**T.C.**

**ATILIM UNIVERSITY MEDICAL SCHOOL**

**EDUCATION in 2024-2025 ACADEMIC YEAR**

**SPRING SEMESTER ACADEMIC CALENDAR**

**Laboratory Lessons:**

1. Skeleton and joints of upper limb (Dr. Öktem & Dr. Brohi)
2. Bone and cartilage tissue (Dr. Aykanat)
3. Cellular adaptation and cell death (Dr. Yurdakan Özyardımcı)
4. The vertabral column, the ribs, the sternum and joints of the vertabral column (Dr. Öktem & Dr. Brohi)
5. Skeleton and joints of lower limb (Dr. Öktem & Dr. Brohi)
6. Nervous tissue and skin (Dr. Aykanat)
7. Anatomy review (Dr. Öktem & Dr. Brohi)

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| **COMMITTEE NAME** | **STARTING DATE** | **COMPLETION DATE** |
| **MED 102** | 27.01.2025 | 07.03.2025 |
| **MED 104** |  |  |
| **MED 106** |  |  |

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| **COMMITTEE NAME** |
|  | **MED 101** | **MED 102** | **MED 103** | **MED 104** | **MED 105** | **MED 106** |
| **LABORATORY EXAM DATE** | - | 05.03.2025 | - |  | - |  |
| **PRACTICAL EXAM DATE** | - | 06.03.2025 | - |  | - |  |
| **THEORETICAL EXAM DATE** | - | 07.03.2025 | - |  | - |  |

**MED102 TISSUES and SKELETAL SYSTEM**

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| **PHASE I COORDINATOR** | Assoc. Prof. Dr. Nuriye Ezgi BEKTUR AYKANAT |
| **CHAIR OF THE MED 102 COMMITTEE** | Asst. Prof. Dr. Atakan TEVLEK |
| **MED 102 COMMITTEE DATE RANGE** | 27.01.2025 - 07.03.2025 |
| **ACADEMIC STAFF AT THE MED 102 COMMITTEE** | Prof. Dr. Necla TÜLEK - Medical MicrobiologyProf. Dr. Nedret KILIÇ - Medical BiochemistryProf. Dr. Gamze YURDAKAN ÖZYARDIMCI - PathologyProf. Dr. Ahmet SALTIK - Public HealthProf. Dr. Yekbun ADIGÜZEL - BiophysicsAssoc. Prof. Dr. Hale ÖKTEM - AnatomyAssoc. Prof. Dr. Selma USLUCA - Medical MicrobiologyAssoc. Prof. Dr. Nuriye Ezgi BEKTUR AYKANAT- Histology & EmbryologyAsst. Prof. Dr. Badegül SARIKAYA- PhysiologyAsst. Prof. Dr. Recep Ali BROHİ- AnatomyAsst. Prof. Dr. Melike EROL DEMİRBİLEK- Medical BiochemistryAsst. Prof. Dr. Merve TOPCU BULUT- Clinical PsychologyAsst. Prof. Dr. Atakan TEVLEK- Medical BiologyAsst. Prof. Dr. Onur BULUT- Medical Biochemistry |
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**ACADEMIC STAFF** | **THEORETICAL LESSON HOUR** | **PRACTICAL LESSON HOUR** | **INTERACTIVE EDUCATION****HOUR** | **TOTAL TIME****(Hours)** |
| **Anatomy** | 11 | 4 | 1 | 16 |
| **Histology and Embryology** | 6 | 2 | 1 | 9 |
| **Medical Microbiology** | 9 | - | - | 9 |
| **Medical Biochemistry** | 14 | - | - | 14 |
| **Physiology** | 4 | - | - | 4 |
| **Pathology**  | 7 | 1 | - | 8 |
| **Public Health** | 4 | - | - | 4 |
| **Biophysics** | 3 | - | - | 3 |
| **Medical Biology** | 2 | - | - | 2 |
| **Clinical Psychology** | 6 | - | - | 6 |
| **TOTAL** | 66 | 7 | 2 | 75 |

