|  |
| --- |
| **HITOLOGY AND EMBRYYOLOGY DEPARTMENT MASTER’S DEGREE PROGRAM - Courses – ECTS Credits (Histoloji Ve Embriyoloji YL) M Sc** |
| **AUTUMN TERM** |
| **Code** | **Lesson Name** | **ECTS** | **T+U+L** | **C/E** | **Language** |
| 521903201  | [ULTRASTRUCTURE OF TISSUES](#DERS521903201)   | 7,5 | 3+0+0 | ELECTIVE | TURKISH |
| 521903202 | [HISTOGENESIS](#DERS521903202) | 7,5 | 3+0+0 | ELECTIVE | TURKISH |
| **521903203** | [**CELL ULTRASTRUCTURE**](#DERS521903203) | **7,5** | **3+0+0** | **COMPULSORY** | **TURKISH** |
| **521903204** | [**IN VIVO EMBRYOGENESIS**](#DERS521903204) | **7,5** | **3+0+0** | **COMPULSORY** | **TURKISH** |
| 521905205 | [DEVELOPMENT AND HISTOLOGICAL STRUCTURES OF BASIC TISSUES](#DERS521905205) | 5 | 2+0+0 | ELECTIVE | TURKISH |
| 521903206 | [MAIN EQUIPMENTS OF HISTOLOGY AND EMBRYOLOGY LABORATORY](#DERS521903206)  | 7,5 | 2+2+0 | ELECTIVE | TURKISH |
| **521903400** | **SEMINAR** | **7,5** | **0+1+0** | **COMPULSORY** | **TURKISH** |
| **521901700** | **SPECIALIZATION FIELD COURSE** | **5** | **3+0+0** | **COMPULSORY** | **TURKISH** |
| **521901200** | **MASTER'S THESIS** | **25** | **0+1+0** | **COMPULSORY** | **TURKISH** |
| **520111103** | **RESEARCH METHODS AND PUBLISHING ETHICS\*** | **7,5** | **3+0+3** | **COMPULSORY** | **TURKISH** |
|  |  |  |  |  |
| **SPRİNG TERM** |
| **Code** | **Lesson Name** | **ECTS** | **T+U+L** | **C/E** | **Language** |
| 521906201 | [IN VITRO FERTILIZATION](#DERS521906201) | 5 | 2+1+0 | ELECTIVE | TURKISH |
| **521904203** | [**EXAMINATION METHODS OF CELLS AND TISSUES IN HISTOLOGY AND THEIR APPLICATIONS**](#DERS521904203) | **7,5** | **2+2+0** | **COMPULSORY** | **TURKISH** |
| 521904204 | [THE BEGINNING OF HUMAN DEVELOPMENT: FIRST, SECOND AND THIRD WEEKS](#DERS521904204) | 7,5 | 3+0+0 | ELECTIVE | TURKISH |
| 521904205 | [THE FETAL PERIOD: FROM NINTH WEEK TO BIRTH](#DERS521904205)  | 7,5 | 3+0+0 | ELECTIVE | TURKISH |
| 521906206 | [MICROSCOPIC EVALUATION AND MORPHOMETRIC ANALYSIS OF TISSUES IN HISTOLOGY](#DERS521906206) | 5 | 1+3+0 | ELECTIVE | TURKISH |
| **521903400** | **SEMINAR** | **7,5** | **0+1+0** | **COMPULSORY** | **TURKISH** |
| **521901700** | **SPECIALIZATION FIELD COURSE** | **5** | **3+0+0** | **COMPULSORY** | **TURKISH** |
| **521901200** | **MASTER'S THESIS** | **25** | **0+1+0** | **COMPULSORY** | **TURKISH** |
| **520111103** | **RESEARCH METHODS AND PUBLISHING ETHICS\*** | **7,5** | **3+0+3** | **COMPULSORY** | **TURKISH** |
|  |  |  |  |  |
|  |  |  |  |  |

|  |  |  |  |
| --- | --- | --- | --- |
| **COURSE CODE:** | **521903201** | **DEPARTMENT:** | HISTOLOGY AND EMBRYOLOGY |
| **COURSE NAME:** | **ULTRASTRUCTURE OF TISSUES**  |
| **INSTRUCTOR NAME** | **COURSE LANGUAGE** | **COURSE CATEGORY** |
|  Prof. Dr. Dilek BURUKOĞLU DÖNMEZ | **Turkish** | **English** | **Technical** | **Medical** | **Other** |
| **X** |  |  | **X** |  |

**COURSE LEVEL**

|  |  |  |  |
| --- | --- | --- | --- |
| **PROPAEDEUTIC** | **MASTER OF SCIENCE** | **DOCTORATE** | **COURSE OF PROVINCE** |
|  | **X** |  |  |

|  |  |  |
| --- | --- | --- |
| **SEMESTER** | **WEEKLY COURSE PERIOD** | **COURSE OF** |
| **Autumn** | **Spring** | **Theoretic** | **Practice** | **Laboratory** | **Credit** | **ECTS** | **Type** |
| **X** |  | 3 | 0 | 0 | 3 | 7,5 | Compulsory: |
| Elective: **X** |

|  |
| --- |
| **ASSESMENT CRITERIA** |
| **SEMESTER ACTIVITIES** | **ACTIVITY** | **Quantity** | **Percentage (%)** |
| Mid-Term | **1** | **50**  |
| Quiz |  |   |
| Homework |   |   |
| Project |   |   |
| Report  |  |  |
| Other (………) |  |  |
| **FInal ExamInatIon** | 50 |
| **PREREQUISITE(S)** | No  |
| **SHORT COURSE CONTENT** | Despite its complexity, the human body is composed of only 4 basic tissues; epithelial, connective, muscular and nervous tissues. |
| **COURSE AIMS** | To teach the ultra-structural characteristics of the four basic tissues. |
| **COURSE CONTRBUTION TO THE PROFESSIOAL EDUCATION OBJECTIVES** | To provide better understanding of human body and applying it in clinical situations by teaching the general properties of the tissues in detail. |
| **LEARNING OUTCOMES OF THE COURSE**  | Explain the definition of tissue, list the types of tissue.Explain the histological structure of epithelial tissue, connective tissue, muscle tissue and nervous tissue.Distinguish tissue types under the microscope.Explain the structural features, classifications and functions of basic tissue types (epithelial, connective, muscle and nerve).Interpret the relationship between the histological structures of organs and their functions on a theoretical level. |
| **TEXTBOOK** | Histology-A Text and Atlas, M. H. Ross and W. Pawlina, Seventh Edition, Wolters Kluwer, USA, 2016. |
| **OTHER REFERENCES** |  |
| **TOOLS AND EQUIPMENTS REQUIRED**  | **No**  |

|  |
| --- |
| **COURSE SCHEDULE (Weekly)** |
| **WEEK** | **DATE** | **TOPICS** |
| 1 |  | Introduction to the ultrastructure of tissues |
| 2 |  | Ultra structural features of covering epithelium |
| 3 |  | Ultra structural features of glandular epithelium |
| 4 |  | Seminar 1 |
| 5 |  | Ultra structural features of connective tissue cells |
| 6 |  | Ultra structural features of extracellular matrix in connective tissue |
| 7 |  | **Mid-Term Exam** |
| 8 |  | Ultra structural features of cartilaginous tissue |
| 9 |  | Ultra structural features of osseous tissue |
| 10 |  | Ultra structural features of adipose tissue |
| 11 |  | Seminar 2 |
| 12 |  | Ultra structural features of blood tissue |
| 13 |  | Ultra structural features of muscular tissue |
| 14 |  | Ultra structural features of nervous tissue |
| 15 |  | Clinical significance of ultrastructure  |
| 16 |  | **Final Exam** |

|  |  |
| --- | --- |
| **CONTRIBUTION OF THE COURSE LEARNING OUTCOMES TO THE PROGRAM LEARNING OUTCOMES** | **CONTRIBUTION LEVEL** |
| **NO** | **LEARNING OUTCOMES (MSc)** | **1**Low | **2**MId | **3**HIgh |
| LO 1 | Possesses up-to-date and advanced theoretical and practical knowledge in the field of Histology and Embryology and continually develops and deepens this knowledge. |  | **X** |  |
| LO 2 | Understands and applies interdisciplinary interactions relevant to the field. |  | **X** |  |
| LO 3 | Has knowledge of information technologies, technical equipment, and field-specific devices and tools at the level required by the discipline. |  | **X** |  |
| LO 4 | Applies appropriate tissue preparation and histological staining techniques in line with the nature of the tissue. | **X** |  |  |
| LO 5 | Has the ability to operate microscopes effectively and to examine cells, tissues, and organs at the microscopic level. |  | **X** |  |
| LO 6 | Utilizes advanced theoretical and practical knowledge gained in the field. |  | **X** |  |
| LO 7 | Integrates the knowledge acquired in the field with information from other disciplines, interprets it, generates new insights, and proposes solutions by using various research methods through analysis and synthesis. | **X** |  |  |
| LO 8 | Understands the process of human embryological development and the molecular mechanisms regulating this development. |  | **X** |  |
| LO 9 | Possesses the knowledge and skills to contribute to education and knows the methods of accessing and updating information to enhance individual capacity. |  | **X** |  |
| LO 10 | Has the ability to independently formulate original hypotheses, transform them into research projects, write and manage them. |  | **X** |  |
| LO 11 | Acts with professional responsibility and ethical awareness in all academic and research activities. |  | **X** |  |
| LO 12 | Takes responsibility in conducting group work related to Histology and Embryology. |  | **X** |  |
| LO 13 | Recognizes the fundamental concepts of medical education. |  | **X** |  |
| LO 14 | Gains the ability to approach ethical problems by grounding them in core scientific and educational principles. |  |  | **X** |

