

T.C.

ATILIM UNIVERSITY FACULTY OF MEDICINE

EDUCATION IN 2025-2026 ACADEMIC YEAR

ACADEMIC CALENDAR

Laboratory Lessons:

1. Karyotyping Analysis (Dr. Sönmez)
2. Polymerase Chain Reaction (Dr. Sönmez)
3. Fetal and maternal histology (Dr. Aykanat)
4. Agarose Gel Electrophoresis (Dr. Sönmez)

COMMITTEE NAME	STARTING DATE	COMPLETION DATE
MED 101	22.09.2025	17.10.2025
MED 103	20.10.2025	05.12.2025
MED 105	08.12.2025	09.01.2026

COMMITTEE NAME						
	MED 101	MED 102	MED 103	MED 104	MED 105	MED 106
COMMITTEE EXAM DATE					09.01.2026	

MED105 GROWTH AND DEVELOPMENT

PHASE I COORDINATOR	Assoc. Prof. Dr. Nuriye Ezgi BEKTUR AYKANAT			
CHAIR OF THE MED 105 COMMITTEE	Prof. Dr. Çağla Sönmez			
MED 105 COMMITTEE DATE RANGE	08.12.2025-09.01.2026			
ACADEMIC STAFF AT THE MED 105 COMMITTEE	Prof. Dr. Çağla SÖNMEZ- Medical Biology Prof. Dr. Nedret KILIÇ- Medical Biochemistry Assoc. Prof. Dr. Selma USLUCA-Medical Microbiology Assoc. Prof. Dr. Nuriye Ezgi BEKTUR AYKANAT- Histology and Embryology Assoc. Prof. Dr. Göksu BOZDERELİ BERİKOL- Emergency Medicine Asst. Prof. Dr. Gülin ÖZCAN KUYUCU- Medical Microbiology Asst. Prof. Dr. Özge BOYACIOĞLU-Medical Biochemistry Asst. Prof. Dr. Melike EROL DEMİRBİLEK- Medical Biochemistry			
	THEORETICAL LESSON TIME	PRACTICAL LESSON TIME	INTERACTIVE EDUCATION TIME	TOTAL TIME
ACADEMIC STAFF				
Medical Biochemistry	7	-	-	7
Medical Biology	25	3	-	28
Histology and Embryology	10	1	3 (Case-based learning & Flipped-class)	14
Medical Microbiology	6	-	-	6
Medical Informatics	2	-	-	2
PBL	-	-	4	4
TOTAL	50	4	7	61

Advisor Visit	4
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CONTENT OF THE MED 105 COMMITTEE
Understanding the principles of inheritance, chromosomal abnormalities, karyotype analysis, mutations and polymorphisms, mitochondrial mutations and their implications in disease, population genetics, epigenetics, biochemistry of nucleic acids, enzymes, carbohydrates, fatty acids, phospholipids, steroids, fertilization, implantation and development of human and ongoing of embryonic period, gametogenesis.
MED 105 COMMITTEE AIM
To teach the fundamental concepts of inheritance, chromosomal abnormalities, types of mutations and to give information about the biochemistry of nucleic acids, development of the human embryo and extraembryonic structures.
MED 105 COMMITTEE LEARNING OBJECTIVES
The students who succeeded in this course; 1. Describe the principles of inheritance. 2. Describe the cellular proliferation and the regulation of it. 3. Explain the mutation, its varieties, mechanisms of occurrence and detection methods. 4. Explain the packaging of DNA into chromosome and the molecules taking role in this process. 5. Explain how nucleic acids are digested and absorbed in the human body.

6. Explain the development of cells and tissues, the relationship and differentiation between cells in embryological period.
7. Explain the development of human embryo and extraembryonic structures.
8. Identify anomalies that may develop during embryological period with their mechanisms.
9. Explain the fertilization and implantation.
10. Explain the embryonic stages.
11. Explain the developmental events in fetal period.
12. Explain the reasons for the development of birth defects.
13. Indicate the formation mechanism of multiple pregnancies.
14. Indicate the methods used in prenatal diagnosis.
15. Explain the birth defects.
16. Classify each parasite.
17. Describe the structure of each parasite.
18. Explain the parasites' life cycles.
19. Discuss the relationship between each parasite and its host.
20. Explain the sources of infection route of entry and exit of parasites in the human body, biological infection period, impact on host of parasite, host response and pathogenesis.
21. Understand the medical importance of parasites. Suggest various methods for the prevention and control of the parasite.
22. Compare the structure of fungal cells to other eukaryotic.
23. Define mycology and describe the ecological, medical and commercial importance of fungi.
24. Describe fungal classification and taxonomic features.
25. Describe the classification of pathogenic fungi.
26. Describe diseases caused by mitochondrial mutations.
27. Compare and contrast yeasts, molds and dimorphic fungi and give examples of each.
28. Describe examples of asexual and sexual reproduction of fungi.
29. Define fungal structure, antigenicity, pathogenicity and immune response.
30. Differentiate Mendelian and non-Mendelian genetics.
31. Define polygenic traits, multifactorial inheritance, and some underlying molecular events.
32. Identify single nucleotide polymorphisms to study them.
33. Explain genetic control mechanisms.
34. Explain the structure of Y chromosome.
35. Describe X chromosome-linked inheritance.
36. Describe the genome organization in humans.
37. Know how to conduct a karyotype analysis.
38. Know how to do agarose gel electrophoresis.
39. Describe the fundamental aspects of epigenetics.
40. Describe the synthesis of glycogen (glycogenesis) and its breakdown (glycogenolysis) in the liver and muscles.
41. Identify the key enzymes involved in both pathways, such as glycogen synthase and glycogen phosphorylase.
42. Explain the regulation of these pathways by insulin and glucagon at basic level.
43. Correlate defects in glycogen metabolism with specific diseases, such as glycogen storage diseases at a basic level.
44. Explain the metabolic relationship between glycolysis and gluconeogenesis.
45. Define how key regulatory enzymes are reciprocally regulated.
46. Outline how major dietary carbohydrates other than glucose are integrated into the glycolytic pathway.
47. Describe the unique enzymes and metabolic steps required for the metabolism of these sugars.

