



INTRODUCTION TO HUMAN SYSTEMS (2019-2020)

INTRODUCTION OF THE COURSE

COURSE PERIOD	: Year 2 – Semester 1
COURSE CODE	: MED 211
COURSE DURATION	: 4 weeks
NATIONAL CREDIT	: 5
ECTS CREDIT	: 7
COURSE COORDINATORS	: Prof. Aslihan GÜRBÜZ
COURSE SECRETARY	: Buket ADIŞANLI, Bahadır ÇEVİRİM
COURSE DATES	: 16.09.2019 – 11.10.2019
TRAINING LOCATIONS	: Prof. Dr. Zeki Faik Ural Classroom, Prof. Dr. Kazım Türker Classroom, Anatomy Laboratory, Ridvan Ege Laboratory, Communication Skills Laboratory

COORDINATING DEPARTMENTS

Anatomy
Histology & Embryology
Medical Biochemistry
Medical Genetics
Physiology

CONTRIBUTING DEPARTMENTS

Emergency Medicine
Family Medicine
Medical Education & Informatics
Professional & Communication Skills Group

TEACHING STAFF

Prof. Nihal APAYDIN	Assoc. Prof. İskender Sinan ÖZKAVUKCU
Prof. Belgin CAN	Assist. Prof. İpek GÖNÜLLÜ
Prof. Erdiñç DEVRİM	Assist. Prof. Halil Gürhan KARABULUT
Prof. Aslihan GÜRBÜZ	Assist. Prof. Timur TUNCALI
Prof. Hasan Serdar ÖZTÜRK	Assist. Prof. Nüket YÜRÜR KUTLAY
Prof. Onur POLAT	Lecturer Simge AYKAN ZERGEROĞLU
Prof. Hatice ILGIN RUHİ	Lecturer Zehra DAĞLI
Prof. Bizden SABUNCUOĞLU	

AIM OF THE COURSE

To gain knowledge about basic anatomy, histology, physiology, biochemistry and genetics which are needed for better understanding of normal structure, function and disorders of human systems. Also, to gain skills of clinical approach to patients using the communication techniques.

LEARNING OBJECTIVES OF THE COURSE

Describes the commonly used terms in anatomy.

Describes the general properties of the elements of musculoskeletal system.

Describes the types of connective tissue, and explains their development and function.

Describes the cells, fibers and intermediate substance of connective tissue.

Describes the characteristics and development of adipose tissue.

Describes the types, characteristics and development of cartilage tissue.

Describes the general structure, characteristics and development of bone tissue.

Describes the repair of bone and cartilage tissues.

Describes the anatomical components and basic functions of the nervous system.

Describes the macroscopic structure of medulla spinalis and spinal nerves.

Describes the microscopic structure of nervous tissue.

Classifies the cells of nervous tissue, and explains the structural properties and functions of neurons.

Describes the glial cells in the central and peripheral nervous system.

Describes astrocytes, oligodendrocytes, ependymal cells and microglia cells.

Compares the support cells of the central nervous system and the peripheral nervous system.

Describes myelination in the peripheral and central nervous system, and explains its importance in terms of nervous system functions.

Defines physiological sciences, and explains basic physiological principles.

Describes the cell membrane functions.

Explains the transport of substances across cell membrane and the signal transmission between cells.

Explains the basic principles related membrane potentials.

Defines the types of synaptic transmission, and explains the mechanisms that play a role in transmission.

Describes the neurotransmitters and their receptors of the central nervous system.

