

**Vocational School of Health Services / Medical Imaging Techniques**

**2024 - 2025 Academic Year**

**MEDICAL IMAGING II**

**Syllabus**

| <b>Course Description</b>   |  |                                |                         |                           |             |
|---|--|--------------------------------|-------------------------|---------------------------|-------------|
| <b>Name</b>   | <b>Code</b>  | <b>Semester</b>                | <b>T+A Hour</b>         | <b>Credit</b>             | <b>ECTS</b> |
| MEDICAL IMAGING II  | TGT1213090   | Spring Semester                | 2+0                     | 2                         | 8           |
| <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>   | Prof.Dr. Cengiz EROL   |                                |                         |                           |             |
| <b>Name of Lecturer(s)</b>  | Assist.Prof. Abdulkadir EREN   |                                |                         |                           |             |
| <b>Assistant(s)</b>   |  |                                |                         |                           |             |
| <b>Aim</b>  | To provide knowledge about the terminology of medical imaging methods and working principles of imaging devices.   |                                |                         |                           |             |
| <b>Course Content</b>   | This course contains; Proton, Spin, Magnetic Moment and Vector, Elektromagnetism, Magnetic Field, Radio Frequency, Magnetic Resonance Imaging Devices, The Equipment of The Magnetic Resonance Imaging Devices, The Principles of Magnetic Resonance Imaging Devices Physics, Obtaining 3D images by MRI devices, Functional Magnetic Resonance Devices (f-MR), Brain functional areas and their maps, BOLD Technique and Diffusion Tensor Imaging, Photon, Radioactivity and Gamma Decay, Nuclear Medicine and Radionuclid Therapy, Positron Emission Tomography and It's Principles, Single Photon Emission Tomography (SPECT), Medical Scanning Modalities and Imaging Quality Performance. |                                |                         |                           |             |
| <b>Course Learning Outcomes</b>                                     |  |                                | <b>Teaching Methods</b> | <b>Assessment Methods</b> |             |
| 1. Classify the technics used in medical scanning                   |  |                                | 16, 9                   | A                         |             |
| 2. Tell the working principles and use areas of the imaging devices |  |                                | 16, 9                   | A                         |             |
| <b>Teaching Methods</b>   | 16: Question - Answer Technique, 9: Lecture Method   |                                |                         |                           |             |
| <b>Assessment Methods</b>   | A: Traditional Written Exam  |                                |                         |                           |             |
| <b>Lecture Schedule</b>   |  |                                |                         |                           |             |
| <b>Sequence</b>   | <b>Topics</b>  | <b>Preliminary Preparation</b> |                         |                           |             |
| 1   | Proton, Spin, Magnetic Moment and Vector   | Pre-Reading                    |                         |                           |             |
| 2   | Elektromagnetism, Magnetic Field, Radio Frequency  | Pre-Reading                    |                         |                           |             |
| 3   | Magnetic Resonance Imaging Devices   | Pre-Reading                    |                         |                           |             |
| 4   | The Equipment of The Magnetic Resonance Imaging Devices  | Pre-Reading                    |                         |                           |             |
| 5   | The Principles of Magnetic Resonance Imaging Devices Physics   | Pre-Reading                    |                         |                           |             |
| 6   | Obtaining 3D images by MRI devices   | Pre-Reading                    |                         |                           |             |
| 7   | Functional Magnetic Resonance Devices (f-MR)   | Pre-Reading                    |                         |                           |             |
| 8   | Brain functional areas and their maps  | Pre-Reading                    |                         |                           |             |
| 9   | BOLD Technique and Diffusion Tensor Imaging  | Pre-Reading                    |                         |                           |             |
| 10  | Photon, Radioactivity and Gamma Decay  | Pre-Reading                    |                         |                           |             |
| 11  | Nuclear Medicine and Radionuclid Therapy   | Pre-Reading                    |                         |                           |             |
| 12  | Positron Emission Tomography and It's Principles   | Pre-Reading                    |                         |                           |             |
| 13  | Single Photon Emission Tomography (SPECT)  | Pre-Reading                    |                         |                           |             |
| 14  | Medical Scanning Modalities and Imaging Quality Performance  | Pre-Reading                    |                         |                           |             |
| <b>Evaluation Methods</b>   |  | <b>Weight(%)</b>               |                         |                           |             |
| Midterm Exam  |  | 40                             |                         |                           |             |
| General Exam  |  | 60                             |                         |                           |             |

| <b>Resources</b>  |
|---|
| Basic Medical Radiologic Imaging Technique / Hiperlink -Basic Physical Concepts in Radiology / Nobel Medicine |