|  |  |
| --- | --- |
| **Instructor Name****Prof. Dr. Dilek BURUKOĞLU DÖNMEZ****Sign** | **Date****26.03.2025** |

|  |  |  |  |
| --- | --- | --- | --- |
| **COURSE CODE:** | **521903202** | **DEPARTMENT:** | HISTOLOGY AND EMBRYOLOGY |
| **COURSE NAME:** | HISTOGENESIS |
| **INSTRUCTOR NAME** | **COURSE LANGUAGE** | **COURSE CATEGORY** |
| Prof. Dr. Dilek BURUKOĞLU DÖNMEZ | **Turkish** | **English** | **Technical** | **Medical** | **Other** |
| **X** |  |  | **X** |  |

**COURSE LEVEL**

|  |  |  |  |
| --- | --- | --- | --- |
| **PROPAEDEUTIC** | **MASTER OF SCIENCE** | **DOCTORATE** | **COURSE OF PROVINCE** |
|  | **X** |  |  |

|  |  |  |
| --- | --- | --- |
| **SEMESTER** | **WEEKLY COURSE PERIOD** | **COURSE OF** |
| **Autumn** | **Spring** | **Theoretic** | **Practice** | **Laboratory** | **Credit** | **ECTS** | **Type** |
| **X** |  | 3 | 0 | 0 | 3 | 7,5 | Compulsory: |
| Elective: **X** |

|  |
| --- |
| **ASSESMENT CRITERIA** |
| **SEMESTER ACTIVITIES** | **ACTIVITY** | **Quantity** | **Percentage (%)** |
| Mid-Term | **1** | **50**  |
| Quiz |  |   |
| Homework |   |   |
| Project |   |   |
| Report  |  |  |
| Other (………) |  |  |
| **FInal ExamInatIon** | 50 |
| **PREREQUISITE(S)** | No  |
| **SHORT COURSE CONTENT** | In the early developing embryo during the gastrulation phase, a trilaminar embryonic disc forms. This disc consists of endoderm, mesoderm and ectoderm, which give rise to all the tissues and organs of the body. |
| **COURSE AIMS** | To teach the endodermal, mesodermal and ectodermal derivatives. |
| **COURSE CONTRBUTION TO THE PROFESSIONAL EDUCATION OBJECTIVES** | Understanding of the intrauterine development of tissues and organs of human body and using it in practice.  |
| **LEARNING OUTCOMES OF THE COURSE**  | Defines the concept of histogenesis and explains the fundamental mechanisms of tissue development.Lists the stages of tissue formation during embryonic development.Explains the biological and embryological significance of gastrulation.Describes the developmental process of the ectoderm layer and the structures derived from it.Explains the development of the neuroectoderm and the formation of the neural tube.Describes the development and segmental organization of the mesoderm layer.Identifies the developmental process and derivatives of the endoderm layer.Performs a comparative analysis of the structures derived from all three germ layers.Evaluates the clinical implications and pathological examples of histogenesis. |
| **TEXTBOOK** | Langman’s Medical Embryology, T. W. Sadler, Thirteenth Edition, Wolters Kluwer, USA, 2015. |
| **OTHER REFERENCES** | Histology-A Text and Atlas, M. H. Ross and W. Pawlina, Seventh Edition, Wolters Kluwer, USA, 2016. |
| **TOOLS AND EQUIPMENTS REQUIRED**  | No  |

|  |
| --- |
| **COURSE SCHEDULE (Weekly)** |
| **WEEK** | **DATE** | **TOPICS** |
| 1 |  | The description and mechanisms of histogenesis |
| 2 |  | Developmental stages of embryonic tissues |
| 3 |  | Gastrulation and its significance  |
| 4 |  | Seminar 1 |
| 5 |  | Development of the ectodermal layer |
| 6 |  | Development of the neuroectoderm |
| 7 |  | **Mid-Term Exam** |
| 8 |  | Derivatives of the ectodermal layer |
| 9 |  | Development of the mesodermal layer |
| 10 |  | Derivatives of the mesodermal layer |
| 11 |  | Seminar 2 |
| 12 |  | Development of the endodermal layer |
| 13 |  | Derivatives of the endodermal layer |
| 14 |  | Comparison of derivatives of the trilaminar germ layer |
| 15 |  | Clinical information |
| 16 |  | **Final Exam** |

|  |  |
| --- | --- |
| **CONTRIBUTION OF THE COURSE LEARNING OUTCOMES TO THE PROGRAM LEARNING OUTCOMES** | **CONTRIBUTION LEVEL** |
| **NO** | **LEARNING OUTCOMES (MSc)** | **1**Low | **2**MId | **3**HIgh |
| LO 1 | Possesses up-to-date and advanced theoretical and practical knowledge in the field of Histology and Embryology and continually develops and deepens this knowledge. |  | **X** |  |
| LO 2 | Understands and applies interdisciplinary interactions relevant to the field. |  | **X** |  |
| LO 3 | Has knowledge of information technologies, technical equipment, and field-specific devices and tools at the level required by the discipline. |  | **X** |  |
| LO 4 | Applies appropriate tissue preparation and histological staining techniques in line with the nature of the tissue. | **X** |  |  |
| LO 5 | Has the ability to operate microscopes effectively and to examine cells, tissues, and organs at the microscopic level. |  | **X** |  |
| LO 6 | Utilizes advanced theoretical and practical knowledge gained in the field. |  | **X** |  |
| LO 7 | Integrates the knowledge acquired in the field with information from other disciplines, interprets it, generates new insights, and proposes solutions by using various research methods through analysis and synthesis. | **X** |  |  |
| LO 8 | Understands the process of human embryological development and the molecular mechanisms regulating this development. |  | **X** |  |
| LO 9 | Possesses the knowledge and skills to contribute to education and knows the methods of accessing and updating information to enhance individual capacity. |  | **X** |  |
| LO 10 | Has the ability to independently formulate original hypotheses, transform them into research projects, write and manage them. |  | **X** |  |
| LO 11 | Acts with professional responsibility and ethical awareness in all academic and research activities. |  | **X** |  |
| LO 12 | Takes responsibility in conducting group work related to Histology and Embryology. |  | **X** |  |
| LO 13 | Recognizes the fundamental concepts of medical education. |  | **X** |  |
| LO 14 | Gains the ability to approach ethical problems by grounding them in core scientific and educational principles. |  |  | **X** |

|  |  |
| --- | --- |
| **Instructor Name****Ass. Prof. Dr. Dilek BURUKOĞLU DÖNMEZ****Sign** | **Date****26.03.2025** |

|  |  |  |  |
| --- | --- | --- | --- |
| **COURSE CODE:** | **521903203** | **DEPARTMENT:** | HISTOLOGY AND EMBRYOLOGY |
| **COURSE NAME:** | CELL ULTRASTRUCTURE |
| **INSTRUCTOR NAME** | **COURSE LANGUAGE** | **COURSE CATEGORY** |
| Prof. Dr. Dilek BURUKOĞLU DÖNMEZ | **Turkish** | **English** | **Technical** | **Medical** | **Other** |
| **X** |  |  | **X** |  |