Explains the mechanisms involved in neuronal communication.
Explains enzyme kinetics at the molecular level, and evaluates enzyme inhibition.
Describes the carbohydrate metabolism, and associates it with basic clinical tables.
Describes the lipid metabolism, and associates it with basic clinical tables.
Describes the metabolism of vitamins, macrominerals and trace elements.
Describes the amino acid and protein metabolism and disorders.
Explains the electron transport chain and ATP synthesis.
Describes the metabolism of purines and pyrimidines, and associates them with basic clinical tables.
Makes uric acid measurement in blood, and interprets its results.
Describes the basic concepts of inheritance.
Describes the Mendelian heritages, and lists their properties.
Explains the inheritance patterns and the properties of single gene disorders.
Makes the pedigree analysis, and associates it with heredity model.
Describes the chromosome anomalies, their types and development mechanisms, and lists chromosomal analysis indications.
Describes the chromosomal diseases, and explains their types and mechanisms of development.
Describes the properties of polygenic and multifactorial inheritance, and explains the mechanism of development of related diseases.
Describes the genetic diseases deviating from classical inheritance, and explains their development mechanisms.
Describes the epigenetic mechanisms and their function in the genome, and explains their effects on disease formation.
Understands the development process with its universal dimensions.
Describes the genetic factors and pathways affecting the developmental process, and associates the dysmorphological development.
Describes congenital anomalies according to the causes of formation, and explains them with examples.
Describes the teratogenicity, and lists the teratogens.
Explains the role of genetics in personal response to environmental factors.
Learns the clinical communication skills, and uses them in communication with patients and their relatives.

PROGRAM LEARNING OUTCOMES RELATED WITH COURSE LEARNING OBJECTIVES

COURSE LEARNING OBJECTIVES	PROGRAM LEARNING OUTCOMES
Describes the commonly used terms in anatomy.	LO-1
Describes the general properties of the elements of musculoskeletal system.	LO-1
Describes the types of connective tissue, and explains their development and function.	LO-1
Describes the cells, fibers and intermediate substance of connective tissue.	LO-1
Describes the characteristics and development of adipose tissue.	LO-1
Describes the types, characteristics and development of cartilage tissue.	LO-1
Describes the general structure, characteristics and development of bone tissue.	LO-1
Describes the repair of bone and cartilage tissues.	LO-1
Describes the anatomical components and basic functions of the nervous system.	LO-1
Describes the macroscopic structure of medulla spinalis and spinal nerves.	LO-1
Describes the microscopic structure of nervous tissue.	LO-1
Classifies the cells of nervous tissue, and explains the structural properties and functions of neurons.	LO-1
Describes the glial cells in the central and peripheral nervous system.	LO-1
Describes astrocytes, oligodendrocytes, ependymal cells and microglia cells.	LO-1
Compares the support cells of the central nervous system and the peripheral nervous system.	LO-1
Describes myelination in the peripheral and central nervous system, and explains its importance in terms of nervous system functions.	LO-1
Defines physiological sciences, and explains basic physiological principles.	LO-1
Describes the cell membrane functions.	LO-1
Explains the transport of substances across cell membrane and the signal transmission between cells.	LO-1
Explains the basic principles related membrane potentials.	LO-1
Defines the types of synaptic transmission, and explains the mechanisms that play a role in transmission.	LO-1

Describes the neurotransmitters and their receptors of the central nervous system.	LO-1
Explains the mechanisms involved in neuronal communication.	LO-1
Explains enzyme kinetics at the molecular level, and evaluates enzyme inhibition.	LO-1
Describes the carbohydrate metabolism, and associates it with basic clinical tables.	LO-1
Describes the lipid metabolism, and associates it with basic clinical tables.	LO-1
Describes the metabolism of vitamins, macrominerals and trace elements.	LO-1
Describes the amino acid and protein metabolism and disorders.	LO-1
Explains the electron transport chain and ATP synthesis.	LO-1
Describes the metabolism of purines and pyrimidines, and associates them with basic clinical tables.	LO-1
Makes uric acid measurement in blood, and interprets its results.	LO-1, LO-2
Describes the basic concepts of inheritance.	LO-1
Describes the Mendelian heritages, and lists their properties.	LO-1
Explains the inheritance patterns and the properties of single gene disorders.	LO-1
Makes the pedigree analysis, and associates it with heredity model.	LO-1
Describes the chromosome anomalies, their types and development mechanisms, and lists chromosomal analysis indications.	LO-1
Describes the chromosomal diseases, and explains their types and mechanisms of development.	LO-1
Describes the properties of polygenic and multifactorial inheritance, and explains the mechanism of development of related diseases.	LO-1
Describes the genetic diseases deviating from classical inheritance, and explains their development mechanisms.	LO-1
Describes the epigenetic mechanisms and their function in the genome, and explains their effects on disease formation.	LO-1
Understands the development process with its universal dimensions.	LO-1
Describes the genetic factors and pathways affecting the developmental process, and associates the dysmorphological development.	LO-1
Describes congenital anomalies according to the causes of formation, and explains them with examples.	LO-1
Explains the role of genetics in personal response to environmental factors.	LO-1
Describes the teratogenicity, and lists the teratogens.	LO-1
Learns the clinical communication skills, and uses them in communication with patients and their relatives.	LO-1, LO-6

