CELL BIOLOGY & INTRODUCTION TO HUMAN EMBRYOLOGY

COURSE INTRODUCTION

COURSE PERIOD : Year 1 – Semester 1

COURSE CODE : MED105

COURSE DURATION : 8 weeks

NATIONAL CREDIT : 8

ECTS CREDIT : 12

COURSE COORDINATOR : Professor Alp CAN

COORDINATOR ASSISTANT : Assistant Professor Nüket YÜRÜR KUTLAY

COURSE SECRETARY : Buket ADIŞANLI, Bahadır ÇEVRİM

COURSE DATES : 19.11.2018 – 11.01.2019

TRAINING LOCATIONS : Pink Hall, Yellow Hall, Rıdvan Ege Laboratory, Medical Skills Laboratory

COORDINATING DEPARTMENTS

Biochemistry
Biophysics
Histology & Embryology
Medical Biology
Medical Genetics

CONTRIBUTING DEPARTMENTS

Anesthesiology and Reanimation
Hematology
Medical Education and Informatics
Plastic, Reconstructive and Aesthetic Surgery

TEACHING STAFF

Prof. Önder ARSLAN
Prof. Aslıhan AVCI
Prof. Alp CAN
Prof. Özgür ÇINAR
Prof. Erdinç DEVRİM
Prof. İlker DURAK
Prof. Hatice ILGIN RUHİ
Prof. Hasan Serdar ÖZTÜRK
Prof. Asuman SUNGUROĞLU
Prof. Ayşe Fulya TEKŞEN
Prof. Ayşe Fulya TEKŞEN
Prof. Mehmet UĞUR
Assoc. Prof. Oya Sena AYDOS
Assoc. Prof. Özlem SELVİ CAN
Assoc. Prof. Burak KAYA
Assoc. Prof. Başak Ceyda MEÇO
Assist. Prof. Halil Gürhan KARABULUT
Assist. Prof. Timur TUNCALI
Assist. Prof. Nüket YÜRÜR KUTLAY
Assist. Prof. İpek GÖNÜLLÜ

AIM OF THE COURSE
To gain knowledge about the structure, function and mechanisms of human organism at the molecular and cellular level and the basic human embryology. Also, to gain skills for basic communication and medical practices.

LEARNING OBJECTIVES OF THE COURSE
Explains the origin of life and the universal properties of cells.
Lists the macromolecules of the livings, and relates the three-dimensional structure functionally.
Explains the functions of the macromolecules involved in the metabolism.
Interprets the macromolecular mechanisms in the cell.
Describes the structure of genome, and explains the diversity of the genome.
Understands that all living organisms have a common origin and divided in to three groups as archea, eubacteria and eukaryote.
Explains the formation of living organisms with eukaryotic cells and gradually evolve until today.
Explains the structure and function of the cell membrane.
Defines the structure of the cytoplasm, lists the organelles in the cytoplasm, and explains their functions.
Explains the structure and function of the cell nucleus.
Explains the mechanism of transport of molecules across the cytoplasm and the nucleus, and understands their relation in cellular processes.
Lists the components of the cytoskeleton, and explains their differences.
Understands the signaling mechanisms within the cell.
Knows and applies the basic methods for cell analysis.
Distinguishes various types of cells on microscopic level.
Explains the structure and function of DNA, and interprets the relation between them.
Explains the mechanism of packaging of DNA to chromosomes and the molecules that play a role in this process.
Explains the mutation, its varieties, mechanisms of occurrence and detection methods.
Explains the DNA repair mechanisms.
Describes the recombination mechanisms, and explains the consequences and effects on the evolution process of this mechanism.

Explains the RNA types, their synthesis and functions from the formation of primitive organisms to today's more complex organisms.
Explains protein synthesis, defines genetic code and associates it with protein synthesis.
Describes epithelial tissue and covering epithelium, and explains their functions.
Describes the secretory epithelium, and explains its types and functions.
Defines gene structure, and explains the all steps of the gene transcription.
Explains all phases and mechanisms of gene expression control.
Sorts the methods used in gene expression, gene sequences and identifying changes of their functions, and interprets the results.
Explains the cell division and its control.
Explains the cell proliferation and its control.
Explains the cell aging process.
Defines the types of cell death, and explains their mechanisms.
Explains the general principles and mechanisms of evolution, and understands its importance in the health sciences.
Understands the importance of discovery of DNA molecules in the development of health sciences.
Describes the differences of intraspecies and interspecies in genetic information.
Uses the frequently used terms in cell biology, and associates them.
Defines the stem cells, and sorts out them in clinical use.
Uses the basic laboratory equipment required for basic experiments.
Describes the formation of human embryo and their molecular interactions.
Performs basic medical skills (basic life support).

