionum 7. Define the muscles of the regio suprahyoidea and region infrahyoidea 8. Distinguish the vessels and nerves of the regio colli anterior 9. Explain the lymphatics in regio colli anterior
	Cervix II: Regio colli (cervicalis) laterale - Trigonum caroticum, Trigonum omoclaviculare Cervix II: Regio colli (cervicalis) laterale - Truncus cervicalis, vessels, nerves (T-2)	1. Describe trigonum trigonum caroticum, trigonum omoclaviculare 2. Discuss the structures in each trigonum 3. Define the relationships of the structures in each trgionum 4. Define the truncus cervicalis 5. Distinguish the vessels and nerves of the regio colli laterale 6. Explain the lymphatics in regio colli laterale 7. Explain clinical significance of lateral cervical triangles

At the end of this lesson, the student will be able to:		
KNOWLEDGE		
DEP.	**TOPIC**	**LEARNING OUTCOMES**
BIOCHEMISTRY	ROS and Tissue Damage (T-2)	1. Describe the term “free radical” 2. Explain the formation of various types of reactive oxygen species (ROS) 3. Describe the properties of ROS 4. Explain the sources of ROS in cells 5. Explain how ROS are formed by nonenzymatic and ezymatic reactions 6. Explain the beneficial effects of ROS in cells 7. Explain the mechanisms of ROS mediated cellular injury 8. Discuss the role of ROS in human diseases and clinical conditions associated with ROS damage
	Disorders of Amino Acids Metabolism (T-3)	1. Explain the metabolism of amino acids during well-fed state, fasting state and starvation 2. Tell the significance of essential and non-essential amino acids in the organism 3. Explain the overflow of nitrogen in amino acid metabolism 4. Tell the enzymes of urea cycle 5. Explain the biological role of urea cycle 6. Explain the defects of the urea cycle 7. Explain the catabolism of carbon skeleton of amino acids 8. Classify the human genetic disorders affecting amino acid catabolism 9. Explain the clinical significance of amino acid related disorders 10. Define the tests performed in the “National newborn screening program in Turkey” 11. Define the cofactors and coenzymes involved in amino acid metabolism
	Antioxidants: Cellular Defenses Against Reactive Oxygen Species (T-1)	1. Explain the term antioxidant 2. Classify antioxidants according to their nature and action 3. Discuss how enzymatic antioxidants are expressed in cells 4. Explain the function and mechanism of action of antioxidant enzymes (e.g., superoxide dismutase,catalase, glutathione reductase, and glutathione peroxidases) in cellular defence against reactive oxygen species 5. Expain the mechanisms underlying the antioxidant effects of nutritients, specific vitamins and trace elements 6. Discuss whether too much antioxidants are good or bad for human health
	Disorders of vitamin metabolism (T-2)	1. Define the structure of water and lipid soluble vitamins 2. Explain the Vitamin B12, Folic acid and Vitamin D metabolism 3. Explain the functional role of Vitamin B12, Folic acid and Vitamin D

		4. Explain the mechanisms of disorders related with Vitamin B12, Folic acid and Vitamin D metabolism 5. Define the clinical characteristics of disorders related with Vitamin B12, Folic acid and Vitamin D metabolism

At the end of this lesson, the student will be able to:		
KNOWLEDGE		
DEP.	**TOPIC**	**LEARNING OUTCOMES**
BIOPHYSICS	Computerized Tomography (CT) (T-1)	1. Discuss the history of CT and its advantages as an imaging modality in medicine 2. Discuss the background of computer systems and how they have evolved in Radiology departments today 3. Demonstrate knowledge of the basic principles of Computed Tomography 4. Describe the major components of the CT Scanner, implementing the elements of a CT image processing system, CT gantry, display, storage, and recording devices. 5. Evaluate the techniques used for image manipulation in CT and the properties which affect image quality in CT Scanning 6. Discuss the biological effects of CT and adhere to radiation protection guidelines.
	Magnetic Resonance Imaging (MRI) (T-1)	1. Discuss the physics of image formation, contrast mechanisms, and how these interact with imaging sequences 2. Define magnetic resonance sequences, including radiofrequency pulses, different readout strategies, and gradient sensitization for motion/flow/diffusion. 3. Describe critically appraise methods available for quantitative, microstructural and functional MRI 4. Evaluate the techniques used for image manipulation in CT and the properties which affect image quality in CT Scanning 5. Discuss the safety issues in MRI and understand how safety can be accessed via numerical models
	(Nuclear Magnetic Resonance Spectroscopy (NMR) (T-2)	1. Define nuclear magnetic resonance spectroscopy 2. Describe the origin of the NMR signal and magnetic moment 3. Evaluate the mathematical techniques used for detecting the signal 4. Define shielding and deshielding of protons

At the end of this lesson, the student will be able to:		
KNOWLEDGE		
DEP.	**TOPIC**	**LEARNING OUTCOMES**
DERMATOLOGY	The Anatomy of The Skin (T-1)	1. Differentiate the major 2 layers of the skin 2. Describe variations in skin according to body site 3. Describe basic structure and components of the skin 4. Define localization of basic layers of the skin 5. Describe layers of the epidermis and their order 6. List cells of epidermis 7. Recall main functions of cells of epidermis 8. Define epidermal proliferation and differentiation 9. Describe basic constituents and cells of dermis 10. List functions of dermis 11. Describe basic 2 layers of dermis 12. List and describe skin appendages 13. Recall plexuses and functions of cutaneous vascular system 14. List which senses are sensed by cutaneous nerves 15. List functions of the skin
	Immunology of The Skin (T-1)	1. Define the term “immune surveillance” function of the skin 2. List basic characteristics of innate immune system of the skin 3. Define the common structures that are recognized in innate immune response 4. Recall the basic function of innate immune system of the skin 5. List the basic constituents of innate immune system of the skin

		6. Define antimicrobial peptides and their function 7. Describe microbial flora of the skin 8. List the functions of the skin flora 9. Describe receptors of innate immune system of the skin 10. Describe how innate immune system operates if any skin injury happens 11. List basic characteristics of adaptive immune system of the skin 12. Describe receptors of adaptive immune system of the skin 13. List the basic constituents of adaptive immune system of the skin 14. Describe how extracellular antigens are processed by adaptive immune system of the skin 15. Describe how intracellular antigens are processed by adaptive immune system of the skin 16. Explain the major functions of mature T cells in the skin 17. Differentiate humoral versus cellular immunity in the skin 18. Describe SALT (skin associated lymphoid tissue)

At the end of this lesson, the student will be able to:		
KNOWLEDGE		
DEP.	**TOPIC**	**LEARNING OUTCOMES**
EVIDENCE BASED MEDICINE AND STATISTICS	Statistical Inference (p value - Confidence Interval) (T-1)	1. Identify the concept of probabilistic result interpretation 2. Explain why p value is important to understand the value of the data and its integrity 3. Learn how p value is computed/found in different settings 4. Understand the accuracy and the confidence of the output of the result by calculating confidence interval. 5. Identify which factors may influence the confidence interval calculation and why they are important for data interpretation.
	Statistical Hypothesis Testing (T-1)	1. Write a testable hypothesis 2. Explain the difference between the null and alternative hypotheses. 3. Discriminate between type I and type II errors 4. Define the importance of statistical power in conducting analyses. 5. Interpret the rejection region for one- and two-tailed tests and assess the significance of a statistical test.
	Choosing the right statistical test (T-1)	1. Name the various commonly used statistical tests 2. Describe the preconditions to select a statistical test 3. Apply the correct test for the problem at hand 4. İnterpret the conclusions of the test appropriately

At the end of this lesson, the student will be able to:		
KNOWLEDGE		
DEP.	**TOPIC**	**LEARNING OUTCOMES**
INFECTIOUS DISEASES	Pathogenesis of fever (T-2)	1. Identify the signs of inflammation and fever and explain why they occur 2. Explain the advantages and risks posed by inflammatory responses

At the end of this lesson, the student will be able to:		
KNOWLEDGE		
DEP.	**TOPIC**	**LEARNING OUTCOMES**
MEDICAL MICROBIOLOGY	Listeria and Erysipelothrix (T-1)	1. Define Listeria and Erysipelothrix 2. Classify Listeria and Erysipelothrix 3. List important properties of Listeria and Erysipelothrix 4. List the clinical manifestations of Listeria and Erysipelothrix infections 5. Describe the lab diagnosis for Listeria and Erysipelothrix
	Bacillus (T-1)	1. Define Bacillus genus 2. Classify Bacillus genus 3. List their important properties of Bacillus 4. List the clinical manifestations of Bacillus infections 5. Describe the lab diagnosis for Bacillus 6. Describe prevention measures from Bacillus infections
	Corynebacterium and Other Gram-Positive Rods (T-2)	1. Define Corynebacterium and Other Gram-Positive Rods 2. Classify Corynebacterium and Other Gram-Positive Rods 3. List important properties of Corynebacterium and related bacilli 4. List the clinical manifestations of Corynebacterium infections 5. Describe the lab diagnosis for Corynebacterium species 6. Describe prevention measures from Corynebacterium
	Nocardia and Actinomyces (T-1)	1. Define Nocardia and aerobic Actinomycetes 2. Classify Nocardia and aerobic Actinomycetes 3. List important properties of Nocardia and aerobic Actinomycetes 4. List the clinical manifestations of infections of Nocardia and aerobic Actinomycetes 5. Describe the lab diagnosis for Nocardia and aerobic Actinomycetes
	Mycobacterium (T-4)	1. Define Mycobacteria 2. Classify Mycobacteria 3. List important properties of Mycobacteria 4. List the clinical manifestations of Mycobacterial infections 5. Define Atypical Mycobacteria and features 6. Describe the lab diagnosis for Mycobacteria 7. Define the antibacterial resistance to M.tuberculosis 8. Describe M.leprae and clinical manifestations 9. Describe prevention measures for Mycobacterial infections
	SKILLS	
	MICROBIOLOGY LAB: Microscopy and Staining Methods (P-1)	1. Describe the preparation of a slide for staining 2. Describe the steps of gram staining 3. Apply gram staining 4. Investigate the stained slide to show and describe a stained bacteria under the microscope

At the end of this lesson, the student will be able to:		
KNOWLEDGE		
DEP.	**TOPIC**	**LEARNING OUTCOMES**
PATHOLOGY	Normal Immune Response (innate and adaptive immunity) (T-1)	1. Define what immunity means 2. Explain the immune system with the functions of cells and molecules 3. Classify the types of immunity 4. Describe the major components of innate and adaptive immunity 5. Explain the mechanism of recognition of microorganisms by phagocytes 6. Describe the types and basic mechanism of adaptive immunity

		7. Explain the distribution of lymphoid tissue in the body
	Overview of Lymphocyte Activation and Adaptive Immune Responses (T-1)	1. Explain the differences, mechanisms and clinical importance of cellular and humoral immunity 2. Explain the mechanism involved in lymphocyte activation 3. Classify the cells involved in hypersensitivity reactions 4. Describe the types and functions of the cytokines 5. Define the major mechanisms of adaptive immune response
	Hypersensitivity: Immunologically Mediated Tissue Injury, Type I, II, III, IV Hypersensitivity (T-1)	1. Classify the types of hypersensitivity reactions 2. Explain the definition and mechanisms of hypersensitivity reactions 3. Give examples to each type of hypersensitivity reactions 4. Classify the causes of glomerular diseases 5. Explain the correlation between pathological findings, etiology and clinical findings in glomerular diseases.
	Autoimmune diseases I (SLE) (T-1)	1. Give five examples for the most important autoimmune diseases 2. Explain the pathogenesis of the autoimmune diseases 3. Describe the pathogenesis and clinical findings of sle 4. Describe the self and peripheral tolerances
	Autoimmune diseases II (RA-Scleroderma-Sjögren Syndrome) (T-1)	1. Explain the pathogenesis of RA-Scleroderma-Sjögren Syndrome. 2. Give examples of at least two significant antibodies regarding to RA-Scleroderma-Sjögren Syndrome. 3. Describe the pathological and clinical findings of the above mentioned diseases
	Rejection of transplants (T-1)	1. Classify the types of the immunuty in organ rejection 2. Describe the pathogenesis and mechanisms of immunity in organ rejections 3. Define the clinical consequences of the organ rejection
	Immune deficiency diseases, amyloidosis (T-1)	1. Classify the immunodeficiency diseases 2. Explain the pathogenesis of the immunodeficiency diseases 3. Describe the pathological and clinical findings of the immunodeficiency diseases 4. Explain the pathogenesis of amyloidosis. 5. Classify the the types of amyloid accumulation
	General principles of microbial pathogenesis (T-1)	1. Describe the pathological features of infectious diseases caused by various bacteria, viruses, fungi and parasites 2. Describe general principles of infectious diseases 3. Define the pathways of microorganisms to enter the host 4. Explain the pathogenetic mechanisms of various infections 5. Define the methods of sampling for the laboratory tests. 6. Define the basic principles of prevention and control. 7. Explain the basic principles of clinical approach to infectious diseases 8. Describe the pathological finding so mycoplasma and mycobacterium infections
	Pathology of viral diseases and bacterial infections (T-1)	1. Explain the disease-causing mechanisms of viruses and bacteria 2. Give examples to common bacterial diseses 3. Classify the viral diseases 4. Explain acute (transient) infections (measles, mumps, polio), chronic latent infections (hsv1-2, vzv, cmv), chronic productive infections (hepatitis b) 5. Describe the inflammation pattern and pathogenesis of acute, chronic latent and chronic productive infections
	Tuberculosis (T-1)	1. Explain the pathogenesis of tuberculosis 2. Describe the typical histomorphologic findings of tubersulosis 3. Define the various diagnostic methods for tuberculosis 4. Explain the clinical and radiological features of tuberculosis

	Pathology of fungal diseases and parasitic diseases (T-1)	1. Explain the pathogenesis of fungal and parasitic diseases 2. Describe the typical histomorphologic findings of fungal and parasitic diseases 3. Define the various diagnostic methods for fungal and parasitic diseases 4. Explain the clinical and radiological features of fungal and parasitic diseases 5. Describe the main virulence factors, clinical findings and inflammation patterns of candida, aspergillus, cryptococcus and mucor infections 6. Outline the main virulence factors, clinical findings and inflammation patterns of malaria, leishmania, echinococcus and schistosoma infections
	Neoplasia, Nomenclature, Characteristics of benign and malignant neoplasm (T-1)	1. Identify the common genetic changes seen in cancer 2. Explain the molecular mechanisms of neoplasia 3. Classify the neoplasms in terms of their histogenesis and define their subgroups 4. Give at least 5 most important features of malignant and benign tumors 5. Define the specific characteristics of malignant and benign tumors 6. Explain the differences between hamartoma and choristoma 7. Describe the properties of dysplasia and anaplasia 8. Explain the approach in naming the tumors 9. Describe the grading and staging the tumors 10. Explain the main differences between benign and malignant tumors 11. Explain the mechanisms of local invasion of tumors 12. Describe metastasis, metastatic routes and patterns 13. Explain the differences between in situ and invasive carcinoma
	Epidemiology of cancer (T-1)	1. Explain the differences in the frequency of cancer relating with eographical distribution 2. Give examples to the common cancers which mostly cause death 3. Give examples to common types of cancer in men and women 4. Explain cancer epidemiology related to geographical factors, age and sex. 5. Explain the significant agents facilitating carcinogenesis 6. Explain the basic concepts of cancer prevention 7. Define the parameters used in the diagnosis and laboratory diagnosis of cancer 8. Understand the role of immunohistochemistry and molecular pathology in cancer diagnosis 9. Classify the main methods of cancer treatment
	Cancer genes, Genetic Lesions in Cancer (T-1)	1. Explain the mechanisms and type of mutations that may cause cancer 2. Describe the basic cellular and molecular properties of cancer 3. Explain the mechanisms of carcinogenesis by exemplifying carcinogenic agents
	Hallmarks of cancer: Self-sufficiency in growth signals (T-1)	1. Define the functions of protooncogene, oncogene and tumor suppressor gene 2. Explain the mechanism of the significant genes (p53, rb, ras, cyclin, cyclin dependent kinase inhibitors
	Hallmarks of cancer : Tumor Suppressor Genes. (T-1)	1. Describe the mechanisms of functions of the tumor supressor genes 2. Explain the importance of the tumor supressor genes in various cancers
	Hallmarks of cancer: Altered cellular metabolism, Evasion of apoptosis, immortality, Sustained angiogenesis (T-1)	1. Describe the role and mechanism of angiogenesis 2. Define the evasion from apoptosis adn its relation with limitless replicative potential
	Hallmarks of cancer: Invasion and metastasis, Evasion of immune	1. Explain the immune mechanisms in cancer 2. Describe the clinical picture of the immunity.

	surveillance, Genomic Instability Tumor-Promoting Inflammation (T-1)	3. Describe the stages of invasion and metastasis
	Etiology of cancer: Carcinogenic agents (Chemical , radiation and viral) (T-1)	1. Explain the definition and effect mechanisms of carcinogens 2. Explain the mechanisms of mutations and carcinogens
	Clinical aspects of neoplasia, effects of tumor on host, grading and staging, laboratory diagnosis (T-1)	1. Define grading and staging cancer and establish the relationship between grade and staging and life expectancy 2. Describe the effects of cancer on host clinically 3. Determine suitable laboratory test for diagnosing the cancer
	Environmental and nutritional diseases, Health Effects of Climate Change (T-1)	1. Toxicity of Chemical and Physical Agents. 2. Explain the relationship between environmental factors and diseases 3. Classify nutritional disorders and define the clinical importance of these diseases 4. Give examples to at least five environmental and nutritional factors that cause diseases
	Effects of Tobacco and Alcohol, Injury by Therapeutic Drugs and Drugs of Abuse (T-1)	1. Explain effects of tobacco, effects of alcohol,injury by therapeutic drugs and drugs of abuse 2. Explain the mechanisms of tobacco, alcohol nd other drugs and relate them with clinical findings
	Injury by Physical Agents (T-1)	1. Describe the types of injury by physical agents 2. Explain the histopathological and clinical findings of physical injury
	Nutritional Diseases (T-1)	1. Explain basic mechanisms of the nutritional diseases. 2. Define appropriate clinical findings to related nutritional disease
	SKILLS	
	Pathology Lab (LAB-2)	1. Gain the ability of identifying the pathological areas in normal tissues microscopically 2. Get through to benign and malignant tumors microscopically 3. Give descriptions for the microscopic findings of neoplasms

At the end of this lesson, the student will be able to:		
KNOWLEDGE		
DEP.	**TOPIC**	**LEARNING OUTCOMES**
PHARMACOLOGY	Clinical Use of Antimicrobial Agents (T-2)	1. List the steps that should be taken before the initiation of empiric antimicrobial therapy. 2. List the reasons why susceptibility testing of isolates and the determination of antibiotic blood levels are important in the treatment of many infections. 3. Identify antibiotics that require major modifications of dosage in renal or hepatic dysfunction. 4. List the reasons for use of antimicrobial drugs in combination and the probable mechanisms involved in drug synergy. 5. Describe the principles underlying valid antimicrobial chemoprophylaxis and give examples of commonly used surgical and nonsurgical prophylaxis.
	Sulfonamides, Trimethoprim, & Quinolones (T-1)	1. Describe how sulfonamides and trimethoprim affect bacterial folic acid synthesis and how resistance to the antifolate drugs occurs. 2. Identify major clinical uses of sulfonamides and trimethoprim, singly and in combination, and describe their characteristic pharmacokinetic properties and toxic effects.

		3. Describe how fluoroquinolones inhibit nucleic acid synthesis and identify mechanisms involved in bacterial resistance to these agents. 4. List the major clinical uses of fluoroquinolones and describe their characteristic pharmacokinetic properties and toxic effects.
	Miscellaneous Antimicrobial Agents and Urinary Antiseptics (T-1)	1. Identify the clinical uses of metronidazole and describe its pharmacokinetics and toxicities. 2. List the clinical uses of mupirocin and polymyxins. 3. Identify the major urinary antiseptics and their characteristic adverse effects. 4. List the agents used as antiseptics and disinfectants and point out their limitations.
	Immunopharmacology (T-3)	1. Describe the primary features of cell-mediated and humoral immunity. 2. Name 7 immunosuppressants and, for each, describe the mechanism of action, clinical uses, and toxicities. 3. Describe the mechanisms of action, clinical uses, and toxicities of antibodies used as immunosuppressants. 4. Identify the major cytokines and other immunomodulating agents and know their clinical applications. Describe the different types of allergic reactions to drugs.
	Antimycobacterial Drugs (T-2)	1. List 5 special problems associated with chemotherapy of mycobacterial infections. 2. Identify the characteristic pharmacodynamic and pharmacokinetic properties of isoniazid and rifampin. 3. List the typical adverse effects of ethambutol, pyrazinamide, and streptomycin. 4. Describe the standard protocols for drug management of latent tuberculosis, pulmonary tuberculosis, and multidrug-resistant tuberculosis. 5. Identify the drugs used in leprosy and in the prophylaxis and treatment of Mavium-intracellulare complex disease.
	Beta-Lactam & Other Cell Wall- & Membrane-Active Antibiotics (T-2)	1. Describe the mechanism of antibacterial action of beta-lactam antibiotics. 2. Describe 3 mechanisms underlying the resistance of bacteria to beta-lactam antibiotics. 3. Identify the prototype drugs in each subclass of penicillins, and describe their antibacterial activity and clinical uses. 4. Identify the 4 subclasses of cephalosporins, and describe their antibacterial activities and clinical uses. 5. List the major adverse effects of the penicillins and the cephalosporins. 6. Identify the important features of aztreonam, imipenem, and meropenem. 7. Describe the clinical uses and toxicities of vancomycin.
	Tetracyclines, Macrolides, Clindamycin, Chloramphenicol, Streptogramins, & Oxazolidinones (T-2)	1. Explain how these agents inhibit bacterial protein synthesis. 2. Identify the primary mechanisms of resistance to each of these drug classes. 3. Name the most important agents in each drug class, and list 3 clinical uses of each. 4. Recall distinctive pharmacokinetic features of the major drugs. 5. List the characteristic toxic effects of the major drugs in each class.
	Aminoglycosides & Spectinomycin (T-1)	1. Describe 3 actions of aminoglycosides on protein synthesis and 2 mechanisms of resistance to this class of drugs. 2. List the major clinical applications of aminoglycosides and identify their 2 main toxicities. 3. Describe aminoglycoside pharmacokinetic characteristics with reference to their renal clearance and potential toxicity. 4. Understand time-dependent and concentration-dependent killing actions of antibiotics and what is meant by postantibiotic effect.

At the end of this lesson, the student will be able to:		
KNOWLEDGE		
DEP.	**TOPIC**	**LEARNING OUTCOMES**
PUBLIC HEALTH	Immunization: public health perspective (T-1)	1. Differentiate between the terms immunisation and vaccination 2. Define the term «fully immunized child» 3. Explain the contraindications and precautions to vaccination 4. Explain the types of vaccination failures 5. Explain the global immunization coverage for childhood vaccines 6. Explain the national childhood vaccination schedule of Turkey 7. list the targeted vaccine preventable diseases in EPI of Turkey
	Immunization: Herd immunity (T-1)	1. Define the term Herd Immunity 2. Explain what is meant by threshold for herd immunity 3. Explain how vaccination rates affect vaccine preventable diseases and public health 4. Explain how the use of vaccines may produce indirect effect in nonvaccinees. 5. List reasons why some people cannot or do not get immunized

At the end of this lesson, the student will be able to:		
SKILLS		
DEP.	**TOPIC**	**LEARNING OUTCOMES**
CLINICAL SKILLS	Dressing of the skin injuries, External bleeding Control (T-1, P-1)	1. Describe general approach to wound care 2. Outline the definition of wound dressing 3. List the aims of wound dressing 4. Define and show how to take measures to stop/limit external bleeding.

At the end of this lesson, the student will be able to:		
KNOWLEDGE		
DEP.	**TOPIC**	**LEARNING OUTCOMES**
MEDICAL GENETICS	Gene structure and function – Part 1 (T-4)	1. Explain phenotype and genotype with their correlations. 2. Describe the central dogma of biology 3. Explain the basic principles of transcription and translation 4. Explain gene families and their evolution 5. Explain pseudogenes and importance in evolution 6. Explain the noncoding RNAs and their importance in diseases 7. Explain the transcription of mitochondrial genome.
	Gene structure and function – Part 2: Epigenetics (T-4)	1. Explain the epigenetic mechanisms and their roles in gene expression. 2. Describe alternative splicing 3. Explain DNA methylation and histone modifications. 4. Explain gene expression as the integration of genomic and epigenomic signals 5. Describe allelic imbalance and its importance in gene expression 6. Explain somatic rearrangements and monoallelic expression 7. Explain paint of origin imprinting 8. Explain X-chromosome inactivation and list gene function

MED 2005: MUSCULOSKELETAL SYSTEM DISORDERS				
Course Date	November 18-December 20, 2024			
Exam Date	Practical Exams: December 18, 2024; Theoretical Exam: December 19, 2024			
Course Coordinators:	Betilay Topkara Arslan			
Academic Unit	**Academic Staff**	**Theoretical hours**	**Practical hours**	**Total**
Anatomy (Topographic)	Uğur Baran Kasırga, Assist. Prof.	10	-	10
Biochemistry	Yeşim Neğiş, Assoc. Prof. Özlem Unay Demirel, Assoc. Prof.	9	2	11
Embriyology	Yasemin Ersoy Canıllıoğlu, Assoc. Prof.	3	-	3
Medical Microbiology	Gülden Çelik, Prof. Orhan Cem Aktepe, Prof. Rabia Can Sarınoğlu, Assoc. Prof. Seyda İğnak Tarlığ, Assist. Prof.	17	1	18
Orthopedics and Traumatology	Uğur Onur Kasman, Assist. Prof.	4	-	4
Pathology	Özlem Yapicier, Prof. Zehra Affan, Assist. Prof.	12	2	14
Pharmacology	Kevser Erol, Prof. Fatih Özdener, Assoc. Prof. Zülfiye Gül, Assoc. Prof.	10	-	10
Physıcal Therapy And Rehabılıtatıon	Göksel Çelebi, Assist. Prof.	6	-	6
Public Health	Sebahat Dilek Torun, Prof.	1	-	1
Clinical Skills	Özgür Korkmaz, Assist. Prof.	1	1	3
TOTAL		73	6	79
Medical Genetics	Timuçin Avşar, Assoc. Prof.	8	-	8
STUDY TIME				77

COURSE AIM:

The aim of this course is:

- to provide knowledge on the pathogenesis of the disorders related to musculoskeletal system;
- to provide knowledge on the signs and symptoms of musculoskeletal disorders, related risk factors, prevention, diagnosis, and principles of treatment and rehabilitation of these disorders;
- to provide knowledge about the medically important bacteria, their properties, the disorders they cause and the prevention, diagnosis and the treatment of these infectious diseases;
- to provide detailed knowledge about the upper limp in terms of topographical anatomy;
- to get skills in patient transport with a spine board, elastic bandage and splint application, and use of glucometer;
- to get skills about working as a part of a team.