ASSESSMENT AND EVALUATION

ASSESSMENT SYSTEM

MID-TERM ASSESSMENT	<ul style="list-style-type: none">• Mid-term quiz (20%)• Communication skills performance (10%)
PRACTICAL EXAM AT THE END OF COURSE	Objectively structured practical exam
WRITTEN EXAM AT THE END OF COURSE	Written exam consisting of multiple-choice questions
CALCULATION OF COURSE FINAL SCORE	Mid-term assessment : 30% Practical exam at the end of course : 30% Written exam at the end of course : 50%

PROGRAM EVALUATION

Evaluation at the end of the course is implemented both orally and electronically using structured evaluation forms.

SUMMARY OF THE COURSE

	Lecture	Practice	Total
Anatomy	9	4	13
Histology & Embryology	11	6	17
Medical Biochemistry	17	8	25
Medical Genetics	12	4	16
Physiology	7	2	9
Professional & Communication Skills Group	4	6	10
TOTAL	60	30	90

COURSE PROGRAM

WEEK-1

MONDAY (16.09.2019)

08:30-09:15	Introduction of 2 nd Year Program	Prof. Nihal APAYDIN
09:30-10:15	Introduction of the course	Prof. Aslıhan GÜRBÜZ
10:30-11:15	Introduction to anatomy	Prof. Nihal APAYDIN
11:30-12:15	Introduction to terminology	Prof. Nihal APAYDIN
12:15-13:30	Lunch Break	
13:30-14:15	Basic principles of physiology	Lec. Simge AYKAN ZERGEROĞLU
14:30-15:15	Connective tissue: Definition and types	Assoc. Prof. Sinan ÖZKAVUKCU
15:30-16:15	Independent Learning Session	
16:30-17:15		

TUESDAY (17.09.2019)

08.30-09:15	Transport of substances across cell membrane	Lec. Simge AYKAN ZERGEROĞLU
09:30-10:15	Regulation of enzyme kinetics and activities	Prof. Erdinç DEVRİM
10:30-11:15	Lab Practice: Observation of enzyme inhibition in laboratory	Prof. Erdinç DEVRİM
11:30-12:15		
12:15-13:30	Lunch Break	
13:30-14:15	Connective tissue fibers, extracellular matrix	Assoc. Prof. Sinan ÖZKAVUKCU
14:30-15:15	Cells of connective tissues	Assoc. Prof. Sinan ÖZKAVUKCU
15:30-16:15	Biochemistry of extracellular matrix, and synthesis of collagen and elastin	Prof. Aslıhan GÜRBÜZ
16:30-17:15	Independent Learning Session	

WEDNESDAY (18.09.2019)

08.30-09:15	RESEARCH PROJECTS	
09:30-10:15		
10:30-11:15		
11:30-12:15		
12:15-13:30	Lunch Break	
13:30-14:15	Clinical communication skills (Lecture-1)	Prof. Onur POLAT
14:30-15:15		Assist. Prof. İpek GÖNÜLLÜ Lect. Zehra DAĞLI
15:30-16:15	Information and Communication Technologies II	e-Learning
16:30-17:15	Information and Communication Technologies II	e-Learning