PROGRAM LEARNING OUTCOMES RELATED WITH COURSE LEARNING OBJECTIVES

COURSE LEARNING OBJECTIVES	PROGRAM LEARNING OUTCOMES
Explains the origin of life and the universal properties of cells.	LO-1
Lists the macromolecules of the livings, and relates the three-dimensional structure functionally.	LO-1
Explains the functions of the macromolecules involved in the metabolism.	LO-1
Interprets the macromolecular mechanisms in the cell.	LO-1
Describes the structure of genome, and explain the diversity of the genome.	LO-1
Understands that all living organisms have a common origin and divided in to three groups as archea, eubacteria and eukaryote.	LO-1
Explains the formation of living organisms with eukaryotic cells and gradually evolve until today.	LO-1
Explains the structure and function of the cell membrane.	LO-1
Defines the structure of the cytoplasm, lists the organelles in the cytoplasm, and explains their functions.	LO-1
Explains the structure and function of the cell nucleus.	LO-1
Explains the mechanism of transport of molecules across the cytoplasm and the nucleus, and understands their relation in cellular processes.	LO-1
Lists the components of the cytoskeleton, and explains their differences.	LO-1
Understands the signaling mechanisms within the cell.	LO-1
Knows and applies the basic methods for cell analysis.	LO-1
Distinguishes various types of cells on microscopic level.	LO-1
Explains the structure and function of DNA, and interprets the relation between them.	LO-1
Explains the mechanism of packaging of DNA to chromosomes and the molecules that play a role in this process.	LO-1
Explains the mutation, its varieties, mechanisms of occurrence and detection methods.	LO-1
Explains the DNA repair mechanisms.	LO-1
Describes the recombination mechanisms, and explains the consequences and effects on the evolution process of this mechanism.	LO-1

Explains the RNA types, their synthesis and functions from the formation of primitive organisms to today's more complex organisms.	LO-1
Explains protein synthesis, defines genetic code and associates it with protein synthesis.	LO-1
Describes epithelial tissue and covering epithelium, and explains their functions.	LO-1
Describes the secretory epithelium, and explains its types and functions.	LO-1
Describes the biochemical properties of the extracellular matrix, and sorts the biochemical stages of collagen and elastin synthesis.	LO-1
Defines gene structure, and explains the all steps of the gene transcription.	LO-1
Explains all phases and mechanisms of gene expression control.	LO-1
Sorts the methods used in gene expression, gene sequences and identifying changes of their functions, and interprets the results.	LO-1
Explains the cell division and its control.	LO-1
Explains the cell proliferation and its control.	LO-1
Explains the cell aging process.	LO-1
Defines the types of cell death, and explains their mechanisms.	LO-1
Explains the general principles and mechanisms of evolution, and understands its importance in the health sciences.	LO-1
Understands the importance of discovery of DNA molecules in the development of health sciences.	LO-1
Describes the differences of intraspecies and interspecies in genetic information.	LO-1
Uses the frequently used terms in cell biology, and associates them.	LO-1
Defines the stem cells, and sorts out them in clinical use.	LO-1
Uses the basic laboratory equipment required for basic experiments.	LO-1
Describes the formation of human embryo and their molecular interactions.	LO-1
Performs basic medical skills (basic life support).	LO-1, LO-3

ASSESSMENT AND EVALUATION

ASSESSMENT SYSTEM	
MIDTERM EXAM	Scientific article presentation
PRACTICAL EXAM AT THE END OF COURSE	• Medical skills 10% • Objectively structured practical and clinical exam 20%
WRITTEN EXAM AT THE END OF COURSE	Written exam consisting of multiple-choice questions
CALCULATION OF COURSE FINAL SCORE	Midterm exam : 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	Panel	Lab Practice	Medical Skills	Total
Biochemistry	6	2	3		11
Biophysics	3	2			5
Histology & Embryology	13	2	6		21
Medical Biology	21	2	14		37
Medical Genetics	20	4			24
Hematology		2			2
Plastic Surgery		2			2
Anesthesiology and Reanimation Medical Education and Informatics				28	28
TOTAL	**63**	**6**	**23**	**68**	**120**