LEARNING OUTCOMES:

At the end of this lesson, the student will be able to:		
KNOWLEDGE		
DEP.	**TOPIC**	**LEARNING OUTCOMES**
TOPOGRAPHIC ANATOMY	Upper limp, Clavipectoral triangle, Deltoid region, Glenohumeral joint, Scapular region (T-1)	1. Explain the subdivisions of the upper limp 2. Explain the cutaneus innervation of the upper limp 3. Explain the fasciae of the upper limp 4. Describe the borders and contents of clavipectoral triangle 5. Explain the structures of the deltoid region from superficial to deep. 6. Describe the muscles, vessels and nerves of the deltoid region 7. Describe glenohumeral joint 8. Discuss the basic movements performed around shoulder joint 9. Distinguish the components of the shoulder joint 10. Explain the structures of the scapular region from superficial to deep. 11. Describe the muscles, vessels and nerves of the scapular region 12. Explain clinical aspects of upper limp, clavipectoral triangle, deltoid region, glenohumeral joint, scapular region
	Axillary region, Brachial plexus Axillary artery, Axillary nerve (T-2)	1. Describe the location of the axillary region 2. Explain the cutaneous innervation of axillary region 3. Explain the fascia of the axillary region 4. Explain the walls and contents of the axillary fossa 5. Discuss the relation of the structures in the axillary fossa with each other 6. Define axillary lymph nodes in detail 7. Describe the formation of the brachial plexus 8. Define the parts and branches of the brachial plexus 9. Discuss the relationships of the parts and branches of the brachial plexus 10. Discuss the parts and branches of the brachial plexus in terms of functions 11. Define the axillary artery, subdivisons and branches 12. Discuss the relationships of the subdivisions and branches of the axillary artery 13. Discuss functional and topographical aspects of the axillary nerve 14. Explain clinical aspects of axillary region, brachial plexus Axillary artery, axillary nerve
	Arm: Anterior and posterior compartments of arm	1. Explain the cutaneous innervation of arm 2. Explain the fascia of the arm 3. Explain the superficial veins of the arm

	Arm: Anterior and posterior compartments of arm and elbow joint (T-2)	4. Describe the anterior and posterior compartments of the arm 5. Explain the muscles of the anterior compartment of the arm 6. Explain the vessels, nerves and lymphatics of the anterior compartment of the arm 7. Define the relationships of the structures of the anterior compartment of the arm 8. Define the muscles of the posterior compartment of the arm 9. Distinguish the vessels, nerves and lymphatics of the posterior compartment of the arm 10. Discuss the relationships of the structures of the posterior compartment of the arm in detail 11. Describe the spaces between the muscles of the posterior compartment of the arm and differentiate the structures within these spaces 12. Describe the components of the elbow joint 13. Explain the movements performed around elbow joint 14. Define the vessels and nerves related with elbow joint 15. Discuss the relationships of the elbow joint with surrounding structures
	Forearm: Anterior compartment of forearm Forearm: Posterior compartment of forearm (T-2)	1. Explain the cutaneous innervation of forearm 2. Explain the fascia of the forearm 3. Explain the superficial veins of the forearm 4. Describe the anterior and posterior compartments of the forearm 5. Explain the muscles of the anterior compartment of the forearm 6. Explain the vessels, nerves and lymphatics of the anterior compartment of the forearm 7. Define the relationships of the structures of the anterior compartment of the forearm 8. Define the borders, contents of the cubital fossa 9. Describe the relationships of the structures related with the cubital fossa 10. Define the muscles of the posterior compartment of the forearm 11. Distinguish the vessels, nerves and lymphatics of the posterior compartment of the forearm 12. Discuss the relationships of the structures of the posterior compartment of the forearm in detail 13. Describe the spaces between the muscles of the posterior compartment of the forearm and differentiate the structures within these spaces 14. Explain the movements performed by anterior and posterior compartments of forearm
	Hand: Palm, Dorsum Of Hand Joints Of Hand (T-1)	1. Explain the cutaneus innervation and superficial veins of the hand 2. Explain the fasciae of the hand 3. Describe the fascial compartments of the hand 4. Define the tunnels and canals related with the hand 5. Describe the muscles, nerves and vessels of the palm of hand 6. Describe the muscles, nerves and vessels of the dorsum of hand 7. Discuss the relationships of the structures of the palm and dorsum of hand from superficial to deep in detail 8. Describe the joints of hand 9. Discuss the basic movements performed around each joint of the hand 10. Distinguish the components of the joints of hand 11. Explain clinical significance and related diseases of hand region and joints of hand

	Back, Posterior cervical region, Vertebral column Atlanto-occipital joint, Atlanto-axial joint (T-2)	1. Explain the back region superficial to deep, describe the cutaneous innervation and lymphatics 2. Describe the muscles of back region layer by layer including the nerves, functions 3. Explain the bones and joints of the back region one by one including anatomical details 4. Discuss the relationship of the structures of back region with each other 5. Explain localization and contents of posterior cervical region 6. Describe atlanto-occipital joint including the ligaments, functions and relationships 7. Describe atlanto-axial joint including the ligaments, functions and relationships 8. Explain clinical significance of back, posterior cervical region, vertebral column, atlanto-occipital joint, atlanto-axial joint

At the end of this lesson, the student will be able to:

KNOWLEDGE

DEP.	TOPIC	LEARNING OUTCOMES
BIOCHEMISTRY	Formation and degradation of bone, markers of bone turnover (T-2)	1. Explain the structure and composition of bone tissue 2. Describe the formation and degradation of bone tissue 3. Explain matrix proteins 4. Tell the steps in bone remodeling process 5. Explain the bone resorption markers 6. Explain the bone formation markers
	Calcium & Phosphate Metabolism (T-2)	1. Explain the distribution of calcium and phosphate in the body 2. Explain the physicochemical states of calcium and phosphate in human plasma 3. Tell the concentration of calcium and phosphate in human plasma 4. Comprehend the biochemical importance of calcium and phosphate 5. Explain the factors affecting ionized calcium levels in human plasma 6. Explain how to estimate the levels of ionized calcium in states of hypoalbuminemia 7. Explain the mechanism of calcium absorbion from intestines 8. Outline the major and minor regulators of calcium and phosphate metabolism 9. Explain the synthesis and regulation of parathyroid hormone, calcitriol, calcitonin and FGF-23 and mechanisms of action of these hormones on calcium and phosphate metabolism
	Disorders of Calcium & Phosphate Metabolism (T-2)	1. Outlines the causes of hypocalcemia 2. Explain hormonal response to hypocalcemia 3. Tell which biochemical laboratory tests are required to evaluate hypocalcemia 4. Explain how abnormal vitamin D metabolism is related with hypocalcemia and hypophosphotemia 5. Define the role of FGF23 to maintain phosphate balance and relates this with vitamin D metabolism 6. Outline the most and less common the causes of hypercalcemia 7. Explain the causes of hypercalcemia in hyperparathyroidism 8. Explain the pathogenesis of malignancy associated hypercalcemia 9. Explain the mechanism of parathyroid hormone-related protein (PTHrP) induced hypercalcemia 10. Tell the biochemical laboratory evaluation of hypercalcemia 11. List the clinical presentations of hypercalcemia
	Biochemistry of Hemoglobin (T-2)	1. Identify heme structure 2. Recite and define three oxidation states of heme 3. Define ligand 4. Define K_D 5. Define cooperative binding and sketch a binding curve

		6. Name and interpret the three factors that affect oxygen binding to hemoglobin
	Hemoglobin Disorders (T-1)	1. Understand how the basic anatomy of a gene has a direct bearing on the occurrence of genetic disease. 2. Know the normal and abnormal expression patterns of the hemoglobin genes. 3. Understand the mutations that cause quantitative abnormalities in globin. 4. Unequal crossing over, and every other possible type of mutation 5. Recognize mutations that cause qualitative abnormalities in globin. 6. Understand the molecular basis of sickle cell anemia
	SKILLS	
	Biochemistry Lab: Determination of glucose in body fluids and use of glucometer (LAB-2)	1. Tell the concentration of blood glucose levels in body fluids 2. Interpret blood glucose concentrations in normal, glucose intolerance and diabetic conditions 3. Describe how to perform oral glucose tolerance test and interpret the results 4. Explain how specimen is collected and stored accurately for glucose measurements 5. Explain chemical methods used for glucose determination 6. Explain enzymatic methods used for glucose determination 7. Demonstrate practical use of the glucometer

At the end of this lesson, the student will be able to:		
KNOWLEDGE		
DEP.	**TOPIC**	**LEARNING OUTCOMES**
EMBRIYOLOGY	Development of Skull, Vertebrae, Muscle and Extremity bones (T-3)	1. Describe the different sources of origin of the skeletal and muscular system 2. Identfy the components of a somite and the adult derivatives of each compnent. 3. Discuss the two types of embryonic bone development within the skull 4. Describe the development of the vertebral column and thoracic cage 5. Identify the development of limb buds 6. Discuss how deviations from the normal development of the musculoskeletal system can result in congenital anomalies

At the end of this lesson, the student will be able to:		
KNOWLEDGE		
DEP.	**TOPIC**	**LEARNING OUTCOMES**
MEDICAL MICROBIOLOGY	Neisseria and related genera (T-2)	1. Classify Neisseria genus 2. List important properties of Neisseria genus 3. List the clinical manifestations of Neisseria infections 4. Describe the lab diagnosis for N.gonorrheae&N.menengitidis 5. Define the antibacterial resistance of N.gonorrheae & N.menengitidis 6. Describe prevention measures from Neisseria infections
	Haemophilus and Related Bacteria (T-2)	1. Define Pasteurellaceae family 2. List Pasteurellaceae family members 3. Define Haemophilus and Related Bacteria (Actinobacillus, Aggregatibacter and Pasteurella) 4. Classify Haemophilus and Related Bacteria (Actinobacillus, Aggregatibacter and Pasteurella) 5. List important properties of Pasteurellaceae family members 6. List the clinical manifestations of Haemophilus and Related Bacteria (Actinobacillus, Aggregatibacter and Pasteurella)

		7. Describe the lab diagnosis for Pasteurellaceae family members 8. Define the antibacterial resistance to Haemophilus species 9. Describe prevention measures from Haemophilus species
	Bordetella (T-1)	1. Define Bordetella genus 2. Classify Bordetella genus 3. List important properties of Bordetella genus 4. List the clinical manifestations of Bordetella infections 5. Describe the lab diagnosis for Bordetella species 6. Describe prevention measures from Bordetella infections
	Legionella (T-1)	1. Define Legionella genus 2. Classify Legionella genus 3. List their important properties of Legionella species 4. List the clinical manifestations of Legionella infections 5. Describe the lab diagnosis for Legionella species
	Francisella and Brucella (T-2)	1. Define Francisella and Brucella 2. Classify Francisella and Brucella 3. List important properties of Francisella and Brucella 4. List the clinical manifestations of Francisella and Brucella 5. Describe the lab diagnosis for Francisella and Brucella 6. Define the antibacterial resistance to Francisella and Brucella 7. Describe prevention measures from Francisella and Brucella
	Enterobactericea (T-4)	1. Define Enterobacteriaceae 2. Classify Enterobacteriaceae members 3. Define the pathogens, as Salmonella, Shigella 4. List general properties of Enterobacteriaceae 5. List the clinical manifestations of Enterobacteriacea 6. Describe the lab diagnosis for Enterobacteriaceae by elementary tests and serologic markers 7. Define the antibacterial resistance to Enterobacteriaceae (i.e.ESBL) 8. Describe prevention measures for the Enterobacteriaceae
	Vibrio and Aeromonas (T-1)	1. Define Vibrio and Aeromonas 2. Classify Vibrio and Aeromonas 3. List important properties of Vibrio 4. List the clinical manifestations of Vibrio 5. Describe the lab diagnosis for Vibrio and Aeromonas 6. Describe prevention measures from Vibrio and Aeromonas
	Campylobacter- Helicobacter (T-2)	1. Define Campylobacter and Helicobacter 2. List Campylobacter and Helicobacter species 3. Classify Campylobacter and Helicobacter 4. List important properties of Campylobacter and Helicobacter 5. List clinical manifestations of Campylobacter and Helicobacter 6. Describe the lab diagnosis for Campylobacter and Helicobacter 7. Define the antibacterial resistance to Campylobacter and Helicobacter
	Pseudomonas and other Non-fermentative bacteria (T-2)	1. Define Pseudomonas and other nonfermentative bacteria 2. List nonfermentative bacteria 3. Classify nonfermentative bacteria 4. List important properties of Pseudomonas 5. List the clinical manifestations of nonfermentative bacteria 6. Describe the lab diagnosis for Pseudomonas and other nonfermentative bacteria 7. Define the antibacterial resistance to Pseudomonas
	SKILLS	
	MICRO. LAB: Culture and Identification Methods (P-1)	1. Define different culture media for different bacteria 2. Describe different colony forms 3. List identification techniques of different bacteria 4. Explain precise diagnostic Algorithms in Bacteriology

At the end of this lesson, the student will be able to:		
KNOWLEDGE		
DEP.	**TOPIC**	**LEARNING OUTCOMES**
ORTHOPEDICS AND TRAVMATOLOGY	Physical Examination of the Orthopedic Patient (T-1)	1. Demonstrate a complete physical examination of the musculoskeletal system
	Physical Examination of the Orthopedic Trauma Patient (T-1)	1. Recognize the historical symptoms of trauma patients 2. Explain the evaluation strategy for the patient with traumatic injury
	Functional Anatomy (T-2)	1. Demonstrate a thorough knowledge of the functional anatomy of the head, neck and vertebral column 2. Apply anatomical knowledge in evaluating movement of the axial skeleton, 3. Appreciate the link between functional anatomy and biomechanics of movement

At the end of this lesson, the student will be able to:		
KNOWLEDGE		
DEP.	**TOPIC**	**LEARNING OUTCOMES**
PATHOLOGY	Basic Structure and Function of Bone (T-1)	1. Describe the basic components of skeletal system, bone formation and bone destruction 2. Explain the differences of bone tissue in pathological conditions
	Congenital Disorders of Bone and Cartilage (T-1)	1. List the three most common congenital bone diseases 2. Describe the pathogenesis of osteogenesis imperfecta, achondroplasia, osteopetrosis, osteoporosis, Paget disease, rickets and osteomalazia 3. Make the differential diagnosis of osteogenesis imperfecta, achondroplasia, osteopetrosis, osteoporosis, Paget disease, ricket and osteomalasia with clinical findings
	Metabolic disorders of bone, Paget Disease of bone (T-1)	1. Define the causes of acquired bone anomalies 2. Make the distinction between primary and secondary osteoporosis in terms of the causes and the morphological changes in bone tissue 3. Determine the clinical manifestations of osteoporosis by morphological changes 4. Explain metabolic bone diseases and their differences 5. Explain the definition, clinical and pathological features, pathogenetic mechanisms and complications of osteoporosis 6. Define rickets and osteomalacia and its clinical and morphological features 7. Define primary and secondary hyperparathyroidism 8. Explain the clinical and pathological features of primary and secondary hyperparathyroidism 9. Define Paget's disease. 10. Explain the clinical and pathological features of Paget's disease
	Fractures and healing of fractures (T-1)	1. Describe types of bone fractures 2. Explain the histological steps of healing of fracture 3. List five of the complications of healing of fracture 4. Describe the morphological stages of fracture healing and their clinical importance 5. List five factors which have affect on fracture healing 6. Explain the pathogenetic process of fracture repair and bone-specific healing conditions 7. Explains the developmental defects of bone and differences between pathogenetic mechanisms

	Osteonecrosis, Osteomyelitis (T-1)	1. Explain three pathways of generation of osteomyelitis 2. Explain the most common pathogens in osteomyelitis according to age groups 3. Explain the two complications of tuberculous osteomyelitis 4. Describe osteomyelitis, its subtypes, pathological features, healing patterns and complications 5. List the clinical and pathological features of tuberculous osteomyelitis
	Bone tumors and Tumorlike lesions (T-1)	1. Describe the histology of benign and malignant tumors of bone 2. Differentiate benign and malignant bone tumors by their radiological and pathological images 3. List the five most common malignant benign bone tumors 4. Describe the general classification of bone tumors and general morphological differences of benign and malignant tumors 5. Identify tumor-like lesions in the differential diagnosis of bone tumors 6. Identify the vital importance of multidisciplinary approach in the diagnosis of bone tumors 7. List benign and malignant tumors and tumor-like lesions of bone and cartilage according to age distribution 8. Describe relatively rare primary bone tumors 9. Define the most common metastatic tumors to bone
	Arthritis,Osteoarthritis, Seronegative Spondyloarthropathies (T-1)	1. Lists five of the most common arthritis 2. Describe osteoarthritis, rheumatoid arthritis and seronegative spondyloarthritis 3. Explain the pathogenesis of osteoarthritis, rheumatoid arthritis and seronegative spondyloarthritis 4. Describe the pathogenesis and morphological changes of degenerative joint diseases
	Infectious Arthritis, Lyme Arthritis, Crystal-Induced Arthritis (T-1)	1. Describe the five most common Infectious Arthritis, Lyme Arthritis and Crystal-Induced arthritis 2. Explain the pathogenesis of gout and pseudogut 3. Describe the differential diagnosis of gout and pseudogut with the help of radiological, pathological and clinical findings 4. Describe the pathogenesis and morphological changes of Infectious Arthritis and Lyme Arthritis 5. List the articular diseases 6. Explain the pathogenetic mechanisms, clinical and morphological features and complications of osteoarthritis and rheumatoid arthritis
	Joint Tumors and Tumorlike Conditions (T-1)	1. Describe histopathological findings of joint tumors and tumorlike conditions 2. Differentiate benign and malignant joint tumors and tumorlike conditions with radiological and pathological images 3. Give at least two examples for malignant and benign lesions of joint tumors and tumorlike conditions 4. Explain the basic morphological differences of benign and malignant tumors
	Soft tissue tumors (T-1)	1. Describe the general classification of soft tissue tumors 2. Describe the histomorphological findings of benign and malignant soft tissue tumors 3. List the five most common malignant and benign soft tissue tumors 4. Describe benign and malignant subtypes of soft tissue tumors according to their histogenesis 5. Explain the basic clinical and pathological features of soft tissue tumors 6. List the basic prognostic diagnostic criteria for commonly seen malignant
	Disorders of Skeletal Muscle, Patterns of Skeletal Muscle Injury and Atrophy (T-1)	1. Explain the Patterns of Peripheral Nerve Injury 2. Explains the pathogenesis and clinical findings of the Guillain-Barré syndrome, Chronic inflammatory demyelinating polyneuropathy,

		Diabetic peripheral neuropathy and toxic, vasculitic and inherited forms of peripheral neuropathy
	Inherited Disorders of Skeletal Muscle, Acquired Disorders of Skeletal Muscle (T-1)	1. Explain the pathogenesis and diagnostic methods of relatively common skeletal muscle diseases
	SKILLS	
	LAB-2	1. Gain the ability of identifying the pathological areas in normal tissues microscopically 2. Get through to benign and malignant bone and soft tissue tumors microscopically 3. Give descriptions for the microscopic findings of benign and maligant soft tissue and bone neoplasms

At the end of this lesson, the student will be able to:		
KNOWLEDGE		
DEP.	**TOPIC**	**LEARNING OUTCOMES**
PHARMACOLOGY	Histamine, Serotonin, & the Ergot Alkaloids (T-2)	1. List the major organ system effects of histamine and serotonin. 2. Describe the pharmacology of the 3 subgroups of H1 antihistamines; list prototypical agents for each subgroup. 3. Describe the pharmacology of the H2 antihistamines; name 2 members of this group. 4. Describe the action and indication for the use of sumatriptan. 5. Describe one 5-HT2 and one 5-HT3 antagonist and their major applications. 6. List the major organ system effects of the ergot alkaloids. 7. Describe the major clinical applications and toxicities of the ergot drugs.
	The Eicosanoids: Prostaglandins, Thromboxanes, Leukotrienes, & Related Compounds (T-2)	1. List the major effects of PGE1, PGE2, PGF2α, PGI2, LTB4, LTC4, and LTD4. 2. List the cellular sites of synthesis and the effects of thromboxane and prostacyclin in the cardiovascular system. 3. List the types of currently available antagonists of leukotrienes and prostaglandins and their targets (receptors or enzymes). 4. Explain the different effects of aspirin on prostaglandin, thromboxane, and leukotriene synthesis.
	Nitric Oxide (T-1)	1. Name the enzyme responsible for the synthesis of NO in tissues. 2. List the major beneficial and toxic effects of endogenous NO. 3. List 2 drugs that cause release of endogenous NO. 4. List 2 drugs that spontaneously or enzymatically break down in the body to release NO.
	Nonsteroidal Anti-Inflammatory Drugs, Disease-Modifying Antirheumatic Drugs, Nonopioid Analgesics, & Drugs Used in Gout (T-3)	1. Describe the effects of NSAIDs on prostaglandin synthesis. 2. Contrast the functions of COX-1 and COX-2. 3. Compare the actions and toxicity of aspirin, the older nonselective NSAIDs, and the COX-2-selective drugs. 4. Explain why several of the highly selective COX-2 inhibitors have been withdrawn from the market. 5. Describe the toxic effects of aspirin. 6. Describe the effects and the major toxicity of acetaminophen. 7. Name 5 disease-modifying antirheumatic drugs (DMARDs) and describe their toxicity. 8. Contrast the pharmacologic treatment of acute and chronic gout. 9. Describe the mechanisms of action and toxicity of 3 different drug groups used in Gout
	Vasoactive Peptides (T-2)	1. Name an antagonist of angiotensin II at its receptor and at least 2 drugs that reduce the formation of ANG II. 2. Outline the major effects of bradykinin and brain natriuretic peptide. 3. Describe the functions of converting enzyme (peptidyl dipeptidase, kininase II). 4. List 2 potent vasoconstrictor peptides. 5. Describe the effects of vasoactive intestinal peptide and substance P.