**COURSE LEVEL**

|  |  |  |  |
| --- | --- | --- | --- |
| **PROPAEDEUTIC** | **MASTER OF SCIENCE** | **DOCTORATE** | **COURSE OF PROVINCE** |
|  | **X** |  |  |

|  |  |  |
| --- | --- | --- |
| **SEMESTER** | **WEEKLY COURSE PERIOD** | **COURSE OF** |
| **Autumn** | **Spring** | **Theoretic** | **Practice** | **Laboratory** | **Credit** | **ECTS** | **Type** |
| **X** |  | 3 | 0 | 0 | 3 | 7,5 | Compulsory: **X** |
| Elective: |

|  |
| --- |
| **ASSESMENT CRITERIA** |
| **SEMESTER ACTIVITIES** | **ACTIVITY** | **Quantity** | **Percentage (%)** |
| Mid-Term | **1** | **50**  |
| Quiz |  |   |
| Homework |   |   |
| Project |   |   |
| Report  |  |  |
| Other (………) |  |  |
| **FInal ExamInatIon** | 50 |
| **PREREQUISITE(S)** | No  |
| **SHORT COURSE CONTENT** | Teaching of cellular elements at the ultra-structural level  |
| **COURSE AIMS** | Interpretation of different cells by comparing of fine structures |
| **COURSE CONTRBUTION TO THE PROFESSIONAL EDUCATION OBJECTIVES** | Understanding of the relation between morphology and function by interpretation of TEM-SEM micrographs |
| **LEARNING OUTCOMES OF THE COURSE**  | Defines the fundamental structural and functional units of the cell.Describes the structures of organelles such as the nucleus, mitochondria, and endoplasmic reticulum at the electron microscopy level.Analyzes intercellular junctional complexes and the apical-basal polarity of cells.Explains the working principles of devices used in ultrastructural analysis.Understands appropriate tissue preparation techniques for electron microscopy analysis.Develops the ability to interpret electron microscopy images.Relates cellular ultrastructure to physiological and pathological processes. |
| **TEXTBOOK** | Histology-A Text and Atlas, M. H. Ross and W. Pawlina, Seventh Edition, Wolters Kluwer, USA, 2016. |
| **OTHER REFERENCES** |  |
| **TOOLS AND EQUIPMENTS REQUIRED**  | No  |

|  |
| --- |
| **COURSE SCHEDULE (Weekly)** |
| **WEEK** | **DATE** | **TOPICS** |
| 1 |  | General properties of cells  |
| 2 |  | Properties and structure of cell membrane |
| 3 |  | Nucleus |
| 4 |  | Granular endoplasmic reticulum |
| 5 |  | Agranular endoplasmic reticulum |
| 6 |  | Mitochondrion |
| 7 |  | **Mid-Term Exam** |
| 8 |  | Other organelles |
| 9 |  | Intercellular junctions |
| 10 |  | Apical and basal membrane properties of the cell |
| 11 |  | Devices for evaluation of cellular ultrastructure |
| 12 |  | Technical properties of TEM |
| 13 |  | Technical properties of SEM  |
| 14 |  | Tissue processing methods for TEM  |
| 15 |  | Tissue processing methods for SEM |
| 16 |  | **Final Exam** |

|  |  |
| --- | --- |
| **CONTRIBUTION OF THE COURSE LEARNING OUTCOMES TO THE PROGRAM LEARNING OUTCOMES** | **CONTRIBUTION LEVEL** |
| **NO** | **LEARNING OUTCOMES (MSc)** | **1**Low | **2**MId | **3**HIgh |
| LO 1 | Possesses up-to-date and advanced theoretical and practical knowledge in the field of Histology and Embryology and continually develops and deepens this knowledge. | **X** |  |  |
| LO 2 | Understands and applies interdisciplinary interactions relevant to the field. |  | **X** |  |
| LO 3 | Has knowledge of information technologies, technical equipment, and field-specific devices and tools at the level required by the discipline. | **X** |  |  |
| LO 4 | Applies appropriate tissue preparation and histological staining techniques in line with the nature of the tissue. |  |  | **X** |
| LO 5 | Has the ability to operate microscopes effectively and to examine cells, tissues, and organs at the microscopic level. |  | **X** |  |
| LO 6 | Utilizes advanced theoretical and practical knowledge gained in the field. |  | **X** |  |
| LO 7 | Integrates the knowledge acquired in the field with information from other disciplines, interprets it, generates new insights, and proposes solutions by using various research methods through analysis and synthesis. |  | **X** |  |
| LO 8 | Understands the process of human embryological development and the molecular mechanisms regulating this development. | **X** |  |  |
| LO 9 | Possesses the knowledge and skills to contribute to education and knows the methods of accessing and updating information to enhance individual capacity. |  |  | **X** |
| LO 10 | Has the ability to independently formulate original hypotheses, transform them into research projects, write and manage them. |  | **X** |  |
| LO 11 | Acts with professional responsibility and ethical awareness in all academic and research activities. |  |  | **X** |
| LO 12 | Takes responsibility in conducting group work related to Histology and Embryology. |  |  | **X** |
| LO 13 | Recognizes the fundamental concepts of medical education. |  | **X** |  |
| LO 14 | Gains the ability to approach ethical problems by grounding them in core scientific and educational principles. |  |  | **X** |

|  |  |
| --- | --- |
| **Instructor Name****Prof. Dr. Dilek BURUKOĞLU DÖNMEZ****Sign** | **Date****26.03.2025** |

|  |  |  |  |
| --- | --- | --- | --- |
| **COURSE CODE:** | **521903204** | **DEPARTMENT:** | HISTOLOGY AND EMBRYOLOGY |
| **COURSE NAME:** | IN VIVO EMBRYOGENESIS |
| **INSTRUCTOR NAME** | **COURSE LANGUAGE** | **COURSE CATEGORY** |
| Prof. Dr. Varol ŞAHİNTÜRK | **Turkish** | **English** | **Technical** | **Medical** | **Other** |
| **X** |  |  | **X** |  |

**COURSE LEVEL**

|  |  |  |  |
| --- | --- | --- | --- |
| **PROPAEDEUTIC** | **MASTER OF SCIENCE** | **DOCTORATE** | **COURSE OF PROVINCE** |
|  | **X** |  |  |

|  |  |  |
| --- | --- | --- |
| **SEMESTER** | **WEEKLY COURSE PERIOD** | **COURSE OF** |
| **Autumn** | **Spring** | **Theoretic** | **Practice** | **Laboratory** | **Credit** | **ECTS** | **Type** |
| **X** |  | 3 | 0 | 0 | 3 | 7,5 | Compulsory: **X** |
| Elective: |

|  |
| --- |
| **ASSESMENT CRITERIA** |
| **SEMESTER ACTIVITIES** | **ACTIVITY** | **Quantity** | **Percentage (%)** |
| Mid-Term | **1** | **50**  |
| Quiz |  |   |
| Homework |   |   |
| Project |   |   |
| Report  |  |  |
| Other (………) |  |  |
| **FInal ExamInatIon** | 50 |
| **PREREQUISITE(S)** | No  |
| **SHORT COURSE CONTENT** | Early period of human development |
| **COURSE AIMS** | Learning of basic events and mechanisms of human reproduction |
| **COURSE CONTRBUTION TO THE PROFESSIONAL EDUCATION OBJECTIVES** | Comprehension of basic human developmental events and establish relations between them |
| **LEARNING OUTCOMES OF THE COURSE**  | Analyzes the historical development of embryology and defines fundamental concepts.Explains the processes of gametogenesis at both biological and hormonal levels.Evaluates the roles of sex hormones in reproductive physiology.Describes the biological mechanisms of the fertilization process.Compares the basic principles of in vitro fertilization with in vivo processes.Explains the molecular and structural mechanisms of implantation.Identifies the early stages of embryonic development and analyzes the influencing factors.Uses embryological terminology accurately and effectively.Analyzes unresolved scientific questions in the field of embryology.Interprets embryonic development processes using diagrams, charts, and models. |
| **TEXTBOOK** | Langman’s Medical Embryology, T. W. Sadler, Thirteenth Edition, Wolters Kluwer, USA, 2015. |
| **OTHER REFERENCES** |  |
| **TOOLS AND EQUIPMENTS REQUIRED**  | No  |

|  |
| --- |
| **COURSE SCHEDULE (Weekly)** |
| **WEEK** | **DATE** | **TOPICS** |
| 1 |  | Historical progress of embryology |
| 2 |  | Stages and influencing factors of spermatogenesis  |
| 3 |  | Stages and influencing factors of oogenesis |
| 4 |  | Functions and effects of sexual hormones in male and female bodies |
| 5 |  | Factors and events that influence fertilization |
| 6 |  | In vivo fertilization |
| 7 |  | **Mid-Term Exam** |
| 8 |  | Basic principles of in vitro fertilization |
| 9 |  | Implantation and its mechanisms |
| 10 |  | Terminology in embryology |
| 11 |  | Events and influencing factors of the development in first week  |
| 12 |  | Events and influencing factors of the development in second week |
| 13 |  | Events and influencing factors of the development in third week |
| 14 |  | Some actual problems in embryology without solutions |
| 15 |  | Film projection |
| 16 |  | **Final Exam** |

|  |  |
| --- | --- |
| **CONTRIBUTION OF THE COURSE LEARNING OUTCOMES TO THE PROGRAM LEARNING OUTCOMES** | **CONTRIBUTION LEVEL** |
| **NO** | **LEARNING OUTCOMES (MSc)** | **1**Low | **2**MId | **3**HIgh |
| LO 1 | Possesses up-to-date and advanced theoretical and practical knowledge in the field of Histology and Embryology and continually develops and deepens this knowledge. |  | **X** |  |
| LO 2 | Understands and applies interdisciplinary interactions relevant to the field. |  | **X** |  |
| LO 3 | Has knowledge of information technologies, technical equipment, and field-specific devices and tools at the level required by the discipline. |  | **X** |  |
| LO 4 | Applies appropriate tissue preparation and histological staining techniques in line with the nature of the tissue. |  | **X** |  |
| LO 5 | Has the ability to operate microscopes effectively and to examine cells, tissues, and organs at the microscopic level. | **X** |  |  |
| LO 6 | Utilizes advanced theoretical and practical knowledge gained in the field. |  | **X** |  |
| LO 7 | Integrates the knowledge acquired in the field with information from other disciplines, interprets it, generates new insights, and proposes solutions by using various research methods through analysis and synthesis. |  | **X** |  |
| LO 8 | Understands the process of human embryological development and the molecular mechanisms regulating this development. | **X** |  |  |
| LO 9 | Possesses the knowledge and skills to contribute to education and knows the methods of accessing and updating information to enhance individual capacity. |  | **X** |  |
| LO 10 | Has the ability to independently formulate original hypotheses, transform them into research projects, write and manage them. |  | **X** |  |
| LO 11 | Acts with professional responsibility and ethical awareness in all academic and research activities. |  |  | **X** |
| LO 12 | Takes responsibility in conducting group work related to Histology and Embryology. |  | **X** |  |
| LO 13 | Recognizes the fundamental concepts of medical education. |  |  | **X** |
| LO 14 | Gains the ability to approach ethical problems by grounding them in core scientific and educational principles. |  |  | **X** |