THURSDAY (19.09.2019)		
08.30-09:15	The concept of heredity	Assist. Prof. Halil G. KARABULUT
09:30-10:15	Inheritance of single gene disorders	Assist. Prof. Halil G. KARABULUT
10:30-11:15	Introduction to musculoskeletal system	Prof. Nihal APAYDIN
11:30-12:15	Introduction to musculoskeletal system	Prof. Nihal APAYDIN
12:15-13:30	Lunch Break	
13:30-14:15	Adipose tissue	Assoc. Prof. Sinan ÖZKAVUKCU
14:30-15:15	Lab Practice: Connective and adipose tissues	Assoc. Prof. Sinan ÖZKAVUKCU
15:30-16:15		
16:30-17:15	Independent Learning Session	
FRIDAY (20.09.2019)		
08.30-09:15	Carbohydrate metabolism (Glycolysis)	Prof. Erdinç DEVRİM
09:30-10:15	Carbohydrate metabolism (Krebs cycle)	Prof. Erdinç DEVRİM
10:30-11:15	Lab Practice: An overview of musculoskeletal system	Prof. Nihal APAYDIN
11:30-12:15		
12:15-13:30	Lunch Break	
13:30-14:15	Clinical communication skills (Lecture-2)	Prof. Onur POLAT Assist. Prof. İpek GÖNÜLLÜ Lect. Zehra DAĞLI
14:30-15:15		
15:30-16:15	Independent Learning Session	
16:30-17:15	Independent Learning Session	

WEEK-2		
MONDAY (23.09.2019)		
08.30-09:15	Polygenic and multifactorial inheritance	Assist. Prof. Halil G. KARABULUT
09:30-10:15	Cartilage tissue: Types and cells	Prof. Bizden SABUNCUOĞLU
10:30-11:15	Membrane potentials	Lec. Simge AYKAN ZERGEROĞLU
11:30-12:15	Receptors and signal transduction	Lec. Simge AYKAN ZERGEROĞLU
12:15-13:30	Lunch Break	
13:30-14:15	Chromosomal abnormalities	Prof. Hatice ILGIN RUHİ
14:30-15:15	Chromosomal disorders	Prof. Hatice ILGIN RUHİ
15:30-16:15	Independent Learning Session	
16:30-17:15	Independent Learning Session	
TUESDAY (24.09.2019)		
08.30-09:15	Carbohydrate metabolism (Glycogen metabolism and the others sugars)	Prof. Erdinç DEVRİM

09:30-10:15	Carbohydrate metabolism (Gluconeogenesis, hexose-monophosphate shunt)	Prof. Erdinç DEVRİM
10:30-11:15	Practice: Pedigree practice	Prof. Hatice ILGIN RUHİ
11:30-12:15		
12:15-13:30	Lunch Break	
13:30-14:15	Bone tissue: General structure and cells	Prof. Bizden SABUNCUOĞLU
14:30-15:15	Bone tissue: General structure and cells	Prof. Bizden SABUNCUOĞLU
15:30-16:15	Vitamins (water and lipid soluble)	Prof. Aslıhan GÜRBÜZ
16:30-17:15	Independent Learning Session	
WEDNESDAY (25.09.2019)		
08.30-09:15	RESEARCH PROJECTS	
09:30-10:15		
10:30-11:15		
11:30-12:15		
12:15-13:30	Lunch Break	
13:30-14:15	Clinical communication skills (Role-play)	Prof. Onur POLAT Assist. Prof. İpek GÖNÜLLÜ Lect. Zehra DAĞLI
14:30-15:15		
15:30-16:15	Information and Communication Technologies II	e-Learning
16:30-17:15	Information and Communication Technologies II	e-Learning
THURSDAY (26.09.2019)		
08.30-09:15	Macrominerals	Prof. Aslıhan GÜRBÜZ
09:30-10:15	Trace elements	Prof. Aslıhan GÜRBÜZ
10:30-11:15	Molecular pathology in genetic diseases deviating from classic inheritance	Assist. Prof. Halil G. KARABULUT
11:30-12:15	Functional importance of epigenetic mechanisms in genome, and the role in development and disease etiopathogenesis	Assist. Prof. Halil G. KARABULUT
12:15-13:30	Lunch Break	
13:30-14:15	Bone and cartilage development and repair	Prof. Bizden SABUNCUOĞLU
14:30-15:15	Lab Practice: Cartilage and bone tissues	Prof. Bizden SABUNCUOĞLU
15:30-16:15		
16:30-17:15	Independent Learning Session	
FRIDAY (27.09.2019)		
08.30-09:15	Lipid metabolism	Prof. Hasan Serdar ÖZTÜRK
09:30-10:15	Lipid metabolism	Prof. Hasan Serdar ÖZTÜRK