		6. Describe the clinical applications of bosentan and aprepitant.

At the end of this lesson, the student will be able to:		
KNOWLEDGE		
DEP.	**TOPIC**	**LEARNING OUTCOMES**
PHYSICAL THERAPHY AND REHABILITATION	Physical Examination of the locomotor system (T-1)	1. Describe the steps of physical examination in physical medicine and rehabilitation 2. Describe what to look for in inspection 8. Describe the difference between active range of motion and passive range of motion
	Osteoporosis (T-1)	1. Describe the definition of osteoporosis 2. Describe the pathophysiology of osteoporosis 3. List common sites and risk factor for development of osteoporosis 4. Classify the type of osteoporosis 5. Describe the diagnostic methods of osteoporosis 6. Describe clinical presentation of osteoporosis 5. Discuss the investigations and treatment of osteoporosis
	Soft Tissue Pain (T-1)	1. Tell the most common diagnoses with soft tissue pain 2. Tell the aspects of myofascial pain syndrome 3. Tell the aspects of fibromyalgia 4. Tell the differences between strain and sprain
	Low Back Pain (T-1)	1. Distinguish the key anatomical structures implicated in the pathogenesis of low back pain 2. Identify the clinical characteristics of low back pain 3. Identify the most common causes of low back pain 4. Identify the clinical features of cauda equina syndrome
	Spondyloarthropathies (T-1)	1. Explain the clinical features and presentations of the spondyloarthropathies 2. Tell the common types of spondyloarthrtopathies 3. Explain the clinical feature of ankylosing spondylitis 4. Explain the clinical features of reactive arthritis (Reiter syndrome)
	Rheumatoid Arthritis (T-1)	1. Explain the clinical features of Rheumatoid Arthritis (RA) 2. Describe pathophysiologic mechanisms that result in the inflammation and pathology of RA 3. Explain the articular and extraarticular manifestations of RA

At the end of this lesson, the student will be able to:		
KNOWLEDGE		
DEP.	**TOPIC**	**LEARNING OUTCOMES**
PUBLIC HEALTH	Musculoskeletal Disorders and Ergonomics (T-1)	1. Define the terms ergonomics and ergonomics hazard 2. Explain basic principles of ergonomics 3. Explains the relation of ergonomics with musculoskeletal disorders 4. List the risk factors for musculoskeletal injuries 5. Give at least three examples of situations where indivuduals may be at risk for musculoskeletal injury 6. Identify two ergonomic solutions to reduce the risk factors for musculoskeletal injuries

At the end of this lesson, the student will be able to:		
SKILLS		
DEP.	**TOPIC**	**LEARNING OUTCOMES**
CLINICAL SKILLS	Elastic bandage application (T-1) (P-1)	1. Describe the purpose of elastic bandage usage 2. Demonstrate application of an elastic bandage

At the end of this lesson, the student will be able to:		
KNOWLEDGE		
DEP.	**TOPIC**	**LEARNING OUTCOMES**
MEDICAL GENETICS	Human Genetic Diversity - Part 1: Mutation and Polymorphism (T-2)	1. Explain nature of genetic variation 2. Define allele, wild-type or common allele / variant or mutation 3. Define polymorphisms and its importance in medical genetics. 4. List the common variation types in human genome with respect to their size, frequency and basis for the polymorphisms 5. Describe the different types of mutations: Synonymous/nonsynonymous, insertion/deletion 6. Explain DNA fingerprinting with microsatellite polymorphisms, short tandem repeat polymorphisms, mobile element insertion polymorphisms. 7. Explain the copy number variations
	Human Genetic Diversity - Part 2: Mutation and Polymorphism (T-2)	1. List the causes of mutations and describe the rate of mutagenesis 2. Explain the mutation rates for selected human diseases 3. Explain the sex differences and age effects on mutation rates 4. List the different types of mutations, their consequences and frequencies 5. Explain the term dynamic mutations 6. Define the clinical sequencing
	Principles of Clinical Cytogenetics and Genome Analysis (T-4)	1. Explain the principles of clinical cytogenetics and genome analysis 2. Explain cytogenetics, chromosome and genome analysis using CGH and microarray analysis. 3. Explain chromosome and genome analysis using whole genome sequencing. 4. Describe the clinical indications for chromosome and genome analysis 5. Explain the basic steps and different types of chromosome identification 6. Describe fluorescence in situ hybridization method 7. Explains strategies for detection of numerical and structural chromosome abnormalities by whole-genome sequence analysis

MED 2007: CIRCULATORY AND RESPIRATORY SYSTEM DISORDERS				
Course Date	December 23, 2024-January 24, 2025			
Exam Date	Practical Exams: January 22, 2025 Theoretical Exam: January 23, 2025			
Course Coordinators:	Betilay Topkara Arslan			
Academic Unit	**Academic Staff**	**Theoretical hours**	**Practical hours**	**Total**
Anatomy (Topographic)	Uğur Baran Kasırga, Assist. Prof.	8	-	8
Biochemistry	Yeşim Neğiş, Assoc. Prof. Özlem Unay Demirel, Assoc. Prof.	11	-	11
Cardiology	Gürkan Karaca, Assist. Prof.	6	-	6
Embriyology	Yasemin Ersoy Canıllıoğlu, Assoc. Prof.	5	-	5
Medical Microbiology	Gülden Çelik, Prof. Orhan Cem Aktepe, Prof. Rabia Can Sarınoğlu, Assoc. Prof. Melda Özdamar, Assoc. Prof.	16	1	17
Pathology	Özlem Yapicier, Prof. Zehra Affan, Assis. Prof.	22	4	27
Pharmacology	Kevser Erol, Prof. Fatih Özdener, Assoc. Prof. Zülfiye Gül, Assoc. Prof.	22	-	22
Physiology	Yasemin Keskin Ergen, Assist. Prof.	4	4	10
Pulmonary Diseases	Merih Kalamanoğlu Balcı, Prof. N. Zeynep Uslu, Assist. Prof.	4	-	4
Clinical Skills	Özlem Unay Demirel, Assoc. Prod	1	1	2
TOTAL		99	10	112
STUDY TIME				46

COURSE AIM:

The aim of this course is:

- to provide knowledge about the basic pathologic mechanisms of cardiovascular and respiratory system disorders;
- provide knowledge about the medically important bacteria, their properties, the disorders they cause and the prevention, diagnosis and the treatment of these infectious diseases;

- to provide detailed knowledge about the thorax in terms of topographical anatomy;
- to get skills about arterial blood gas sampling;
- to get skills about working as a part of a team.

LEARNING OUTCOMES:

At the end of this lesson, the student will be able to:		
KNOWLEDGE		
DEP.	**TOPIC**	**LEARNING OUTCOMES**
TOPOGRAPHIC ANATOMY	Thorax-I: Region Thoracicum Anterior (T-2)	1. Describe the walls of the thorax 2. Explain the cutaneous innervation and superficial veins of thorax 3. Explain the fascia of the thorax 4. Explain the bony structures of the thorax 5. Explain the muscles of the region thoracicum anterior 6. Explain the structures superficial to the deep fascia of the region thoracicum anterior including the mammary glands 7. Describe the lymphatics, vessels and nerves of the thoracic wall 8. Explain the joints related with the thoracic wall 9. Explain main functions and clinical importance of region thoracicum anterior
	Thorax-II: Cavitas Thoracis (T-2)	1. Explain the borders of the cavitas thoracis 2. Explain the subdivisions of the cavitas thoracis 3. Describe the pulmonary cavity and its contents 4. Describe the mediastinum and subdivisions of the mediastinum 5. Explain the structures (nervous structures, vessels, lymphatic structures) in each subdivision of the mediastinum 6. Explain the relationships of structures in each subdivision of the mediastinum in detail 7. Define the pericardium and subdivisons of the pericardium 8. Explain contents of the pericardium, 9. Explain the sinuses related with the pericardium including the locations and relationships 10. Describe vessels, nerves and lymphatics of the pericardium 11. Explain clinical significance of cavitas thoracis
	Thorax-III: Heart (T-2)	1. Explain the location and relationships of the heart in detail 2. Distinguish the structures on the outer surface of the heart in detail 3. Describe the projection of the heart on the thoracic wall 4. Distinguish the chambers of the heart 5. Discuss the internal structures of the heart in detail 6. Describe the location of the heart valves 7. Describe the cardiac skeleton 8. Define the locations of auscultation points on the thoracic wall. 9. Distinguish the arteries of the heart including branches of each coronary artery. 10. Distinguish the veins of the heart including the branches of each main vein. 11. Define the conduction system of the heart. 12. Describe the relationships of the conduction system of the heart with the rest of the heart on models and cadavers. 13. Discuss the nerves of the heart in detail
	Thorax-IV: Trachea and Lungs (T-2)	1. Explain the location and anatomical features of trachea in detail 2. Describe the neurovascular structures of the trachea in detail 3. Explain the location and anatomical features of the lungs in detail 4. Explain the bronchial tree in detail 5. Describe the neurovascular structures of the lungs in detail 6. Explain the lymphatics of the trachea and lungs 7. Discuss the relationships of lungs and related structures in detail

		8. Describe the main functions and clinical relevance of the trachea and lungs

At the end of this lesson, the student will be able to:		
KNOWLEDGE		
DEP.	**TOPIC**	**LEARNING OUTCOMES**
BIOCHEMISTRY	Biochemistry Of Lipoprotein Metabolism (T-2)	1. Describe the classification, composition and characteristics of plasma lipoproteins 2. Explain the distribution and function of major types of apolipoproteins found in the different lipoprotein classes. 3. Describe lipoprotein determination methods (lipoprotein electrophoresis and ultracentrifugation methods) 4. Explain the synthesis, degradation and metabolism of chylomicrons, VLDL, LDL, HDL 5. Explain the functions of lipoprotein lipase and hepatic lipase enzymes 6. Explain the LDL receptor pathway and regulation of cholesterol metabolism 7. Describe the structures of Lipoprotein (a) and LpX Lipoprotein and explain their clinical significance 8. Explain the major types of receptors (LDL Receptor, LRP Receptor, scavanger receptors) and transporters that lipoproteins interact
	Biochemistry Of Atherosclerosis (T-1)	1. Define of atherosclerosis and explain the stages 2. Explain "Response of Injury" Hypothesis 3. Explain the role of oxidized LDL, growth factors and cytokines in the pathogenesis of atherosclerosis 4. Explain the traditional and non-traditional risk factors of atherosclerosis 5. Explain antiatherogenic effects of HDL 6. Explain biochemical markers of atherosclerosis and comment on laboratory tests that assess lipid metabolism and cardiovascular risk
	Disorders Of Lipid Metabolism: Dyslipidemias And Hypolipidemias (T-2)	1. Explain the primary and secondary causes of lipoprotein metabolism disorders 2. Classify hyperlipidemias based on the elevated lipoproteins (WHO (Fredrickson) classification) 3. Explain the metabolic and genetic defects in clinically relevant hyperlipidemias and define their clinical findings 4. Explain the types, causes and clinical findings of hypolipoproteinemias 5. Explain the mechanism and clinical findings of plasma lecithin cholesterol acyl transferase (LCAT) deficiency 6. Explain the mechanism and clinical findings of HDL lipoprotein deficiency (Tangier disease) 7. Explain the biochemical diagnostic methods used in diagnosis and prognosis of lipid and lipoprotein metabolism disorders
	Cardiac İnjury Markers (T-2)	1. Classify the biomarkers used to test cardiac function 2. Tell clinical states related with myocardial injury 3. Explain the biomarkers of myocardial injury 4. Explain the biomarkers used in case of hemodynamic stress 5. Explain the biomarkers used to test inflammation and prognosis 6. Explain the use of cardiac markers in clinical states of cardiac injury
	Introduction To Porphyrins (T-1)	1. Define the structure of porphyrins 2. Tell the chemical properties of porphyrins 3. Define heme and related proteins
	Disorders of Porphyrine Metabolism (T-2)	1. Classify the porphyrias according to their origin of tissue 2. Explain the analysis of porphyrins in the clinical laboratory 3. Describe the methods used in the diagnosis of porphyrias

		4. Tell the biochemical causes of porphyrias 5. Tell the enzymes that are involved in the pathogenesis porphyrias 6. Explain the distinct clinical features of porphyrias related with enzyme defects
	Heme Biosynthesis (T-1)	1. Explain the reactions of heme biosynthesis 2. Explain the enzymatic regulation of heme biosynthesis 3. Tell the enzymes involved in biosynthesis of heme

At the end of this lesson, the student will be able to:		
KNOWLEDGE		
DEP.	**TOPIC**	**LEARNING OUTCOMES**
CARDIOLOGY	Common Symptoms of Cardiovascular Disease (Angina, Dispnea, Palpitation, Edema) (T-1)	1. Describe common symptoms of cardiovascular diseases 2. Identify risk factors that contribute to the development of cardiovascular diseases
	Examination Of Cardiovascular System (T-1)	1. Describe the basic anatomy and physiology of the cardiovascular system 2. Explain how to collect a focused health history related to the cardiovascular system 3. Explain how to undertake a physical examination of the cardiovascular system
	Circulatory dynamics in cardiac failure and Circulatory Shock (T-2)	1. Define heart failure. 2. Define normal pressure values in cardiac chambers; explain central vein pressure, pulmonary artery and vein pressures 3. List the normal values of stroke volume, cardiac output, heart rate and explain the relationship between them 4. Explain the pressure changes that occur during heart failure 5. Explain the pathophysiology of heart failure 6. Explain the pathophysiological mechanisms of possible symptoms of heart failure (shortness of breath, pretibial edema, fatigue) 7. Explain the pathophysiological mechanisms of pulmonary edema 8. Explain the principles of treatment of heart failure in the light of pathophysiological mechanisms 9. Define (circulatory) shock 10. Name the different types of shock 11. Describe the relationship between stroke volume, cardiac output and blood pressure 12. Describe cardiac disorders that may cause shock 13. Describe the consequences of shock 14. Describe the general principles of shock therapy from a pathophysiological perspective
	Introduction To Clinical Electrocardiography (T-2)	1. Discuss the cardiac anatomy essential for understanding the basic principles of ECG interpretation 2. Discuss the difference between depolarization and repolarization 3. Describe how ECG wave forms are produced 4. Explain the purpose of ECG monitoring 5. Describe the electrical mechanisms of arrhythmias and their electrocardiographic reflections

At the end of this lesson, the student will be able to:		
KNOWLEDGE		
DEP.	**TOPIC**	**LEARNING OUTCOMES**
EMBRIYOLOGY	Development Of Cardiovascular System (T-3)	1. Acquire knowledge concerning the development stages of heart, blood vessels, prenatal and neonatal circulations 2. Describe the anomalies that occur during the development stages of cardiovascular system
	Developmet Of Respiratory System (T-2)	1. Describe the development of the respiratory system from the endodermal and mesodermal components. 2. Identfy the main steps in the development of the lungs. 3. Describe the development of the diaphragm and thoracic cavities. 4. Define the respiratory changes before and after birth.

		5. Describe the developmental aberrations during the development process such as tracheo - oesophageal fistula (T.O.F); oesphageal atresia; diaphragmatic hernia; lobar emphysema.

At the end of this lesson, the student will be able to:		
KNOWLEDGE		
DEP.	**TOPIC**	**LEARNING OUTCOMES**
MEDICAL MICROBIOLOGY	Introduction To Anaerobs (T-1)	1. Define anaerobic bacteria 2. Classify anaerobic bacteria 3. List important properties of anaerobic bacteria 4. Describe the specific conditions for transport and cultivation for lab diagnosis of anaerobic bacteria
	Clostiridium (T-3)	1. Define Clostridium genus 2. Classify Clostridium genus 3. List important properties of Clostridium genus 4. List the clinical manifestations of Clostridium genus 5. Describe the lab diagnosis of Clostridium genus 6. Define the antibacterial resistance in Clostridium genus
	Anaerobic Gram Negative Bacteria (T-2)	1. Define anaerobic gram negative bacteria 2. Classify anaerobic gram negative bacteria 3. List important properties of anaerobic gram negative bacteria 4. List clinical manifestations of anaerobic gram negative bacteria 5. Describe the lab diagnosis for anaerobic gram negative bacteria 6. Define the antibacterial resistance in anaerobic gram negative bacteria
	Anaerobic, Non-Spore-Forming, Gram Positive Bacteria (T-1)	1. Define anaerobic non-spore-forming gram positive bacteria 2. Classify anaerobic non-spore-forming ram positive bacteria 3. List important feature of non-spore-forming gram positive bacteria 4. List clinical manifestations of non-spore-forming gram positive bacteria 5. Describe the lab diagnosis of non-spore-forming gram positive bacteria 6. Define the antibacterial resistance in non-spore-forming gram positive bacteria
	Bartonella& Miscellaneous Gram negative Bacteria (T-1)	1. Define Bartonella genus 2. Define Miscellaneous Gram negative Bacteria 3. Classify Miscellaneous Gram negative Bacteria 4. List important properties of Bartonella and Miscellaneous Gram negative Bacteria 5. List the clinical manifestations of Bartonella and related bacteria 6. Describe the lab diagnosis of Bartonella and related bacteria
	Spirochetes: Treponema, Leptospira and other Spirochetes (T-3)	1. Define Spirochetes 2. List Spirochetes: Treponema, Leptospira and Borrelia 3. Classify Spirochetes: Treponema, Leptospira and Borrelia 4. List important properties of Spirochetes 5. List clinical manifestations of Treponema, Leptospira and Borrelia 6. Describe the lab diagnosis of Spirochetes 7. Prevention measures from Treponema, Leptospira and other Spirochetes infections
	Chlamydia and Chlamydophila (T-2)	1. Define Chlamydia and Chlamydophila 2. Classify Chlamydia and Chlamydophila 3. List important properties of Chlamydia and Chlamydophila 4. List the clinical manifestations of Chlamydia and Chlamydophila infections 5. Describe the lab diagnosis of Chlamydia and Chlamydophila
	Mycoplasma and Ureoplasma (T-1)	1. Define Mycoplasma and Ureoplasma 2. Classify Mycoplasma and Ureoplasma 3. List important properties of Mycoplasma and Ureoplasma 4. List the clinical manifestations of Mycoplasma and Ureoplasma infections

		5. Describe the lab diagnosis of Mycoplasma and Ureoplasma 6. Describe prevention measures from Mycoplasma and Ureoplasma infections
	Rickettsia, Erlichia, Anaplasma and Coxiella (T-2)	1. Define Rickettsia, Erlichia, Anaplasma and Coxiella 2. Classify Rickettsia, Erlichia, Anaplasma and Coxiella 3. List important properties of Rickettsia,,Erlichia, Anaplasma and Coxiella 4. List the clinical manifestations of Rickettsia,,Erlichia, Anaplasma and Coxiella 5. Describe the lab diagnosis of Rickettsia,,Erlichia, Anaplasma and Coxiella
	SKILLS	
	Microbiology Laboratory : Serological Methods (P-1)	1. Define the most commonly used immunoassays 2. Interpret their results and monitorisation 3. Describe ELISA methodology 4. List agglutination tests

At the end of this lesson, the student will be able to:		
KNOWLEDGE		
DEP.	**TOPIC**	**LEARNING OUTCOMES**
PATHOLOGY	Overview Of Heart Disease: Left And Right Sided Heart Failure (T-1)	1. Define the left and right-sided heart failures 2. Explain pump failures, obstructions, regurgitant flow, shunted flow, disorders of cardiac conduction, rupture of the heart or major vessels 3. Explain morphological changes.and clinical features of the left and right-sided heart failure 4. List the main causes of left and right ventricular hypertrophy 5. Describe the systemic effects of left and right ventricular failure to the lung and the body
	Ischemic Heart Disease: Angina Pectoris And Myocardial İnfarction (T-2)	1. Explain pathogenesis of the angina pectoris and myocardial infarction. 2. Describe and interpret the clinical, laboratory and pathological findings of angina pectoris and myocardial infarction. 3. Describes ischemic heart disease and explains the main pathogenetic causes 4. Explain ischemic heart disease according to clinical findings by associating subtypes with vascular pathologies. 5. Relate macroscopic and microscopic morphological features of myocardial infarction to the time elapsed after occlusion 6. List the complications of myocardial infarction in relation with the duration 7. Classify the mechanisms and morphological features of chronic ischemic heart disease
	Arrhythmias And Hypertensive Heart Disease (T-1)	1. Explain pathogenesis and types of the arrhythmias 2. Explain the reasons of the sudden cardiac death 3. Explain the pathogenesis of the systemic (left-sided) hypertensive heart disease 4. Explain the pathogenesis of the right-sided hypertensive heart disease 5. Explain the pathological organ changes of the left and right-sided hypertensive heart disease
	Valvular Heart Disease: Degenerative And Rheumatic Valvular Disease (T-1)	1. Explain the pathogenesis and systemic findings of rheumatic endocarditis 2. Describes the macroscopic and microscopic features of rheumatic heart disease
	Valvular Heart Disease: Infective Endocarditis And Noninfective Vegetations (T-1)	1. Define the macroscopic and microscopic features of infective endocarditis 2. Distinguish the clinical and pathological features and differences of subacute and acute infective endocarditis 3. List the main cardiac and embolic complications of infective endocarditis

	Cardiomyopathies:Dilated And Hypertophicand restrictive Cardiomyopathy (T-1)	1. List the age-related changes in the heart 2. Explain macroscopic and microscopic features of hypertropy in the heart 3. Describe the subtypes, clinical and pathological features of cardiomyopathies
	Cardiomyopathies:Restrictive Cardiomyopathy And Myocarditis (T-1)	1. Define myocarditis and explain the main factors / causes of myocarditis 2. Distinguish macroscopic and microscopic features of myocarditis according to causative factors 3. Describe the types of acute pericarditis 4. Define the concept of chronic healed pericarditis and subtypes of them 5. Explain the three major heart tumors
	Arteriosclerosis, Atherosclerosis, Aneurysms And Dissections (T-1)	1. Describe the clinical features of life-threatening diseases (aortic aneurysm, aortic dissection) 2. Define the main congenital vascular pathological conditions 3. Explain the dysfunction, stimulation and activation of the endothelial cell in relation to the development of vascular disease and the damage response of the vascular wall 4. Describe the morphological features of the atheroma plaque and plaque complications with their reflection in the clinic 5. Describe the pathogenesis of atherosclerosis 6. List the types of aneurysm, and macroscopic features and complications of them
	Noninfectious And İnfectious Vasculitis (T-1)	1. Define the types of vascular diseases 2. Associate vasculitis with clinical findings 3. Describe the pathogenesis of vasculitis 4. Explain two basic features of histomorphological changes of vasculitis
	Lung: Atelectasis, Acut Respiratory Distress Syndrome, (chronic obstructive versus restrictive pulmonary diseases (COPD-CRPD) (T-1)	1. List the congenital anomalies of the lung 2. Explain the definition of atelectasis, its subtypes, macroscopic and microscopic features 3. Describe the causes, morphological features, clinical outcomes of acute respiratory distress syndrome 4. Explain tests which used in differential diagnosis of COPD and CRPD 5. Explain the definition of acute and chronic rhinitis, sinusitis and pathological features according to subtypes 6. List the major nasal, sinus and nasopharyngeal tumors 7. Describe the clinical and pathological features of nasopharyngeal carcinoma 8. Describe macroscopic features and microscopic subtypes of laryngeal carcinoma
	Obstructive Lung (Aırway) Diseases: Emphysema, Chronic Bronchitis (T-1)	1. Define emphysema types, macroscopic and microscopic features and complications 2. Describe the pathogenesis and morphology of the chronic bronchitis
	Obstructive Lung (Aırway) Diseases: Asthma, Bronchiectasis (T-1)	1. Explain clinical and pathological findings and immunopathogenesis of the bronchial asthma 2. Describe the pathogenesis and morphology of the bronchiectasis
	Chronic İntestitial Lung Diseases: Fibrosing diseases, Pneumoconioses (T-1)	1. Define the restrictive pulmonary diseases 2. Explain clinical and pathological findings and of restrictive pulmonary disease 3. Describe the pathogenesis, subtypes and morphological features of fibrosing pulmonary diseases 4. Describe the pathogenesis and morphology of the pneumoconioses 5. Classify the diffuse restrictive (interstitial) lung diseases 6. Describe the causes of chronic restrictive lung diseases 7. Explain the pneumoconiosis and the main types of pneumoconiosis 8. Describe the features and microscopic findings of lung involvement in sarcoidosis 9. Define idiopathic pulmonary fibrosis.