|  |  |
| --- | --- |
| **Instructor Name****Prof. Dr. Varol ŞAHİNTÜRK****Sign** | **Date****26.03.2025** |

|  |  |  |  |
| --- | --- | --- | --- |
| **COURSE CODE:** | **521905205** | **DEPARTMENT:** | HISTOLOGY AND EMBRYOLOGY |
| **COURSE NAME:** | DEVELOPMENT AND HISTOLOGICAL STRUCTURES OF BASIC TISSUES  |
| **INSTRUCTOR NAME** | **COURSE LANGUAGE** | **COURSE CATEGORY** |
| Prof. Dr. Dilek BURUKOĞLU DÖNMEZ | **Turkish** | **English** | **Technical** | **Medical** | **Other** |
| **X** |  |  | **X** |  |

**COURSE LEVEL**

|  |  |  |  |
| --- | --- | --- | --- |
| **PROPAEDEUTIC** | **MASTER OF SCIENCE** | **DOCTORATE** | **COURSE OF PROVINCE** |
|  | **X** |  |  |

|  |  |  |
| --- | --- | --- |
| **SEMESTER** | **WEEKLY COURSE PERIOD** | **COURSE OF** |
| **Autumn** | **Spring** | **Theoretic** | **Practice** | **Laboratory** | **Credit** | **ECTS** | **Type** |
| **X** |  | 2 | 0 | 0 | 2 | 5 | Compulsory: |
| Elective: **X** |

|  |
| --- |
| **ASSESMENT CRITERIA** |
| **SEMESTER ACTIVITIES** | **ACTIVITY** | **Quantity** | **Percentage (%)** |
| Mid-Term | **1** | **50**  |
| Quiz |  |   |
| Homework |   |   |
| Project |   |   |
| Report  |  |  |
| Other (………) |  |  |
| **FInal ExamInatIon** | 50 |
| **PREREQUISITE(S)** | No  |
| **SHORT COURSE CONTENT** | Developmental and differentiation aspects of the human basic tissues. |
| **COURSE AIMS** | Teaching of the developmental and differentiation aspects of the humans basic tissues |
| **COURSE CONTRBUTION TO THE PROFESSIONAL EDUCATION OBJECTIVES** | Comprehension of humans basic tissues and establish a relation between their developmental and differentiation aspects |
| **LEARNING OUTCOMES OF THE COURSE**  | Explains the general structure of cells and distinguishes their characteristic features.Defines the concept of tissue and identifies the main components that form tissues.Explains the processes of cell migration and differentiation within the context of developmental biology.Describes the developmental origins and histological characteristics of epithelial tissues.Analyzes the developmental process and differentiation pathways of connective tissue.Explains the process of hematopoiesis and the histological features of blood tissue.Compares the embryonic development and histological structures of adipose, cartilage, and bone tissues.Describes the development and histological types of muscle tissue.Explains the development and microscopic structure of nervous tissue. |
| **TEXTBOOK** | Langman’s Medical Embryology, T. W. Sadler, Thirteenth Edition, Wolters Kluwer, USA, 2015. |
| **OTHER REFERENCES** | Histology-A Text and Atlas, M. H. Ross and W. Pawlina, Seventh Edition, Wolters Kluwer, USA, 2016. |
| **TOOLS AND EQUIPMENTS REQUIRED**  | No  |

|  |
| --- |
| **COURSE SCHEDULE (Weekly)** |
| **WEEK** | **DATE** | **TOPICS** |
| 1 |  | General cell structure and key differences between cells |
| 2 |  | Tissue: definition and its components |
| 3 |  | Cell migration and differentiation |
| 4 |  | Development and differentiation of covering epithelium |
| 5 |  | Development and differentiation of glandular epithelium |
| 6 |  | Development and differentiation of connective tissue cells and fibers |
| 7 |  | **Mid-Term Exam** |
| 8 |  | Types of connective tissue |
| 9 |  | Hematopoiesis |
| 10 |  | Basic histological features of blood |
| 11 |  | Development and differentiation of adipose tissue |
| 12 |  | Development and differentiation of cartilage  |
| 13 |  | Development and differentiation of bone |
| 14 |  | Development and differentiation of muscular tissue |
| 15 |  | Development and differentiation of nervous tissue |
| 16 |  | **Final Exam** |

|  |  |
| --- | --- |
| **CONTRIBUTION OF THE COURSE LEARNING OUTCOMES TO THE PROGRAM LEARNING OUTCOMES** | **CONTRIBUTION LEVEL** |
| **NO** | **LEARNING OUTCOMES (MSc)** | **1**Low | **2**MId | **3**HIgh |
| LO 1 | Possesses up-to-date and advanced theoretical and practical knowledge in the field of Histology and Embryology and continually develops and deepens this knowledge. |  | **X** |  |
| LO 2 | Understands and applies interdisciplinary interactions relevant to the field. |  | **X** |  |
| LO 3 | Has knowledge of information technologies, technical equipment, and field-specific devices and tools at the level required by the discipline. |  | **X** |  |
| LO 4 | Applies appropriate tissue preparation and histological staining techniques in line with the nature of the tissue. | **X** |  |  |
| LO 5 | Has the ability to operate microscopes effectively and to examine cells, tissues, and organs at the microscopic level. | **X** |  |  |
| LO 6 | Utilizes advanced theoretical and practical knowledge gained in the field. |  | **X** |  |
| LO 7 | Integrates the knowledge acquired in the field with information from other disciplines, interprets it, generates new insights, and proposes solutions by using various research methods through analysis and synthesis. |  | **X** |  |
| LO 8 | Understands the process of human embryological development and the molecular mechanisms regulating this development. | **X** |  |  |
| LO 9 | Possesses the knowledge and skills to contribute to education and knows the methods of accessing and updating information to enhance individual capacity. |  | **X** |  |
| LO 10 | Has the ability to independently formulate original hypotheses, transform them into research projects, write and manage them. |  | **X** |  |
| LO 11 | Acts with professional responsibility and ethical awareness in all academic and research activities. | **X** |  |  |
| LO 12 | Takes responsibility in conducting group work related to Histology and Embryology. |  |  | **X** |
| LO 13 | Recognizes the fundamental concepts of medical education. |  |  | **X** |
| LO 14 | Gains the ability to approach ethical problems by grounding them in core scientific and educational principles. |  |  | **X** |

|  |  |
| --- | --- |
| **Instructor Name****Prof. Dr. Dilek BURUKOĞLU DÖNMEZ** **Sign** | **Date****26.03.2025** |

|  |  |  |  |
| --- | --- | --- | --- |
| **OURSE CODE:** | **521903206** | **DEPARTMENT:** | HISTOLOGY AND EMBRYOLOGY |
| **COURSE NAME:** | MAIN EQUIPMENTS OF HISTOLOGY AND EMBRYOLOGY LABORATORIES |
| **INSTRUCTOR NAME** | **COURSE LANGUAGE** | **COURSE CATEGORY** |
| Prof. Dr. Dilek BURUKOĞLU DÖNMEZ | **Turkish** | **English** | **Technical** | **Medical** | **Other** |
| **X** |  |  | **X** |  |