COURSE PROGRAM

WEEK-1		
MONDAY (19.11.2018)		
08.30-09:15		
09:30-10:15	Introduction of the course	Dr. Alp CAN
10:30-11:15	Water and pH	Dr. Erdinç DEVRİM
11:30-12:15	Origin of life, universal features of cells	Dr. Timur TUNCALI
12:15-13:30	Lunch Break	
13:30-14:15	Macromolecules in medicine: Carbohydrates	Dr. Hasan Serdar ÖZTÜRK
14:30-15:15	Macromolecules in medicine: Lipids	Dr. Hasan Serdar ÖZTÜRK
15:30-16:15	Turkish Language	Meltem AYABAKAN İPEK
16:30-17:15	Turkish Language	Meltem AYABAKAN İPEK
TUESDAY (20.11.2018)		
08.30-09:15	Independent Learning Session	
09:30-10:15	Macromolecules in medicine: Amino acids	Dr. Aslıhan AVCI
10:30-11:15	Nucleic acids	Dr. Aslıhan AVCI
11:30-12:15	Enzymes	Dr. Erdinç DEVRİM
12:15-13:30	Lunch Break	
13:30-14:15	Ataturk's Principles and History of Revolution	Dr. Demo Ahmet ASLAN
14:30-15:15	Ataturk's Principles and History of Revolution	Dr. Demo Ahmet ASLAN
15:30-16:15	Independent Learning Session	
16:30-17:15		
WEDNESDAY (21.11.2018)		
08.30-09:15	Basic Medical Skills (Airway opening, Airway placement)	Dr. Özlem SELVİ CAN Dr. Başak Ceyda MEÇO Dr. İpek GÖNÜLLÜ
09:30-10:15		
10:30-11:15		
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	Information and Communication Technologies	
16:30-17:15	Information and Communication Technologies	

THURSDAY (22.11.2018)		
08.30-09:15	Independent Learning Session	
09:30-10:15	Physicochemical properties of macromolecular interactions	Dr. Mehmet UĞUR
10:30-11:15	Physicochemical properties of macromolecular bonds	Dr. Mehmet UĞUR
11:30-12:15	Independent Learning Session	
12:15-13:30	Lunch Break	
13:30-14:15	Preparation for the article presentation	Group study
14:30-15:15		
15:30-16:15		
16:30-17:15		
FRIDAY (23.11.2018)		
11:30-12:15	Reactions in binding of macromolecules to small molecules	Dr. Mehmet UĞUR
09:30-10:15	Diversity of genomes and genomic structure	Dr. Timur TUNCALI
10:30-11:15	Archea, eubacteria and eukaryotic cells	Dr. Ayşe Fulya TEKŞEN
11:30-12:15	Archea, eubacteria and eukaryotic cells	Dr. Ayşe Fulya TEKŞEN
12:15-13:30	Lunch Break	
13:30-14:15	Preparation for the article presentation	Group study
14:30-15:15		
15:30-16:15		
16:30-17:15		

WEEK-2		
MONDAY (26.11.2018)		
08.30-09:15	Independent Learning Session	
09:30-10:15	Lab Practice: Laboratory safety	Dr. Erdinç DEVRİM
10:30-11:15	Structure of the cell membrane	Dr. Asuman SUNGUROĞLU
11:30-12:15	Structure of the cell membrane	Dr. Asuman SUNGUROĞLU
12:15-13:30	Lunch Break	
13:30-14:15	Lab Practice: Introduction to microscopy and cell imaging techniques (examples of cells/tissue preparations); Tissue preparation techniques	Dr. Özgür ÇINAR
14:30-15:15		
15:30-16:15	Turkish Language	Meltem AYABAKAN İPEK
16:30-17:15	Turkish Language	Meltem AYABAKAN İPEK
TUESDAY (27.11.2018)		
08.30-09:15	Cytoplasmic compartments and organelles	Dr. Özgür ÇINAR