	Chronic interstitial lung diseases: Granulomatous diseases, hypersensitivity pneumonitis, pulmonary eosinophilia, smoking related interstitial diseases (T-1)	1. List chronic interstitial lung diseases 2. Define the granulomatous diseases, hypersensitivity pneumonitis, pulmonary eosinophilia, smoking related interstitial diseases 3. Explain clinical and pathological findings and immunopathogenesis of granulomatous diseases, hypersensitivity pneumonitis, pulmonary eosinophilia, smoking related interstitial diseases
	Pulmonary Embolism, Hemorrhage, İnfarction, Hypertension (T-1)	1. Describe the causes and consequences of pulmonary embolism 2. List vascular diseases of the lung 3. Explain the causes and macroscopic and microscopic changes.of pulmonary edema and pulmonary infarction
	Pulmonary İnfections: Acute Pneumonias And Abscess (T-1)	1. Define the factors causing pneumonia 2. Explain the types of pneumonia and the reasons that facilitate the pathogenesis 3. Describe the macroscopic and microscopic features and clinical course of lobar and lobular pneumonia 4. Describe the complications of pneumonia. 5. Explain the concept of interstitial / atypical pneumonia and its difference from classical pneumoni
	Pulmonary İnfections: Chronic Pneumonias, Tuberculosis (T-1)	1. Describe the risk factors and pathogenesis of tuberculosis 2. Describe the clinical and pathological features of primary pulmonary tuberculosis 3. Describe the clinical and pathological features of secondary pulmonary tuberculosis 4. Explain the main types of inflammation seen in tuberculosis, morphological features of the fresh, old and reactive caverns
	Pulmonary İnfections: Nonruberculous Mycobacterial Diseases, Pneumonia İn İmmunocompromised Host,Fungal İnfections (T-1)	1. Define the nontuberculous mycobacterial diseases, pneumonia in immunocompromised host, fungal infections of lung. 2. Explain the clinical and pathological findings of nontuberculous mycobacterial diseases, pneumonia in immunocompromised host, fungal infections
	Lung Tumors And Pleural Lesions (T-2)	1. Classify lung tumors 2. Describe the etiopathogenesis, clinical and morphological features, treatment approach according to subtypes of bronchogenic carcinoma 3. Identify secondary pathologies developing in lung carcinoma 4. Describe the clinical course of lung cancer and the main paraneoplastic syndromes 5. Explain the metastatic tumors of the lung and macroscopic differences from primary tumors 6. Describe the substances accumulated in the pleural space and their etiopathogenetic features 7. Explain the definition of pleuritis, its subtypes and differences in macroscopic appearance 8. Describe healing patterns of pleuritis 9. List the main features of mesothelioma
	Congenital heart diseases (T-1)	1. Define the most important congenital heart diseases (CHD) 2. Classify early cyanotic and late cyanotic or non-cyanotic and obstructive CHD 3. Define Atrial Septal Defect (ASD), foramen ovale and relate them with embryogenesis 4. Define the diagnosis and treatment of the congenital heart diseases
	SKILLS	
	Pathology Lab (Lab-4)	1. Gain the ability of identifying the pathological areas in normal tissues microscopically 2. Recognize the histomorphologic findings of lobar and lobular pneumonia 3. Discuss pulmonary tuberculosis macroscopic types, properties, fresh and old caverni 4. Get through to benign and malignant lung tumors microscopically 5. Differentiate primary and secondary neoplasms of the lung microscopically

		6. Define microscopic findings of atelectasis and emphysema

At the end of this lesson, the student will be able to:		
KNOWLEDGE		
DEP.	**TOPIC**	**LEARNING OUTCOMES**
PHARMACOLOGY	Introduction To Autonomic Pharmacology (T-2)	1. Describe the steps in the synthesis, storage, release, and termination of action of the major autonomic transmitters. 2. Name the major types and subtypes of autonomic receptors and the tissues in which they are found. 3. Describe the organ system effects of stimulation of the parasympathetic and sympathetic systems. 4. Name examples of inhibitors of acetylcholine and norepinephrine synthesis, storage, and release. Predict the effects of these inhibitors on the function of the major organ systems. 5. List the determinants of blood pressure and describe the baroreceptor reflex response for the following perturbations: (1) blood loss, (2) administration of a vasodilator, (3) a vasoconstrictor, (4) a cardiac stimulant, (5) a cardiac depressant. 6. Describe the results of transplantation of the heart (with interruption of its autonomic nerves) on cardiac function. 7. Describe the actions of several toxins that affect nerve function: tetrodotoxin, saxitoxin, botulinum toxins, and latrotoxin.
	Cholinoceptor-Activating & Cholinesterase-İnhibiting Drugs (T-2)	1. List the locations and types of acetylcholine receptors in the major organ systems (CNS, autonomic ganglia, eye, heart, vessels, bronchi, gut, genitourinary tract, skeletal muscle, exocrine glands). 2. Describe the second messengers involved and the effects of acetylcholine on the major organs. 3. List the major clinical uses of cholinomimetic agonists. 4. Describe the pharmacodynamic differences between direct-acting and indirect-acting cholinomimetic agents. 5. List the major pharmacokinetic differences of the direct- and indirect-acting cholinomimetics. 6. List the major signs and symptoms of (1) Mushroom toxicities (2) organophosphate insecticide poisoning and (3) acute nicotine toxicity.
	Cholinoceptor-Blocking Drugs (T-1)	1. Describe the effects of atropine on the major organ systems (CNS, eye, heart, ves- sels, bronchi, gut, genitourinary tract, exocrine glands, skeletal muscle). 2. List the signs, symptoms, and treatment of atropine overdose. 3. List the major clinical indications and contraindications for the use of muscarinic antagonists. 4. Describe the effects of the ganglion-blocking nicotinic antagonists. 5. List one antimuscarinic agent promoted for each of the following uses: to produce mydriasis and cycloplegia; to treat parkinsonism, asthma, bladder spasm, and the muscarinic toxicity of insecticides 6. Describe the mechanism of action and clinical use of pralidoxime.
	Adrenoceptor Agonists & Sympathomimetic Drugs (T-2)	1. Name a typical nonselective α agonist, a selective α2 agonist, a nonselective β agonist, a selective β1 agonist, selective β2 agonists, an α1, α2, β1 agonist, and an α1, α2, β1, β2 agonist. 2. List tissues that contain significant numbers of α1 or α2 receptors. 3. List tissues that contain significant numbers of β1 or β2 receptors. 4. Describe the major organ system effects of a pure α agonist, a pure β agonist, and a mixed α and β agonist 5. Describe a clinical situation in which the effects of an indirect sympathomimetic would differ from those of a direct agonist. 6. List the major clinical applications of the adrenoceptor agonists
	Adrenoceptor Antagonist Drugs (T-2)	1. Describe and compare the effects of an α blocker on the blood pressure and heart rate responses to epinephrine, norepinephrine, and phenylephrine. 2. Compare the pharmacodynamics of propranolol, labetalol, metoprolol, and pindolol.

		3. Compare the pharmacokinetics of propranolol, atenolol, esmolol, and nadolol. 4. Describe the clinical indications and toxicities of typical α and β blockers. 5. List and describe several drugs useful in glaucoma. 6. Describe the pharmacological characterisation of ganglia blockers.
	Vasodilators & The Treatment Of Angina Pectoris (T-2)	1. Describe the pathophysiology of effort angina and vasospastic angina and the major determinants of cardiac oxygen consumption. 2. List the strategies and drug targets for relief of anginal pain. 3. Contrast the therapeutic and adverse effects of nitrates, β blockers, and calcium channel blockers when used for angina. 4. Explain why the combination of a nitrate with a β blocker or a calcium channel blocker may be more effective than either alone. 5. Explain why the combination of a nitrate and sildenafil is potentially dangerous. 6. Contrast the effects of medical therapy and surgical therapy of angina.
	Antihypertensive Agents (T-2)	1. List 4 major groups of antihypertensive drugs, and give examples of drugs in each group. (Renin inhibitors are not considered an independent major group; can you name the one available drug that acts by this mechanism?) 2. Describe the compensatory responses, if any, to each of the 4 major types of antihypertensive drugs. 3. List the major sites of action of sympathoplegic drugs in clinical use, and give examples of drugs that act at each site. 4. List the 4 mechanisms of action of vasodilator drugs. 5. List the major antihypertensive vasodilator drugs and describe their effects. 6. Describe the differences between the 2 types of angiotensin antagonists. 7. List the major toxicities of the prototype antihypertensive agents.
	Drugs Used İn Heart Failure (T-2)	1. Describe the strategies and list the major drug groups used in the treatment of acute heart failure and chronic failure. 2. Describe the mechanism of action of digitalis and its major effects. Indicate why digitalis is no longer considered a first-line therapy for chronic heart failure. 3. Describe the nature and mechanism of digitalis's toxic effects on the heart. 4. List positive inotropic drugs other than digitalis that have been used in heart failure. 5. Explain the beneficial effects of diuretics, vasodilators, ACE inhibitors, and other drugs that lack positive inotropic effects in heart failure.
	Agents Used in Cardiac Arrhythmias (T-3)	1. Describe the distinguishing electrophysiologic action potential and ECG effects of the 4 major groups of antiarrhythmic drugs and adenosine. 2. List 2 or 3 of the most important drugs in each of the 4 groups. 3. List the major toxicities of those drugs. 4. Describe the mechanism of selective depression by local anesthetic antiarrhythmic agents. 5. Explain how hyperkalemia, hypokalemia, or an antiarrhythmic drug can cause an arrhythmia.
	Diuretic Agents (T-2)	1. List 5 major types of diuretics and relate them to their sites of action. 2. Describe 2 drugs that reduce potassium loss during sodium diuresis. 3. Describe a therapy that reduces calcium excretion in patients who have recurrent urinary stones. 4. Describe a treatment for severe acute hypercalcemia in a patient with advanced carcinoma. 5. Describe a method for reducing urine volume in nephrogenic diabetes insipidus. 6. Describe a method for increasing water excretion in SIADH secretion. 7. List the major applications and the toxicities of acetazolamide, thiazides, loop diuretics, and potassium-sparing diuretics.

	Drugs Used İn Asthma (T-2)	1. Describe the strategies of drug treatment of asthma and COPD. 2. List the major classes of drugs used in asthma and COPD. 3. Describe the mechanisms of action of these drug groups. 4. List the major adverse effects of the prototype drugs used in airways disease.

At the end of this lesson, the student will be able to:		
KNOWLEDGE		
DEP.	**TOPIC**	**LEARNING OUTCOMES**
PHYSIOLOGY	Overview Of Cardiovascular System (T-2)	1. Describe and calculate parameters including mean arterial pressure, heart rate, stroke volume, cardiac output, and ejection fraction 2. List the series of event that takes place during every cardiac cycle on a ventricular volume-pressure curve 3. Discuss how afterload and preload will affect cardiac function by giving examples on ventricular volume-pressure curve 4. Explain the regulation of cardiovascular function by autonomic nervous system with the types of receptors and their effects on different target tissues in the body 5. Describe the way the electrocardiogram (ECG) is recorded 6. Describe the standards that are used for recording a 12-lead ECG 7. Compare the various waveforms that are recorded from the standard limb leads, augmented limb leads, and precordial leads
	Overview Of Respiratory System (T-2)	1. Explain the process of respiration 2. Define factors that govern ventilation (gas flow), diffusion of gases, and perfusion in the lungs 3. Explain oxygen-hemoglobin dissociation curve and factors affecting this curve. 4. Explain the neuronal and chemical regulation of respiration 5. Describe the ventilation/perfusion in different parts of lung 6. Define the effects of different conditions (i.e., exercise, low blood pressure, high pulmonary resistance) on alveolar pressure and gas exchange 7. Discuss the difference between lung compliance (static & dynamic) and airway resistance 8. Describe how pulmonary volumes can be measured by using spirometer 9. Gives the normal rages for the lung volume and capacities 10. Define how to calculate forced expiratory volumes (i.e., FEV_1, FEV_2, FEV_3) as the percentage of vital capacity in the period of first, second and third seconds of forceful exhalation 11. Discuss how FEV and maximal voluntary ventilation is affected in obstructive and restrictive pulmonary diseases.
	SKILLS	
	Lab: Electrocardiography recording from standard limb leads (P-2)	1. Describe how the electrocardiogram (ECG) is recorded from standard limb leads 2. Explain placement of the electrodes for the standard limb lead recordings 3. Compare the various waveforms that are generated when recording electrocardiograms with the standard limb leads, augmented limb leads, and precordial leads 4. State the relationship between electrical events of cardiac excitation and the generation of the various waveforms, intervals, and segments that can be observed on ECG 5. Calculate heart rate by using ECG data 6. Explain how the electrical axis of the heart can be calculated by using ECG data recorded from limb leads 7. Calculate mean electrical axis of QRS complex under different conditions
	Lab: Pulmonary Function Tests (P-2)	1. Describe how pulmonary volumes can be measured by using spirometer 2. Record and/or calculate pulmonary volumes and capacities based on observed values during the experiment

		3. Recall average values of pulmonary volume and capacity and compare with the observed values 4. Calculate forced expiratory volumes as the percentage of vital capacity in the period of first, second and third seconds of forceful exhalation in the experiment (i.e., FEV_1, FEV_2, FEV_3) 5. Calculate maximal voluntary ventilation (MVV) based on observed values during the experiment 6. Discuss how FEV and MVV is affected in obstructive and restrictive pulmonary diseases.

At the end of this lesson, the student will be able to:		
KNOWLEDGE		
DEP.	**TOPIC**	**LEARNING OUTCOMES**
PULMONARY DISEASES	History And Symptoms in Pulmonary Diseases (T-1)	1. Obtain accurate medical history 2. Define basic pulmonary symptoms (cough, dyspnea, chest pain,sputum, hemoptysis, cyanosis)
	Physical Examination Of Thorax And Lung (T-1)	1. Explain each part of the physical examination of the respiratory system (Inspection, palpation, percussion, auscultation) 2. Explain why the physical examination is being performed 3. Explain what abnormalities are being sought
	Obstructive Pulmonary Diseases (T-1)	1. Define chronic obstructive pulmonary disease., Chronic Bronchitis and Emphysema 2. Explain the pathogenesis ad risk factors 3. Identify signs and symptoms of chronic obstructive pulmonary disease. 4. Determine the components of a physical examination for chronic obstructive pulmonary disease. 5. Explain spirometry assessment in terms of: a) indications, b) interpretation of results (FEV1, FVC, FEV1/ FVC, peak expiratory flow) 6. Examine the comprehensive approach to the management of chronic obstructive pulmonary disease.
	Restrictive Pulmonary Diseases (T-1)	1. Define restrictive lung diseases 2. Differentiate their various forms Including etiology, pathogenesis if known, and clinical presentation. 3. Explain spirometry assessment in terms of: a) indications, b) interpretation of results (fev1, fvc,Fev1/ fvc, peak expiratory flow. 4. Explain and compare the pathophsiology of obstructive lung diseases and restrictive lung disease

At the end of this lesson, the student will be able to:		
SKILLS		
DEP.	**TOPIC**	**LEARNING OUTCOMES**
CLINICAL SKILLS	Arterial blood gas sampling (T-1), (P-1)	1. Identify the indications for blood gas sampling 2. List the arterial sampling sites 3. Describe the Modified Allen's test 4. Describe the procedure 5. List the complications

MED 2002: HEMATOLOGY AND ONCOLOGY				
Course Date	February 10- March 07, 2025			
Exam Date	Theoretical Exam: March 05, 2025 Practical Exams: March 06, 2025			
Course Coordinators:	BETİLAY TOPKARA ARSLAN			
Academic Unit	**Academic Staff**	**Theoretical hours**	**Practical hours**	**Total**
Anatomy (Topographic)	Uğur Baran Kasırga, Assist. Prof.	8	-	8
Biochemistry	Yeşim Neğiş, Assoc. Prof. Özlem Unay Demirel, Assoc. Prof.	12	2	14
Biophysics	Serdar Durdağı, Prof. Bircan Dinç, Assist. Prof. Duygu Tarhan, Assist. Prof.	9	-	9
Medical Microbiology	Gülden Çelik, Prof. Rabia Can Sarınoğlu, Assoc. Prof.	17	1	18
Pathology	Özlem Yapicier, Prof. Zehra Affan, Assist. Prof.	11	2	13
Pharmacology	Kevser Erol, Prof. Fatih Özdener, Assoc. Prof. Zülfiye Gül, Assoc. Prof.	10	-	10
Physiology	Yasemin Keskin Ergen, Assist. Prof.	3	-	3
Public Health	Melike Yavuz, Assoc. Prof.	3	-	3
Clinical Skills	Utku Göktuğ, Assist Prof.	1	1	2
TOTAL		74	6	90
Medical Genetics	Timuçin Avşar, Assoc. Prof.	2		2
STUDY TIME				47

COURSE AIM:

The aim of this course is:

- to provide knowledge about the biochemistry, physiology, and pathology of the hematopoetic system and general principles of oncology
- to provide general knowledge about viruses,
- to provide knowledge about the medically important viruses , their properties, the disorders they cause and the prevention, diagnosis and the treatment of these infectious diseases;
- to provide detailed knowledge about the lower limp in terms of topographical anatomy;
- to get skills in surgical knotting and suturing techniques;
- to get skills about working as a part of a team.

LEARNING OUTCOMES:

At the end of this lesson, the student will be able to:		
KNOWLEDGE		
DEP.	**TOPIC**	**LEARNING OUTCOMES**
TOPOGRAPHIC ANATOMY	Gluteal region: Gluteal muscles Gluteal region: Hip joint (T-2)	1. Explain the subdivisions of the lower limp 2. Explain the cutaneus innervation of the lower limp 3. Explain the fasciae of the lower limp 4. Explain the cutaneous innervation, superficial veins of gluteal region 5. Explain the fascia of gluteal region 6. Explain the muscles of gluteal region 7. Distinguish the vessels, nerves and lymphatics of gluteal region 8. Describe the relationships of the structures of gluteal region in detail 9. Describe the openings, spaces or compartments between certain structures of gluteal region and differentiate the structures within these openings, spaces or compartments 10. Describe the components of the hip joint 11. Explain the movements performed around hip joint 12. Define the vessels and nerves related with hip joint 13. Discuss the relationships of the hip joint with surrounding structures 14. Explain clinical significance of hip joint and gluteal region
	Thigh: Femoral triangle, anterior compartment of thigh Thigh: Medial and Posterior compartments of thigh (T-2)	1. Explain the cutaneous innervation of thigh 2. Explain the fascia of the thigh 3. Explain the superficial veins of the thigh 4. Describe the anterior, medial and posterior compartments of the thigh 5. Explain the muscles of the anterior compartment of the thigh 6. Explain the vessels, nerves and lymphatics of the anterior compartment of the thigh 7. Define the relationships of the structures of the anterior compartment of the thigh 8. Define the location, borders, contents of the femoral triangle and sub-sartorial canal 9. Define the muscles of the medial and posterior compartments of the thigh 10. Distinguish the vessels, nerves and lymphatics of the medial and posterior compartments of the thigh 11. Discuss the relationships of the structures of the medial and posterior compartments of the thigh in detail

	Bones of the leg, Interosseal membrane Anterior, lateral and posterior compartments of leg (T-2)	1. Explain the cutaneous innervation of leg 2. Explain the fascia of the leg 3. Explain the superficial veins of the leg 4. Distinguish each bone of the leg, to explain anatomical structures of bone of the leg 5. Describe the interosseal membrane and to explain relationships of interosseal membrane with surrounding structures 6. Describe the anterior, lateral and posterior compartments of the leg 7. Explain the muscles of the anterior compartment of the leg 8. Explain the vessels, nerves and lymphatics of the anterior compartment of the leg 9. Define the relationships of the structures of the anterior compartment of the leg 10. Define the muscles of the lateral compartment of the leg 11. Distinguish the vessels, nerves and lymphatics of the lateral compartment of the leg 12. Discuss the relationships of the structures of the lateral compartment of the leg in detail 13. Define the location, borders and contents of the popliteal fossa 14. Distinguish the relationships of structures of the popliteal fossa 15. Define the muscles of the posterior compartment of the leg 16. Distinguish the vessels, nerves and lymphatics of the posterior compartment of the leg 17. Discuss the relationships of the structures of the posterior compartment of the leg in detail 18. Explain clinical significance of compartments of leg and bones of the leg and interosseal membrane
	Foot: Dorsum of foot, sole Foot: joints of foot, arches of foot (T-2)	1. Define dorsum of the foot 2. Define sole of the foot 3. Explain cutaneous innervation of foot 4. Explain fascia of the foot 5. Explain muscles of the dorsum of the foot including the functions and nerves 6. Describe the relationships of structures of dorsum of the foot including the vessels and nerves 7. Explain muscles of the sole of the foot including the functions and nerves 8. Describe the relationships of structures of sole of the foot including the vessels and nerves 9. Explain joints of the foot including the joint type and movements performed around each joint 10. Differentiate morphologic features of joints of the foot 11. Explain arches of foot 12. Explain the funtions of arches of foot 13. Explain clinical importance of arches of foot

At the end of this lesson, the student will be able to:

KNOWLEDGE

DEP.	TOPIC	LEARNING OUTCOMES
BIOCHEMISTRY	Complete Blood Count and Peripheral Blood Smear (T-1)	1. List the parameters of complete blood count 2. Explain briefly the parameters of complete blood count 3. Identify the components peripheral blood smear 4. Describe how the peripheral blood smear is made
	Metabolism of Purine & Pyrimidine Nucleotides (T-2)	1. Integrate the terminology and defining structural features that distinguish different classes of nucleotide metabolites 2. Name the major purine and pyrimidine bases and identify amino acid and one-carbon metabolites that contribute to the synthesis of these ring structures.

		3. Connect the pentose phosphate pathway to 5'phosphoribosyl-1-pyrophosphate (PRPP) synthesis and explain the central role of this metabolite in nucleotide metabolism 4. Explain the de novo synthesis of purine and pyrimidine nucleotides with emphasis on the key regulated steps. 5. Explain the purine and pyrimidine salvage pathways 6. Explain the regulation of purine and pyrimidine synthesis 7. Describe the ribonucleotide reductase reaction and its regulation 8. Explain the synthesis thymine and its relevance to pharmacotherapy 9. Explain the catabolic pathways of purine and pyrimidine nucleotides
	Disorders of Purine & Pyrimidine Metabolism (T-1)	1. Identify the disorders of (such as gout, deficiencies of HPRTase, adenosine deaminase and nucleotide phosphorylase), describe their mechanism and primary clinical presentations. 2. Expain the causes an treatment of gout 3. Explain how glucose-6-phosphatese deficiency can cause gout formation 4. Identify inborn errors of pyrimidine metabolism 5. Expain the etiology and primary clinical presentations of orotic aciduria
	Biochemical aspects of anemia (T-2)	1. Describe erythropoiesis and its regulation 2. Compare erythrocyte and reticulocyte 3. Describe the iron cycle 4. Define anemia 5. Classify the types of anemia according to morphology and aetiology 6. Identify the typical hemoglobin levels that define anemia in children/adolescents and post-pubertal men and women 7. List factors that impair the normal reticulocyte response to anemia
	Clinical laboratory findings of anemia (T-1)	1. Discuss the hematological parameters used in the laboratory to diagnose anemia 2. List the red cell indices used to diagnose anemia 3. Describe the diagnosis of anemia morphologically by using peripheral blood smear
	Biochemistry of Tumor Markers (T-2)	1. Define a biomarker 2. Classify tumor markers according to tissue of origin and structure 3. Describe when a test can be used to screen the general population for a particular disorder 4. Know the ideal characteristics of a tumor marker 5. Explain the current use of tumor markers and their limitations 6. Understand the role of tumor markers for diagnosis and management of patients with cancer 7. Know the emerging technologies for tumor markers 8. Understand the role of tumor markers for therapeutic selection 9. List the applications of tumor markers
	Biochemistry Of Coagulation, Pt, PTT tests (T-3)	1. Outline the sequential mechanisms involved in normal hemostasis. 2. Summarize the processes through which the vessel wall regulates hemostasis and thrombosis. 3. Describe the role of platelets in hemostasis and thrombosis. 4. Outline pathways through which antiplatelet drugs act. 5. Describe the pathways of blood coagulation, and how these are tested in the clinical hemostasis laboratory to identify coagulation disorders. 6. Describe the physiologic inhibitors of blood coagulation. 7. Outline pathways through which anticoagulant drugs act. 8. Describe the main components of the fibrinolytic system. 9. Describe how thrombolytic (fibrinolytic) drugs act.
	SKILLS	

	Lab-Biochemistry Of Hematology (LAB-2)	1. Explain the principles in the collection and handling of blood specimen 2. Define complete blood count (CBC) and explain what is it used for and how it is reported 3. Define each parameter in CBC and state normal adult values for CBC test results 4. Explain leukocyte (WBC) differential analysis 5. Decribe how red and white blood cell morphology is analyzed on a peripheral smear and define the morphology of each cell type observed Explain how reticulocytes is analyzed under microscope and define their morphology

t the end of this lesson, the student will be able to:		
KNOWLEDGE		
DEP.	**TOPIC**	**LEARNING OUTCOMES**
BIOPHYSICS	Positron Emission Tomography (PET) (T-1)	1. Discuss the composition, operation, and evaluation of a PET tomography. 2. Describe the standardized uptake value, its uses in clinical PET, and factors affecting it. 3. Discuss mechanisms and issues related to the production of PET radionuclides and radiopharmaceuticals 4. Define essential concepts of nuclear medicine physics and their application to radiation protection in PET 5. Identify patient preparation and imaging protocols for oncologic, cardiac, and neurologic PET applications, including interventional pharmaceuticals.
	Single Photon Emission Computed Tomography (SPECT) (T-1)	1. Discuss the basic concepts of clinical application of SPECT imaging in medicine. 2. Define working principle and commonly used radiopharmaceuticals. 3. Describe technical aspects of SPECT tomography. 4. Distinguish the differences between SPECT and PET.
	Ultrasound Imaging Techniques (T-1)	1. Describe the basic properties and modes of ultrasound. 2. Describe continuous-wave, pulsed-wave and color flow imaging 3. Define Doppler echocardiography 4. Explain the basic principle of piezoelectric transducer 5. Explain the use of ultrasound gel on the imaging area
	Sterilization of medical devices (T-1)	1. Define sterilization, infection, methods of sterilization and disinfection 2. Explain the correct way to respond to and prevent disease outbreaks 3. Distinguish proper sterilization techniques to manage diseases 4. Define physical and chemical sterilization methods 5. Distinguish safety standards necessary for sterilization, sterilization methods
	Effects of electric current on tissues (T-1)	1. Define the basics of electrodiagnosis, low, medium, and high-frequency currents. 2. Explain the physical and chemical effects of direct current, electrolysis, iontophoresis, electrophoresis, and electroosmosis 3. Describe the electrotherapy medical galvanization, antifibrillation, electroshock, iontophoresis, and surgical galvanism 4. Define physiological, general, and local effects of electricity. 5. Distinguish of diathermy, shortwave diathermy, and microwave diathermy
	Radioactivity (T-2)	1. Describe the quantities, units, radioisotopes of radioactive elements 2. Explain interaction of radiation with matter 3. Explain energy transfer process, half-life, decay types 4. Explain radiation chemistry, theory and models of cell survival curves, types of cellular damage 5. Explain exposure to background radiation and other radioactive sources, applications in diagnose and therapy
	Biological Effects Of Radiation And Protection From Radiation (T-2)	1. Define the basics of ionizing radiation biological effects and risks from cellular to human. 2. Explain the factors that affect the dose-effect relationship. 3. Describe the acute and late effects from ionizing radiation. 4. Define radiation carcinogenesis, stochastic effects of ionizing radiation. 5. Distinguish of radionuclides and biological effects of radionuclides in human body.

