

**Vocational School / Electroneurophysiology**  
**2024 - 2025 Academic Year**  
**OTHER ELECTROPHYSIOLOGICAL EXAMINATIONS (TMS, DCS)**

**Syllabus**

| Course Description  |  |                                |                         |                           |      |   |
|---|--|--------------------------------|-------------------------|---------------------------|------|---|
| Name  | Code   | Semester                       | T+A Hour                | Credit                    | ECTS |   |
| OTHER ELECTROPHYSIOLOGICAL EXAMINATIONS (TMS, DCS)  |  | EFZ2126910                     | Fall Semester           | 2+0                       | 2    | 4 |
| <b>Prerequisites Courses</b>  |  |                                |                         |                           |      |   |
| <b>Recommended Elective Courses</b>   |  |                                |                         |                           |      |   |
| <b>Language of Instruction</b>  | Turkish  |                                |                         |                           |      |   |
| <b>Course Level</b>   | Short Cycle (Associate's Degree)   |                                |                         |                           |      |   |
| <b>Course Type</b>  | Required   |                                |                         |                           |      |   |
| <b>Course Coordinator</b>   | Assist.Prof. Nagihan MANTAR  |                                |                         |                           |      |   |
| <b>Name of Lecturer(s)</b>  | Assist.Prof. Nagihan MANTAR  |                                |                         |                           |      |   |
| <b>Assistant(s)</b>   |  |                                |                         |                           |      |   |
| <b>Aim</b>  | To provide basic knowledge about the theoretical basis, clinical applications, benefits and risks of various neuromodulation and neurophysiological monitoring techniques such as Electroconvulsive Therapy (ECT), Transcranial Magnetic Stimulation (TMS) and Intraoperative Neuromonitoring (IONM).  |                                |                         |                           |      |   |
| <b>Course Content</b>   | This course contains; Introduction to brain stimulation, Motor Pathways, Physiology and Pathophysiology of Basal Ganglia, Viewing Brain Stimulation from a Plasticity Perspective, Introduction to Convulsive Therapy, Electroconvulsive Therapy (ECT), Focal Electrically Administered Seizure Therapy (FEAST) and Magnetic Seizure Therapy (MST), Transcranial Magnetic Stimulation (TMS), Introduction to Transcranial Electrical Stimulation (TES), Transcranial Direct Current Stimulation (tDCS), Transcranial Alternating Current Stimulation (tACS), Deep Brain Stimulation (DBS), Vagus Nerve Stimulation (VNS), Intraoperative Neuromonitoring (IONM), Intraoperative Neuromonitoring (IONM) - II. |                                |                         |                           |      |   |
| <b>Course Learning Outcomes</b>   |  |                                | <b>Teaching Methods</b> | <b>Assessment Methods</b> |      |   |
| Explain the mechanisms underlying brain neuromodulation.  |  |                                | 9                       | C                         |      |   |
| Describe current clinical applications and limitations of neuromodulation methods and IONM.   |  |                                | 9                       | C                         |      |   |
| Establishes a connection between the effect of neuromodulation technique on brain activity depending on electrode placement.  |  |                                | 9                       | C                         |      |   |
| Describe the risks and side effects of neuromodulation and IONM.  |  |                                | 9                       | C                         |      |   |
| Explain how to perform application security screening for neuromodulation techniques.   |  |                                | 9                       | C                         |      |   |
| On successful completion of this course, the student will be able to identify the technical components of the devices required for various neuromodulation methods (ECT, TMS, tES, etc.) and Intraoperative Neuromodulation (IONM). |  |                                | 9                       | C                         |      |   |
| <b>Teaching Methods</b>   | 9: Lecture Method  |                                |                         |                           |      |   |
| <b>Assessment Methods</b>   | C: Multiple-Choice Exam  |                                |                         |                           |      |   |
| <b>Lecture Schedule</b>   |  |                                |                         |                           |      |   |
| <b>Sequence</b>   | <b>Topics</b>  | <b>Preliminary Preparation</b> |                         |                           |      |   |
| 1   | Introduction to brain stimulation  |                                |                         |                           |      |   |
| 2   | Motor Pathways, Physiology and Pathophysiology of Basal Ganglia  |                                |                         |                           |      |   |
| 3   | Viewing Brain Stimulation from a Plasticity Perspective  |                                |                         |                           |      |   |
| 4   | Introduction to Convulsive Therapy   |                                |                         |                           |      |   |
| 5   | Electroconvulsive Therapy (ECT)  |                                |                         |                           |      |   |
| 6   | Focal Electrically Administered Seizure Therapy (FEAST) and Magnetic Seizure Therapy (MST)   |                                |                         |                           |      |   |
| 7   | Transcranial Magnetic Stimulation (TMS)  |                                |                         |                           |      |   |
| 8   | Introduction to Transcranial Electrical Stimulation (TES)  |                                |                         |                           |      |   |
| 9   | Transcranial Direct Current Stimulation (tDCS)   |                                |                         |                           |      |   |
| 10  | Transcranial Alternating Current Stimulation (tACS)  |                                |                         |                           |      |   |
| 11  | Deep Brain Stimulation (DBS)   |                                |                         |                           |      |   |
| 12  | Vagus Nerve Stimulation (VNS)  |                                |                         |                           |      |   |
| 13  | Intraoperative Neuromonitoring (IONM)  |                                |                         |                           |      |   |
| 14  | Intraoperative Neuromonitoring (IONM) - II   |                                |                         |                           |      |   |
| <b>Evaluation Methods</b>   |  | <b>Weight(%)</b>               |                         |                           |      |   |
| Midterm Exam  |  | 40                             |                         |                           |      |   |
| General Exam  |  | 60                             |                         |                           |      |   |

| Resources            |  |
|----------------------|--|
| Lecturer's own notes |  |