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| **CONTENT of the MED 102 COMMITTEE**  |
| Introduction to anatomy, histology and embryology of the skin, biochemistry of bone tissue and connective tissue, cellular response to stress & noxious stimuli; cell death; intracellular accumulation, calcification and cellular aging; developmental abnormalities and acquired disorders of bone and cartilage; fracture, osteonecrosis; skin: more than a mechanical barrier; microscopic and macroscopic terms related to skin; skin and tissue parasites and fungi, arthropods and viruses from arthropods, infectious arthritis and osteomyelitis; Turkish Health System, Access to Health Services; CDC & FDA. |
| **MED 102 COMMITTEE AIM** |
| Definition of anatomical position, planes, sections and directional terms of movement to describe the disfunctions of the bones and joints. Name the bones and joints to define the disfunction and injuries of them. Definition of the parts and structures of upper and lower extremity bones to diagnose the fractures, injuries of dislocations. Definition of the types of vertebral column and joints of vertebrae to diagnose trauma, vertebral injuries, fractures, dislocations, artritis, osteoartritis, tumors, disc hernias. To understand the histopathological mechanism of diseases such as osteoarthritis, osteoporosis, rheumatoid arthritis, giving information about cartilage, bone, joints types. To give information about skin and adnexa. Definition, diagnosis, treatment and prevention of skin parasitic infections. Definition, diagnosis and prevention of skin infections and absesses. Definition, diagnosis and prevention of skin fungal infections and absesses. Preliminary diagnosis and prevention of cutaneous Leishmaniasis. Definition and preliminary diagnosis of Infectious arthritis and osteomyelitis. To give information about the physiopathological features of fracture healing and the developmental mechanisms of avascular necrosis. Introduction to the developmental mechanisms of osteomyelitis. To explain the etiopathogenetic features of developmental and acquired disorders of bone. To describe the cellular responses to stress and noxious stimuli; Describes cell damage and damage development mechanismsIdentify the causes of cell damage; the morphological types of cell damage, explains necrosis mechanisms and necrosis types; To understand endogenous and exogenous extracellular and intracellular accumulations, briefly describe the mechanisms of cell aging; to describe microscopic and macroscopic changes used according to the changes developing in skin diseases |
| **MED 102 COMMITTEE LEARNING OBJECTIVES** |
| **Anatomy:** 1. Describe the anatomical position
2. Says the directional terms used in anatomy
3. Describes the anatomical planes and sections
4. Names the terms which decribes relation and comparison
5. Names the terms which decribe movement
6. Determine the components of bone tissue
7. Determine the types of the bones
8. Determine the differences between compact and spongious bones
9. Counts the components of skeleton system
10. Says the functions of the bones
11. Determines the structural classifications of joints
12. Determines the movements of the joints according to their types
13. Determine the components of the synovial joint
14. Determine the anatomical localisations of the bones of upper limb
15. Determine the anatomical structures on the bones of upper limb
16. Determine the surfaces on the bones of upper limb and the bones which they join with
17. Determine the articular surfaces, major supporting ligaments, key accessory structures of the shoulder joint, elbow joint, and wrist joint
18. Define the movements permitted and limited at the shoulder joint, elbow joint and the radiocarpal joint
19. Says the names of the joints of hand
20. Describe the features of major traumas to each upper limb joint.
21. Describe the vertebral column as a whole
22. Determine the anatomical structures of the vertebrae
23. Determine the atypical vertebrae
24. Describe the specific characteristics of the vertebrae according to region which they take place
25. Determine the sacrum and its anatomical structures on it
26. Describe the anatomical structures of costae
27. Determine the joints related with vertebrae, ribs and sternum
28. Determine the joints of the vertebral column
29. Counts the types of the joints of the vertebral column
30. Determine the related ligaments
31. Determine the anatomical localisations of the bones of lower limb
32. Determine the anatomical structures on the bones of lower limb
33. Determine the surfaces on the bones of lower limb and the bones which they join with
34. Determine the articular surfaces, major supporting ligaments, key accessory structures of the hip joint
35. Define the movements permitted and limited at the hip joint
36. Determine the articular surfaces, major supporting ligaments, key accessory structures and the movements permitted at the knee joint
37. Determine the movements that occur at the knee joint during normal locomotion. Describe the mechanics of “locking” and “unlocking” of the knee.
38. Determine the articular surfaces, major supporting ligaments, key accessory structures and the movements permitted at the ankle joint
39. Determine the joints, ligaments of the foot.
40. Describe the features of major traumas to each lower limb joint.
41. Identify the medial and lateral longitudinal and transverse arches of the foot. Describe the roles of bones, and ligaments in maintaining these arches
42. Evaluate the most common fractures of long bones of upper and lower extremity on anatomical base
43. Says the injuries of nerves in the fractures of upper and lower extremity bones
44. Describe the most common tears of ligaments of dislocations of upper and lower extremity joints
45. Describe the abnormal curvatures of the vertebral column
46. Identify the bones and joints of upper and lower extremity from the radiographs
47. Describe the bone and joint structures from different sections and views