At the end of this lesson, the student will be able to:		
KNOWLEDGE		
DEP.	**TOPIC**	**LEARNING OUTCOMES**
MEDICAL MICROBIOLOGY	Viral Structure (T-1)	1. Define the basic structure of viruses 2. Define the functions of the basic structural parts of virus
	Viral classiification (T-1)	1. Explain how the viruses are classified 2. Define the main properties of the clssified viruses 3. Define the importance of classification on transmission of viruses
	Viral Replication (T-1)	1. List main steps in replication of viruses 2. explain how the virus attaches a target cell 3. Define viral attachment protein and receptor 4. Define macromolecular synthesis in viral replication 5. Define attachment and release according to the presence of envelope of viruses 6. Define the difference in replication in dna and rna viruses
	Viral Pathogenesis (T-1)	1. Define determinants of viral disease 2. Define inclusion bodies in viral infection 3. Define persistent viral infection 4. Define latent viral infection 5. Define oncogenic viruses 6. List oncogenic viruses 7. List the host protective responses in viral infections
	Herpesvirus (T-3)	1. Define herpesviruses 2. Classify herpesviruses 3. List the important properties of herpesviruses 4. List the clinical manifestations of herpesviruses 5. Describe the lab diagnosis of herpesvirus infections 6. Define the antiviral resistance in herpes virusinfections 7. Describe prevention measures from herpesvirus infections
	Adenovirus (T-1)	1. Define adenoviruses 2. Classify adenoviruses 3. List the important properties of adenoviruses 4. List the clinical manifestations of adenoviruses 5. Describe the lab diagnosis of adenovirus infections 6. Define the antiviral resistance in adenovirus infections 7. Describe prevention measures from adenovirus infections
	Poxvirus (T-1)	1. Define poxviruses 2. Classify poxviruses 3. List the important properties of poxviruses 4. List the clinical manifestations of poxviruses 5. Describe the lab diagnosis of poxvirus infections 6. Define the antiviral resistance in poxvirus infections 7. Describe prevention measures from poxvirus infections
	Parvovirus (T-1)	1. Define parvoviruses 2. Classify parvoviruses 3. List the important properties of parvoviruses 4. List the clinical manifestations of parvovirus infections 5. Describe the lab diagnosis of parvovirus infections 6. Define the antiviral resistance in parvovirus infections 7. Describe prevention measures from parvovirus infections
	Papovaviruses (T-1)	1. Define papovaviruses 2. Classify papovaviruses 3. List the important properties of papovaviruses 4. List the clinical manifestations of papovaviruses 5. Describe the lab diagnosis in papovavirus infections 6. Define the antiviral resistance in papovavirus infections 7. Describe prevention measures from papovavirus infections
	Hepatitis Viruses (T-3)	1. Define hepatitis viruses 2. Classify hepatitis viruses 3. List the important properties of hepatitis viruses 4. List the clinical manifestations of hepatitis virus infections 5. Describe the lab diagnosis of hepatitis virus infections

		6. Define the antiviral resistance in hepatitis viruses 7. Describe prevention measures from hepatitis virus infections
	Togaviruses (T-1)	1. Define togaviruses 2. Classify togaviruses 3. List the important properties of togaviruses 4. List the clinical manifestations of togaviruses 5. Describe the lab diagnosis of togavirus infections 6. Define the antiviral resistance in togavirus infections 7. Describe prevention measures from togavirus infections
	Flaviviruses (T-1)	1. Define flaviviruses 2. Classify flaviviruses 3. List the important properties of flaviviruses 4. List their clinical manifestations of flaviviruses 5. Describe the lab diagnosis of flavivirus infections 6. Define the antiviral resistance in flavivirus infections 7. Describe prevention measures from flavivirus infections
	Laboratory Methods in Virology (T-1)	1. List the main basic methods in the laboratory diagnosis of viruses 2. Explain the importance of the laboratory methods in the diagnosis of viral infections 3. List the main advantages and disadvantages of the methods in the diagnosis of viral infections
	SKILLS	
	MICROBIOLOGY LAB – Automated ELISA and diagnosis of Hepatitis viruses (DRY LAB) (P-1)	1. Define ELISA in automatized system 2. Define the markers detectable by ELISA for HAV 3. Name the marker for acute HAV infection 4. Name the marker for past HAV infection 5. List the antigens detectable in sera for HBV infection 6. List the antigens detectable in sera for HBV infection 7. List the antibodies formed in HBV infection 8. Name the marker used in HCV diagnosis by ELISA 9. Name the marker which shows immunity to HBV 10. List the serologic markers in acute HBV infection.

At the end of this lesson, the student will be able to:

KNOWLEDGE

DEP.	TOPIC	LEARNING OUTCOMES
PATHOLOGY	Red Blood Cell Disorders-Anemia of blood loss, Hemolytic Anemias (T-1)	1. Define hemorrhage, hemolysis, extramedullary hematopoiesis and decreased red cell production 2. Describe at least four blood tests to evaluate anemia 3. Define adult reference ranges for red blood cells 4. Define clinical manifestations of anemias 5. Explain the differential diagnosis of anemias in concurrence with the laboratory findings 6. Describe the types of hemolytic anemia (Hereditary Spherocytosis, Sickle Cell Anemia, Thalassemia, Glucose-6-Phosphate Dehydrogenase Deficiency, Immunohemolytic Anemia, Malaria)
	Anemia Of Diminished Erythropoiesis, polycythemia (T-1)	1. Classify the types of anemia of diminished erythropoiesis (Iron Deficiency Anemia, Anemia of Chronic Inflammation, Megaloblastic Anemia, Aplastic Anemia, Myelophthisic Anemia) 2. Explain the mechanisms of anemia of diminished erythropoiesis 3. Describe the types and causes of Polycythemia
	Non-Neoplastic Disorders Of White Blood Cells (T-1)	1. Define leukopenia, lymphopenia, leutropenia and agranulocytosis 2. Explain the mechanisms underlying leukopenia, lymphopenia, neutropenia 3. Differentiate reactive leukocytosis and leukemoid reaction 4. Explain the causes of leukocytosis 5. Define the clinical, pathological and laboratory findings of infectious mononucleosis 6. Explain relation of Epstein-Barr Virus with different cancers 7. Group chronic nonspecific lymphadenitis into subtypes 8. Describe the specific pathological changes of chronic nonspecific lymphadenitis

		9. Explain the differences of the acute and chronic Lymphadenitis regarding the mechanism and morphological features
	Neoplastic proliferations of white cells, lymphoid neoplasms 1 (T-1)	1. Define the five types of B cell and T cell neoplasms 2. Define diagnostic immunohistochemical markers for B and T cells lymphomas 3. Define lymphoid, myeloid and histiocytic neoplasms 4. Describe the underlying pathogenic differences (immunophenotypic differences) in lymphoid neoplasms
	Neoplastic proliferations of white cells, lymphoid neoplasms 2 (T-1)	1. Explain the morphological patterns of the mantle cell, Burkitt, follicular and diffuse large B cell lymphomas 2. Describe the carcinogenesis in different types of lymphomas
	Plasma cell neoplasms and related entities (T-1)	1. Classify the plasma cell neoplasms 2. Explain the morphological patterns of the plasma cell neoplasms 3. Explain the clinical and laboratory findings of the multiple myelom
	Myeloid neoplasms, acute myeloid leukemia, myelodysplastic syndromes (T-1)	1. Define the differences between acute and chronic leukemia 2. Define the differences between lymphoma and leukemia 3. Describe the pathogenesis of acute myeloid leukemias and myelodysplastic syndromes 4. Explain the pathogenetic mechanisms of myelodysplastic syndrome 5. Describe the histomorphological features of acute myeloid leukemia and myelodysplastic syndromes
	Myeloid neoplasms, myeloproliferative neoplasms, histiocytic neoplasms (T-1)	1. Describe the pathogenesis of myeloproliferative neoplasms 2. Classify the myeloproliferative neoplasms 3. Describe the histomorphological features of myeloproliferative neoplasms
	Hodgkin Disease (T-1)	1. Describe the pathogenesis of Hodgkin Disease 2. Classify Hodgkin Disease into histological subgroups 3. Describe the histomorphological features of the Hodgkin Disease and explain the prognosis of them
	Bleeding Disorders (T-1)	1. Explain the pathogenesis of bleeding disorders. 2. Classify the bleeding disorders
	Disorders Of Spleen And Thymus (T-1)	1. Define the thymus diseases 2. Explain the massive splenomegaly reasons
	SKILLS	
	LAB-2	1. Gain the ability of identifying the pathological areas in normal tissues microscopically 2. Recognize histomorphologic findings of acute and chronic nonspecific lymphadenitis 3. Get through to subtypes of lymphoid neoplasms microscopically

At the end of this lesson, the student will be able to:		
KNOWLEDGE		
DEP.	**TOPIC**	**LEARNING OUTCOMES**
PHARMACOLOGY	Agents Used in Dyslipidemia (T-2)	1. Describe the proposed role of lipoproteins in the formation of atherosclerotic plaques. 2. Describe the dietary management of hyperlipidemia. 3. List the 5 main classes of drugs used to treat hyperlipidemia. For each, describe the mechanism of action, effects on serum lipid concentrations, and adverse effects. 4. On the basis of a set of baseline serum lipid values, propose a rational drug treatment regimen. 5. Argue the merits of combined drug therapy for some diseases, and list 3 rational drug combinations.
	Agents Used in Cytopenias; Hematopoietic Growth Factors (T-2)	1. Name the 2 most common types of nutritional anemia, and, for each, describe the most likely biochemical causes. 2. Diagram the normal pathways of absorption, transport, and storage of iron in the human body. 3. Name the anemias for which iron supplementation is indicated and those for which it is contraindicated.

		4. List the acute and chronic toxicities of iron. 5. Sketch the dTMP cycle and show how deficiency of folic acid or deficiency of vitamin B12 affects the normal cycle. 6. Explain the major hazard involved in the use of folic acid as sole therapy for megaloblastic anemia and indicate on a sketch of the dTMP cycle the biochemical basis of the hazard. 7. Name 3–5 major hematopoietic growth factors that are used clinically and describe the clinical uses and toxicity of each. 8. Explain the advantage of covalently attaching polyethylene glycol to filgrastim.
	Drugs Used in Disorders of Coagulation (T-2)	1. List the 3 major classes of anticlotting drugs and compare their usefulness in venous and arterial thromboses. 2. Name 3 types of anticoagulants and describe their mechanisms of action. 3. Explain why the onset of warfarin's action is relatively slow. 4. Compare the oral anticoagulants, standard heparin, and LMW heparins with respect to pharmacokinetics, mechanisms, and toxicity. 5. Give several examples of warfarin's role in pharmacokinetic and pharmacodynamic drug interactions. 6. Diagram the role of activated platelets at the site of a damaged blood vessel wall and show where the 4 major classes of antiplatelet drugs act. 7. Compare the pharmacokinetics, clinical uses, and toxicities of the major antiplatelet drugs. 8. List 3 drugs used to treat disorders of excessive bleeding.
	Cancer Chemotherapy (T-4)	1. Describe the relevance of cell cycle kinetics to the modes of action and clinical uses of anticancer drugs. 2. Name 3 anticancer drugs that are cell cycle-specific and act at different phases of the cell cycle. 3. List the mechanisms by which tumor cells develop drug resistance. 4. Describe the rationale underlying strategies of combination drug chemotherapy and rescue therapies. 5. Identify the major subclasses of anticancer drugs and describe the mechanisms of action of the main drugs in each subclass. 6. Identify a distinctive "characteristic" dose-limiting toxicity for each of the following anticancer drugs: bleomycin, cisplatin, cyclophosphamide, doxorubicin, and vincristine.

At the end of this lesson, the student will be able to:

KNOWLEDGE

DEP	TOPIC	LEARNING OUTCOMES
PHYSIOLOGY	Blood Physiology Overview (T-1)	1. List the types of information that can be obtained by blood sample analysis 2. Recall the normal ranges of parameters like number of white blood cell, red blood cells, and hemoglobin for females and males 3. Define the parameters like hematocrit, MCV, MCH, MCHC, RDW and recall the normal ranges for males and females. 4. Compare different methods of blood sample analysis (i.e., blood smear preparation, hemocytometer, and hemogram) in terms of information that we can obtain by using them 5. Explain the possible effects IV solutions with different content and osmolality
	Hemostasis and Coagulation (T-2)	1. Describe vasospasm, role of vasospasm in hemostasis and detailed mechanisms underlying the vasospasm. 2. Describe formation of platelet plug, role of platelet plug in hemostasis and detailed mechanisms underlying the platelet plug formation. 3. Describe formation of blood clot, role of blood clot in hemostasis and detailed mechanisms underlying the blood clot formation. 4. Name each component of intrinsic and extrinsic coagulation pathways 5. Describe process of prevention of blood clotting 6. Name procoagulant and anticoagulants factors and their specific roles 7. Describe concept of fibrinolysis and name factors promoting fibrinolysis 8. Describe bleeding diathesis and role of individual factors in bleeding diathesis

		9. Name a few clinically important diseases due to abnormal coagulation 10. Name natural and artificial anticoagulants 11. Name coagulation test that are used in clinical practice and physiology underlying these tests

At the end of this lesson, the student will be able to:		
KNOWLEDGE		
DEP	**TOPIC**	**LEARNING OUTCOMES**
PUBLIC HEALTH	Prevention of Cancer (T-1)	1. Define the major causes of cancers, risk factors & prevention strategies 2. Identify the differences between primary, secondary and tertiary prevention of cancer 3. Describe the screening programme of Turkey
	Tobacco:Health Effects And Global Burden (T-1)	1. Explain the health effects and mechanisms of cigarette smoking 2. Define the secondhand smoke (shs) 3. Explain the health effects of shs
	Tobacco:Prevention Strategies (T-1)	1. Classify the scientific interventions for tobacco use. 2. Explain the nicotine dependence and nicotine withdrawal symptoms 3. Explain the health benefits of quitting smoking 4. Explain the evidence-based ways for quitting smoking 5. Explain the stages of tobacco initiation 6. List the community interventions for tobacco use

At the end of this lesson, the student will be able to:		
SKILLS		
DEP	**TOPIC**	**LEARNING OUTCOMES**
CLINICAL SKILLS	Surgical Knots And Suturing Techniques (T-1, P-1)	1. Recognise the characteristics of surgical instruments and sharps, and handle them safely, 2. Identify and use the correct techniques for laying safe surgical knots 3. Identify and use correct, safe suturing techniques

At the end of this lesson, the student will be able to:		
KNOWLEDGE		
DEP.	**TOPIC**	**LEARNING OUTCOMES**
MEDICAL GENETICS	Chromosome abnormalities (T-2)	1. Explain details of numerical chromosome abnormalities 2. Explain details of structural chromosome abnormalities 3. Describe mosaicism of chromosomal abnormalities and incidence of chromosome abnormalities. 4. Define gene dosage, balance and imbalance 5. Describe unbalanced/balanced chromosome rearrangements, ring chromosome 6. Describe translocations and explain robertsonian type of transloations and its medical importance

MED 2004: GASTROINTESTINAL SYSTEM AND METABOLISM DISORDERS				
Course Date	March 10-April 04, 2025			
Exam Date	Theoretical Exam: April 03, 2025 Practical Exams: April 02, 2025			
Course Coordinators	Betilay Topkara Arslan			
Academic Unit	**Academic Staff**	**Theoretical hours**	**Practical hours**	**Total**
Anatomy (Topographic)	Uğur Baran Kasırga, Assist. Prof.	8	-	8
Biochemistry	Yeşim Neğiş, Assoc. Prof. Özlem Unay Demirel, Assoc. Prof.	16	-	16
Gastroenterology	Füsun Bölükbaş, Prof. Cengiz Bölükbaş, Prof.	2	-	2
Embriyology	Yasemin Ersoy Canıllıoğlu, Assoc. Prof.	3	-	3
Medical Microbiology	Gülden Çelik, Prof. Orhan Cem Aktepe, Prof. Rabia Can Sarınoğlu, Assoc. Prof.	16	1	17
Pathology	Özlem Yapicier, Prof.	17	4	21
Pharmacology	Kevser Erol, Prof. Fatih Özdener, Assoc. Prof. Zülfiye Gül, Assoc. Prof.	11	-	11
Physiology	Yasemin Keskin Ergen, Assist. Prof.	2	-	2
Public Health	Melike Yavuz, Assoc. Prof.	1	-	1
Clinical Skills		1	1	2
TOTAL		77	6	83
Medical Genetics	Timuçin Avşar, Assoc. Prof.	10	-	10
STUDY TIME				46

COURSE AIM:

The aim of this course is:

- to provide knowledge about the mechanisms underlying the development of the gastrointestinal system and metabolic disorders and pathogenesis of the disorders related to this system;
- to provide knowledge about the signs and symptoms, related risk factors, prevention, diagnosis, and principles of treatment of these disorders;

- to provide knowledge about the medically important viruses, their properties, the disorders they cause and the prevention, diagnosis and the treatment of these infectious diseases;
- to provide detailed knowledge about the abdomen and gastrointestinal system in terms of topographical anatomy;
- to get skills of nasogastric tube insertion;
- to get skills about working as a part of a team.

LEARNING OUTCOMES:

At the end of this lesson, the student will be able to:		
KNOWLEDGE		
DEP.	**TOPIC**	**LEARNING OUTCOMES**
TOPOGRAPHIC ANATOMY	Abdomen-I: Regio abdominalis anterior, Regio abdominalis lateralis Abdomen-I, Regio inguinalis (T-2)	1. Explain the topographical aspects of abdominal wall 2. Describe the location, borders and walls of abdomen 3. Explain the cutaneous innervation and superficial veins of abdomen 4. Explain the fascia of abdomen 5. Explain the bony structures of abdominal cavity 6. Explain the muscles of abdomen 7. Describe the lymphatics, vessels and nerves of abdomen 8. Describe regio abdominalis anterior and regio abdominalis lateralis topographically to provide a basis with physical examination of regio abdominalis 9. Describe the location, walls and contents of inguinal canal 10. Explain the superficial and deep inguinal rings and relationships of them with surrounding structures 11. Explain the development of the inguinal canal 12. Explain the mechanisms related with inguinal hernia development
	Abdomen-II: Cavitas abdominalis, Peritoneum Abdomen-II: Bursa omentalis (T-2)	1. Explain the borders of the cavitas abdominalis 2. Describe the peritoneum and its layers: parietal and visceral peritoneum 3. Explain the nerves, vessels and lymphatics of the parietal and visceral peritoneum 4. Describe the supero-inferior disposition of the peritoneum 5. Describe the horizontal disposition of the peritoneum 6. Describe the parts of the peritoneum: mesentery of small intestine, mesocolon transversum, mesocolon sigmoideum, greater omentum, lesser omentum 7. Describe the peritoneal ligaments and folds and their contents 8. Describe the relationships of the peritoneal ligaments and contents 9. Describe the peritoneal cavity and its contents 10. Explain the subdivisions of the peritonel cavity: greater sac and bursa omentalis (lesser sac); supra colic and infra colic compartment 11. Describe the borders and relationships of lesser sac 12. Explain the relationships of structures with the peritoneum: intraperitoneal, extraperitoneal and retroperitoneal structures 13. Define the subdivisons of the supracolic and infra colic compartments and explain connections between these subdivisions. 14. Provide an anatomical basis for common clinical conditions related with peritoneum
	Abdomen-III: Ventriculus, Duedonum Abdomen-III: Pancreas, Lien (T-2)	1. Describe the location, anatomical aspects, subdivisions, relationships of ventriculus 2. Distinguish the vessels, nerves and lymphatics of ventriculus 3. Describe the location, anatomical aspects, subdivisions, relationships of duodenum

		4. Distinguish the vessels, nerves and lymphatics of duodenum 5. Describe the location, anatomical aspects, subdivisions, relationships of pancreas 6. Distinguish the vessels, nerves and lymphatics of pancreas 7. Describe the location, anatomical aspects and relationships of lien 8. Distinguish the vessels, nerves and lymphatics of lien 9. Provide an anatomical basis for common clinical conditions related with ventriculus, duodenum, pancreas and lien
	Abdomen-IV: Hepar, Vesica fellea, Truncus coeliacus Abdomen-IV: Intestenum tenue, Intestenum crassum (T-2)	1. Describe the location, anatomical aspects, subdivisions, relationships of hepar and vesical fellea 2. Distinguish the vessels, nerves and lymphatics of hepar and vesical fellea 3. Explain porto-caval anastomoses and provide an anatomical background for clinical conditions related with these anostomoses 4. Explain the location, relationships of truncus coeliacus 5. Describe the location, anatomical aspects, subdivisions, relationships of intestinum tenue 6. Distinguish the vessels, nerves and lymphatics of intestinum tenue 7. Describe the location, anatomical aspects, subdivisions, relationships of intestinum crassum 8. Distinguish the vessels, nerves and lymphatics of intestinum crissum 9. Provide an anatomical basis for common clinical conditions related with hepar, vesical fellea, truncus coeliacus, intestenum tenue and crassum

At the end of this lesson, the student will be able to:		
KNOWLEDGE		
DEP.	**TOPIC**	**LEARNING OUTCOMES**
BIOCHEMISTRY	Overview Of Lipid Metabolism (T-2)	1. Describe biosynthesis of fatty acids 2. Describe biosynthesis of fatty acids 3. Outline the sequence of reactions involved in oxidation of fatty acids in mitochondria 4. Describe the general features of pathways for oxidation of unsaturated odd-chain and branched-chain fatty acids 5. Discuss the role of carnitine in fatty acid oxidation 6. Describe biosynthesis of triacylglycerol 7. Describe biosynthesis of phospholipids and sphingolipids 8. Explain regulation of fatty acid biosynthesis and oxidation 9. Compare the triacylglycerol biosynthesis and phospholipid biosynthesis by means of precursor 10. Contrast different strategies used in the synthesis of phosphatidyl compounds
	Disorders Of Fatty Acid Oxidation (T-2)	1. Describe the synthesis of carnitine 2. Explain the structure of carnitine 3. Explain the functional role of carnitine in oxidation of fatty acids 4. Explain the mechanism of carnitine deficiency in lipid metabolism 5. Explain the functional role of carnitine palmitoyltransferase I enzyme 6. Tell the effects of carnitine palmitoyltransferase I deficiency in terms of metabolism 7. Explain the functional role of carnitine palmitoyltransferase II enzyme 8. Tell the effects of carnitine palmitoyltransferase II deficiency in terms of metabolism
	Deficiency Of Essential Fatty Acids (T-1)	1. Define essential fatty acids 2. Explain the structure of essential fatty acids 3. Explain omega classification in terms of fatty acid structure 4. Differentiate the role of dietary omega-3 versus omega-6 fatty acids in the formation of polyunsaturated fatty acids 5. Describe the effects of essential fatty acid deficiency

	Sphingolipidoses (T-1)	1. Distinguish the composition of different sphingolipids 2. Explain the functional role of sphingolipids in nervous system 3. Explain how specific enzyme deficiencies can result in the inborn errors of metabolism known as sphingolipidoses 4. Classify sphingolipidoses according to sphingolipid structure
	Metabolism Of Ethanol (T-2)	1. Tell the chemical structure for ethanol. Identify the functional group that alcohols have in common. 2. Discuss the physical and chemical properties of ethanol 3. Explain the ethanol metabolism and distinct enzymatic pathways of ethonol oxidation 4. Discuss the effect of different polymorphismic forms of alcohol dehydrogenase (ADH) and aldehyde dehydrogenase (ALDH) enzymes in ethanol metabolism 5. Discuss the variations in the pattern of ethanol metabolism 6. Explain the energy yield of ethanol oxidation 7. Explain the effects of alcohol on lipid and carbohydrate metabolism in liver 8. Discuss the short-term and long-term effects of alcohol consumption in metabolism 9. Explain the acetaldehyde toxicity and the mechanism of alcohol induced hepatitis 10. Tell the diagnosis of chronic alcohol abuse
	Bile Acid Metabolism (T-1)	1. Explain the physiologically significant functions of bile acids 2. List primary bile acids, primary conjugated bile salts, secondary and tertiary bile acids 3. Explain synthesis pathways of primary, secondary bile acids and conjugated bile salts 4. Expalin the importance of the conjugation reactions 5. Explain the enterohepatic circulation of bile acids 6. Explain thre regulation of bile acid synthesis 7. Describe the potential treatment strategies in cholestatic liver disease
	Biochemistry Of Jaundice (T-3)	1. Summarize the processes through heme degradation 2. Describe the role of the enzymes through heme degradation 3. Describe the differences of types of jaundice
	Metabolism Of Xenobiotics (T-2)	1. Explain the terms xenobiotics, detoxification and biotransformation 2. Explain the different types of metabolic transformations that xenobiotic undergo and the site of reactions 3. Discuss the role of xenobiotic metabolism in diseases 4. Explain the purpose and types of Phase I and Phase II reactions 5. Give examples of metabolic activation reactions 6. Explain the structure, mechanism and properties of microsomal and mitochondrial cytochrome P450 system 7. Discuss how the induction, competitive inhibition and gene polymorphisms of cytochrome P-450 enzymes affect drug interaction 8. Discuss, using named examples and giving mechanisms, how the genetic factors, age, sex or hormonal status can affect the metabolism of xenobiotics
	Liver Function Tests (T-2)	1. Describe metabolic functions of liver 2. List the metabolic panel parameters 3. List the tests used to assess liver function in the clinical laboratory 4. List the current uses of liver function tests to diagnose clinical pathologies 5. Discuss the basic clinical states when to order liver function tests 6. List the parameters used to assess hepatitis 7. Discuss the parameters used to detect autoimmune diseases due to liver pathologies 8. Discuss the levels of liver function tests in the clinical course of liver diseases

At the end of this lesson, the student will be able to:		
KNOWLEDGE		
DEP.	**TOPIC**	**LEARNING OUTCOMES**
GASTROENTEROLOGY	Pathophysiology Of Selected Liver Disorder: Cirrhosis And Cirrhosis's Complications (T-1)	1. Knows the liver function in the body 2. Define hepatic fibrosis 3. Describe common features of cirrhosis 4. List the causes of cirrhosis 5. Knows the cirrhosis complications 6. Define portal hypertension 7. Recognize the classification of portal hypertension 8. Identify ascite types
	Pathophysiology Of Disorders Of The Stomach (T-1)	1. Describe the regulation of gastric acid secretion 2. List the stimulants and inhibitors of HCL secretion 3. Knows gastric secretions apart from acid 4. Define peptic ulcer 5. Recognize protective and aggressive factors for mucosal injury 6. Identify at least some risk factors for peptic ulcers 7. Comprehend alarm signs of dyspeptic patients 8. Knows the peptic ulcer complications 9. Recall the state of hypersecretion of gastric acid 10. Knows helicobacter pylori infection and its results

At the end of this lesson, the student will be able to:		
KNOWLEDGE		
DEP.	**TOPIC**	**LEARNING OUTCOMES**
EMBRIYOLOGY	Development Of Gastrointestinal System (T-3)	1. Define the developmental pattern and stages of foregut and esophagus and describe malformations that may occur during this period 2. Define the developmental stages of digestive system and organs forming the lower digestive system such as stomach, small and large intestines and rectum and its digestive glands. 3. Describe their malformations that may occur during this period.

