# AYDIN ADNAN MENDERES UNIVERSITY
## COURSE INFORMATION FORM

| Course Title | Nuclear Medicine | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Course Code | TG204 | | | Couse Level | | Short Cycle (Associate's Degree) | | |
| ECTS Credit | 3 | Workload | 75 *(Hours)* | Theory | 2 | Practice | 0 | Laboratory | 0 |
| Objectives of the Course | This course is intended for students; Gamma Camera and PET in the classrooms and hospital setting to gain knowledge and skills related to CT imaging techniques | | | | | | | |
| Course Content | Physics of nuclear medicine, radiation protection in SPECT and PET application and use of dosimetry, radiopharmaceuticals, Gamma Camera and PET / CT operating principles, Gamma cameras and PET / CT quality control methods, dose calibrators and quality control methods, bone scan, pulmonary perfusion / ventilation scintigraphy , endocrine and central nervous system scans, scans of the urogenital system, gastrointestinal system scans, heart scans and cardiac stress imaging protocols, Positron Emission Tomography (PET / CT) applications. | | | | | | | |
| Work Placement | N/A | | | | | | | |
| Planned Learning Activities and Teaching Methods | | | | Explanation (Presentation), Demonstration, Discussion, Problem Solving | | | | |
| Name of Lecturer(s) | Assoc. Prof. Arzu CENGİZ | | | | | | | |

## Assessment Methods and Criteria

| Method | Quantity | Percentage (%) |
|---|---|---|
| Midterm Examination | 1 | 40 |
| Final Examination | 1 | 70 |

## Recommended or Required Reading

| 1 | Physics in Nuclear Medicine (Simon R. Cherry, James A. Sorenson, Michael E. Phelps) Essentials of Nuclear Medicine Imaging (Fred A. Mettler, Milton J. Guiberteau) |
|---|---|

| Week | Weekly Detailed Course Contents | |
|---|---|---|
| 1 | Theoretical | Physics of Nuclear Medicine |
| 2 | Theoretical | Biological Effects of Radiation, radiation protection and the use of SPECT and PET dosimeter |
| 3 | Theoretical | radiopharmaceuticals |
| 4 | Theoretical | Gamma Camera and PET / CT operating principles, Quality Control Tests |
| 5 | Theoretical | Bone scintigraphy |
| 6 | Theoretical | Endocrine and central nervous system scans |
| 7 | Theoretical | Lung and heart scans |
| 8 | Intermediate Exam | midterm |
| 10 | Theoretical | Gastrointestinal scintigraphy |
| 11 | Theoretical | Infection and tumor imaging scans |
| 12 | Theoretical | PET-CT Patient Preparation |
| 13 | Theoretical | PET-CT Clinical Practice |
| 14 | Theoretical | PET-CT Clinical Practice |
| 15 | Theoretical | To list the imaging devices used in nuclear medicine |

## Workload Calculation

| Activity | Quantity | Preparation | Duration | Total Workload |
|---|---|---|---|---|
| Lecture - Theory | 14 | 0 | 2 | 28 |
| Individual Work | 5 | 5 | 1 | 30 |
| Midterm Examination | 1 | 7 | 2 | 9 |
| Final Examination | 1 | 7 | 1 | 8 |
| | | | Total Workload (Hours) | 75 |
| | | | [Total Workload (Hours) / 25*] = **ECTS** | 3 |

*25 hour workload is accepted as 1 ECTS*

**Learning Outcomes**

| | |
|---|---|
| 1 | Describe the basic concepts of Physics and Nuclear Medicine explains. |
| 2 | SPECT and PET apply the principles of radiation protection and dosimetry applications use correctly. |
| 3 | Radiopharmaceuticals used in the routine identifies the mechanisms. |
| 4 | For the gamma camera imaging and PET-CT device makes patient preparation. |
| 5 | Gamma Camera and PET-CT obtains the images and processes, evaluate the image quality. |
| 6 | Gamma camera, PET-CT and defines dose calibrator quality control tests and make |
| 7 | Identifies major system of the scintigraphic imaging indications and scintigraphic techniques defines and implements |

**Programme Outcomes** *(Medical Imaging Techniques)*

| | |
|---|---|
| 1 | To be able to get information the working principles of Radiology, Nuclear Medicine and Radiotherapy devices, and distinguish their components, use these devices in accordance with operating instructions. |
| 2 | To be able to perform the procedures in accordance with the examination of Radiology and Nuclear Medicine imaging . |
| 3 | To be able to apply the radiotherapy treatment, planned by radiation physicist with instruction of radiotherapist. |
| 4 | To be able to develop and perform the film printing of the  images that obtained by imaging techniques of Radiology, Nuclear Medicine |
| 5 | To be able tıo evaluate the images that obtained by imaging techniques of Radiology, Nuclear Medicine in terms of radiographic quality and takes the necessary measures. |
| 6 | To be able to know the medical and radiologic terminology, and pronounce and use them correctly |
| 7 | To be able to take the necessary measures in accordance with the rules of Radiation safety and protection from radiation, and apply them. |
| 8 | To be able to distinguish the anatomical structures on images, obtained by the conventional and cross-sectional imaging techniques of Radiology, Nuclear medicine. |
| 9 | To be able to  communicate well with patient, their family and the hospital staff. |
| 10 | To be able to move with own professional duties, powers and responsibilities of the consciousness and apply the rules of professional ethics. |
| 11 | To be able to adapt to a multi-disciplinary team work. |
| 12 | To be able to have a basic knowledge of human physiology. |
| 13 | To be able to distinguish anatomical structures. |
| 14 | To be able to establish a cause-and-effect relationship between events. |
| 15 | To be able to have the ability of analytical thinking and problem solving. |
| 16 | To be able to apply the basic principles of first aid. |
| 17 | It has basic knowledge about human anatomy |
| 18 | Understanding the basic concepts and principles of physics while providing, in the medical field and in particular medical imaging students better understand the issues involving technical vocational courses |
| 19 | OHS 'basic concepts; work accidents, occupational diseases, occupational physicians, occupational safety specialist, İSGB, OSGB, hazard classes, risk assessment, OHS employee representatives is |
| 20 | Have basic knowledge about basic medical practices and makes applications |

**Contribution of Learning Outcomes to Programme Outcomes** *1:Very Low, 2:Low, 3:Medium, 4:High, 5:Very High*

| | L1 | L2 | L3 | L4 | L5 | L6 | L7 |
|---|---|---|---|---|---|---|---|
| P6 | 5 | | 5 | | | | |
| P8 | | 5 | | | | | |
| P11 | | | | 5 | | | |
| P12 | | | | | | 5 | |
| P13 | | | | | 5 | | |
| P14 | | | | | | | 5 |