09:30-10:15	Cytoplasmic compartments and organelles	Dr. Özgür ÇINAR
10:30-11:15	Lab Practice: How do I estimate cell size using a microscope?	Dr. Asuman SUNGUROĞLU
11:30-12:15		
12:15-13:30	Lunch Break	
13:30-14:15	Ataturk's Principles and History of Revolution	Dr. Demo Ahmet ASLAN
14:30-15:15	Ataturk's Principles and History of Revolution	Dr. Demo Ahmet ASLAN
15:30-16:15	Independent Learning Session	
16:30-17:15		
WEDNESDAY (28.11.2018)		
08.30-09:15	Basic Medical Skills (Heimlich maneuvering practice in adult and infant)	Dr. Özlem SELVİ CAN Dr. Başak Ceyda MEÇO Dr. İpek GÖNÜLLÜ
09:30-10:15		
10:30-11:15		
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	Information and Communication Technologies	
16:30-17:15	Information and Communication Technologies	
THURSDAY (29.11.2018)		
08.30-09:15	Preparation for the article presentation	Group study
09:30-10:15		
10:30-11:15		
11:30-12:15		
12:15-13:30	Lunch Break	
13:30-14:15	Preparation for the article presentation	Group study
14:30-15:15		
15:30-16:15		
16:30-17:15		
FRIDAY (30.11.2018)		
08.30-09:15	Independent Learning Session	
09:30-10:15	Nuclear transport	Dr. Ayşe Fulya TEKŞEN
10:30-11:15	The structure and function of DNA	Dr. Halil Gürhan KARABULUT
11:30-12:15	Chromosomal DNA and its packaging, chromatin structure and function	Dr. Hatice ILGIN RUHİ

12:15-13:30	Lunch Break	
13:30-14:15	Preparation for the article presentation	Group study
14:30-15:15		
15:30-16:15		
16:30-17:15		

WEEK-3		
MONDAY (03.12.2018)		
08.30-09:15	The maintenance of DNA sequences and DNA replication	Dr. Timur TUNCALI
09:30-10:15	The maintenance of DNA sequences and DNA replication	Dr. Timur TUNCALI
10:30-11:15	Mutation	Dr. Nüket YÜRÜR KUTLAY
11:30-12:15	DNA repair systems	Dr. Nüket YÜRÜR KUTLAY
12:15-13:30	Lunch Break	
13:30-14:15	Lab Practice: DNA isolation	Dr. Asuman SUNGUROĞLU
14:30-15:15		
15:30-16:15	Turkish Language	Meltem AYABAKAN İPEK
16:30-17:15	Turkish Language	Meltem AYABAKAN İPEK
TUESDAY (04.12.2018)		
08.30-09:15	Independent Learning Session	
08.30-09:15	Homologous and site-specific recombination	Dr. Nüket YÜRÜR KUTLAY
09:30-10:15	From DNA to RNA and RNA world	Dr. Halil Gürhan KARABULUT
10:30-11:15	From RNA to proteins	Dr. Halil Gürhan KARABULUT
12:15-13:30	Lunch Break	
13:30-14:15	Ataturk's Principles and History of Revolution	Dr. Demo Ahmet ASLAN
14:30-15:15	Ataturk's Principles and History of Revolution	Dr. Demo Ahmet ASLAN
15:30-16:15	Independent Learning Session	
16:30-17:15		
WEDNESDAY (05.12.2018)		
08.30-09:15	Basic Medical Skills (Artificial respiration in adult and infant)	Dr. Özlem SELVİ CAN Dr. Başak Ceyda MEÇO Dr. İpek GÖNÜLLÜ
09:30-10:15		
10:30-11:15		
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	Information and Communication Technologies	
16:30-17:15	Information and Communication Technologies	
THURSDAY (06.12.2018)		
08.30-09:15	Protein synthesis	Dr. Halil Gürhan KARABULUT
09:30-10:15	Cell secretion (vesicular trafficking)	Dr. Özgür ÇINAR
10:30-11:15	Cytoskeleton	Dr. Alp CAN
11:30-12:15	Cell motility	Dr. Alp CAN
12:15-13:30	Lunch Break	
13:30-14:15	Preparation for the article presentation	Group study
14:30-15:15		
15:30-16:15		
16:30-17:15		
FRIDAY (07.12.2018)		
08.30-09:15	Preparation for the article presentation	Group study
09:30-10:15		
10:30-11:15	Cell signaling	Dr. Asuman SUNGUROĞLU
11:30-12:15	Cell signaling	Dr. Asuman SUNGUROĞLU
12:15-13:30	Lunch Break	
13:30-14:15	Preparation for the article presentation	Group study
14:30-15:15		
15:30-16:15		
16:30-17:15		