At the end of this lesson, the student will be able to:		
KNOWLEDGE		
DEP.	**TOPIC**	**LEARNING OUTCOMES**
MEDICAL MICROBIOLOGY	Orthomyxovirus (T-2)	1. Define orthomyxoviruses 2. Classify orthomyxoviruses 3. List the important properties of orthomyxoviruses 4. List the clinical manifestations of orthomyxoviruses 5. Describe the lab diagnosis of orthomyxovirus infections 6. Define the antiviral resistance in orthomyxovirus infections 7. Describe prevention measures from orthomyxovirus infections
	Paramyxovirus (T-1)	1. Define paramyxoviruses 2. Classify paramyxoviruses 3. List thei important properties of paramyxoviruses 4. List the clinical manifestations of paramyxoviruses 5. Describe the lab diagnosis of paramyxovirus infections 6. Define the antiviral resistance in paramyxovirus infections 7. Describe prevention measures from paramyxovirus infections
	Coronaviruses (T-1)	1. Define coronaviruses 2. Classify coronaviruses 3. List the important properties of coronaviruses 4. List the clinical manifestations of coronaviruses 5. Describe the lab diagnosis of coronavirus infections 6. Define the antiviral resistance in coronavirus infections 8. Describe prevention measures from coronavirus infections
	Picornavirus (T-2)	1. Define picornaviruses 2. Classify picornaviruses 3. List the important properties picornaviruses 4. List the clinical manifestations of picornaviruses 5. Describe the lab diagnosis in picornavirus infections 6. Define the antiviral resistance in picornavirus infections 7. Describe prevention measures from picornavirus infections
	Rabies (T-1)	1. Define rabies virus 2. Classify rabies virus 3. List the important properties of rabies 4. List the clinical manifestations of rabies 5. Describe the lab diagnosis of rabies 6. Define the antiviral resistance in rabies 7. Describe prevention measures from rabies virus infections
	Arena-Bunyavirus (T-1)	1. Define bunyaviruses and arenaviruses 2. Classify bunyaviruses and arenaviruses 3. List the important properties of bunyaviruses and arenaviruses 4. List their clinical manifestations of bunyaviruses and arenaviruses 5. Describe the lab diagnosis of bunyavirus and arenavirus infections 6. Define the antiviral resistance in bunyavirus and arenavirus infections 7. Describe prevention measures from bunyaviruses and arenaviruses infections
	Filoviruses and Bornaviruses (T-1)	1. Define filoviruses and bornaviruses 2. Classify filoviruses and bornaviruses 3. List the important properties of filoviruses and bornaviruses 4. List their clinical manifestations of filoviruses and bornaviruses 5. Describe the lab diagnosis of filovirus bornavirus infections 6. Define the antiviral resistance in filovirus bornavirus infections 7. Describe prevention measures from filovirus bornavirus infections
	Reoviruses & Other GE Viruses (T-1)	1. Define reoviruses and other GE viruses 2. Classify reoviruses and other GE viruses 3. List the important properties of reoviruses and other GE viruses 4. List the clinical manifestations of reoviruses and other GE viruses 5. Describe the lab diagnosis in reoviruses and other GE viruses infections 6. Define the antiviral resistance of reoviruses and other GE viruses infections 7. Describe prevention measures from reoviruses and other GE viruses infections

	Retroviruses and HIV (T-3)	1. Define retroviruses 2. Classify retroviruses 3. List the important properties of retroviruses 4. List the clinical manifestations of retroviruses 5. Describe the lab diagnosis of retrovirus infections 6. Define the antiviral resistance in retrovirus infections 1. Describe prevention measures from retrovirus infections
	Antivirals (T-1)	1. Define antiviral agents 2. List the main targets of antivirals in the virus 3. Classify antivirals 4. Define antiviral resistance 5. Describe resistance mechanisms for antivirals 6. Classify antiviral susceptibility methods
	Role Of Viruses İn Diseases (T-1)	1. List the major sites of viral disease 2. List the viruses involved in different system infections 3. List the congenital viral infections 4. List blood born viral infections 5. List sexually transmitted viral disease 6. List arbovirus infections 7. List viral infections in immunocompromised patients
	Prions (T-1)	1. Define Prions 2. Classify Prions 3. List the important properties of prions 4. List their clinical manifestations of prions 5. Describe the lab diagnosis in prion infections 6. Describe prevention measures from prion infections
	SKILLS	
	MICROBIOLOGY LAB: – Advanced methods in virology and diagnosis of HIV infection (DRY LAB) (P-1)	1. Define Fluorescent microscope 2. Define IFA technique and NAAT 3. List main methods used in common viral infections 4. Define the serological and molecular markers for HIV infection 5. Define the interpretation of results in HIV infection

At the end of this lesson, the student will be able to:		
KNOWLEDGE		
DEP.	**TOPIC**	**LEARNING OUTCOMES**
PATHOLOGY	Inflamm11atory, proliferative and neoplastic lesions of the oral cavity/Diseases of Salivary glands/Odontogenic cysts and tumors (T-1)	1. Tell the clinical morphological findings of oral inflammatory Lesions (Aphthous Ulcers, Herpes Simplex Virus Infections and Oral Candidiasis) 2. Define the lesions seen in the oral cavity 3. Explain fibroma and pyogenic granuloma with its pathogenesis, clinic and morphology 4. Describe leukoplakia and erythroplakia 5. Describe the morphological and clinical features of SCC 6. Describe the morphological findings of infection and tumoral lesions of the salivary glands 7. Describe xerostomia, sialadenitis and mucocele 8. Group the salivary gland tumors into benign and malignant counterparts 9. Explain the clinical and morphological features of pleomorphic adenoma and mucoepidermoid carcinoma
	Obstructive and vascular diseases/ Inflammatory and neoplastic diseases of Esophagus (T-1)	1. Explain atresia, fistulas and duplication 2. Explain the pathogenesis of achalasia. 3. Define inlet patch, esophageal varices, Mallory-Weiss tears, Boerhaave syndrome and associate them with clinical findings 4. Describe the causes, morphological and clinical findings of chemical and infectious esophagitis 5. Describe the pathogenesis, clinical and morphological findings of eosinophilic esophagitis and reflux esophagitis

		6. Describe the pathogenesis, clinical and morphological findings of Barrett esophagus 7. Describe the morphological findings of the adenocarcinoma and SCC
	Acute and Chronic Gastritis, Helicobacter gastritis (T-1)	1. Define the differences between gastropathy, acute and chronic gastritis 2. Explain the pathogenesis of acute gastritis 3. Define complications of chronic gastritis 4. Describe the mechanisms which protect and damage the stomach 5. Define stress ulcers, Curling ulcers and Cushing ulcers 6. Define Helicobacter pylori gastritis, its clinical findings, pathogenesis and histopathology
	Autoimmune Gastritis, Peptic ulcer disease and Neoplastic Disease of the Stomach (T-1)	1. Describe autoimmune gastritis, explain its pathogenesis and clinical findings 2. Describe the histopathology of autoimmune gastritis 3. Describe the clinical and histomorphologic findings of peptic ulcer disease 4. Describe the pathogenesis of Zollinger-Ellison syndrome 5. Define inflammatory and hyperplastic polyps, fundic gland polyps, gastric adenomas, gastric adenocarcinoma, gastrointestinal stromal tumor, carcinoid tumors and lymphoma
	Intestinal obstruction, Hirschsprung Disease, etc. vascular disorders of bowel, hemorrhoids, Diarrheal disease (T-1)	1. Describe the causes of intestinal obstruction (hernias, intestinal adhesions, intussusception, and volvulus) 2. Explain the clinical findings of various types of intestinal obstructions 3. Explain the pathogenesis of Hirschsprung disease 4. Describe the causes of ischemic bowel disease 5. Describe the causes, clinical signs and stages of hemorrhoids Define diarrhea types and explain their symptoms 6. Explain the pathogenesis of secretory diarrhea, osmotic diarrhea, malabsorptive diarrhea and exudative diarrhea 7. Define cystic fibrosis, environmental enteric dysfunction, lactase deficiency, irritable bowel syndrome and the microscopic colitis 8. Explain the pathogenesis, clinical and histological findings of Celiac disease
	Infectious enterocolitis (T-1)	1. Define pathogenesis of V.cholera, Campylobacter enterocolitis, Shigella, E.coli, Salmonella and rotavirus Explain clinical/histomorphological findings of infectious enterocolitis
	Inflammatory bowel disease (T-1)	1. Explain the pathogenesis of Crohn's disease and ulcerative colitis 2. Compare the mucosal changes of Crohn's disease and ulcerative colitis 3. Define at least ten differences between Crohn's disease and ulcerative colitis
	Colonic polyps and neoplastic disease, tumors of the appendix (T-1)	1. Classify and describe morphological features of benign and malignant tumors of colon 2. Explain familial adenomatous polyposis and hereditary nonpolyposis colorectal cancer syndromes 3. Explain the causes and pathogenesis of acute appendicitis 4. Define the tumors of the appendix
	Hepatic failure, jaundice and cholestasis, hepatic encephalopathy, cirrhosis, portal hypertension (T-1)	1. Define general features of liver diseases 2. Explain mechanisms of injury and repair of the liver tissue 3. Describe apoptosis, focal (Spotty) necrosis, piecemeal necrosis, confluent necrosis, bridging necrosis and massive hepatic necrosis 4. Explain the clinical and morphological findings of acute and chronic liver failure and cirrhosis 5. Explain the underlying causes of hepatic encephalopathy and portal hypertension with clinical findings
	Acute and chronic Hepatitis, viral hepatitis, other viral hepatitis. Bacterial, Parasitic, And Helminthic Infections	1. Classify the causes of the liver infection 2. Explain the pathways of transmission, pathogenesis and clinical findings of viral hepatitis

	(T-1)	3. Describe the histomorphological changes in various types of infectious hepatitis
	Autoimmune Hepatitis, Drug- And Toxin-Induced Liver Injury, Alcoholic And Nonalcoholic Fatty Liver Disease (T-1)	1. Explain the pathogenesis of autoimmune hepatitis, drug- and toxin-induced liver injury, alcoholic and nonalcoholic fatty liver disease 2. Make differential diagnosis between the autoimmune hepatitis, drug- and toxin-induced liver injury, alcoholic and nonalcoholic fatty liver disease based on clinical findings and changes in the liver
	Inherited metabolic liver diseases, cholestatic syndromes, defects in hepatocellular bilirubin metabolism (T-1)	1. Classify the inherited metabolic liver diseases 2. Explain the pathogenesis of hereditary hemochromatosis, Wilson Disease, alpha-1 antitrypsin deficiency 3. Define cholestatic syndromes and explain their pathogenesis 4. Explain defects in hepatocellular bilirubin metabolism
	Cholestasis, neonatal cholestasis, biliary atresia, autoimmune cholangiopathies, circulatory disorders of liver (T-1)	1. Explain the pathogenesis of jaundice and cholestasis 2. Explain the clinical findings and pathogenesis of neonatal cholestasis 3. Define the causes of biliary atresia 4. Classify types of autoimmune cholangiopathies 5. Define circulatory disorders of the liver and explain their etiopathogenesis
	Liver abscess, granulomatous disease Nodules And Tumors Of Liver (T-1)	1. List the most common benign and malignant tumors of the liver 2. Explain the etiopathogenesis of hepatocellular and cholangiocarcinoma 3. Describe histopathological changes in hepatocellular and cholangiocarcinoma 4. Diagnose liver tumors with clinical and laboratory findings
	Gallstone disease, cholecystitis, carcinoma of the gallbladder, pathology of exocrine pancreas diseases (T-1)	1. Identify acute and chronic cholecystitis along with their clinical and laboratory findings 2. Define the causes of acute and chronic cholecystitis 3. Explain the pathogenesis of carcinoma of the gallbladder 4. Describe the types and pathogenesis of gallstones 5. Describe the pathogenesis of exocrine pancreas diseases
	Gastric polyps and tumors (T-1)	1. Classify and describe clinical and morphological features of gastric polyps 2. Classify and describe clinical and morphological features of tumors of stomach 3. Explain pathogenesis of gastric adenocarcinoma 4. Explain pathogenesis of gastrointestinal stromal tumor 5. Describe prognostic gross and microscopic features of gastrointestinal stromal tumor
	SKILLS	
	LAB (P-4)	1. Gain the ability of identifying the pathological areas in normal tissues microscopically 2. Recognize histomorphologic findings of cholangiocarcinoma and hepatocellular carcinoma 3. Get through to tumors of gastrointestinal tract microscopically 4. Recognize the differences of carcinoid tumor, adenoma and hyperplastic polyp microscopically

At the end of this lesson, the student will be able to:		
KNOWLEDGE		
DEP.	**TOPIC**	**LEARNING OUTCOMES**
PHARMACOLOGY	Introduction To Toxicology: Occupational & Environmental (T-2)	1. List the major air pollutants and their clinical effects. 2. Describe the signs and symptoms of carbon monoxide poisoning. 3. Identify the major organ system toxicities of common solvents. 4. Describe the signs, symptoms, and treatment of toxicity resulting from cholinesterase inhibitor insecticides. 5. Identify the toxic effects of chlorinated hydrocarbons and botanical insecticides. 6. List 2 important herbicides and their major toxicities. 7. Describe the toxicologic significance of environmental pollution resulting from dioxins and polychlorinated biphenyls (PCBs).

	Heavy Metal İntoxication & Chelators (T-2)	1. Describe the general mechanism of metal chelation. 2. Identify the clinically useful chelators and know their indications and their adverse effects. 3. Describe the major clinical features and treatment of acute and chronic lead poisoning. 4. Describe the major clinical features and treatment of arsenic poisoning. 5. Describe the major clinical features and treatment of inorganic and organic mercury poisoning. 6. Describe the major clinical features and treatment of iron poisoning.
	Management Of The Poisoned Patient (T-1)	1. Describe the steps involved in the supportive care of the poisoned patient. 2. Identify toxic syndromes associated with overdose of the major drugs or drug groups frequently involved in poisoning. 3. Outline methods for identifying toxic compounds, including descriptive signs and symptoms and laboratory methods. 4. Describe the methods available for decontamination of poisoned patients and for increasing the elimination of toxic compounds. 5. List the antidotes available for management of the poisoned patient.
	Drugs Used in The Treatment Of Gastrointestinal Diseases (T-3)	1. Identify 5 different groups of drugs used in peptic ulcer disease. 2. Describe the mechanism of action of omeprazole and related drugs. 3. List 7 different drugs used in the prevention of chemotherapy- or radiation-induced emesis and identify the receptors with which they interact. 4. Describe the mechanism of action, clinical uses, and adverse effects of metoclopramide. 5. Identify 2 drugs commonly used as antidiarrheal agents and 4 drugs with different mechanisms that are used as laxatives. 6. Identify drugs used in the management of inflammatory bowel disease and irritable bowel syndrome.
	Antiviral Drugs (T-3)	1. Identify the main targets for antiviral action in viral replication. 2. Describe the mechanisms of action of antiherpes drugs and the mechanisms of HSV and CMV resistance. 3. List the main pharmacokinetic properties and toxic effects of acyclovir, ganciclovir, cidofovir, and foscarnet. 4. Describe the mechanisms of anti-HIV action of zidovudine, indinavir, and enfuvirtide. 5. Match a specific antiretroviral drug with each of the following: to be avoided in pregnancy; hyperpigmentation; neutropenia; pancreatitis; peripheral neuropathy; inhibition of P450; severe hypersensitivity reaction; injection site reactions. 6. Identify the significant properties of 4 drugs active against HBV and HCV. 7. Identify the significant properties of an anti-influenza drug acting at the stage of viral uncoating and another acting at the stage of viral release. 8. Identify the main targets for COVID-19 treatment.

At the end of this lesson, the student will be able to:		
SKILLS		
DEP	**TOPIC**	**LEARNING OUTCOMES**
PHYSIOLOGY	Pathophysiology of Gastrointestinal System Disorders (T-2)	1. Describe the pathophysiological mechanisms in different GI system diseases 2. Define the basic pathophysiologies in frequenty seen GI system disorders

At the end of this lesson, the student will be able to:		
KNOWLEDGE		
DEP	**TOPIC**	**LEARNING OUTCOMES**
PUBLIC HEALTH	Water and Food Borne Diseases (T-1)	1. Identify problems about water and food 2. Describe burden of waterand food borne diseases 3. Explain the prevention strategies

At the end of this lesson, the student will be able to:		
SKILLS		
DEP	**TOPIC**	**LEARNING OUTCOMES**
CLINICAL SKILLS	Nasogastric Tube Insertion (T-1) (P-1)	1. List the indications and contraindications of nasogastric (NG) tube insertion 2. List the complications of NG tube insertion 3. Identify the appropriate equipment required for NG tube insertion 4. Describe the technique for NG tube insertion 5. Define how to check for correct tube positioning

At the end of this lesson, the student will be able to:		
KNOWLEDGE		
DEP.	**TOPIC**	**LEARNING OUTCOMES**
MEDICAL GENETICS	Chromosome abnormalities (T-2)	1. Explain details of numerical chromosome abnormalities 2. Explain details of structural chromosome abnormalities 3. Describe mosaicism of chromosomal abnormalities and incidence of chromosome abnormalities. 4. Define gene dosage, balance and imbalance 5. Describe unbalanced/balanced chromosome rearrangements, ring chromosome 6. Describe translocations and explain robertsonian type of transloations and its medical importance
	The Chromosomal and Genomic Basis of Disease (T-4)	1. Explain chromosome segregation related disorders 2. Define and list the five major mechanisms of chromosome abnormalities. 3. Describe the clinical and genetic features of down syndrome 4. Explain the uniparental disomy and its clinical impact 5. Describe the cri du cat syndrome with clinical and genetic properties 6. Describe and explain the clinical and genetic properties of Prader willi and Angelman syndromes
	Disorders of the Autosomes and Sex Chromosomes (T-4)	1. Describe sex chromosomes and define their abnormalities. 2. Explain the X and Y chromosomes and their roles in sex development. 3. Explain cytogenetic abnormalities of the sex chromosomes 4. Define the SRY gene and its importance in sex determination 5. Explain patterns of X chromosome inactivation and X inactivation center 6. Describe significance of X inactivation in medical genetics. 7. Describe Klinefelter syndrome and its clinical characteristics.

MED 2006: NEUROLOGICAL AND PSYCHIATRIC DISORDERS				
Course Date	April 07-May 09, 2025			
Exam Date	Theoretical Exam: May 08, 2025 Practical Exams: May 07, 20245			
Course Coordinators:	Betilay Topkara Arslan			
Academic Unit	**Academic Staff**	**Theoretical hours**	**Practical hours**	**Total**
Anatomy (Topographic)	Uğur Baran Kasırga, Assist. Prof.	8	-	8
Biochemistry	Yeşim Neğiş, Assoc. Prof. Özlem Unay Demirel, Assoc. Prof.	4	-	4
Biophysics	Bircan Dinç, Assist. Prof. Duygu Tarhan, Assist. Prof.	6	1	7
Embriyology	Yasemin Ersoy Çanıllıoğlu, Assoc. Prof.	3	-	3
Medical Microbiology	Gülden Çelik, Prof. Rabia Can Sarınoğlu, Assoc. Prof Sibel Ergüven, Prof.	16	2	18
Pathology	Özlem Yapicier, Prof. Zehra Affan, Assist. Prof.	16	2	18
Pharmacology	Kevser Erol, Prof. Fatih Özdener, Assoc. Prof. Zülfiye Gül, Assoc. Prof.	24	-	24
Psychiatry	Sibel Çakır, Prof. Asil Budaklı, Assist. Prof. Onat Yılmaz, M.D.	3	-	3
Clinical Skills		1	-	1
TOTAL		81	5	86
Medical Genetics	Timuçin Avşar, Assoc. Prof.	10	-	10
STUDY TIME				47

COURSE AIM:

The aim of this course is:

- to provide knowledge about the development, topographical anatomy, pathology, and pharmacology of the nervous system;
- to provide knowledge about the medically important parasites, their properties, the disorders they cause and the prevention, diagnosis and the treatment of these infectious diseases;
- to provide knowledge about anxiety disorders and schizophrenia;
- to get skills about lumbar puncture and using a bag-valve mask;

- to get skills about working as a part of a team.

LEARNING OUTCOMES:

At the end of this lesson, the student will be able to:		
KNOWLEDGE		
DEP.	**TOPIC**	**LEARNING OUTCOMES**
TOPOGRAPHIC ANATOMY	Topographic anatomy of neurocranium - Walls -Calvaria and lateral wall; temporal region and infratemporal region Topographic anatomy of neurocranium - Pterygopalatine fossa, Cranial base (T-2)	1. Explain the morphological aspects of neurocranium including the walls and bones contributing to neurocranium 2. Describe the structures on superior, anterior, lateral and view of the cranium 3. Explain scalp and related structures including vessels and nerves 4. Describe the location, borders of temporal region and infratemporal region 5. Describe the connections and contents of temporal fossa and infratemporal fossa 6. Explain the relationships of structures of the temporal fossa and infratemporal fossa in detail 7. Describe the location, borders of pterygopalatine fossa 8. Describe the connections and contents of pterygopalatine fossa 9. Explain the relationships of structures of the pterygopalatine fossa in detail 10. Describe the structures related with cranial base 11. Explain the connections of cranial base with other subdivisions of the cranium 12. Provide an anatomical basis for common clinical conditions related with cranial base, pterygopalatine fossa, temporal and infratemporal region
	Internal structures of neurocrainum - Dura mater, Arachnoidea mater Internal structures of neurocrainum - Pia mater, Dural venous sinuses (T-2)	1. Explain the dura mater, arachnoidea mater 2. Describe the subdivisions of dura mater, 3. Explain the nerves, vessels of dura mater 4. Explain the nerves, vessels of arachnoidea mater 5. Describe pia mater and nerves and vessels of pia mater 6. Explain basic functions of dura mater, arahnoidea mater and pia mater 7. Describe the localization, connections, relationships and contents of dural venous sinuses 8. Describe the subdivisons, localization, connections, relationships and contents of subarachnoid cisterns 9. Provide an anatomical basis for common clinical conditions related with dura mater, arachnoidea mater, pia mater and dural venous sinuses
	Encephalon - Cerebrum Encephalon - Cerebellum, Rhomboid fossa (T-2)	1. Explain the location, external structures and relationships of cerebrum in detail 2. Describe the sulci, gyri and lobes of cerebrum in detail 3. Explain cortical centers and their basic functional concepts 4. Describe the white matter of cerebrum in detail 5. Discuss the connections of cortical centers within telencephalon and with lower parts of the central nervous system in terms of pathways 6. Describe the location, connections subcortical nuclei and describe their basic functions 7. Explain the location, external structures and relationships of cerebellum in detail 8. Describe the internal structures of cerebellum in detail 9. Discuss the connections of cerebellum with higher and lower parts of the central nervous system in terms of pathways 10. Describe the localization and relationships of the rhomboid fossa

		11. Discuss the relationships of the external structures of cerebellum with surrounding structures 12. Describe the arterial supply of cerebrum and cerebellum in detail 13. Explain clinical aspects of cerebrum, cerebellum and rhomboid fossa
	Ear (T-2)	1. Describe the location of ear 2. Describe the subdivisions of ear 3. Describe the relationships, vessels, lymphatics and connections vessels of ear in detail 4. Explain main functions of each subdivisions of ear 5. Provide an anatomical basis for common clinical conditions related with ear

At the end of this lesson, the student will be able to:		
KNOWLEDGE		
DEP.	**TOPIC**	**LEARNING OUTCOMES**
BIOCHEMISTRY	Biochemical Aspect Of Nervous Tissue (T-2)	1. Describe the functional organization of the nervous system 2. Explain the properties of neurons 3. Describe the processes occuring in a chemical synapse 4. Explain the biochemistry of blood brain barrier 5. Define a neurotransmitter, neuropeptide and a neurohormone by mentioning their structure, synthesis and site of origin 6. Compare neurotransmitter and neurohormones 7. Compare neurotransmitters and neuropeptides 8. Explain the metabolism of neurotransmitters 9. Mention the biosynthetic reactions requiring tetrahydrobiopterin 10. Explain the glucose metabolism leading to biosynthesis of glycine, aspartate, glutamate and GABA
	Hypothalamic, Hypophysial Hormones, Melatonin: Related Disorders (T-2)	1. Classify hypothalamic and hypohyseal hormones according to tissue of origin 2. Describe the biosynthesis of melatonin 3. Classify hypothalamic and hypohyseal hormones according to mechanism of action 4. Explain the target tissues and functions of hypothamic and hypophyseal hormones 5. List the pituitary adenomas according to pituitary cell type 6. Compare acromegaly and gigantism according to clinical characteristics and effected hormone 7. Explain the clinical syndromes associated with inappropriate ADH secretion 8. Compare the differences between osmolarity and osmolality 9. Comapre diabetes insipidus and syndrome of inappropriate ADH secretion by means of clinical laboratory evaluation 10. Explain the biosynthesis of melatonin 11. Describe the biochemical effects of melatonin
At the end of this lesson, the student will be able to:		
KNOWLEDGE		
DEP.	**TOPIC**	**LEARNING OUTCOMES**
BIOPHYSICS	Treatment of hearing loss and implants (T-2)	1. Describe pathologies of the sound conducting in ear canal, middle ear, cochlea, central auditory nervous system and pathologies from damage to the auditory system 2. Define cochlear implants, function and design of cochlear implants 3. Explain functions that are not covered by modern cochlear implants 4. Define function and design of auditory brainstem implants and physical basis 5. Demonstrate the cartilage-bone pathway, cartilage-air pathway, direct air pathway and hearing aids 6. Discuss patient selection for implants 7. Discuss success of cochlear implants and brainstem implants

	Visual defects and correction (T-2)	1. Define intraocular lenses 2. Explain usage and parts of eye implants 3. Describe the epiretinal prosthesis 4. Distinguish the parts of bionic eye 5. Explain image formation with bionic eye system
	Lasers And Medical Practices (T-2)	1. Define light, basic laser properties, methods of laser generation 2. Distinguish laser types used in medicine 3. Explain laser tissue interactions 4. Discuss laser treatment and therapy processes and describe the optical spectroscopic, diagnostic and imaging applications in medicine. 5. Define the essential laser safety precautions.
	SKILLS	
	LAB- Plank's constant (P-2)	1. Be able to measure the cut-off value of the decelerating voltage as a function of the wavelength of light. 2. Plot the results in a graph of energy against frequency. 3. Determine Planck's constant and the work required to emit an electron. 4. Demonstrate that the energy of the electrons does not depend on the intensity of the light.