10:30-11:15	Developmental genetics	Assist. Prof. Nüket Y. KUTLAY
11:30-12:15	Independent Learning Session	
12:15-13:30	Lunch Break	
13:30-14:15	Metabolism of amino acids and nitrogen compounds	Prof. Aslıhan GÜRBÜZ
14:30-15:15	Metabolism of amino acids and nitrogen compounds	Prof. Aslıhan GÜRBÜZ
15:30-16:15	What have we learned this week?	Prof. Aslıhan GÜRBÜZ
16:30-17:15		

WEEK-3

MONDAY (30.09.2019)

08.30-09:15	MID-TERM EXAM	
09:30-10:15		
10:30-11:15	Lipid metabolism	Prof. Hasan Serdar ÖZTÜRK
11:30-12:15	Lipid metabolism	Prof. Hasan Serdar ÖZTÜRK
12:15-13:30	Lunch Break	
13:30-14:15	Ecogenetics and the role of genetics in personal response differences to environmental factors	Assist. Prof. Timur TUNCALI
14:30-15:15	Lab Practice: Karyotype practice	Prof. Hatice ILGIN RUHİ
15:30-16:15		
16:30-17:15	Independent Learning Session	

TUESDAY (01.10.2019)

08.30-09:15	Overview of the nervous system, nerve tissue and neuron	Prof. Belgin CAN
09:30-10:15	Types of glial cells and myelination	Prof. Belgin CAN
10:30-11:15	Lab Practice: Lipid profile	Prof. Hasan Serdar ÖZTÜRK
11:30-12:15		
12:15-13:30	Lunch Break	
13:30-14:15	Introduction to central nervous system	Prof. Nihal APAYDIN
14:30-15:15	Introduction to peripheral nervous system	Prof. Nihal APAYDIN
15:30-16:15	Introduction to autonomic nervous system	Prof. Nihal APAYDIN
16:30-17:15	Independent Learning Session	

WEDNESDAY (02.10.2019)

08.30-09:15	RESEARCH PROJECTS	
09:30-10:15		
10:30-11:15		

11:30-12:15		
12:15-13:30	Lunch Break	
13:30-14:15	Clinical communication skills (Practice-1)	Prof. Onur POLAT Assist. Prof. İpek GÖNÜLLÜ Lect. Zehra DAĞLI
14:30-15:15		
15:30-16:15	Information and Communication Technologies II	e-Learning
16:30-17:15	Information and Communication Technologies II	e-Learning
THURSDAY (03.10.2019)		
08.30-09:15	Genetic methodologies	Assist. Prof. Timur TUNCALI
09:30-10:15	Genetic methodologies	Assist. Prof. Timur TUNCALI
10:30-11:15	General organization of spinal cord	Prof. Nihal APAYDIN
11:30-12:15	Spinal nerves	Prof. Nihal APAYDIN
12:15-13:30	Lunch Break	
13:30-14:15	Connective tissue components of peripheral nervous system (peripheral nerve and spinal ganglia)	Prof. Belgin CAN
14:30-15:15	Lab Practice: Histology of nerves tissue, cells, peripheral nerves and spinal ganglia	Prof. Belgin CAN
15:30-16:15		
16:30-17:15	Independent Learning Session	
FRIDAY (04.10.2019)		
08.30-09:15	Independent Learning Session	
09:30-10:15	Congenital anomalies	Prof. Hatice ILGIN RUHİ
10:30-11:15	Lab Practice: An overview of nervous system	Prof. Nihal APAYDIN
11:30-12:15		
12:15-13:30	Lunch Break	
13:30-14:15	Synaptic transmission	Lec. Simge AYKAN ZERGEROĞLU
14:30-15:15	What have we learned this week?	Prof. Hatice ILGIN RUHİ
15:30-16:15		
16:30-17:15		

WEEK-4

MONDAY (07.10.2019)		
08.30-09:15	Lab Practice: Protein measurement in blood and urine, and search for amino acid metabolites in urine	Prof. Aslıhan GÜRBÜZ
09:30-10:15		
10:30-11:15	Neurotransmitters	Lec. Simge AYKAN ZERGEROĞLU
11:30-12:15	Synaptic integration	Lec. Simge AYKAN ZERGEROĞLU