WEEK-4		
MONDAY (10.12.2018)		
08.30-09:00	MIDTERM EXAM (Article presentation by groups)	Dr. Mehmet UĞUR Dr. Erdinç DEVRİM
09:15-09:45	MIDTERM EXAM (Article presentation by groups)	Dr. Aslıhan AVCI Dr. Nihal APAYDIN
10:00-10:30	MIDTERM EXAM (Article presentation by groups)	Dr. H. Serdar ÖZTÜRK Dr. Timur TUNCALI
10:30-11:00	MIDTERM EXAM (Article presentation by groups)	Dr. Hatice ILGIN RUHİ Dr. İpek GÖNÜLLÜ
11.15-11:45	MIDTERM EXAM (Article presentation by groups)	Dr. Oya Sena AYDOS Dr. Halil Gürhan KARABULUT
12:15-13:30	Lunch Break	

13:30-14:15	Introduction to tissue biology and epithelial tissues	Dr. Özgür ÇINAR
14:30-15:15	Introduction to tissue biology and epithelial tissues	Dr. Özgür ÇINAR
15:30-16:15	Turkish Language	Meltem AYABAKAN İPEK
16:30-17:15	Turkish Language	Meltem AYABAKAN İPEK
TUESDAY (11.12.2018)		
08.30-09:15	Independent Learning Session	
09:30-10:15	Introduction to tissue biology and epithelial tissues	Dr. Özgür ÇINAR
10:30-11:15	Lab Practice: Epithelium	Dr. Özgür ÇINAR
11:30-12:15		
12:15-13:30	Lunch Break	
13:30-14:15	Ataturk's Principles and History of Revolution	Dr. Demo Ahmet ASLAN
14:30-15:15	Ataturk's Principles and History of Revolution	Dr. Demo Ahmet ASLAN
15:30-16:15	Independent Learning Session	
16:30-17:15		
WEDNESDAY (12.12.2018)		
08.30-09:15	Basic Medical Skills (External cardiac massage in adult and infant)	Dr. Özlem SELVİ CAN Dr. Başak Ceyda MEÇO Dr. İpek GÖNÜLLÜ
09:30-10:15		
10:30-11:15		
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	Information and Communication Technologies	
16:30-17:15	Information and Communication Technologies	
THURSDAY (13.12.2018)		
08.30-09:15	Independent Learning Session	
09:30-10:15	An overview of gene control	Dr. Halil Gürhan KARABULUT
10:30-11:15	Transcriptional regulation	Dr. Halil Gürhan KARABULUT
11:30-12:15	Independent Learning Session	
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		

FRIDAY (14.12.2018)		
08.30-09:15	Independent Learning Session	
09:30-10:15	Post transcriptional control	Dr. Halil Gürhan KARABULUT
10:30-11:15	Noncoding RNAs and regulation of gene expression	Dr. Timur TUNCALI
11:30-12:15	Epigenetics	Dr. Asuman SUNGUROĞLU
12:15-13:30	Lunch Break	
13:30-14:15	What have we learned so far?	Dr. Asuman SUNGUROĞLU Dr. Özgür ÇINAR
14:30-15:15		
15:30-16:15		
16:30-17:15		

WEEK-5		
MONDAY (17.12.2018)		
08.30-09:15	Lab Practice: Epigenetics - X chromatin assay	Dr. Asuman SUNGUROĞLU
09:30-10:15		
10:30-11:15	Cell cycle and cell division: Mitosis and meiosis	Dr. Oya Sena AYDOS
11:30-12:15	Cell cycle and cell division: Mitosis and meiosis	Dr. Oya Sena AYDOS
12:15-13:30	Lunch Break	
13:30-14:15	Lab Practice: Simple cell viability and proliferation assay	Dr. Oya Sena AYDOS
14:30-15:15		
15:30-16:15	Turkish Language	Meltem AYABAKAN İPEK
16:30-17:15	Turkish Language	Meltem AYABAKAN İPEK
TUESDAY (18.12.2018)		
08.30-09:15	Cell cycle and cell division: Mitosis and meiosis	Dr. Oya Sena AYDOS
09:30-10:15	Cell cycle and cell division: Mitosis and meiosis	Dr. Oya Sena AYDOS
10:30-11:15	Cell proliferation and control mechanisms	Dr. Asuman SUNGUROĞLU
11:30-12:15	Cell proliferation and control mechanisms	Dr. Asuman SUNGUROĞLU
12:15-13:30	Lunch Break	
13:30-14:15	Ataturk's Principles and History of Revolution	Dr. Demo Ahmet ASLAN
14:30-15:15	Ataturk's Principles and History of Revolution	Dr. Demo Ahmet ASLAN
15:30-16:15	Independent Learning Session	
16:30-17:15		
WEDNESDAY (19.12.2018)		
08.30-09:15	Practice for the Basic Medical Skills (Airway opening,	Dr. Özlem SELVİ CAN