At the end of this lesson, the student will be able to:		
KNOWLEDGE		
DEP.	**TOPIC**	**LEARNING OUTCOMES**
EMBRIYOLOGY	Development Of Central Nervous System (T-3)	1. Describe the germ layers during the developmental process of the central nervous system 2. Define the developmental stages of central nervous system and organs forming central nervous system such as cerebrum, cerebellum, spinal cord. 3. Interprete the malformations that occur during the development process of the nervous system

At the end of this lesson, the student will be able to:		
KNOWLEDGE		
DEP.	**TOPIC**	**LEARNING OUTCOMES**
MEDICAL MICROBIOLOGY	Parasitology: Structure & Classification (T-1)	1. Define the basic structure of parasites 2. Define the functions of the basic structural parts of parasites 3. Classify parasites
	Intestinal Protozoa (T-1)	1. Define protozoa 2. Classify protozoa 3. List intestinal protozoa 4. List important properties of intestinal protozoa 5. List their clinical manifestations of intestinal protozoa 6. Describe the lab diagnosis for intestinal protozoa 7. Describe treatment and prevention measures from intestinal protozoan infections
	Urogenital Protozoa (T-1)	1. Define urogenital protozoa 2. Classify urogenital protozoa 3. List important properties of urogenital protozoa 4. List clinical manifestations of urogenital protozoa 5. Describe the lab diagnosis for urogenital protozoa 6. Describe treatment and prevention measures from urogenital protozoan infections
	Blood Protozoa (T-2)	1. Define blood protozoa 2. Classify blood protozoa 3. List important properties of blood protozoa 4. List clinical manifestations of blood protozoa 5. Describe the lab diagnosis for blood protozoa 6. Describe treatment and prevention measures from blood protozoan infections
	Tissue Protozoa (T-1)	1. Define tissue protozoa 2. Classify tissue protozoa 3. List important properties of tissue protozoa 4. List clinical manifestations of tissue protozoa 5. Describe the lab diagnosis for tissue protozoa 6. Describe treatment and prevention measures from tissue protozoan infections
	Helmints: Nematods (T-3)	1. Define helmints 2. Classify helmints 3. List nematodes 4. List important properties of nematodes 5. List clinical manifestations of nematodes 6. Describe the lab diagnosis for nematodes 7. Describe treatment and prevention measures from nematode infections
	Helmints: Cestods (T-2)	1. Define cestodes 2. Classify cestodes 3. List important properties of cestodes 4. List clinical manifestations of cestodes 5. Describe the lab for cestodes 6. Describe treatment and prevention measures from cestode infections
	Helmints: Trematods (T-1)	1. Define trematodes 2. Classify trematodes 3. List important properties of trematodes 4. List clinical manifestations of trematodes 5. Describe the lab diagnosis for trematodes 6. Describe treatment and prevention measures from trematode infections
	Opportunistic Parasites (T-1)	1. List the main opportunistic parasites 2. Explain the importance of them in certain hosts 3. List advanced diagnostic methods for opportunistic parasites 4. List important properties of opportunistic parasites 5. Compare them in normal host and impaired patients 6. Describe treatment and prevention measures to opportunistic parasites

	Labaratory Diagnosis Of Parasitic Diseases (T-1)	7. List the main and advanced methods in the laboratory diagnosis of parasites 8. Explain the importance of them in the diagnosis 9. List the main advantages and disadvantages of these methods
	Arthropods (T-1)	1. Define arthropodes 2. Classify arthropodes 3. List important properties of arthropodes 4. List clinical manifestations of arthropodes 5. Describe the lab diagnosis for arthropodes 6. Describe treatment and prevention measures from arthropode infections
	Antiparasitic Agents (T-1)	1. Define antiparasitic agents 2. List their main targets in the parasite 3. Classify antiparasitic agents
	SKILLS	
	MICROBIOLOGY LAB – Diagnosis of helmints (LAB-1)	1. Define methods in identifying helmintic infections 2. List the concentration techniques in investigating stool 3. Define sedimentation and floating techniques 4. Define the staining techniques of stool for egg investigation 5. Apply the lugol staining of eggs 6. İdentify the eggs of different helmints.
	MICROBIOLOGY LAB – Diagnosis of protozoa (LAB-1)	1. Define methods in identifying protozoan infections 2. Define the staining techniques of blood and stool for protozoa investigation 3. Apply the staining techniques of blood smear 4. Apply wet –mount preperation 5. İdentify protozoa in stained stool and blood samples

At the end of this lesson, the student will be able to:

KNOWLEDGE

DEP.	TOPIC	LEARNING OUTCOMES
PATHOLOGY	Introduction to CNS, edema, herniation, and hydrocephalus (T-1)	1. Identify the cellular reactions to injury in the central nervous system 2. Describe the responses of the cells and tissues to injury in the central nervous system (reversible-irreversible damage, red neuron, hypoxic neuronal changes)
	Cerebrovascular Diseases (Hypoxia, İschemia And İnfarction, Intracranial Hemorrhage) (T-1)	1. Describe the importance of cerebrovascular diseases in terms of mortality and morbidity 2. Interpret the results of the damage of the hypertensive intracranial hemorrhage 3. Describe the cellular mechanisms of vascular pathologies in the central nervous system 4. Define the concepts of cerebral edema, increased intracranial pressure, herniation and hydrocephalus, explain their importance in clinical practice
	Central Nervous System Trauma (T-1)	1. Group central nervous system traumas and explain the pathogenesis 2. Describe the morphological changes of different forms of trauma in the central nervous system
	Congenital Malformations&Perinatal Brain İnjury (T-1)	1. List the relatively common malformations and developmental diseases of the central nervous system 2. Distinguish the most frequently observed malformations according to their macroscopic appearance
	Infections of the nervous system (T-1)	1. Interpret the access routes of the infections observed in the central nervous system. 2. Explain the main changes of the most frequently observed infectious conditions in the tissue and their possible clinical manifestations

		3. Describe the histomorphological changes of various infections of the central nervous system
	Diseases of myelin, metabolic diseases (T-1)	1. Describe frequently observed demyelinating diseases with their pathogenesis, explain the morphological changes of them in the central nervous system 2. Define the clinical signs of multiple sclerosis 3. Describe histomorphological changes in demyelinating diseases
	Neurodegenerative Diseases (T-1)	1. Group degenerative diseases along with their pathogenesis 2. Define the clinical signs and symptoms of Alzheimer disease and Parkinson's disease 3. Describe histomorphological changes in neurodegenerative diseases
	Tumors Of CNS (T-2)	1. Classify the tumors of CNS using the recent classification systems 2. Define the most frequently observed benign and malignant tumors in adults and children 3. Describe the basic morphological criteria for the benign-malignant tumors in central nervous system 4. Explain the importance of age, localization and radiological features in the diagnosis and prognosis of nervous system tumors
	Disorders of peripheral nerves, disorders of neuromuscular junction and peripheral nerve sheath tumors (T-1)	1. Define the cellular responses of the peripheral nervous system to the damage 2. Describe the general features of the most frequently observed tumors of the peripheral nervous system 3. Explain the genetic back ground of the neurocutaneous lesions
	Introduction to skin diseases, elementary lesions of the skin (T-1)	1. Define microscopic elementary lesions of the skin (acanthosis, diskeratosis, hyperkeratosis, papillomatosis, parakeratosis, spongiosis) 2. Define macroscopic elementary lesions of the skin(excoriation, lichenification, macule, patch, papule, nodule, plaque, pustule, scale, vesicule, bul, blister, wheal)
	Acute inflammatory dermatoses, chronic inflammatory dermatoses, infectious dermatoses (T-1)	1. Define the most common diseases regarding acute inflammatory dermatoses, chronic inflammatory dermatoses and infectious dermatoses 2. Describe the diagnostic criteria of urticaria, erythema multiforme and acute eczematous dermatitis 3. Explain the pathogenesis and morphological findings of the urticaria, erythema multiforme and acute eczematous dermatitis 4. Explain the pathogenesis and morphological findings of the psoriasis, lichen planus and lichen simplex chronicus 5. Explain the pathogenesis and morphological findings of the impetigo, warts and fungal infections
	Blistering (Bullous) disorders (T-1)	1. Define the most common diseases regarding blistering (Bullous) disorders 2. Explain the pathogenesis and morphological findings of the pemphigus vulgaris, pemphigus foliaceus, dermatitis herpetiformis
	Tumors of the skin and skin appendages. (T-1)	1. Define the most common benign and premalignant epithelial lesions such as seborrheic keratosis and actinic keratosis 2. Define morphological features of the squamous cell carcinoma and basal cell carcinoma 3. Explain the pathogenesis of the squamous cell carcinoma and basal cell carcinoma. 4. List the most common skin appendage tumors
	Melanocytic proliferations (T-1)	1. Define the most common melanocytic lesions such as melanocytic nevi and dysplastic nevi and malignant melanoma 2. Explain the pathogenesis of the dysplastic nevi and malignant melanoma 3. Define morphological features of the dysplastic nevi and malignant melanoma
	Orbit, eyelid, conjunctiva, sclera, cornea, anterior segment, uvea, retina and vitreous, optic nerve (T-1)	1. List eye diseases according to the anatomical structures involved

	SKILLS	
	(Lab -2)	1. Gain the ability of identifying the pathological areas in normal tissues microscopically 2. Recognize histomorphologic findings of brain tumors 3. Get through to tumors of glial tumors microscopically 4. Recognize the differences of dysplastic nevus and malignant melanoma microscopically

At the end of this lesson, the student will be able to:		
KNOWLEDGE		
DEP.	**TOPIC**	**LEARNING OUTCOMES**
PHARMACOLOGY	Introduction to the Pharmacology of CNS Drugs (T-2)	1. Explain the difference between voltage-gated and ligand-gated ion channels. 2. List the criteria for accepting a chemical as a neurotransmitter. 3. Identify the major excitatory and inhibitory CNS neurotransmitters in the CNS. 4. Identify the sites of drug action at synapses and the mechanisms by which drugs modulate synaptic transmission. 5. Give an example of a CNS drug that influences neurotransmitter functions at the level of (a) synthesis, (b) metabolism, (c) release, (d) reuptake, and (e) receptor.
	Sedative-Hypnotic Drugs (T-2)	1. Identify major drugs in each sedative-hypnotic subgroup. 2. Recall the significant pharmacokinetic features of the sedative-hypnotic drugs commonly used for treatment of anxiety and sleep disorders. 3. Describe the proposed mechanisms of action of benzodiazepines, barbiturates, and zolpidem. 4. List the pharmacodynamic actions of major sedative-hypnotics in terms of their clinical uses and their adverse effects. 5. Identify the distinctive properties of buspirone, eszopiclone, ramelteon, zaleplon, and zolpidem. 6. Describe the symptoms and management of overdose of sedative-hypnotics and withdrawal from physiologic dependence.
	The Alcohols (T-1)	1. Sketch the biochemical pathways for ethanol metabolism and indicate where fomepizole and disulfiram act. 2. Summarize characteristic pharmacodynamic and pharmacokinetic properties of ethanol. 3. Relate blood alcohol levels in a nontolerant person to CNS depressant effects of acute alcohol ingestion. 4. Identify the toxic effects of chronic ethanol ingestion. 5. Describe the fetal alcohol syndrome. 6. Describe the treatment of ethanol overdosage. 7. Outline the pharmacotherapy of (1) the alcohol withdrawal syndrome and (2) alcohol-use disorders. 8. Describe the toxicity and treatment of acute poisoning with (1) methanol and (2) ethylene glycol.
	Antiseizure Drugs (T-3)	1. List the drugs of choice for partial seizures, generalized tonic-clonic seizures, absence and myoclonic seizures, and status epilepticus. 2. Identify the mechanisms of antiseizure drug action at the levels of specific ion channels or neurotransmitter systems. 3. Describe the main pharmacokinetic features, and list the adverse effects of carbamazepine, phenytoin, and valproic acid. 4. Identify the distinctive toxicities of felbamate, lamotrigine, and topiramate.. 5. Indicate why benzodiazepines are rarely used in the chronic therapy of seizure states but are valuable in status epilepticus.
	General Anesthetics (T-2)	1. Name the major inhalation anesthetic agents and identify their pharmacodynamic and pharmacokinetic properties. 2. Describe what is meant by the terms (1) blood:gas partition coefficient and (2) minimum alveolar anesthetic concentration. 3. Identify proposed molecular targets for the actions of anesthetic drugs.

		4. Describe how the blood:gas partition coefficient of an inhalation anesthetic influences its speed of onset of anesthesia and its recovery time. 5. Identify the commonly used intravenous anesthetics and list their main pharmacokinetic and pharmacodynamic characteristics.
	Local Anesthetics (T-2)	1. Describe the mechanism of action of local anesthetics. 2. Know what is meant by the terms "use-dependent blockade" and "state-dependent blockade." 3. Explain the relationship among tissue pH, drug pKa, and the rate of onset of local anesthetic action. 4. List 4 factors that determine the susceptibility of nerve fibers to local anesthetic blockade. 5. Describe the application methods of local anesthetics 6. Describe the major toxic effects of the local anesthetics
	Skeletal Muscle Relaxants (T-2)	1. Describe the transmission process at the skeletal neuromuscular end plate and the points at which drugs can modify this process. 2. Identify the major nondepolarizing neuromuscular blockers and depolarizing neuromuscular blocker; compare their pharmacokinetics. 3. Describe the differences between depolarizing and nondepolarizing blockers from the standpoint of tetanic and post-tetanic twitch strength. 4. Describe the method of reversal of nondepolarizing blockade. 5. List drugs for treatment of skeletal muscle spasticity and identify their sites of action and their adverse effects
	Pharmacologic Management of Parkinsonism & Other Movement Disorders (T-2)	1. Describe the neurochemical imbalance underlying the symptoms of Parkinson's disease. 2. Identify the mechanisms by which levodopa, dopamine receptor agonists, selegiline, tolcapone, and muscarinic blocking drugs alleviate parkinsonism. 3. Describe the therapeutic and toxic effects of the major antiparkinsonism agents. 4. Identify the compounds that inhibit dopa decarboxylase and COMT and describe their use in parkinsonism. 5. Identify the chemical agents and drugs that cause parkinsonism symptoms. 6. Identify the most important drugs used in the management of essential tremor, Huntington's disease, drug-induced dyskinesias, restless legs syndrome, and Wilson's disease.
	Antipsychotic Agents & Lithium (T-2)	1. Describe the "dopamine hypothesis" of schizophrenia. 2. Identify 4 receptors blocked by various antipsychotic drugs and name drugs that block each. 3. Identify the established toxicities of each of the following drugs: chlorpromazine, clozapine, haloperidol, thioridazine, ziprasidone. 4. Describe tardive dyskinesia and the neuroleptic malignant syndrome. 5. Identify the distinctive pharmacokinetic features of lithium, and list its adverse effects and toxicities. 6. List the alternative drugs used in bipolar disorder
	Antidepressant Agents (T-2)	1. Describe the probable mechanisms of action and the major characteristics of TCAs, including receptor interactions, adverse effects (from chronic use and in overdose), drug interactions, and clinical uses. 2. Identify the drugs classified as SSRIs and SNRIs, and describe their characteristics, including clinical uses, adverse effects and toxicity, and potential drug interactions. 3. Identify drugs thought to act via block of serotonin receptors, and describe their characteristics including clinical uses, adverse effects and toxicity, and potential drug interactions. 4. What are the major toxicities of MAO inhibitors?
	Opioid Agonists & Antagonists (T-2)	1. Identify 3 opioid receptor subtypes and describe 2 ionic mechanisms that result from such activation.

		2. Name the major opioid agonists, rank them in terms of analgesic efficacy, and identify specific dynamic or kinetic characteristics. 3. Describe the cardinal signs and treatment of opioid drug overdose and of the withdrawal syndrome. 4. List acute and chronic adverse effects of opioid analgesics. 5. Identify an opioid receptor antagonist and a mixed agonist-antagonist. 6. Identify opioids used for antitussive effects and for antidiarrheal effects.
	Drugs of Abuse (T-2)	1. Identify the major drugs that are commonly abused. 2. Describe the signs and symptoms of overdose with, and withdrawal from, CNS stimulants, opioid analgesics, and sedative-hypnotics, including ethanol. 3. Describe the general principles of the management of overdose of commonly abused drugs. 4. Identify the most likely causes of death from commonly abused drugs.

At the end of this lesson, the student will be able to:		
KNOWLEDGE		
DEP	**TOPIC**	**LEARNING OUTCOMES**
PSYCHIATRY	Mood And Affect (T-1)	1. Differentiate between mood, affect and emotion 2. Describe neurobiological basis of mood, affect and emotions 3. Define clinical features of mood disorders 4. Have a general knowledge about management of mood disorders.
	Anxiety Disorders (T-1)	1. Explain normal anxiety and differentiate between anxiety, fear and panic. 2. Describe neurobiological and behavioral theories of anxiety and anxiety disorders. 3. Define clinical features of panic disorder, social anxiety disorder, generalized anxiety disorder and phobias. 4. Have a general knowledge about management of anxiety disorders.
	Schizophrenia (T-1)	1. Explain the concept of psychosis and schizophrenia spectrum disorders 2. Define clinical features and symptom domains of schizophrenia 3. Describe epidemiological and etiological factors related to schizophrenia 4. Define longitudinal course and prognosis of schizophrenia 5. Have a general knowledge about management of schizophrenia

At the end of this lesson, the student will be able to:		
SKILLS		
DEP	**TOPIC**	**LEARNING OUTCOMES**
CLINICAL SKILLS	Lumbar Puncture (T-1)	1. Outline the definition of the lumbar puncture procedure 2. Define the indications for lumbar puncture 3. List the contraindications associated with lumbar puncture 4. Know the equipment used for lumbar puncture 5. Describe the sites used for lumbar puncture 6. Comprehend how to apply the lumbar puncture 7. List the complications of lumbar puncture

At the end of this lesson, the student will be able to:		
KNOWLEDGE		
DEP.	**TOPIC**	**LEARNING OUTCOMES**
MEDICAL GENETICS	Disorders of sex development (T-2)	1. Explain disorders of sex development 2. Describe the central dogma of biology 3. Explains the role of SOX3 and SOX9 genes in sex development 4. Explains gene families and their evolution 5. Explain the ovarian development and maintenance 6. Describe disorders of sex development involving phenotypic sex 7. Explain association of sex chromosomes and neurodevelopmental disorders.
	Patterns of Single Gene Inheritance-Part 1 (T-4)	1. Explain the basics of single gene inheritance. 2. Define haplotype, genotype and genotype association 3. Define homozygote, heterozygote, compound heterozygote and hemizygote terms. 4. Explain penetrance and expressivity 5. Describe the symbols and their meanings of pedigrees. 6. Explain the autosomal dominance and recessive inheritance 7. Explain gene frequency and carrier frequency 8. Define consanguinity with its impact on medical genetics
	Patterns of Single Gene Inheritance-Part 2 (T-4)	1. Explain effect of incomplete penetrance, variable expressivity, and new mutations on autosomal dominant inheritance patterns 2. Describe the fitness and its impact on a autosomal dominant disorder 3. Define X linked inheritance. 4. Define dosage compensation, and the expression of X-linked genes 5. Explain recessive and dominant inheritance of X-linked disorders 6. Define X-linked dominant disorders with male lethality 7. Define X-Linked dominant disorders with male sparing 8. Explain pseudoautosomal inheritance 9. Explain the mosaicism and its impact on inheritance of mutations

MED 2008: ENDOCRINOLOGY AND UROGENITAL SYSTEM DISORDERS				
Course Date	May 12-June 13, 2025			
Exam Date	Theoretical Exam: June 12, 2025 Practical Exams: June 11, 2025			
Course Coordinators:	Betilay Topkara Arslan			
Academic Unit	**Academic Staff**	**Theoretical hours**	**Practical hours**	**Total**
Anatomy (Topographic)	Uğur Baran Kasırga, Assist. Prof.	8	-	8
Biochemistry	Yeşim Neğiş, Assoc. Prof. Özlem Unay Demirel, Assoc. Prof.	13	2	15
Embriyology	Yasemin Ersoy Canıllıoğlu, Assist. Prof.	4	-	4
Medical Microbiology	Gülden Çelik, Prof. Rabia Can Sarınoğlu, Assoc. Prof. Seyda İpnak Tarlığ, Assist. Prof.	11	-	11
Pathology	Özlem Yapicier, Prof. Zehra Affan, Assist. Prof.	28	4	32
Pharmacology	Kevser Erol, Prof. Fatih Özdener, Assoc. Prof. Zülfiye Gül, Assoc. Prof.	20	-	20
Physiology	Yasemin Keskin Ergen, Assist. Prof.	2	-	2
Plastic Reconstructive and Aesthetic Surgery	Cem Öz, Assist. Prof.	2	-	2
Clinical Skills	Emre Erdoğan, Assist Prof.	1	1	2
TOTAL		89	7	97
Medical Genetics	Timuçin Avşar, Assoc. Prof.	8	-	8
STUDY TIME				35

COURSE AIM:

The aim of this course is:

- to provide knowledge about the development, pathology, pharmacology and radiology of the endocrın and urogenital systems;
- provide knowledge about the medically important fungi, their properties, the disorders they cause and the prevention, diagnosis and the treatment of these infectious diseases;

- to provide detailed knowledge about the perineal region, and pelvic cavity in terms of topographical anatomy;
- to get skills about urinary catheterization;
- to get skills about working as a part of a team.