**COURSE LEVEL**

|  |  |  |  |
| --- | --- | --- | --- |
| **PROPAEDEUTIC** | **MASTER OF SCIENCE** | **DOCTORATE** | **COURSE OF PROVINCE** |
|  | **X** |  |  |

|  |  |  |
| --- | --- | --- |
| **SEMESTER** | **WEEKLY COURSE PERIOD** | **COURSE OF** |
| **Autumn** | **Spring** | **Theoretic** | **Practice** | **Laboratory** | **Credit** | **ECTS** | **Type** |
| **X** |  | 2 | 2 | 0 | 3 | 7,5 | Compulsory: |
| Elective: **X** |

|  |
| --- |
| **ASSESMENT CRITERIA** |
| **SEMESTER ACTIVITIES** | **ACTIVITY** | **Quantity** | **Percentage (%)** |
| Mid-Term | **1** | **50**  |
| Quiz |  |   |
| Homework |   |   |
| Project |   |   |
| Report  |  |  |
| Other (………) |  |  |
| **FInal ExamInatIon** | 50 |
| **PREREQUISITE(S)** | No  |
| **SHORT COURSE CONTENT** | Equipment of histology and embryology laboratory |
| **COURSE AIMS** | Learning of functional principles and practice of laboratory equipment  |
| **COURSE CONTRBUTION TO THE PROFESSIONAL EDUCATION OBJECTIVES** | Accurate and convenient usage of the laboratory equipment  |
| **LEARNING OUTCOMES OF THE COURSE**  | Gains knowledge about the equipment, safety principles, and organization of histology and embryology laboratories.Recognizes the devices used in histology and embryology laboratories and explains their functions.Lists all steps of the tissue processing procedure and applies appropriate protocols.Acquires the skill of obtaining tissue sections from paraffin blocks using a microtome.Prepares frozen tissue sections using a cryostat.Learns histochemical and staining techniques both theoretically and practically.Evaluates prepared tissue sections under the microscope.Develops skills in photographing microscopic images and documenting them digitally.Interprets microscopic images and performs scientific analysis. |
| **TEXTBOOK** | Histology-A Text and Atlas, M. H. Ross and W. Pawlina, Seventh Edition, Wolters Kluwer, USA, 2016. |
| **OTHER REFERENCES** |  |
| **TOOLS AND EQUIPMENTS REQUIRED**  | No  |

|  |
| --- |
| **COURSE SCHEDULE (Weekly)** |
| **WEEK** | **DATE** | **TOPICS** |
| 1 |  | General properties of histology and embryology laboratory |
| 2 |  | A general view to the equipment |
| 3 |  | Tissue processing protocols |
| 4 |  | Automatic and manual tissue processing  |
| 5 |  | Microtomy 1 |
| 6 |  | Microtomy 2  |
| 7 |  | **Mid-Term Exam** |
| 8 |  | Cryostat sectioning  |
| 9 |  | Histochemistry methods |
| 10 |  | Staining practice 1 |
| 11 |  | Staining practice 2 |
| 12 |  | Staining practice 3 |
| 13 |  | Photo microscopy 1 |
| 14 |  | Photo microscopy 2 |
| 15 |  | Photo microscopy 3 |
| 16 |  | **Final Exam** |

|  |  |
| --- | --- |
| **CONTRIBUTION OF THE COURSE LEARNING OUTCOMES TO THE PROGRAM LEARNING OUTCOMES** | **CONTRIBUTION LEVEL** |
| **NO** | **LEARNING OUTCOMES (MSc)** | **1**Low | **2**MId | **3**HIgh |
| LO 1 | Possesses up-to-date and advanced theoretical and practical knowledge in the field of Histology and Embryology and continually develops and deepens this knowledge. | **X** |  |  |
| LO 2 | Understands and applies interdisciplinary interactions relevant to the field. | **X** |  |  |
| LO 3 | Has knowledge of information technologies, technical equipment, and field-specific devices and tools at the level required by the discipline. | **X** |  |  |
| LO 4 | Applies appropriate tissue preparation and histological staining techniques in line with the nature of the tissue. |  | **X** |  |
| LO 5 | Has the ability to operate microscopes effectively and to examine cells, tissues, and organs at the microscopic level. |  |  | **X** |
| LO 6 | Utilizes advanced theoretical and practical knowledge gained in the field. |  | **X** |  |
| LO 7 | Integrates the knowledge acquired in the field with information from other disciplines, interprets it, generates new insights, and proposes solutions by using various research methods through analysis and synthesis. |  | **X** |  |
| LO 8 | Understands the process of human embryological development and the molecular mechanisms regulating this development. |  |  | **X** |
| LO 9 | Possesses the knowledge and skills to contribute to education and knows the methods of accessing and updating information to enhance individual capacity. |  | **X** |  |
| LO 10 | Has the ability to independently formulate original hypotheses, transform them into research projects, write and manage them. |  | **X** |  |
| LO 11 | Acts with professional responsibility and ethical awareness in all academic and research activities. |  |  | **X** |
| LO 12 | Takes responsibility in conducting group work related to Histology and Embryology. |  | **X** |  |
| LO 13 | Recognizes the fundamental concepts of medical education. |  | **X** |  |
| LO 14 | Gains the ability to approach ethical problems by grounding them in core scientific and educational principles. |  | **X** |  |

|  |  |
| --- | --- |
| **Instructor Name****Prof. Dr. Dilek BURUKOĞLU DÖNMEZ****Sign** | **Date****26.03.2025** |

|  |  |  |  |
| --- | --- | --- | --- |
| **COURSE CODE:** | **521906201** | **DEPARTMENT:** | HISTOLOGY AND EMBRYOLOGY |
| **COURSE NAME:** | IN VITRO FERTILIZATION |
| **INSTRUCTOR NAME** | **COURSE LANGUAGE** | **COURSE CATEGORY** |
| Asst. Prof. Dr. Murat SEVİMLİ | **Turkish** | **English** | **Technical** | **Medical** | **Other** |
| **X** |  |  | **X** |  |

**COURSE LEVEL**

|  |  |  |  |
| --- | --- | --- | --- |
| **PROPAEDEUTIC** | **MASTER OF SCIENCE** | **DOCTORATE** | **COURSE OF PROVINCE** |
|  | **X** |  |  |

|  |  |  |
| --- | --- | --- |
| **SEMESTER** | **WEEKLY COURSE PERIOD** | **COURSE OF** |
| **Autumn** | **Spring** | **Theoretic** | **Practice** | **Laboratory** | **Credit** | **ECTS** | **Type** |
|  | **X** | 2 | 1 | 0 | 2,5 | 5 | Compulsory: |
| Elective: **X** |

|  |
| --- |
| **ASSESMENT CRITERIA** |
| **SEMESTER ACTIVITIES** | **ACTIVITY** | **Quantity** | **Percentage (%)** |
| Mid-Term | **1** | **50**  |
| Quiz |  |   |
| Homework |   |   |
| Project |   |   |
| Report  |  |  |
| Other (………) |  |  |
| **FInal ExamInatIon** | 50 |
| **PREREQUISITE(S)** | No |
| **SHORT COURSE CONTENT** | Assisted reproductive techniques |
| **COURSE AIMS** | Teaching of assisted reproductive techniques |
| **COURSE CONTRBUTION TO THE PROFESSIONAL EDUCATION OBJECTIVES** | Comprehension of assisted reproductive techniques |
| **LEARNING OUTCOMES OF THE COURSE**  | Explains the fundamental principles and applications of assisted reproductive technologies.Identifies the main causes of infertility in both females and males.Compares diagnostic and treatment approaches for female and male patients.Describes the indications and procedural methods of artificial insemination.Explains and applies the laboratory procedures for semen analysis and preparation.Identifies the materials, equipment, and environmental conditions used in the IVF laboratory.Learns the procedures of oocyte retrieval, classification, and evaluation.Defines and compares the differences between conventional IVF and ICSI applications.Analyzes the embryo transfer process and the factors affecting success rates.Discusses the biological, legal, and ethical principles related to gamete and organ donation.Gains the ability to work in accordance with ethical standards in assisted reproduction laboratories. |
| **TEXTBOOK** | İnfertil olgulara klinik yaklaşım ve IVF laboratuar uygulamaları, Editör: Hikmet Hassa, ESOGÜ yayınları no: 087, Eskişehir, 2003. |
| **OTHER REFERENCES** | Langman’s Medical Embryology, T. W. Sadler, Thirteenth Edition, Wolters Kluwer, USA, 2015. |
| **TOOLS AND EQUIPMENTS REQUIRED**  | No  |

|  |
| --- |
| **COURSE SCHEDULE (Weekly)** |
| **WEEK** | **DATE** | **TOPICS** |
| 1 |  | Introduction to assisted reproductive techniques |
| 2 |  | Reproductive problems in males |
| 3 |  | Reproductive problems in females |
| 4 |  | Applications for females |
| 5 |  | Applications for males |
| 6 |  | Semen analysis and preparation |
| 7 |  | **Mid-Term Exam** |
| 8 |  | Artificial insemination |
| 9 |  | Laboratory equipment |
| 10 |  | Oocyte pick up and classification |
| 11 |  | Classical IVF |
| 12 |  | Micromanipulation and ICSI |
| 13 |  | Embryo transfer |
| 14 |  | Donation of reproductive cells and organs |
| 15 |  | Ethical approaches and problems |
| 16 |  | **Final Exam** |