12:15-13:30	Lunch Break	
13:30-14:15	Electron transport chain	Prof. Aslıhan GÜRBÜZ
14:30-15:15	Metabolism of purines and pyrimidines	Prof. Aslıhan GÜRBÜZ
15:30-16:15	Independent Learning Session	
16:30-17:15		
TUESDAY (08.10.2019)		
08.30-09:15	Lab Practice: Nerve conduction velocity	Lec. Simge AYKAN ZERGEROĞLU
09:30-10:15		
10:30-11:15	Lab Practice: Uric acid measurement in blood and clinical interpretation of the results	Prof. Aslıhan GÜRBÜZ
11:30-12:15		
12:15-13:30	Lunch Break	
13:30-14:15	Independent Learning Session	
14:30-15:15		
15:30-16:15		
16:30-17:15		
WEDNESDAY (09.10.2019)		
08.30-09:15	RESEARCH PROJECTS	
09:30-10:15		
10:30-11:15		
11:30-12:15		
12:15-13:30	Lunch Break	
13:30-14:15	Clinical communication skills (Practice-2)	Prof. Onur POLAT Assist. Prof. İpek GÖNÜLLÜ Lect. Zehra DAĞLI
14:30-15:15		
15:30-16:15	Information and Communication Technologies II	e-Learning
16:30-17:15	Information and Communication Technologies II	e-Learning
THURSDAY (10.10.2019)		
08.30-09:15	INDEPENDENT STUDY FOR EXAMS	
09:30-10:15		
10:30-11:15		
11:30-12:15		
12:15-13:30	Lunch Break	
13:30-14:15	INDEPENDENT STUDY FOR EXAMS	
14:30-15:15		
15:30-16:15		
16:30-17:15		

FRIDAY (11.10.2019)		
08.30-09:15	PRACTICAL EXAM AT THE END OF COURSE	
09:30-10:15		
10:30-11:15		
11:30-12:15		
12:15-13:30	Lunch Break	
13:30-14:15	WRITTEN EXAM AT THE END OF COURSE	
14:30-15:15		
15:30-16:15	FEEDBACK SESSION OF THE COURSE	All Faculty Members
16:30-17:15		

READING/STUDYING SOURCES

- Gray's Anatomy for Students (3rd Edition); Richard L. Drake, A. Wayne Vogl, Adam W. M. Mitchell; Churchill Livingstone Elsevier, Philadelphia, 2015.
- Moore Clinically Oriented Anatomy (8th edition); Keith L. Moore, Anne M. R. Agur, Arthur F. Dalley; 2018.
- Histology and Cell Biology: An Introduction to Pathology (4th Edition); Abraham L. Kierszenbaum, Laura L. Tres; Elsevier Saunders, Philadelphia, 2015.
- Guyton and Hall Textbook of Medical Physiology (13th Edition); John E. Hall; Elsevier, Philadelphia, 2016.
- Lippincott Illustrated Reviews: Biochemistry (Seventh Edition); Denise R. Ferrier; Lippincott Williams & Wilkins; Philadelphia, 2017.
- Harper's Illustrated Biochemistry (30th Edition); Victor W. Rodwell, David Bender, Kathleen M. Botham, Peter J. Kennelly, P. Anthony Weil; McGraw-Hill, 2015.
- Emery's Elements of Medical Genetics (15th Edition); Peter D. Turnpenny, Sian Ellard; Elsevier, Philadelphia, 2017.
- Thompson & Thompson Genetics in Medicine (8th Edition); Robert L. Nussbaum, Roderick R. McInnes, Huntington F. Willard; Elsevier, Philadelphia, 2016.
- Teaching and Learning Communication Skills in Medicine (2nd Edition); Suzanne Kurtz, Juliet Draper, Jonathan Silverman; Radcliffe Publishing, Abingdon, 2005.
- Making The Patient Your Partner: Communication Skills for Doctors and Other Caregivers; Thomas Gordon, W. Sterling Edwards; Greenwood Publishing Group, 1995.