**Pathology:** 1. Describes the fracture and its types.
2. Identify fracture healing mechanisms and factors affecting positively / negatively.
3. Explain avascular necrosis and development mechanisms.
4. Describe the mechanisms of development of osteomyelitis, histomorphological and typical clinical features.
5. Defines the developmental diseases of bone and cartilage
6. Describe the diseases that develop due to metabolic disorders in bone and cartilage and explain their pathogenesis
7. Defines the relationship of common acquired bone diseases with other body systems
8. Describes the response of cells to damaging agents and adaptation mechanisms
9. Defines the developmental mechanisms of exogenous and endogenous extracellular, intracellular accumulations and explain the stages of cellular againg.
10. Explain to stages of cell death, defines of the cell death and determines their mechanisms
11. Briefly describes the macroscopic and microscopic changes that the develop in the skin due to diseases.
12. Explain the typical features of the skin tissue that explain their reflections in diseases.

**Microbiology (Dr. Usluca):** 1. List common ectoparasites
2. Identify common hosts for ectoparasites.
3. Identify signs & treatments for common ectoparasites.
4. Define the scabies agents and mites which have medical importance
5. Perform effective and rational treatment of scabies.
6. Take the necessary prophylactic measures.
7. Explain differential diagnosis of scabies.
8. Definition and importance of subcutaneous fungi
9. Describe the characteristics of subcutaneous fungi
10. Identify examples of the primary causes of infections due to subcutaneous fungi.
11. Definition and importance of superficial and cutaneous fungi
12. Describe the characteristics of superficial and cutaneous fungi
13. Identify examples of the primary causes of infections due to superficial and cutaneous fungi.
14. Definition and importance of dimorphic fungi
15. Identify examples of the primary causes of infections due to dimorphic fungi.
16. Describe the characteristics of dimorphic fungi.

**Histology:** 1. Use your knowledge of the basic tissues to describe the histological organization of skin.
2. Identify the epidermis and discuss its embryological origin, organization and functions.
3. Identify the dermis and hypodermis and discuss their embryological origins, organization and functions.
4. Examine a variety of skin adnexa and determine their function.
5. Identify cells and tissues in the peripheral nervous system (nerves, neurons and glia cells).
6. Describe the cellular organization of neurons and the direction of information flow.
7. Understand the general process of myelination and the function of myelin, including nodes of Ranvier. Explain the role of Schwann cells in both myelinated and unmyelinated axons.
8. Describe the organization of connective tissue in a nerve.
9. Describe the structural organization of sensory and autonomic neuronal cells and their respective arrangement in ganglia.
10. Be able to identify tissues in the central nervous system and know their cellular components (nerves, cell bodies, white vs. gray matter).
11. Know the main groups of glial cells and their general functions (ependymal cells, microglia, astrocytes, oligodendrocytes).
12. Recognize ependymal cells of the choroid plexus and know about their role in the production of cerebrospinal fluid.

**Physiology** 1. Describe the microscopic structure and chemical composition of bone tissue
2. Identify the major types of bone cells and describe their functions
3. Discuss the process of bone formation and development
4. Compare and contrast the function of osteoblasts and osteoclasts during bone growth, repair, and remodeling.
5. Explain what an excitable tissue is and name the major excitable tissue types
6. Draw a typical neuron and identify the role played by soma, dendrites, axon, and initial segment in impulse generation and conduction.
7. Describe the resting membrane potential and explain the ionic-basis of the resting membrane potential.
8. Describe the action potential and explain the ionic fluxes that occur during an action potential.
9. Define the terms depolarisation, repolarisation and hyperpolarisation
10. Describe the graded potential, and explain the difference between a depolarising and hyperpolarising graded potential
11. Explain the key differences between action potentials and graded potentials.
12. Define the receptor and explain the function of receptor.
13. Explain the transduction mechanism in a receptor.
14. Describe the somatic receptors.