09:30-10:15	Airway placement, Heimlich maneuvering practice in adult and infant)	Dr. Başak Ceyda MEÇO Dr. İpek GÖNÜLLÜ
10:30-11:15		
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	Information and Communication Technologies	
16:30-17:15	Information and Communication Technologies	
THURSDAY (20.12.2018)		
08.30-09:15	Independent Learning Session	
09:30-10:15	Cell death: Types and mechanisms	Dr. Asuman SUNGUROĞLU
10:30-11:15	Cell death: Types and mechanisms	Dr. Asuman SUNGUROĞLU
11:30-12:15	Independent Learning Session	
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		
FRIDAY (21.12.2018)		
08.30-09:15	Independent Learning Session	
09:30-10:15	Cellular senescence and aging	Dr. Ayşe Fulya TEKŞEN
10:30-11:15	Genetic diversity and polymorphism	Dr. Timur TUNCALI
11:30-12:15	Evolutionary mechanisms: Microevolution and neutral theory of evolution	Dr. Timur TUNCALI
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		

WEEK-6		
MONDAY (24.12.2018)		
08.30-09:15	Independent Learning Session	
09:30-10:15	Lab Practice: Cell division (mitosis)	Dr. Oya Sena AYDOS
10:30-11:15		

11:30-12:15	Population genetics	Dr. Timur TUNCALI
12:15-13:30	Lunch Break	
13:30-14:15	Lab Practice: Programmed cell death - Apoptosis assay	Dr. Asuman SUNGUROĞLU
14:30-15:15		
15:30-16:15	Turkish Language	Meltem AYABAKAN İPEK
16:30-17:15	Turkish Language	Meltem AYABAKAN İPEK
TUESDAY (25.12.2018)		
08.30-09:15	Lab Practice: Hypo-osmotic solutions and hemolysis	Dr. Asuman SUNGUROĞLU
09:30-10:15		
10:30-11:15	Evolutionary mechanisms: Macroevolution	Dr. Timur TUNCALI
11:30-12:15	Evolutionary processes and its impact on health sciences	Dr. Timur TUNCALI
12:15-13:30	Lunch Break	
13:30-14:15	Ataturk's Principles and History of Revolution	Dr. Demo Ahmet ASLAN
14:30-15:15	Ataturk's Principles and History of Revolution	Dr. Demo Ahmet ASLAN
15:30-16:15	Independent Learning Session	
16:30-17:15		
WEDNESDAY (26.12.2018)		
08.30-09:15	Practice for the Basic Medical Skills (Artificial respiration in adult and infant)	Dr. Özlem SELVİ CAN Dr. Başak Ceyda MEÇO Dr. İpek GÖNÜLLÜ
09:30-10:15		
10:30-11:15		
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	Information and Communication Technologies	
16:30-17:15	Information and Communication Technologies	
THURSDAY (27.12.2018)		
08.30-09:15	Independent Learning Session	
09:30-10:15	Panel: Online genome and variation databases	Dr. Timur TUNCALI
10:30-11:15		
11:30-12:15	Mechanisms of developmental biology	Dr. Ayşe Fulya TEKŞEN
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		
FRIDAY (28.12.2018)		
08.30-09:15	Independent Learning Session	
09:30-10:15	Stem cell biology	Dr. Asuman SUNGUROĞLU
10:30-11:15	Stem cell biology	Dr. Asuman SUNGUROĞLU
11:30-12:15	Human embryology-1	Dr. Alp CAN
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		

