COURSE INFORMATION					
Course Title	*Code*	*Semester*	*Lecture+Practice+Labrotory Hour*	*Credits*	*ECTS*
Nuclear Medicine Training Program (Clinical Clerkship)	MED 516	5/9-10	19+5	2	2*

* ECTS credits are the university credits of the courses in Yeditepe University, Faculty of Medicine, Undergraduate Medical Education Program

Prerequisites	The student that joins this course, should have at least the Phase 5 knowledge level in medical faculty.

Language of Instruction	English
Course Level	Second-cycle higher education (i.e. QF-EHEA-2, EQF-LLL-7, TYYÇ-7) with Master's Degree/ "Regulated Professions" legislation by EU 2005/36/EC Directive
Course Type	Compulsory
Course Coordinator	Prof. Dr. Nalan Alan Selçuk, MD.
The instructors	Prof. Dr. Nalan Alan Selçuk, MD. Prof. Dr. Biray Caner, MD. Doç. Dr. Emre Demirci, MD Dr. Turkay Toklu, PhD
Assistants	-
Goals	The course aims to equip necessary knowledge on nuclear medicine , working principles, nuclear physics, radiopharmacy, besides where, when and which technique is suitable or needed.

Content

For further details please see Academic Program Book of Phase V at http://med.yeditepe.edu.tr/sites/default/files/phase_5_0.pdf

	Monday	Tuesday	Wednesday	Thursday	Friday
09.00-09.50	**Introductory Session** (Introduction to NM) *Nalan Alan Selçuk*	**Lecture** NM In Hyperthyroidism *Emre Demirci*	**Lecture** Introduction to PET Imaging *Biray Caner*	**Lecture** Radionuclide Therapy -1 *Nalan Alan Selçuk*	**Theoretical Examination**
10.00-10.50	**Lecture** Basic Radiation Physics and Radiation Detectors in NM *Türkay Toklu*	**Lecture** Renal Scintigraphy *Emre Demirci*	**Lecture** FDG-PET in Cancer - 1 *Biray Caner*	**Lecture** Radionuclide Therapy -2 *Nalan Alan Selçuk*	
11.00-11.50	**Lecture** Introduction to NM *Türkay Toklu*	**Lecture** Lung Perfusion and Ventilation Scintigraphy (V/Q Scan) *Emre Demirci*	**Lecture** FDG-PET in Cancer - 2 *Biray Caner*	**Lecture** NM In Thyroid Cancer *Nalan Alan Selçuk*	
12.00-12.50	**Lunch**				

13.00-13.50	**Lecture** Imaging Techniques in NM *Türkay Toklu / Hüseyin Adıgüzel*	**Lecture** Non-FDG PET Tracers *Emre Demirci*	**Clinical Experience** PET Imaging *Biray Caner*	**Lecture** Myocardial Perfusion Scan and Cardiological PET Applications *Nalan Alan Selçuk*	**Asessment Session Program Evaluation Session** Review of the Exam Questions Evaluation of the Program *Nalan Alan Selçuk*
14.00-14.50	**Laboratory** Radiopharmaceuticals, Gamma Camera, PET/CT, Thyroid Uptake System *Alper Güler / Hüseyin Adıgüzel*	**Lecture** Bone Scintigraphy and Other Tumor Agents *Emre Demirci*	**Clinical Experience** PET Imaging *Biray Caner*		
15.00-15.50		**Lecture** Other Conventional NM Applications *Emre Demirci*	**Clinical Experience** PET Imaging *Biray Caner*	**Lecture** Brain Imaging and Neurological PET Application *Nalan Alan Selçuk*	
16.00-16.50	**Independent Learning**	**Independent Learning**	**Independent Learning**	**Independent Learning**	

Learning Outcomes *At the end of this term, the student should be able to:*	**Program Learning Outcomes**	**Teaching Methods**	**Assessment Methods**
1. ***List*** common indications for PET/CT and ***describe*** patient preperation of FDG PET/CT	1.1.7, 1.1.8, 1.1.9	1,2,3	A,C
2. ***describe*** diagnostic imaging of infection or tumor.	1.1.7, 1.1.8, 1.1.9	1,2,3	A,C
3. ***describe*** radionuclide therapy and its application areas	1.1.9	1,2,3	A,C
4. ***describe*** physics of nuclear medicine and methods of projection	1.1.8	1,2,3	A,C
5. ***describe*** gamma probe and its application method	1.1.8	1,2,3	A,C
6. ***describe*** basic scintigraphy reading techniques	1.1.8, 1.1.9	1,2,3	A,C
7. ***Demonstrate*** the ability to identify patient preparation requirements for specific diagnostic and therapeutic studies	1.1.10	1,2,3	A,C
8. ***Demonstrate*** knowledge of radiopharmaceuticals, their characteristics, and biodistribution that are used for specific nuclear medicine procedures.	1.1.10	1,2,3	A,C

9. ***Differentiate*** normal and basic pathological findings on common scintigraphy and PET images	1.1.10	1,2,3	A,C
10. ***Demonstrate*** the knowledge of personal radiation safety	1.1.7	1,2,3	A,C
11. ***make*** examination of thyroid gland	1.1.5	1,2,3	A,C

Teaching Methods:	1: Lecture, 2: Question-Answer, 3: Discussion
Assessment Methods:	A: Testing B: Presentation C: Homework