48. Discuss the clinical consequences of defects in the metabolism of these carbohydrates.
49. Describe the two main branches of the pentose phosphate pathway.
50. Explain the two major products of pentose phosphate pathway.
51. Relate a deficiency in glucose-6-phosphate dehydrogenase to its clinical manifestations.
52. Apply Bayesian probability principles to interpret diagnostic test results, including sensitivity, specificity, predictive values, and likelihood ratios, in order to make evidence-based clinical decisions.

RECOMMENDED BOOKS

1. Harper's Illustrated Biochemistry (30th Edition); Victor W. Rodwell, David Bender, Kathleen M. Botham, Peter J. Kennelly, P. Anthony Weil; McGraw-Hill, 2015.
2. Lippincott® Illustrated Reviews: Biochemistry, 9th Edition, North American Edition. Emine Ercikan Abali, Susan D. Cline, David S. Franklin, Dr. Susan M. Viselli, 2025.
3. Lehninger Principles of Biochemistry, 8th Edition, David L. Nelson, Michael M. Cox. W.H. Freeman & Company, 2021.
4. Marks' Basic Medical Biochemistry A Clinical Approach (5th Edition); Michael Lieberman, Alisa Peet; Wolters Kluwer, Philadelphia, 2018.
5. Peter J. Kennelly, Kathleen M. Botham, Owen McGuinness, Victor W. Rodwell, P. Anthony Weil - Harper's Illustrated Biochemistry-McGraw Hill, 2022.
6. John W. Baynes PhD, Marek H. Dominiczak Dr Hab Med FRCPath (Editor), Medical Biochemistry, 6th Edition, Elsevier, 2022.
7. Tietz Fundamentals of Clinical Chemistry and Molecular Diagnostics (Tietz Textbook of Clinical Chemistry and Molecular Diagnostics) 9th Edition, Nader Rifai PhD (Editor), 2023.
8. Thompson & Thompson Genetics in Medicine (8th Edition); Robert L. Nussbaum, Roderick R. McInnes, Huntington F. Willard; Elsevier, Philadelphia, 2016.
9. The Developing Human (10th Edition); T. V. N. Persaud, Mark G. Torchia Keith L. Moore, Elsevier Health Books, 2015.
10. Cell and molecular biology (2th edition); Nalini Chandar, PhD, Susan Viselli, PhD, Lipincot Williams & Wilkins, 2019.
11. Molecular cell biology (8th edition); Harvey Lodish, W.H. Freeman & Co Ltd, 2016.
12. Klug, Cummings, Spencer, Palladino, 2016, Concepts of Genetics, Pearson, 11th Edition
13. Molecular biology of the cell (7th edition); Bruce Alberts, W. W. Norton & Company.
14. Jawetz, Melnick, & Adelberg's Medical Microbiology, 28e, McGraw-Hill Education, 2019.
15. Medical Microbiology (9th Edition); Murray, Rosenthal, Pfaller, 2020.
16. Introduction to Molecular and Cell Biology. K. Mattaini, licensed under a Creative Commons Attribution-NonCommercial 4.0 International License. 2020.
17. Medical Genetics – An Integrated Approach. G. B. Schaefer and J. N. Thompson, Jr. McGraw Hill. 2014.
18. Perinatal Genetics. M. E. Norton, J. A. Kuller and L. Dugoff. Elsevier. 2019.
19. Human Genes and Genomes. Science, Health, Society. L. E. Rosenberg and D. D. Rosenberg. Elsevier. 2012.
20. Thompson & Thompson Genetics in Medicine, Eight Edition. R. L. Nussbaum, R. R. McInnes, H. F. Willard and A. Hamosh. Elsevier. 2016.
21. Campbell Biology. Ninth Edition. J. B. Reece, L. A. Urry, M. L. Cain, S. A. Wasserman, P. V. Minorsky and R. B. Jackson. Benjamin Cummings, Pearson. 2011.
22. Clinical Genomics. Second Edition. S. Kulkarni and S. Roy. Elsevier. 2015.
23. Basic Techniques in Molecular Biology. Springer Lab Manuals. S. Surzycki Springer, Berlin, Heidelberg. 2000.
24. Pagano, M., & Gauvreau, K. (2018). Principles of Biostatistics (2nd ed.). Chapman and Hall/CRC. <https://doi.org/10.1201/9780429489624>

MED 105 COMMITTEE EXAM WEEK				
DATE	EXAM NAME		EXAM HOUR	
09.01.2026	MED 105 Committee Exam		09:30-12:20	
Teaching Methods and Techniques	☒ Lecture	☒ Case based learning	☐ Case discussion	☐ Student presentation
	☐ Role playing	☒ Problem Based Learning	☐ Project	☐ Homework
	☒ Laboratory practice	☐ Team Based Learning	☒ Self Learning	☒ Flipped Class
Evaluation Method	Theoretical Exam (83%), Flipped-class (2%), Problem Based Learning (PBL) (5%) Informed Quiz (2) Medical Biology: (4+4)8%, Quiz (2%; Histology & Embryology: 1%, Medical Microbiology: 1%)			
Language of lectures, practical and all other applications	English			