**Public Health**1. Define the organizational structure of Turkish Ministry d Health (MoH)
2. Recognise the structural and functional characteristics of Turkish Health System both for public & private sector including weak and strong sides comparatively with samples from other countries.
3. Define how people can access to health services in Turkiye. Indicates hierarchial structure & functioning of health services in terms of Primary, Secondary and Tertiary Health Care, how to use referral chain, counselling general people and the patients about how to access health services under certain circumstences.
4. Pick up required information about these 2 internationally important institutions of public health.

**Medical Biology**1. Understand the Role of AI in Medicine:
2. Comprehend the key applications of AI in diagnostics, clinical decision-making, and research.
3. Explore GPT Models and Their Medical Applications:
4. Differentiate between GPT models (e.g., GPT-3, GPT-4, MedPaLM).
5. Understand the relevance of models like BioGPT and PubMedGPT in medical literature analysis and patient interaction.
6. Develop Hands-On Skills in AI Applications:
7. Build a simple machine learning model for image classification using Google Teachable Machine.
8. Interact with ChatGPT to simulate clinical scenarios and evaluate its responses.
9. Critically Analyze AI Outputs:
10. Evaluate the accuracy and limitations of AI in medical applications.
11. Discuss the ethical implications of using AI in medicine, including patient safety and accountability.

**Clinical Psychology**1. Identify the biological, psychological, and social factors that influence human behavior.
2. Understand and compare major theories of human behavior (e.g., psychodynamic, behavioral, cognitive, humanistic).
3. Differentiate evidence-based approaches to understanding human behavior from pseudoscientific or non-scientific methods, emphasizing the importance of empirical research and scientific rigor.
4. Explain how behavior evolves across different stages of human development.
5. Analyze the impact of culture and social environment on human behavior.
6. Learn methods used to understand human behavior.
7. Recognize ethical principles related to the study of human behavior and their importance in practice.

**Medical Biochemistry**1. Describes the synthesis and functions of collagen fibers.
2. Determines the biochemistry of the different bone cells and defines their role within bone.
3. Explains the biochemical properties of bone tissue.
4. Defines bone metabolism.
5. Explains the bone tissue related diseases.
6. Distinguishes between aerobic and anaerobic glycolysis.
7. Lists stages of aerobic and anaerobic glycolysis and explain their importance.
8. Explains the purpose of glycolysis.
9. Compares the output of glycolysis in terms of ATP molecules and NADH molecules produced.
10. Describes the use and formation of ATP during glycolysis.
11. Defines the clinical importance of glycolysis in case of an enzyme deficiency.
12. Explains the importance of regulation in glycolysis to cells.
13. Defines the major pathways of metabolism of biomolecules.
14. Describes the bioenergetics of biomolecules.
15. Defines the disruptions in regulatory mechanism of glycolysis and energetics.
16. Explains the importance and precursors of gluconeogenesis in cells.
17. Describes the opposing pathways of glycolysis and gluconeogenesis.
18. Explains the stages of gluconeogenesis and their clinical importance.
19. Defines the energetics of gluconeogenesis.
20. Defines the disruptions in regulatory mechanism of gluconeogenesis.
21. Explains the importance of reciprocal regulation of glycolysis and gluconeogenesis.
22. Describes the biochemical process of the reciprocal regulation of glycolysis and gluconeogenesis and the role of allosteric enzymes in that regulation.
23. Defines the major pathways and regulation of gluconeogenesis and glycolysis in the liver.
24. Describes how irreversible enzymes of glycolysis are bypassed and how those two pathways are regulated reciprocally.
25. Explains the metabolic outcomes if glycolysis and gluconeogenesis were unregulated and their clinical importance.
26. Explains the importance of pentose phosphate pathway to cells and describes the pentose phosphate pathway and its importance in nucleotide and fat metabolism.
27. Describes the parameters regulating the pentose phosphate pathway.
28. Describes which tissues requires for an active pentose phosphate pathway.
29. Explains the metabolic outcomes if pentose phosphate pathway was unregulated and its clinical importance.
30. Defines the carbohydrates which are utilized through glycolytic pathway.
31. Describes the clinical outcomes if the precursor carbohydrates were not utilized in glycolytic pathways.
32. Describes the overall purpose of glycogenesis and glycogenolysis.
33. Defines the reactants and products, their cellular localization, and tissue distribution in glycogenesis and glycogenolysis.
34. Describes the roles of enzymes in glycogenesis and biochemical and potential clinical consequences in deficiencies of these enzymes.
35. Compares the purpose and regulation of glycogenolysis between hepatocytes and skeletal muscle.
36. Describes the process of the citric acid cycle (Krebs cycle).
37. Identifies the reactants and products in citric acid cycle.
38. Lists the important steps in citric acid cycle.
39. Briefly describes the roles of enzymes in citric acid cycle in specialized tissues and biochemical and potential clinical consequences in deficiencies of these enzymes.
40. Describes the regulation of citric acid cycle and the underlying mechanism of the allosteric modulators.