COURSE CONTENT

Week	Topics	Study Materials
1	**Introductory Session** (Introduction to Nuclear Medicine)	Materials for the course provided by the the instructor
2	**Lecture** Basic Radiation Physics and Radiation Detectors in NM	Materials for the course provided by the instructor
1	**Lecture** Imaging Techniques in NM	Materials for the course provided by the instructor
1	**Laboratory** Radiopharmaceuticals, Gamma Camera, PET/CT, Thyroid Uptake System	Materials for the course provided by the instructor
1	**Lecture** NM In Hyperthyroidism	Materials for the course provided by the instructor
1	**Lecture** Renal Scintigraphy	Materials for the course provided by the instructor
1	**Lecture** Lung Perfusion and Ventilation Scintigraphy (V/Q Scan)	Materials for the course provided by the instructor
1	**Lecture** Non-FDG PET Tracers	Materials for the course provided by the instructor
1	**Lecture** Bone Scintigraphy and Other Tumor Agents	Materials for the course provided by the instructor
1	**Lecture** Other Conventional NM Applications	Materials for the course provided by the instructor
1	**Lecture** Introduction to PET Imaging	Materials for the course provided by the instructor
2	**Lecture** FDG-PET in Cancer	Materials for the course provided by the instructor
3	**Clinical Experience** PET Imaging	Materials for the course provided by the instructor
2	**Lecture** Radionuclide Therapy	Materials for the course provided by the instructor
1	**Lecture** NM In Thyroid Cancer	Materials for the course provided by the instructor

1	**Lecture** Myocardial Perfusion Scan and Cardiological PET Applications	Materials for the course provided by the instructor
1	**Lecture** Brain Imaging and Neurological PET Application	Materials for the course provided by the instructor
3	**Examination**	Materials for the course provided by the instructor
2	**Program Evaluation Session** Review of the Exam Questions, Evaluation of the Program	Materials for the course provided by the instructor

RECOMMENDED SOURCES	
Textbook	1- Nuclear Medicine: The Requisites 2- Essentials of Nuclear Medicine Imaging, by Drs. Fred A Mettler and Milton
Additional Resources	Lecture notes

MATERIAL SHARING	
Documents	Photocopy shareable.
Assignments	Not Shareable
Exams	Not shareable

ASSESSMENT		
Questions Types (Pencil-Paper Tests)	**Proportion (in Pass/Fail Decision)**	**Questions Types (Pencil-Paper Tests)**
Multiple Choice Questions	60%	Multiple Choice Questions
Essay Questions	10	Essay Questions
Modified Essay Questions	10%	Essay Questions
Short Response Essay Questions	20%	Essay Questions
Total	%100	**Total**
Other Assessment Methods and Tools	**Proportion (in Pass/Fail Decision)**	**Other Assessment Methods and Tools**
Structured Oral Exam (SOE)	30%	Structured Oral Exam (SOE)
Direct Observation of Procedural Skills (DOPS)	15%	
Evaluation of Case Presentation (With Checklist)	20%	
Evaluation of Preparation Skills of Patient's File (With Checklist)	15%	
Global Evaluation of Student's Performance (With Checklist)	20%	
Total	%100	**Total**

Pass/Fail Decision	**Proportion (in Pass/Fail Decision)**	Pass/Fail Decision
Pencil-Paper Tests	70%	Pencil-Paper Tests
Other Assessment Methods and Tools	30%	Other Assessment Methods and Tools
Total	%100	**Total**

COURSE CATEGORY	Compulsory

COURSE'S CONTRIBUTION TO PROGRAM							
No	Program Learning Outcomes	Contribution					
		1	2	3	4	5	
1.1.2	***employs*** a patient-centered approach in patient management.			x			
1.1.3	***recognizes*** most frequently occurring or significant clinical complaints, symptoms, signs, findings and their emergence mechanisms in clinical conditions.				x		
1.1.5	***does*** general and focused physical and mental examination.			x			
1.1.6	***interprets*** findings in medical history, physical and mental examination.				x		
1.1.7	***employs*** diagnostic procedures that are used frequently at the primary health care level.		x				
1.1.9	***makes*** clinical decisions using evidence-based systematic data in health care service.					X	
1.1.12	***keeps*** medical records in health care provision and ***uses*** information systems to that aim.					X	
1.2.1	throughout his/her career, ***communicates*** effectively with health care beneficiaries, co-workers, accompanying persons, visitors, patient's relatives, care givers, colleagues, other individuals, organizations and institutions.			x			
1.2.2	***collaborates*** as a team member with related organizations and institutions, with other professionals and health care workers, on issues related to health.				x		
1.2.3	***recognizes*** the protection and privacy policy for health care beneficiaries, co-workers, accompanying persons and visitors.				x		
1.2.4	***communicates*** with all stakeholders taking into consideration the socio-cultural diversity.			x			
2.1.1	***performs*** medical practices in accordance with the legal framework which regulates the primary health care service.			x			
2.2.1	***recognizes*** basic ethical principles completely, and ***distinguishes*** ethical and legal problems.					x	
2.2.2	***pays importance to*** the rights of patient, patient's relatives and physicians, and ***provides*** services in this context.			x			
2.5.2	***displays*** a patient-centered and holistic (biopsychosocial) approach to patients and their problems.					x	

ECTS ALLOCATED BASED ON STUDENT WORKLOAD BY THE COURSE DESCRIPTION

Activities	Quantity/ day	Duration (Hour)	Total Workload (Hour)
Course Duration (1 week)	5	5	25
Hours for off-the-classroom study (Pre-study, practice, review/week)	5	3	15
Homework	4	2	8
Exam	1	2	1
Total Work Load			49
Total Work Load / 30 (h)			1.63
ECTS Credit of the Course			2