

| Course Title | Code | Semester | Theoretical (hours/week) | Practice (hours/week) | Laboratory (hours/week) | ECTS |
|---------------------------------|--|----------|--------------------------|-----------------------|-------------------------|------|
| Membranes and Transport | BİK514 | Autumn | 1 | 0 | 0 | 6 |
| Prerequisites | None | | | | | |
| Course Language | Turkish | | | | | |
| Course Type | Elective | | | | | |
| Teaching Methods | Lecture, interactive, brainstorming | | | | | |
| Instructor(s) | | | | | | |
| Course Objective | The aim of the course is to examine the structure of membranes, transport mechanisms from membranes and clinical disorders associated with these mechanisms. | | | | | |
| Course Learning Outcomes | 1-Counts the membrane components, explains the structure 2-Explains active and passive transport mechanisms 3-Defines endocytosis, exocytosis, counts its steps 4-Counts the clinical disorders in transport mechanisms | | | | | |
| References | 1. Nelson DL, Cox MM. Lehninger Principles of Biochemistry, W.H. Freeman; 7th Ed., 2017 2. Berg JM, Tymocko JL, Gatto GJ jr, Stryer L. Biochemistry, W.H. Freeman; 9h ed, 2019. 3. Gürdöl F, Ademoğlu E. Biyokimya. Nobel Tıp Kitabevleri, 2013 4. Bhagavan NV. Ha CH. Essentials of Medical Biochemistry With Clinical Cases, Academic Press, 2nd Ed., 2015. 5. Rodwell VW, Bender DA, Botham KM, kennelly PJ, Weil PA. Harper's Illustrated Biochemistry, McGraw-Hill Education, 31th Ed. 2018 | | | | | |

WEEKLY COURSE TOPICS

| Weeks | DISCUSSION TOPICS TO BE PROCESSED |
|-------|--|
| 1. | Meeting, course flow, course resources and classroom rules Cell membrane and membrane structure in various organelles |
| 2. | Membrane components-lipids |
| 3. | Membrane components- proteins |
| 4. | Membrane components- carbohydrates |
| 5. | Interactions between membrane components |
| 6. | Changes in the membrane in apoptosis |
| 7. | Midterm exam |
| 8. | Classification of membrane transport systems Passive transport-simple diffusion |
| 9. | Passive transport- facilitated diffusion |
| 10. | Presentation of seminar |
| 11. | Active transport |
| 12. | Primary active transporters |
| 13. | Secondary active transporters |
| 14. | Endocytosis and its types, exocytosis |
| 15. | Final Exam |

ECTS / WORK LOAD TABLE

| Activities | Number | Duration | Total Workload |
|--|----------------------|----------|----------------|
| Course | 13 | 1 | 13 |
| Laboratory | | | |
| Practice | | | |
| Field Study | | | |
| Outclass course work hours (Self working / Teamwork / Preliminary work) | 13 | 8 | 104 |
| Presentations (Video preparation / Poster preparation / Oral presentation / Focus group discussion / Applying questionnaire/ Observation and report writing) | 1 | 12 | 12 |
| Seminars | 1 | 12 | 12 |
| Project | | | |
| Case study | 1 | 6 | 6 |
| Role playing, dramatization | | | |
| Preparing and criticizing article | | | |
| Semester midterm exams | 1 | 1 | 1 |
| Semester final exams | 1 | 2 | 2 |
| Total Workload (hour) / 25(s) | 150 saat /25 saat =6 | | |
| ECTS | 6 | | |

EVALUATION SYSTEM

| Midterm Studies | Number | Contribution |
|---|--------|--------------|
| Midterm exam | 1 | % 100 |
| Quiz | | |
| Laboratory | | |
| Practice | | |
| Field Study | | |
| Specific practical training (If exists) | | |
| Homework assignment | | |
| Presentation and seminar | | |
| Projects | | |
| Other evaluation methods | | |
| Total of Midterm Studies | 1 | 100 |
| Final Studies | | |
| Final | 1 | % 70 |

| | | |
|---|----------|------------|
| Homework assignment | 1 | %30 |
| Practice | | |
| Laboratory | | |
| Total of Final Studies | 2 | 100 |
| Contribution of midterm studies to course grade | | %30 |
| Contribution of final studies to course grade | | %70 |
| Total Grade | | 100 |

RELATIONSHIPS BETWEEN COURSE LEARNING OUTCOMES AND PROGRAM QUALIFICATIONS

| | Program Qualifications | Learning Outcomes | | | |
|-----|--|-------------------|-----|-----|-----|
| | | LO1 | LO2 | LO3 | LO4 |
| 1. | Has up-to-date knowledge in proficiency level in the field of Molecular Medicine based on qualifications at the undergraduate level, develops and deepens them. | 5 | 5 | 5 | 5 |
| 2. | Has knowledge about the information technologies, technical equipment, devices and tools at the level required by the field of Molecular Medicine. | 2 | 2 | 3 | 3 |
| 3. | Interprets new informations by integrating with information from different disciplines and Molecular Medicine. Analyzes and synthesizes by using different research methods and brings solution proposals. | 4 | 4 | 4 | 4 |
| 4. | Writes the report of own research. | 3 | 3 | 3 | 3 |
| 5. | Plans experimental research and practises. | 4 | 4 | 4 | 4 |
| 6. | Fictionalizes about the subjects that need proficiency in the field of Molecular Medicine, brings solution proposals, solves problems, evaluates the results obtained and applies them when necessary. | 4 | 4 | 5 | 5 |
| 7. | Make scientific clinical and / or descriptive research / presentation / publication associated with primary topics in Molecular Medicine and community health | 5 | 5 | 5 | 5 |
| 8. | Evaluates the knowledge in the field of Molecular Medicine critically and directs the learning. | 5 | 5 | 5 | 5 |
| 9. | Applies the principles of professional development and lifelong learning related to the field of Molecular Medicine to the studies that carry out. | 5 | 5 | 5 | 5 |
| 10. | Systematically discusses and shares the informations about current developments and own works in the field of Molecular Medicine, in written, oral and visual manner with same or different working areas. | 5 | 5 | 5 | 5 |
| 11. | Collects, registers, interprets, announces data related to the field of Molecular Medicine, observes social, scientific and ethical values and teaches these values. | 5 | 5 | 5 | 5 |
| 12. | Collects data related to the field of Molecular Medicine, towards restriction, interpretation, announcing social, scientific, and ethic values in oversees and teaches these values. | 5 | 5 | 5 | 5 |
| 13. | Evaluates current developments in the field of Molecular Medicine that cover both the basic unit related to the society, child and family, in the direction of national values and country facts. | 5 | 5 | 5 | 5 |
| 14. | Knows the importance of ethical principles and ethical committees for the individual and society and behaves ethically. | 4 | 4 | 4 | 4 |
| 15. | Develops strategies, policies and implementation plans in the field of Molecular Medicine and evaluates the results obtained within the framework of quality processes. | 5 | 5 | 5 | 5 |

Contribution to the level of proficiency: 1: Low 2: Low/Moderate 3: Moderate 4: High 5: Excellent