**Biophysics:** 1. Reinforced comprehension of the establishment of membrane potentials
 |
| **RECOMMENDED BOOKS**1. Basic & Clinical Pharmacology (14th Edition); Bertram G. Katzung,‎ Anthony J. Trevor; McGraw-Hill, 2018.
2. Braddom's Physical Medicine and Rehabilitation (5th Edition); David X. Cifu MD; Elsevier, Philadelphia, 2016.
3. Gray’s Anatomy for Students (3rd Edition); Richard L. Drake, A. Wayne Vogl, Adam W. M. Mitchell; Churchill Livingston Elsevier, Philadelphia, 2015.
4. Guyton and Hall Textbook of Medical Physiology, 14th Edition, 2021
5. Ganong’s Review of Medical Physiology, 26th Edition, 2019
6. Vander’s Human Physiology: The Mechanisms of Body Function, 16th Edition,2022
7. Lipincott’s Illustrated Reviews: Physiology, 2nd Edition, 2019
8. Michael H., M.D. Pawlina Wojciech. Histology: A Text and Atlas, with Correlated Cell and Molecular Biology, 8th Edition, 2018.
9. Anthony Mescher. Junqueira's Basic Histology: Text and Atlas, Fifteenth Edition, 2018.
10. Keith L. Moore, BA, MSc, PhD, DSc, FIAC, FRSM, FAAA, T. V. N. Persaud, MD, PhD, DSc, FRCPath (Lond.), FAAA and Mark G. Torchia, MSc, PhD. The Developing Human Clinically Oriented Embryology 11th Edition, 2019.
11. Jawetz, Melnick, & Adelberg's Medical Microbiology, 28e, 2019, McGraw-Hill Education
12. Apurba S Sastry, Sandhya Bhat, Essentials of Medical Microbiology, 3th Edition, JAYPEE BROTHERS Medical Publishers, New Delhi | London, 2021.
13. Murray, Rosenthal, Pfaller. Medical Microbiology (9th Edition); 2020.
14. Subhash Chandra Parija, Textbook of Microbiology and Immunology, 4th Edition, Springer Nature Singapore, 2023.
15. Mandell, Douglas, and Bennett's Principles and Practice of Infectious Diseases, 9th Edition, Bennett, JE, Dolin R, Blaser MJ. Elsevier, 2020.
16. Satish Gupte, The Short Textbook of Medical Microbiology, 11th Edition, Jaype, 2020.
17. Gunn A, Pitt SJ, Parasitology An Integrated Approach, Wiley, 2th Edition, 2022.
18. Mandell, Douglas, and Bennett's Principles and Practice of Infectious Diseases, 9th Edition, Bennett, JE, Dolin R, Blaser MJ. Elsevier, 2019
19. Robbins Basic Pathology (10th Edition); Vinay Kumar, Abul K. Abbas, Jon C. Aster; Elsevier Saunders, Philadelphia, 2018.
20. Understanding pathophysiology First canadian Ed. 2018 by Elsevier Inc. Sue Huether; Kelly PowerKean; Mohamed ElHussein
21. Pathophysiology of Diseases: An introduction in clinical medicine 8 ed. 2019 by McGraw-Hill Education; Lange Inc. Gary D. Hammer, MD, PhD Stephen J. McPhee, MD
22. Pathophysiology: The biologic basis for diseases in adults and children 8th ed. 2019 by Elsevier Inc. Kathryn L. McCance, MS, PhD Sue E. Huether, MS, PhD Valentına L. Brashers, Neal S. Rote, PhD
23. Rapid Review Pathology, Fifth Edition 2019 by Elsevier, Inc. Edward F. Goljan, MD