WEEK-7		
MONDAY (31.12.2018)		
08.30-09:15	FREE DAY	
09:30-10:15		
10:30-11:15		
11:30-12:15		
12:15-13:30		
13:30-14:15		
14:30-15:15		
15:30-16:15		
16:30-17:15		
TUESDAY (01.01.2019)		
08.30-09:15	NEW YEAR'S DAY	
09:30-10:15		
10:30-11:15		
11:30-12:15		
12:15-13:30		
13:30-14:15		
14:30-15:15		
15:30-16:15		
16:30-17:15		

WEDNESDAY (02.01.2019)		
08.30-09:15	Practice for the Basic Medical Skills (External cardiac massage in adult and infant)	Dr. Özlem SELVİ CAN Dr. Başak Ceyda MEÇO Dr. İpek GÖNÜLLÜ
09:30-10:15		
10:30-11:15		
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	Information and Communication Technologies	
16:30-17:15	Information and Communication Technologies	
THURSDAY (03.01.2019)		
08.30-09:15	Lab Practice: Effects of substrate concentration of enzyme activation	Dr. İlker DURAK
09:30-10:15		
10:30-11:15	Panel: Stem cells and regenerative medicine	Dr. Asuman SUNGUROĞLU Dr. Alp CAN Dr. Önder ARSLAN Dr. Burak KAYA
11:30-12:15		
12:15-13:30	Lunch Break	
13:30-14:15	Human embryology-2	Dr. Alp CAN
14:30-15:15	Human embryology-3	Dr. Alp CAN
15:30-16:15	Independent Learning Session	
16:30-17:15		
FRIDAY (04.01.2019)		
08.30-09:15	Panel: Labware and equipment (spectrophotometry, electrophoresis, cell sorting, DNA amplification)	Biochemistry Medical Genetics Biophysics
09:30-10:15		
10:30-11:15	Human embryology-4	Dr. Alp CAN
11:30-12:15	Human embryology-5	Dr. Alp CAN
12:15-13:30	Lunch Break	
13:30-14:15	What have we learned so far?	Dr. Alp CAN Dr. Nüket YÜRÜR KUTLAY
14:30-15:15		
15:30-16:15		
16:30-17:15		

WEEK-8
MONDAY (07.01.2019)

08.30-09:15	INDEPENDENT STUDY FOR EXAMS	
09:30-10:15		
10:30-11:15	Lab Practice: Human embryology	Dr. Alp CAN
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	Turkish Language	Meltem AYABAKAN İPEK
16:30-17:15	Turkish Language	Meltem AYABAKAN İPEK
TUESDAY (08.01.2019)		
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	Ataturk's Principles and History of Revolution	Dr. Demo Ahmet ASLAN
14:30-15:15	Ataturk's Principles and History of Revolution	Dr. Demo Ahmet ASLAN
15:30-16:15	INDEPENDENT STUDY FOR EXAMS	
16:30-17:15		
WEDNESDAY (09.01.2019)		
08.30-09:15	MEDICAL SKILLS EXAM (Airway opening, Airway placement, Heimlich maneuvering practice in adult and infant, Artificial respiration in adult and infant, External cardiac massage in adult and infant)	
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	Information and Communication Technologies	
16:30-17:15	Information and Communication Technologies	
THURSDAY (10.01.2019)		
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 (11.01.2019)		
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	
16:30-17:15		

READING/STUDYING SOURCES

- Histology and Cell Biology: An Introduction to Pathology (4th Edition); Abraham L. Kierszenbaum, Laura L. Tres; Elsevier Saunders, Philadelphia, 2015.
- Histology: A Text and Atlas with Correlated Cell and Molecular Biology (7th Edition); Micheal H. Ross, Wojciech Pawlina; Lippincott Williams & Wilkins, 2015.
- Molecular Biology of the Cell (6th Edition); Bruce Alberts; Garland Science, New York, 2015.
- Molecular Cell Biology (8th Edition); Harvey Lodish; W. H. Freeman & Co, 2016.
- Marks' Basic Medical Biochemistry A Clinical Approach (5th Edition); Michael Lieberman, Alisa Peet; Wolters Kluwer, Philadelphia, 2018.
- 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.
- Molecular and Cellular Biophysics; Meyer B. Jackson; Cambridge University Press, Cambridge, 2006.
- The Developing Human: Clinically Oriented Embryology (10th Edition); Keith L. Moore, T. V. N. Persaud, Mark G. Torchia; Elsevier, Philadelphia, 2015.
- Langman's Medical Embryology (13th Edition); T. Sadler; Lippincott Williams & Wilkins, Philadelphia, 2015.