LEARNING OUTCOMES:

At the end of this lesson, the student will be able to:		
KNOWLEDGE		
DEP.	**TOPIC**	**LEARNING OUTCOMES**
TOPOGRAPHIC ANATOMY	Posterior abdominal wall, kidney, adrenal gland, ureter, urinary bladder (T-2)	1. Explain the topographic aspects of posterior abdominal wall 2. Explain the posterior abdominal wall structures including muscles, fasciae, nerves, vessels and lymphatic structures 3. Explain the relationships of structures of posterior abdominal wall with each other in detail 4. Describe localization, vasculature, innervation and lymphatics of the kidneys in detail 5. Describe localization, vasculature, innervation and lymphatics of adrenal glands in detail 6. Discuss the relationships of posterior abdominal structures with each other 7. Define the functions and clinical significance of kidneys and adrenal gland 8. Describe localization, vasculature, innervation and lymphatics of ureter in detail 9. Describe localization, vasculature, innervation and lymphatics of urinary bladder in detail 10. Discuss the relationships of ureter and urinaruy bladder with surrounding structures
	Perineal region: Structures in males and females Perineal region: Peritoneal relations, Pelvic diameters (T-2)	1. Describe the perineum 2. Describe the subdivisions of perineum: urogenital triangle and anal triangle 3. Explain the localization, borders and contents of superficial perineal pouch and deep perineal pouch 4. Describe the muscles of perineal region in terms of attachments, functions and innervation 5. Explain the morphologic aspects and localization, vasculature, innervation and lymphatics of the structures of the perineum in males and females 6. Explain the bony pelvis, and diameters of pelvis 7. Describe the pelvic floor and walls of the pelvic cavity 8. Describe the relationships of the pelvic structures with peritoneum 9. Explain clinical significance of pelvic diameters, pelvic cavity and perineal region
	Pelvic Cavity I: Male Genital Organs (T-2)	1. Describe localization, vasculature, innervation and lymphatics of male external genital organs 2. Define relationships of male external genital organs with surrounding structures 3. Describe localization, vasculature, innervation and lymphatics of male internal genital organs 4. Define relationships of male internal genital organs with surrounding structures

	Pelvic Cavity II: Female Genital Organs (T-2)	1. Describe localization, vasculature, innervation and lymphatics of female external genital organs 2. Define relationships of female external genital organs with surrounding structures 3. Describe localization, vasculature, innervation and lymphatics of female internal genital organs 4. Define relationships of female internal genital organs with surrounding structures

At the end of this lesson, the student will be able to:		
KNOWLEDGE		
DEP.	**TOPIC**	**LEARNING OUTCOMES**
BIOCHEMISTRY	Biochemistry of adipose tissue (T-2)	1. List the metabolic processes regulated by adipose tissue 2. Explian different types of adipose tissue in terms of development, morphology and function 3. Explain the mechanism of heat generation by brown adipose tissue 4. Explain the significant physiological functions of white adipose tissue 5. Explain lipogenesis, lipolysis and regulation of lipid metabolism in adipocytes 6. List the factors secreted by adipose tissue 7. Explain the structure, tissue expression, signaling mechanisms and physiological effects of leptin 8. Discuss the role of leptin in glucose and lipid homeostasis 9. Explain the structure, tissue expression, signaling mechanisms and physiological effects of adiponectin 10. Explain the function and metabolic effects of some of the factors secreted by white adipose tissue: resistin, acylation stimulating protein, adipsin, plasminogen activator inhibitor, adipocyte renin-angiotensin system, visfatin, apelin, metallothionein 11. Discuss the inflammatory functions of adipose tissue in relation with insulin resistance, diabetes and obestiy 12. Discuss the relation of insulin resistance in obesity and type 2 diabetes 13. Explain the effect of inflammation in the development of insulin resistance
	Endocrine function of pancreas (T-2)	1. Explain the biochemical function of pancreas 2. List the hormones secreted from the pancreas 3. Describe the effects of insulin in the lipid, carbohydrate and amino acid metabolism 4. Compare and contrast type 1 and type 2 diabetes mellitus with respect to incidence, age of onset and distinguishing characteristics 5. Recognize the clinical presentation of type 1 diabetes mellitus and discuss established diagnostic criteria 6. Describe abnormalities in blood glucose homeostasis in patients with type 1 diabetes 7. Compare and contrast postprandial blood glucose changes in a patient with type 1 diabetes with someone who does not have diabetes 8. Discuss the metabolic derangements leading to diabetic ketoacidosis List the laboratory parameters used to diagnose diabetes mellitus
	Hormone stimulation tests (T-2)	1. Explain the feedback regulatory system in terms of hypothalamus, hypohyseal and gland axis

		2. Categorize hormone stimulation and suppression tests by means of clinical use 3. Explain ACTH stimulation test 4. Explain low dose dexamethasone suppresion test 5. Explain high dose dexamethastone suppresion test 6. Explain metyrapone test 7. List the clinical use of ACTH stimulation, low dose, high dose dexamethasone suprresion and metyrapone test 8. Explain the interpretation of results of stimulation and suppression tests
	Renal function tests (T-2)	1. Explain the functional role of kidney in terms of biochemistry 2. Define glomerular filtration rate and estimated glomerular filtration rate (eGFR) 3. Explain and calculate the creatinine clearance 4. List the names of renal function tests 5. Explain the use of guidelines in the evaluation of renal function 6. Explain the renal threshold of substances (Eg.Glucose) 7. Compare Urea and blood urea nitrogen in the clinical use 8. Tell the use of microalbumin in a clinical setting 9. Explain urinary protein, specific gravity, albumin excretion rate, albumin/creatinine ratio, protein/creatinine ratio 10. Describe when to use renal function tests
	Disturbances of adrenocorticol function (T-2)	1. Describe the adrenocortical hormone biosynthesis in terms of enzymes and reactants 2. Describe the structure of adrenocortical hormones 3. Describe the hypothalamic, pituitary and adrenal gland axis 4. Define the source of ACTH 5. Explain the feedback regulation of aldosterone and cortisol 6. Describe the circadian and pulsatile secretion of ACTH 7. Tell the metabolism of cortisol 8. Categorize the adrenocortical diseases according to hormone involved 9. Compare Cushing syndrome and Cushing disease 10. Compare primary hyperaldosteronism and secondary hyperaldosteronism 11. Discuss diagnosis of Addison's disease in terms of laboratory parameters 12. Explain the hormonal basis of congenital adrenal hyperplasia 13. List the laboratory parameters used to assess adrenocortical function
	Biochemistry of thyroid hormones (T-2)	1. Define thyroid hormones and secretion mechanism. 2. List different types of thyroid hormones and describe their composition and features. 3. Explain the biosynthesis of the throid hormones 4. Describe the level changes in plasma by dietary changes. 5. Describe the sytmpoms when thriod hormone levels change.
	Prenatal diagnostic tests (T-1)	1. Compare prenatal diagnosis and prenatal screening 2. List the prenatal diagnostic techniques 3. List the prenatal screening tests 4. Name the parameters in first trimester and second trimester screening tests 5. Explain the information needed to record in case of prenatal screening tests 6. Explain the calculation of MoM (multiple of the median) 7. List the use of prenatal diagnostic tests 8. Explain the follow up testing for patients with positive prenatal screening tests
	SKILLS	

	Biochemistry Laboratory: Analysis of urine (LAB-2)	1. Explain how urinalysis is performed 2. Describe how to collect and perform macroscopic and microscopic analysis of urine samples 3. Explain the microscopic view of urine and the contents of it in normal and pathological conditions. 4. Demonstrate urine dipstick test and explains the parameters and principles of each test performed.

At the end of this lesson, the student will be able to:		
KNOWLEDGE		
DEP.	**TOPIC**	**LEARNING OUTCOMES**
EMBRIOLOGY	Developmet of Endocrine System (T-2)	1. Describe the developmental stages of the endocrine organs such as hypophysis, pineal gland, tiroid, paratiriod, adrenal gland and endocrine pancreas 2. Interprete the malformations that occur during the development process of the these endocrine organs
	Developmet of Urogenital System (T-2)	1. Define the developmental stages of organs forming the urinary system such as kidney, ureter, urinary bladder and urethra. 2. Define the developmental stages of genital system both in female and male. 3. Interprete the malformations that occur during the development process of the reproduvtive system

At the end of this lesson, the student will be able to:		
KNOWLEDGE		
DEP.	**TOPIC**	**LEARNING OUTCOMES**
MEDICAL MICROBIOLOGY	Medically Important Fungi and Fungal Structure (T-1)	1. Define the basic structure of fungi 2. Define the functions of the basic structural parts of fungi 3. Define medically important fungi
	Pathogenesis Of Fungal Infections (T-1)	1. Define determinants of fungal disease 2. Define development mechanisms of fungal infections 3. Define basic virulance factors responsible in fungal infections
	Subcutaneous Mycoses (T-1)	1. Define subcutaneous mycoses 2. Classify subcutaneous mycoses 3. List the important properties of subcutaneous mycoses 4. List the clinical manifestations of subcutaneous mycoses 5. Describe the lab diagnosis of subcutaneous mycoses 6. Describe prevention measures from subcutaneous mycoses
	Superficial&Cutaneous Mycoses (T-2)	1. Define superficial and cutaneous mycoses 2. Classify superficial and cutaneous mycoses 3. List the important properties of superficial and cutaneous mycoses 4. List the clinical manifestations of superficial and cutaneous mycoses 5. Describe the lab diagnosis of superficial and cutaneous mycoses 6. Describe prevention measures from superficial and cutaneous mycoses
	Opportunistic Fungi (T-2)	1. Define opportunistic fungi 2. Classify opportunistic fungi 3. List the important properties of opportunistic fungi 4. List the clinical manifestations of of opportunistic fungi 5. Describe the lab diagnosis of of opportunistic fungi 6. Describe prevention measures from opportunistic fungi
	Dimorphic Fungi (T-2)	1. Define dimorphic fungi 2. Classify dimorphic fungi 3. List the important properties of dimorphic fungi 4. List the clinical manifestations of dimorphic fungi 5. Describe the lab diagnosis of dimorphic fungi

		6. Describe prevention measures from dimorphic fungi
	Laboratory Diagnosis Of Fungi (T-1)	1. List the main basic methods in the laboratory diagnosis of fungi 2. Explain the importance of th laboratory methods in the diagnosis of fungi 3. List the main advantages and disadvantages of the methods in the laboratory diagnosis of fungi
	Anti-Fungal Agents (T-1)	1. Define antifungal agents 2. List their main targets in the fungi 3. Classify antifungal agents 4. Define the main properties of antifungal agents

At the end of this lesson, the student will be able to:		
KNOWLEDGE		
DEP.	**TOPIC**	**LEARNING OUTCOMES**
PATHOLOGY	Introduction and Clinical Manifestations of Renal Diseases (T-1)	1. Describe the structure of the glomerules and compare them with basic pathologies in the glomerules 2. Classify the clinical symptoms of glomerular diseases according to their morphological changes 3. Describe nephrotic and nephritic syndromes 4. Define the results caused by proteinuria
	Mechanisms of Glomerular Injury and Disease (T-1)	1. Describe the main pathological-morphological changes observed in the glomeruli. 2. Explain the etiopathogenesis (immune and non-immune) of glomerular diseases 3. Describe the main features of primary and secondary glomerular diseases. Identify systemic and primary causes of the glomerular diseases 4. Describe the cellular mechanisms of the experimental glomerulonephritis 5. Explain the correlation between pathological findings and clinical findings in glomerular diseases
	Glomerular Diseases (T-1)	1. Define the pathogenesis of acute postinfectious glomerulonephritis, IgA nephropathy, membranoproliferative glomerulonephritis minimal change disease, focal segmental glomerulosclerosis, membranous nephropathy 2. Describe the symptoms and clinical findings related with kidney in systemic lupus erythematosus 3. Define the general characteristics of Good-Pasture syndrome 4. Describe the mechanisms of the kidney involvement in diabetes 5. Describe the mechanisms of the kidney involvement in amyloidosis 6. Describe the mechanisms of the kidney involvement in multiple myeloma
	Diseases affecting tubules and interstitium (T-1)	1. Define the diseases involving tubules and interstitium of the kidney 2. Define the diseases caused by infectious, toxic, physical and immunological causes 3. Describe the causes of acute tubular necrosis 4. Group the tubulointerstitial diseases of the kidney according to their etiologies. 5. Explain the cellular mechanisms in pyelonephritis (acute and chronic) 6. Describe the macroscopic and microscopic features of interstitial nephritis
	Diseases Involving Blood Vessels and Chronic Kidney Disease (T-1)	1. Define the characteristic morphological findings of benign nephrosclerosis with their etiopathogenesis 2. Describe the characteristic morphological findings of the malignant hypertension 3. Define the clinical results of renal artery stenosis

		4. Explain the classification and etiopathogenesis of thrombotic microangiopathies 5. Define morphological findings in thrombotic microangiopathies 6. Explain the definition and characteristic morphological findings of chronic kidney disease along with their etiopathogenesis
	Cystic Diseases of the Kidney (T-1)	1. Define the basic clinical and morphological features of adult and childhood polycystic kidney diseases 2. Define congenital anomalies of the kidney 3. Classify etiopathogenesis of the kidney cystic diseases 4. Describe the differences, demographic, macroscopic - microscopic features and prognosis of kidney cystic diseases
	Renal Stones, Hydronephrosis,Congenital and Developmental Anomalies (T-1)	1. Define the types of renal stones 2. Explain the mechanism of stone formation in the kidney 3. Explain the clinical signs and complications caused by kidney stones 4. Describe hydronephrosis with its causes
	Neoplasms of the Kidney (T-1)	1. Define the classification, diagnostic features, pathogenesis and differential diagnosis of kidney and urinary bladder tumors 2. Describe the macroscopic and microscopic features of the common kidney tumors
	Penis, Malformations, Inflammatory Lesions, Neoplasms (T-1)	1. Define clinical findings and morphological changes in penile diseases 2. Identify the morphological features of tumor and non-tumoral penile diseases 3. Define the morphological findings of infectious diseases of penis
	Pathology of the Scrotum, Testis, and Epididymis (T-1)	1. Define the morphological findings of infection and tumoral lesions of the testicle 2. Explain the pathogenesis of cryporchidism 3. Describe the clinical risks of cryptorchidism 4. Explain the cellular mechanisms of inflammatory and vascular diseases of the testicle
	Testicular Neoplasms (T-1)	1. Classify testicular tumors 2. List the macroscopic and microscopic features of testicular tumors
	Prostate (T-1)	1. List the common diseases of the prostate 2. Define the inflammatory prostate diseases 3. Explain clinical and norphological features of benign prostatic hypertrophy 4. Describe the epidemiology and clinical features of prostate cancer 5. Describe microscopic features and histologic grading of prostate cancer
	Ureter, Urinary Bladder (T-1)	1. List the common congenital diseases of the bladder 2. Define infectious and inflammatory diseases of the bladder 3. Classify bladder tumors 4. Explain the clinical and macroscopic/microscopic features of bladder tumors
	Sexually Transmitted Diseases (T-1)	1. List at least six diseases for sexually transmitted diseases 2. Describe the pathogenesis of sexually transmitted diseases 3. Explain the clinical signs and morphological findings of sexually transmitted diseases
	Vulva, Vagina (T-1)	1. Define, interpret and distinguishe the non-tumoral and tumoral pathologies frequently seen in vulva and vagina 2. List the congenital anomalies of the female genital system 3. Define the most common causative factors for common female genital system infections 4. Define the pathogenesis and clinical findings of pelvic inflammatory disease 5. Describe infectious and neoplastic diseases affecting the vulva and vagina
	Cervix pathology, PAP smear (T-1)	1. Define and classify the precursor lesions of cervical cancer seen in the cervix

		2. Explain the importance of screening for the early diagnosis of cervical cancer 3. Describe cellular changes in precursor lesions of the cervix 4. Describe the diagnostic criteria for the cervical cancer
	Uterus (T-1)	1. Categorize and interpret the pathologies causing dysfunctional uterine bleeding 2. Define and interpret endometrial polyp, adenomyosis, endometrial hyperplasia, precursor lesions of endometrial carcinoma, endometrial carcinoma and stromal tumors 3. Identify and interpret benign and malignant tumors of myometrium 4. Define nonneoplastic diseases that frequently affect the endometrium 5. Classify the histologic types of endometrial carcinoma 6. Explain the pathogenesis of endometriosis
	Fallopian Tubes and Ovaries (T-1)	1. Identify and interpret inflammatory and neoplastic lesions of the tuba uterine 2. Define and classify non-tumoral and tumoral lesions of the ovary 3. Explain the pathogenesis of ovarian and tubal cancer 4. Explain the basic classification of ovarian cancers
	Diseases of Pregnancy, Gestational Trophoblastic Disease (T-1)	1. Define gestational and plasental diseases 2. Describe the histologic findings of gestational trophoblastic diseases
	Breast,Benign Lesions of the breast (T-1)	1. Define the classification of breast diseases 2. Define the inflammatory breast diseases 3. Classify benign and malign stromal tumors of the breast
	Carcinoma of the Breast (T-1)	1. Describe the clinicopathological approach to benign and malignant tumors of the breast 2. Describe the lesions of the breast clinically, radiologically and histologically 3. Explain risks of malignancy of epithelial lesions of the breast 4. Classify breast malignant tumors regarding with their molecular and morphological features 5. Explain the etiopathogenesis, basic features, grading, staging and prognostic features of breast malignant tumors
	Introduction to endocrine system diseases and Pathology of pituitary gland (T-1)	1. Classify the causes of hyperpituitarism and hypopituitarism 2. Define the congenital and acquired diseases of the pituitary with their etiopathogenesis and clinical findings 3. Describe the most common mass lesions of the pituitary 4. Classify pituitary adenomas according to the new classification systems 5. Describe the pathogenesis and basic morphological features of pituitary adenomas 6. Explain the transcription factors and hormone expressions in various types of pituitary adenomas
	Pathology of thyroid gland diseases (T-1)	1. Classify congenital and acquired diseases of the thyroid gland 2. Explain the definition and etiology of goiter 3. List the causes and clinical results of hyperthyroidism and hypothyroidism 4. Describe the morphological and basic clinical features of thyroiditis
	Neoplastic lesions of thyroid gland (T-1)	1. Classify the most common mass lesions of the thyroid gland 2. Define etiopathogenesis of the mass lesions of thyroid, determine diagnostic methods, distinguishe benign / malignant counterparts 3. Describe macroscopic and microscopic findings of thyroid neoplasms
	Pathology of parathyroid gland diseases (T-1)	1. Categorize congenital and acquired diseases of parathyroid glands, identify etiopathogenesis and correlate them with clinical findings

		2. Classify the most common mass lesions of the parathyroid glands 3. Describe calcium homeostasis and effects of parathormone 4. List the causes and clinical results of hypercalcemia 5. Define the causes of hyperparathyroidism and hypoparathyroidism 6. Describe the macroscopic and microscopic features of parathyroid hyperplasia, adenoma and carcinoma
	Pathology of adrenal gland disorders (T-1)	1. Categorize the congenital and acquired diseases of the adrenal gland 2. Classify the most common mass lesions of the adrenal gland 3. List the most common diseases of the adrenal gland 4. Explain the clinical conditions that develop as a result of adrenal cortex dysfunction 5. Describe the pathogenesis and morphologic features of adrenal tumors
	Endocrine pancreas and diabetes mellitus (T-1)	1. Describe Type 1 and Type 2 diabetes in terms of clinical and genetic features along with pathogenesis and morphology 2. List and describe the complications of diabetes mellitus by classifying them with the main factors involved in pathogenesis
	Pancreatic neuroendocrine tumors & MEN (T-1)	1. Explain clinical, macroscopic, microscopic and prognostic features of pancreatic neuroendocrine tumors 2. Explain clinical, macroscopic, microscopic and prognostic features of multiple endocrine neoplasias (MEN)
	SKILLS	
	Pathology lab- LAB-4	1. Gain the ability of identifying the pathological areas in normal tissues microscopically 2. Recognize histomorphologic findings of kidney, urinary bladder and prostate tumors 3. Recognize the differences in hyperplasia and adenocarcinoma of prostate microscopically 4. Recognize the cellular changes seen in PAP smear of cervical cancer 5. Recognize the types of uterine and ovarian tumors microscopically 6. Recognize the types of testicle tumors microscopically 7. Explain macroscopic and microscopic features of leiomyoma/leiomyosarcoma

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At the end of this lesson, the student will be able to:		
KNOWLEDGE		
DEP.	**TOPIC**	**LEARNING OUTCOMES**
PHARMACOLOGY	Hypothalamic & Pituitary Hormones (T-2)	1. Describe the drugs used as substitutes for the natural pituitary hormones, and list their clinical uses. 2. List the gonadotropin analogs and GnRH agonists and antagonists, and describe their clinical use in treating male and female infertility, endometriosis, and prostate cancer. 3. Describe the drugs used for treatment of acromegaly and hyperprolactinemia.
	Thyroid & Antithyroid Drugs (T-2)	1. Sketch the biochemical pathway for thyroid hormone synthesis and release and indicate the sites of action of antithyroid drugs. 2. List the principal drugs for the treatment of hypothyroidism. 3. List the principal drugs for the treatment of hyperthyroidism and compare the onset and duration of their action. 4. Describe the major toxicities of thyroxine and the antithyroid drugs.
	Adrenocorticosteroids & Adrenocortical Antagonists (T-2)	1. Describe the major naturally occurring glucocorticosteroid and its actions. 2. List several synthetic glucocorticoids, and describe differences between these agents and the naturally occurring hormone.

		3. Describe the actions of the naturally occurring mineralocorticoid and 1 synthetic agent in this subgroup. 4. List the indications for the use of corticosteroids in adrenal and nonadrenal disorders. 5. Name 3 drugs that interfere with the action or synthesis of corticosteroids, and, for each, describe its mechanism of action.
	The Gonadal Hormones & Inhibitors (T-3)	1. Describe the hormonal changes that occur during the menstrual cycle. 2. Name 3 estrogens and 4 progestins. Describe their pharmacologic effects, clinical uses, and toxicity. 3. List the benefits and hazards of hormonal contraceptives. 4. List the benefits and hazards of postmenopausal estrogen therapy. 5. Describe the use of gonadal hormones and their antagonists in the treatment of cancer in women and men. 6. List or describe the toxic effects of anabolic steroids used to build muscle mass. 7. Name 2 SERMs and describe their unique properties.
	Pancreatic Hormones & Antidiabetic Drugs (T-3)	1. Describe the effects of insulin on hepatocytes, muscle, and adipose tissue. 2. List the types of insulin preparations and their durations of actions. 3. Describe the major hazards of insulin therapy. 4. List the prototypes and describe the mechanisms of action, key pharmacokinetic features, and toxicities of the major classes of agents used to treat type 2 diabetes. 5. Give 3 examples of rational drug combinations for treatment of type 2 diabetes mellitus. 6. Describe the clinical uses of glucagon.
	Agents That Affect Bone Mineral Homeostasis (T-2)	1. Identify the major and minor endogenous regulators of bone mineral homeostasis. 2. Sketch the pathway and sites of formation of 1,25-dihydroxyvitamin D. 3. Compare and contrast the clinical uses and effects of the major forms of vitamin D and its active metabolites. 4. Describe the major effects of PTH and vitamin D vatives on the intestine, the kidney, and bone. 5. Describe the agents used in the treatment of hypercalcemia and the agents used in the treatment of osteoporosis. 6. Recall the effects of adrenal and gonadal steroids on bone structure and the actions of diuretics on serum calcium levels.
	Dermatologic Pharmacology (T-2)	1. Describe the drugs are absorbed through the skin. 2. Identify the mechanisms of action, therapeutic uses, and toxicities of topical and systemic drugs used to treat dermatological disorders. 3. Describe the principles of photochemotherapy of dermatological disorders. 4. Describe the science behind the use of sunscreen agents.
	Antifungal Agents (T-1)	1. Describe the mechanisms of action of the azole, polyene, and echinocandin antifungal drugs. 2. Identify the clinical uses of amphotericin B, flucytosine, individual azoles, caspofungin, griseofulvin, and terbinafine. 3. Describe the pharmacokinetics and toxicities of amphotericin B. 4. Describe the pharmacokinetics, toxicities, and drug interactions of the azoles. 5. Identify the main topical antifungal agents.
	Antiprotozoal Drugs (T-2)	1. Name the major antimalarial drugs. Know which are used for chemoprophylaxis, which are effective in chloroquine resistance, and which are exoerythrocytic schizonticides. 2. Identify the characteristic adverse effects of the major antimalarial drugs. 3. Describe the clinical uses and adverse effects of metronidazole. 4. Identify the intestinal amebicides.

		5. Identify the drugs used for prophylaxis and treatment of pneumocystosis and toxoplasmosis, and know their characteristic toxic effects. 6. Identify the major drugs used for trypanosomiasis and leishmaniasis, and know their characteristic toxic effects.
	Antihelminthic Drugs (T-1)	1. List the clinical uses and the adverse effects of albendazole/mebendazole, diethylcarbamazine, ivermectin, and pyrantel pamoate. 2. Name the antihelminthic drug (or drugs) that (1) facilitate the actions of GABA, (2) increase calcium permeability in muscle, (3) activate nicotinic receptors, and (4) disrupt microtubule function. 3. Describe the clinical uses and adverse effects of both praziquantel and niclosamide.

At the end of this lesson, the student will be able to:

KNOWLEDGE

DEP	TOPIC	LEARNING OUTCOMES
PHYSOLOGY	Case Discussions on Fluid - Electrolyte Balance and Acid-Base Balance (T-2)	1. Define the physiological mechanisms in maintaining the electrolyte balance in the human body 2. Describe the acid-base balance and its physiological mechanisms 3. State the pathophysiologies underlying electrolyte imbalances and acid-base imbalances

At the end of this lesson, the student will be able to:

KNOWLEDGE

DEP	TOPIC	LEARNING OUTCOMES
PLASTIC RECONSTRUCTIVE & AESTHETIC SURGERY	Diabetic Wound Healing (T-1)	1. Define biochemical pathophysiology of diabetic complications 2. Describe effect of diabetes on acute wound healing 3. Describe effect of diabetes on chronic wound healing
	Diabetic Foot Ulcers (T-1)	1. Describe pathophysiology of diabetic foot deformities 2. Define pathophysiology of diabetic foot ulcers 3. Define clinical aspects of diabetic foot ulcers

At the end of this lesson, the student will be able to:

SKILLS

DEP	TOPIC	LEARNING OUTCOMES
CLINICAL SKILLS	Urinary Catheterization (T-1), (P-1)	1. Describe the definition of the urinary catheterization 2. List the indications for urinary catheterization 3. Indicate appropriate catheter type/size 4. Describe the equipment for female/male urinary catheterization 5. Demonstrate a safe method of performing urinary catheterization while maintaining strict aseptic technique 6. List the complications of the urinary catheterization

At the end of this lesson, the student will be able to:

KNOWLEDGE

DEP.	TOPIC	LEARNING OUTCOMES
MEDICAL GENETICS	Patterns of Single Gene Inheritance Part 3 (T-4)	1. Explain parent of origin effects on inheritance patterns. 2. Explain inheritance patterns of dynamic mutations 3. Explain inheritance of mutations in mitochondrial genome and properties of maternal inheritance 4. Explain the correlating genotype and phenotype, list the heterogeneity types 5. Explain the importance of the family history in medical practice

	Genetic Variation in Populations-Part 1 (T-2)	1. Explain the basics of population genetics concept 2. Describe the Hardy-Weinberg principle 3. List and discuss the factors that affect Hardy-Weinberg equilibrium.
	Genetic Variation in Populations-Part 2 (T-2)	1. Explain the basics of population genetics concept 2. Describe the Hardy-Weinberg principle 3. List and discuss the factors that affect Hardy-Weinberg equilibrium.