24. Harper’s Illustrated Biochemistry (30th Edition); Victor W. Rodwell, David Bender, Kathleen M. Botham, Peter J. Kennelly, P. Anthony Weil; McGraw-Hill, 2015.
25. Roger Detels (ed.), Quarraisha Abdool Karim (ed.), Fran Baum (ed.), Liming Li (ed.), Alastair H Leyland (ed.). **Oxford Textbook of Global Public** Health (7 edn), 2021,Online ISBN:9780191858383, Print ISBN:9780198816805, https://doi.org/10.1093/med/9780198816805.001.0001
26. Anjali Choudhary and Vineeta Gupta. Teaching communications skills to medical students: Introducing the fine art of medical practice. [Int J Appl Basic Med Res.](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4552065/) 2015 Aug; 5(Suppl 1): S41–S44. doi: [*10.4103/2229-516X.162273*](https://doi.org/10.4103/2229-516X.162273)
27. Guillermo Ferreira-Padilla, Teresa Ferrández-Antón, José Baleriola-Júlvez, Marijana Braš, and Veljko Đorđević.. **Communication skills in medicine**: where do we come from and where are we going? [Croat Med J.](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4500973/) 2015 Jun; 56(3): 311–314. doi: [10.3325/cmj.2015.56.311](https://doi.org/10.3325/cmj.2015.56.311)
28. Laurie Kelly McCorry  (Author), Jeff Mason (Author). Communication Skills for the Healthcare Professional. Enhanced Ed., 2nd Ed, 2020**,** 978-1284219999.
29. Jon Glasby (Author). The Short Guide to Health and Social Care (Short Guides). 2019.
30. Beth Boyer, Katie Huber, Eyal Zimlichman, Robert Saunders, Mark McClellan, Charles Kahn, Ryan Noach, Claudia Salzberg. Advancing the future of equitable access to health care: recommendations from international health care leaders. [*https://doi.org/10.1093/haschl/qxae094*](https://doi.org/10.1093/haschl/qxae094), 2024.
31. [Health care in Turkey - Statistics and Facts](https://www.statista.com/topics/4782/health-care-in-turkey/)

**Websites**: John's Hopkins School of Public Health, Harvard School of Public Health, Turkish Ministry of Health (MoH), MEDLINE, WHO,<https://www.youtube.com/watch?v=aeSlJPLFk8Q> (Healthcare Communication)[How Effective Communication Can Save Lives in the Healthcare Settings](https://www.youtube.com/watch?v=oTJs5LJ4YKU) |
| **MED 102 COMMITTEE EXAM WEEK** |
| **DATE** | **EXAM NAME** | **EXAM HOUR** |
| 07.03.2025 | MED 102 Committee Exam | 09:30-12:20 |
| **Teaching Methods and Techniques** |

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| [x]  Lecture | [ ]  Case based learning | [ ]  Case discussion | [ ]  Student presentation |
| [ ]  Role playing | [ ]  Problem based learning | [ ]  Project | [ ]  Homework |
| [x]  Laboratory practice | [ ]  Team based learning | [x]  Flipped-Class | [x] Self Learning |

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| **Evaluation Method** | Theoretical Exam (80%), Anatomy Practical Exam (10%), Histology Laboratory Exam (5%), Flipped Class-I (2%), Flipped-Class-II (2%), Quiz (1%) |
| **Lesson Language** | English |