|  |  |
| --- | --- |
| **CONTRIBUTION OF THE COURSE LEARNING OUTCOMES TO THE PROGRAM LEARNING OUTCOMES** | **CONTRIBUTION LEVEL** |
| **NO** | **LEARNING OUTCOMES (MSc)** | **1**Low | **2**MId | **3**HIgh |
| LO 1 | Possesses up-to-date and advanced theoretical and practical knowledge in the field of Histology and Embryology and continually develops and deepens this knowledge. |  | **X** |  |
| LO 2 | Understands and applies interdisciplinary interactions relevant to the field. |  | **X** |  |
| LO 3 | Has knowledge of information technologies, technical equipment, and field-specific devices and tools at the level required by the discipline. |  | **X** |  |
| LO 4 | Applies appropriate tissue preparation and histological staining techniques in line with the nature of the tissue. |  | **X** |  |
| LO 5 | Has the ability to operate microscopes effectively and to examine cells, tissues, and organs at the microscopic level. |  |  | **X** |
| LO 6 | Utilizes advanced theoretical and practical knowledge gained in the field. |  |  | **X** |
| LO 7 | Integrates the knowledge acquired in the field with information from other disciplines, interprets it, generates new insights, and proposes solutions by using various research methods through analysis and synthesis. |  |  | **X** |
| LO 8 | Understands the process of human embryological development and the molecular mechanisms regulating this development. | **X** |  |  |
| LO 9 | Possesses the knowledge and skills to contribute to education and knows the methods of accessing and updating information to enhance individual capacity. |  | **X** |  |
| LO 10 | Has the ability to independently formulate original hypotheses, transform them into research projects, write and manage them. |  | **X** |  |
| LO 11 | Acts with professional responsibility and ethical awareness in all academic and research activities. |  |  | **X** |
| LO 12 | Takes responsibility in conducting group work related to Histology and Embryology. |  |  | **X** |
| LO 13 | Recognizes the fundamental concepts of medical education. |  |  | **X** |
| LO 14 | Gains the ability to approach ethical problems by grounding them in core scientific and educational principles. |  |  | **X** |

|  |  |
| --- | --- |
| **Instructor Name****Asst. Prof. Dr. Murat SEVİMLİ** **Sign** | **Date****26.03.2025** |

|  |  |  |  |
| --- | --- | --- | --- |
| **COURSE CODE:** | **521904203** | **DEPARTMENT:** | HISTOLOGY AND EMBRYOLOGY |
| **COURSE NAME:** | EXAMINATION METHODS OF CELLS AND TISSUES IN HISTOLOGY AND THEIR APPLICATIONS  |
| **INSTRUCTOR NAME** | **COURSE LANGUAGE** | **COURSE CATEGORY** |
| Prof. Dr. Varol ŞAHİNTÜRK | **Turkish** | **English** | **Technical** | **Medical** | **Other** |
| **X** |  |  | **X** |  |

**COURSE LEVEL**

|  |  |  |  |
| --- | --- | --- | --- |
| **PROPAEDEUTIC** | **MASTER OF SCIENCE** | **DOCTORATE** | **COURSE OF PROVINCE** |
|  | **X** |  |  |

|  |  |  |
| --- | --- | --- |
| **SEMESTER** | **WEEKLY COURSE PERIOD** | **COURSE OF** |
| **Autumn** | **Spring** | **Theoretic** | **Practice** | **Laboratory** | **Credit** | **ECTS** | **Type** |
|  | **X** | 2 | 2 | 0 | 3 | 7,5 | Compulsory: **X** |
| Elective: |

|  |
| --- |
| **ASSESMENT CRITERIA** |
| **SEMESTER ACTIVITIES** | **ACTIVITY** | **Quantity** | **Percentage (%)** |
| Mid-Term | **1** | **50**  |
| Quiz |  |   |
| Homework |   |   |
| Project |   |   |
| Report  |  |  |
| Other (………) |  |  |
| **FInal ExamInatIon** | 50 |
| **PREREQUISITE(S)** | No  |
| **SHORT COURSE CONTENT** | Basic histological techniques and methods |
| **COURSE AIMS** | Teaching of basic histological techniques and methods |
| **COURSE CONTRBUTION TO THE PROFESSIONAL EDUCATION OBJECTIVES** | Getting to use basic histological techniques and methods |
| **LEARNING OUTCOMES OF THE COURSE**  | Gains knowledge about the fixation process and the types of fixatives used.Understands the fundamental principles of histological staining techniques.Lists all steps of the routine tissue processing procedure and explains the principles of their application.Learns how to prepare suitable tissue sections for light microscopy.Analyzes the factors influencing the selection of appropriate histological methods.Applies basic staining techniques such as Hematoxylin–Eosin, PAS, and Masson's Trichrome.Performs fixative selection, preparation, and application to tissue samples in the laboratory.Carries out tissue processing, embedding, sectioning, and staining procedures in a laboratory setting.Prepares and stains cytological smears.Understands and applies appropriate section preparation techniques for fluorescence microscopy.Plans the entire histological examination process end-to-end and adapts it to laboratory practice. |
| **TEXTBOOK** | Histolojik boyama teknikleri, Ramazan Demir, Palme Yayınevi, 2001. |
| **OTHER REFERENCES** | Histology-A Text and Atlas, M. H. Ross and W. Pawlina, Seventh Edition, Wolters Kluwer, USA, 2016. |
| **TOOLS AND EQUIPMENTS REQUIRED**  | No  |

|  |
| --- |
| **COURSE SCHEDULE (Weekly)** |
| **WEEK** | **DATE** | **TOPICS** |
| 1 |  | Fixation and fixatives |
| 2 |  | Histological dyestuffs |
| 3 |  | Common tissue preparation techniques |
| 4 |  | Preparation of tissue slides for light microscopic examination |
| 5 |  | Methods for cell and tissue examination |
| 6 |  | Principles of choose for histological methods |
| 7 |  | **Mid-Term Exam** |
| 8 |  | Hematoxyline & eosin staining technique |
| 9 |  | Periodic acid-Schiff (PAS) technique |
| 10 |  | Masson’s trichrome technique |
| 11 |  | Fixatives-choose, preparation and use |
| 12 |  | Tissue processing and embedding |
| 13 |  | Tissue sectioning and staining |
| 14 |  | Smear preparation and staining |
| 15 |  | Preparation of tissue sections for fluorescence microscopy |
| 16 |  | **Final Exam** |

|  |  |
| --- | --- |
| **CONTRIBUTION OF THE COURSE LEARNING OUTCOMES TO THE PROGRAM LEARNING OUTCOMES** | **CONTRIBUTION LEVEL** |
| **NO** | **LEARNING OUTCOMES (MSc)** | **1**Low | **2**MId | **3**HIgh |
| LO 1 | Possesses up-to-date and advanced theoretical and practical knowledge in the field of Histology and Embryology and continually develops and deepens this knowledge. |  | **X** |  |
| LO 2 | Understands and applies interdisciplinary interactions relevant to the field. |  | **X** |  |
| LO 3 | Has knowledge of information technologies, technical equipment, and field-specific devices and tools at the level required by the discipline. |  | **X** |  |
| LO 4 | Applies appropriate tissue preparation and histological staining techniques in line with the nature of the tissue. |  | **X** |  |
| LO 5 | Has the ability to operate microscopes effectively and to examine cells, tissues, and organs at the microscopic level. |  |  | **X** |
| LO 6 | Utilizes advanced theoretical and practical knowledge gained in the field. |  |  | **X** |
| LO 7 | Integrates the knowledge acquired in the field with information from other disciplines, interprets it, generates new insights, and proposes solutions by using various research methods through analysis and synthesis. |  |  | **X** |
| LO 8 | Understands the process of human embryological development and the molecular mechanisms regulating this development. | **X** |  |  |
| LO 9 | Possesses the knowledge and skills to contribute to education and knows the methods of accessing and updating information to enhance individual capacity. |  |  | **X** |
| LO 10 | Has the ability to independently formulate original hypotheses, transform them into research projects, write and manage them. |  | **X** |  |
| LO 11 | Acts with professional responsibility and ethical awareness in all academic and research activities. |  | **X** |  |
| LO 12 | Takes responsibility in conducting group work related to Histology and Embryology. |  |  | **X** |
| LO 13 | Recognizes the fundamental concepts of medical education. |  |  | **X** |
| LO 14 | Gains the ability to approach ethical problems by grounding them in core scientific and educational principles. |  | **X** |  |

|  |  |
| --- | --- |
|  |  |

|  |  |  |  |
| --- | --- | --- | --- |
| **COURSE CODE:** | **521904204** | **DEPARTMENT:** | HISTOLOGY AND EMBRYOLOGY |
| **COURSE NAME:** | THE BEGINNING OF HUMAN DEVELOPMENT: FIRST, SECOND AND THIRD WEEKS  |
| **INSTRUCTOR NAME** | **COURSE LANGUAGE** | **COURSE CATEGORY** |
| Prof. Dr. Dilek BURUKOĞLU DÖNMEZ | **Turkish** | **English** | **Technical** | **Medical** | **Other** |
| **X** |  |  | **X** |  |

**COURSE LEVEL**

|  |  |  |  |
| --- | --- | --- | --- |
| **PROPAEDEUTIC** | **MASTER OF SCIENCE** | **DOCTORATE** | **COURSE OF PROVINCE** |
|  | **X** |  |  |

|  |  |  |
| --- | --- | --- |
| **SEMESTER** | **WEEKLY COURSE PERIOD** | **COURSE OF** |
| **Autumn** | **Spring** | **Theoretic** | **Practice** | **Laboratory** | **Credit** | **ECTS** | **Type** |
|  | **X** | 3 | 0 | 0 | 3 | 7,5 | Compulsory:  |
| Elective:X |

|  |
| --- |
| **ASSESMENT CRITERIA** |
| **SEMESTER ACTIVITIES** | **ACTIVITY** | **Quantity** | **Percentage (%)** |
| Mid-Term | **1** | **50**  |
| Quiz |  |   |
| Homework |   |   |
| Project |   |   |
| Report  |  |  |
| Other (………) |  |  |
| **FInal ExamInatIon** | 50 |
| **PREREQUISITE(S)** | No  |
| **SHORT COURSE CONTENT** | Human development begins at fertilization, the process during which a male gamete or oocyte to form a single cell called a zygote. Embryonic disc gives rise to the germ layers that form all the tissues and organs of the embryo. Gastrulation is the process by which the bilaminar embryonic disc is converted into a trilaminar embryonic disc. |
| **COURSE AIMS** | To teach human development: first week, second week, third week  |
| **COURSE CONTRBUTION TO THE PROFESSIONAL EDUCATION OBJECTIVES** | Understand the beginning of human development; first, second and third weekUnderstand the basis of embryology. This information will be used in clinical practice |
| **LEARNING OUTCOMES OF THE COURSE**  | Explains the main stages of gametogenesis and interprets their contributions to embryonic development.Describes the molecular mechanisms and outcomes of fertilization.Defines the process of blastocyst formation at the morphological level.Analyzes the embryological changes that occur during the second week of development.Explains the completion of implantation and the differentiation of trophoblast cells.Describes the development of the chorionic cavity and chorionic villi.Explains the formation of germ layers during the process of gastrulation.Explains the processes of neurulation and somite development and how they relate to each other.Describes the embryonic and maternal contributions to placental development.Relates early embryogenic processes to relevant clinical conditions and implications. |
| **TEXTBOOK** | Langman’s Medical Embryology, T. W. Sadler, Thirteenth Edition, Wolters Kluwer, USA, 2015. |
| **OTHER REFERENCES** | Embriyoloji ve doğum defektlerinin temelleri, Before we are born. Moore KL, Persaud T.V.N. Çeviri edit.; Müftüoğlu, S., Atilla, P., Kaymaz, F., Güneş Tıp Kitabevleri, 7.baskı, 2009. |
| **TOOLS AND EQUIPMENTS REQUIRED**  | No  |

|  |
| --- |
| **COURSE SCHEDULE (Weekly)** |
| **WEEK** | **DATE** | **TOPICS** |
| 1 |  | The beginning of human development:: the first week |
| 2 |  | Gametogenesis |
| 3 |  | Fertilization |
| 4 |  | Blastocyst formation |
| 5 |  | The formation of the bilaminary embryonic disc:second week |
| 6 |  | Completion of implantation |
| 7 |  | **Mid-Term Exam** |
| 8 |  | Development of the chorionic sac |
| 9 |  | Formation of germ layers and differentiation to the tissues and organs |
| 10 |  | Gastrulation |
| 11 |  | Neurulation |
| 12 |  | Development of somites |
| 13 |  | Development of chorionic villi |
| 14 |  | Development of placenta |
| 15 |  | Clinical information |
| 16 |  | **Final Exam** |

|  |  |
| --- | --- |
| **CONTRIBUTION OF THE COURSE LEARNING OUTCOMES TO THE PROGRAM LEARNING OUTCOMES** | **CONTRIBUTION LEVEL** |
| **NO** | **LEARNING OUTCOMES (MSc)** | **1**Low | **2**MId | **3**HIgh |
| LO 1 | Possesses up-to-date and advanced theoretical and practical knowledge in the field of Histology and Embryology and continually develops and deepens this knowledge. |  | **X** |  |
| LO 2 | Understands and applies interdisciplinary interactions relevant to the field. |  | **X** |  |
| LO 3 | Has knowledge of information technologies, technical equipment, and field-specific devices and tools at the level required by the discipline. |  |  | **X** |
| LO 4 | Applies appropriate tissue preparation and histological staining techniques in line with the nature of the tissue. | **X** |  |  |
| LO 5 | Has the ability to operate microscopes effectively and to examine cells, tissues, and organs at the microscopic level. | **X** |  |  |
| LO 6 | Utilizes advanced theoretical and practical knowledge gained in the field. | **X** |  |  |
| LO 7 | Integrates the knowledge acquired in the field with information from other disciplines, interprets it, generates new insights, and proposes solutions by using various research methods through analysis and synthesis. | **X** |  |  |
| LO 8 | Understands the process of human embryological development and the molecular mechanisms regulating this development. | **X** |  |  |
| LO 9 | Possesses the knowledge and skills to contribute to education and knows the methods of accessing and updating information to enhance individual capacity. |  | **X** |  |
| LO 10 | Has the ability to independently formulate original hypotheses, transform them into research projects, write and manage them. |  | **X** |  |
| LO 11 | Acts with professional responsibility and ethical awareness in all academic and research activities. |  |  | **X** |
| LO 12 | Takes responsibility in conducting group work related to Histology and Embryology. |  | **X** |  |
| LO 13 | Recognizes the fundamental concepts of medical education. |  |  | **X** |
| LO 14 | Gains the ability to approach ethical problems by grounding them in core scientific and educational principles. |  | **X** |  |

|  |  |
| --- | --- |
| **Instructor Name****Prof. Dr. Dilek BURUKOĞLU DÖNMEZ****Sign** | **Date****26.03.2025** |

|  |  |  |  |
| --- | --- | --- | --- |
| **COURSE CODE:** | **521904205** | **DEPARTMENT:** | HISTOLOGY AND EMBRYOLOGY |
| **COURSE NAME:** | THE FETAL PERIOD: FROM NINTH WEEK TO BIRTH  |
| **INSTRUCTOR NAME** | **COURSE LANGUAGE** | **COURSE CATEGORY** |
| Prof. Dr. Dilek BURUKOĞLU DÖNMEZ | **Turkish** | **English** | **Technical** | **Medical** | **Other** |
| **X** |  |  | **X** |  |

**COURSE LEVEL**

|  |  |  |  |
| --- | --- | --- | --- |
| **PROPAEDEUTIC** | **MASTER OF SCIENCE** | **DOCTORATE** | **COURSE OF PROVINCE** |
|  | **X** |  |  |

|  |  |  |
| --- | --- | --- |
| **SEMESTER** | **WEEKLY COURSE PERIOD** | **COURSE OF** |
| **Autumn** | **Spring** | **Theoretic** | **Practice** | **Laboratory** | **Credit** | **ECTS** | **Type** |
|  | **X** | 3 | 0 | 0 | 3 | 7,5 | Compulsory: |
| Elective: **X** |

|  |
| --- |
| **ASSESMENT CRITERIA** |
| **SEMESTER ACTIVITIES** | **ACTIVITY** | **Quantity** | **Percentage (%)** |
| Mid-Term | **1** | **50**  |
| Quiz |  |   |
| Homework |   |   |
| Project |   |   |
| Report  |  |  |
| Other (………) |  |  |
| **FInal ExamInatIon** | 50 |
| **PREREQUISITE(S)** | No  |
| **SHORT COURSE CONTENT** | Features of the fetal period |
| **COURSE AIMS** | Teaching of what is fetus, estimation of fetal age, highlights of the fetal period, expected date of delivery, factors influencing fetal growth |
| **COURSE CONTRBUTION TO THE PROFESSIONAL EDUCATION OBJECTIVES** | Describing of the highlight of the fetal period, the external features of the fetus, the factors influencing fetal growth, the events occurring in the fetal period and a better understanding of foundations of embryology  |
| **LEARNING OUTCOMES OF THE COURSE**  | Defines the fetal period and distinguishes it from other stages of embryological development.Explains the systematic development of the fetus on a week-by-week basis.Identifies and compares the methods used to determine fetal age.Describes the external features of the fetus and developmental measurements.Analyzes the factors that influence fetal growth and development.Explains the methods used to assess fetal health and condition.Summarizes the developmental processes of the fetal period and compares changes across trimesters.Establishes a connection between clinical problems and fetal development.Synthesizes scientific knowledge and current clinical data related to fetal development and prepares academic presentations. |
| **TEXTBOOK** | Langman’s Medical Embryology, T. W. Sadler, Thirteenth Edition, Wolters Kluwer, USA, 2015. |
| **OTHER REFERENCES** | Embriyoloji ve doğum defektlerinin temelleri, Before we are born. Moore KL, Persaud T.V.N. Çeviri edit.; Müftüoğlu, S., Atilla, P., Kaymaz, F., Güneş Tıp Kitabevleri, 7.baskı, 2009. |
| **TOOLS AND EQUIPMENTS REQUIRED**  | No  |

|  |
| --- |
| **COURSE SCHEDULE (Weekly)** |
| **WEEK** | **DATE** | **TOPICS** |
| 1 |  | What is fetus? |
| 2 |  | Introduction to the fetal period |
| 3 |  | Development of fetus |
| 4 |  | Estimation of fetal age |
| 5 |  | External features of the fetus and measures |
| 6 |  | Seminar 1 |
| 7 |  | **Mid-Term Exam** |
| 8 |  | Highlights of the fetal period |
| 9 |  | Expected date of delivery |
| 10 |  | Factors influencing fetal growth |
| 11 |  | Seminar 2 |
| 12 |  | Procedures for assessing fetal status |
| 13 |  | Summary of fetal period |
| 14 |  | Clinically oriented problems |
| 15 |  | Film projection |
| 16 |  | **Final Exam** |

|  |  |
| --- | --- |
| **CONTRIBUTION OF THE COURSE LEARNING OUTCOMES TO THE PROGRAM LEARNING OUTCOMES** | **CONTRIBUTION LEVEL** |
| **NO** | **LEARNING OUTCOMES (MSc)** | **1**Low | **2**MId | **3**HIgh |
| LO 1 | Possesses up-to-date and advanced theoretical and practical knowledge in the field of Histology and Embryology and continually develops and deepens this knowledge. |  | **X** |  |
| LO 2 | Understands and applies interdisciplinary interactions relevant to the field. |  | **X** |  |
| LO 3 | Has knowledge of information technologies, technical equipment, and field-specific devices and tools at the level required by the discipline. |  | **X** |  |
| LO 4 | Applies appropriate tissue preparation and histological staining techniques in line with the nature of the tissue. | **X** |  |  |
| LO 5 | Has the ability to operate microscopes effectively and to examine cells, tissues, and organs at the microscopic level. |  | **X** |  |
| LO 6 | Utilizes advanced theoretical and practical knowledge gained in the field. |  | **X** |  |
| LO 7 | Integrates the knowledge acquired in the field with information from other disciplines, interprets it, generates new insights, and proposes solutions by using various research methods through analysis and synthesis. | **X** |  |  |
| LO 8 | Understands the process of human embryological development and the molecular mechanisms regulating this development. |  | **X** |  |
| LO 9 | Possesses the knowledge and skills to contribute to education and knows the methods of accessing and updating information to enhance individual capacity. |  | **X** |  |
| LO 10 | Has the ability to independently formulate original hypotheses, transform them into research projects, write and manage them. |  | **X** |  |
| LO 11 | Acts with professional responsibility and ethical awareness in all academic and research activities. |  | **X** |  |
| LO 12 | Takes responsibility in conducting group work related to Histology and Embryology. |  | **X** |  |
| LO 13 | Recognizes the fundamental concepts of medical education. |  | **X** |  |
| LO 14 | Gains the ability to approach ethical problems by grounding them in core scientific and educational principles. |  |  | **X** |

|  |  |
| --- | --- |
| **Instructor Name****Prof. Dr. Dilek BURUKOĞLU DÖNMEZ****Sign** | **Date****26.03.2025** |

|  |  |  |  |
| --- | --- | --- | --- |
| **COURSE CODE:** | **521906206** | **DEPARTMENT:** | HISTOLOGY AND EMBRYOLOGY |
| **COURSE NAME:** | MICROSCOPIC EVALUATION AND MORPHOMETRIC ANALYSIS OF THE TISSUES IN HISTOLOGY |
| **INSTRUCTOR NAME** | **COURSE LANGUAGE** | **COURSE CATEGORY** |
| Asst. Prof. Dr. Murat SEVİMLİ | **Turkish** | **English** | **Technical** | **Medical** | **Other** |
| **X** |  |  | **X** |  |

**COURSE LEVEL**

|  |  |  |  |
| --- | --- | --- | --- |
| **PROPAEDEUTIC** | **MASTER OF SCIENCE** | **DOCTORATE** | **COURSE OF PROVINCE** |
|  | **X** |  |  |

|  |  |  |
| --- | --- | --- |
| **SEMESTER** | **WEEKLY COURSE PERIOD** | **COURSE OF** |
| **Autumn** | **Spring** | **Theoretic** | **Practice** | **Laboratory** | **Credit** | **ECTS** | **Type** |
|  | **X** | 1 | 3 | 0 | 2,5 | 5 | Compulsory: |
| Elective: **X** |

|  |
| --- |
| **ASSESMENT CRITERIA** |
| **SEMESTER ACTIVITIES** | **ACTIVITY** | **Quantity** | **Percentage (%)** |
| Mid-Term | **1** | **50**  |
| Quiz |  |   |
| Homework |   |   |
| Project |   |   |
| Report  |  |  |
| Other (………) |  |  |
| **FInal ExamInatIon** | 50 |
| **PREREQUISITE(S)** | No  |
| **SHORT COURSE CONTENT** | Details in microscopic examination and morphometric analysis in histology  |
| **COURSE AIMS** | Evaluation and morphometric analysis of tissues using a light microscope in histology |
| **COURSE CONTRBUTION TO THE PROFESSIONAL EDUCATION OBJECTIVES** | Microscopic evaluation and morphometric analysis application of tissues for researchers in histology |
| **LEARNING OUTCOMES OF THE COURSE**  | Recognizes the basic devices used in histotechnical procedures and operates them through hands-on application.Lists and applies tissue preparation steps prior to microscopic examination.Describes the purposes and application protocols of various staining techniques.Gains the ability to evaluate prepared histological sections under a microscope.Captures images of histological structures in digital format.Explains the basic concepts and application areas of morphometric analysis.Performs morphometric measurements using image analysis software.Prepares reports and interprets the results of histological staining and morphometric measurements.Analyzes the structural characteristics and histological differences of various tissue types. |
| **TEXTBOOK** | Histolojik boyama teknikleri, Ramazan Demir, Palme Yayınevi, 2001. |
| **OTHER REFERENCES** | Histology-A Text and Atlas, M. H. Ross and W. Pawlina, Seventh Edition, Wolters Kluwer, USA, 2016. |
| **TOOLS AND EQUIPMENTS REQUIRED**  | No  |

|  |
| --- |
| **COURSE SCHEDULE (Weekly)** |
| **WEEK** | **DATE** | **TOPICS** |
| 1 |  | Introduction and practice of basic equipment-automatic tissue processing machine |
| 2 |  | Introduction and practice of basic equipment-automatic slide staining machine |
| 3 |  | Preliminary studies of tissues for microscopical evaluation-slide preparation |
| 4 |  | Preliminary studies of tissues for microscopical evaluation –staining of tissue sections |
| 5 |  | Principles of tissue examination -fixation  |
| 6 |  | Principles of tissue examination –dehydration, clearing and embedding |
| 7 |  | **Mid-Term Exam** |
| 8 |  | Tissue and cell examination using common histological stains-H&E |
| 9 |  | Tissue examination using specific histologic stains-Mallory-Azan |
| 10 |  | Tissue examination using specific histologic stains-Masson trichrom |
| 11 |  | Tissue examination using specific histologic stains-Verhoeff |
| 12 |  | Tissue examination using specific histologic stains-Silver impregnation |
| 13 |  | Image capturing for morphometric analysis |
| 14 |  | Morphometric measurements-distance |
| 15 |  | Morphometric measurements-field |
| 16 |  | **Final Exam** |

|  |  |
| --- | --- |
| **CONTRIBUTION OF THE COURSE LEARNING OUTCOMES TO THE PROGRAM LEARNING OUTCOMES** | **CONTRIBUTION LEVEL** |
| **NO** | **LEARNING OUTCOMES (MSc)** | **1**Low | **2**MId | **3**HIgh |
| LO 1 | Possesses up-to-date and advanced theoretical and practical knowledge in the field of Histology and Embryology and continually develops and deepens this knowledge. |  |  | **X** |
| LO 2 | Understands and applies interdisciplinary interactions relevant to the field. |  |  | **X** |
| LO 3 | Has knowledge of information technologies, technical equipment, and field-specific devices and tools at the level required by the discipline. |  | **X** |  |
| LO 4 | Applies appropriate tissue preparation and histological staining techniques in line with the nature of the tissue. |  |  | **X** |
| LO 5 | Has the ability to operate microscopes effectively and to examine cells, tissues, and organs at the microscopic level. |  |  | **X** |
| LO 6 | Utilizes advanced theoretical and practical knowledge gained in the field. |  | **X** |  |
| LO 7 | Integrates the knowledge acquired in the field with information from other disciplines, interprets it, generates new insights, and proposes solutions by using various research methods through analysis and synthesis. |  |  | **X** |
| LO 8 | Understands the process of human embryological development and the molecular mechanisms regulating this development. |  |  | **X** |
| LO 9 | Possesses the knowledge and skills to contribute to education and knows the methods of accessing and updating information to enhance individual capacity. |  |  | **X** |
| LO 10 | Has the ability to independently formulate original hypotheses, transform them into research projects, write and manage them. |  |  | **X** |
| LO 11 | Acts with professional responsibility and ethical awareness in all academic and research activities. |  |  | **X** |
| LO 12 | Takes responsibility in conducting group work related to Histology and Embryology. |  |  | **X** |
| LO 13 | Recognizes the fundamental concepts of medical education. |  | **X** |  |
| LO 14 | Gains the ability to approach ethical problems by grounding them in core scientific and educational principles. |  | **X** |  |

|  |  |
| --- | --- |
| **Instructor Name****Asst. Prof. Dr. Murat SEVİMLİ****Sign** | **Date****26.03.2025** |