



**MUĞLA SITKI KOÇMAN UNIVERSITY FACULTY of MEDICINE  
PHASE V  
ENGLISH MEDICINE PROGRAM**

**COURSE of NUCLEAR MEDICINE  
2022/2023 Academic Year  
COURSE GUIDEBOOK**

**Course Code: MED 5022**

**Course Topic Code: MED5-NÜT**

**\*This guide has been prepared by the Department of NUCLEAR MEDICINE Course Purpose, Target, Outcomes, Training and Education Contents, Methods, Educational Activities, Measurement and Evaluation Techniques, Course Logbook, Program Qualifications Matrix, Matching the Courses with NCEP 2020, Matching the Courses with the Course Objectives and Outcomes, Matching the Course Achievements with Measurement Techniques, Course Notification Form, Vertical/Horizontal Integration Status of Courses and Course Schedules were declared on 15.06.2022.**

# PREFACE

**Dear Students,**

Welcome to the nuclear medicine course which is an important part of your education.

In this course program, which is going to continue for 1 weeks, we aim to give the basic education of the course program in all aspects of theoretical courses and practical applications. This guide describes what you will learn and perform during your course, the rules you must follow in our clinic, and the working conditions. We wish you all success with the belief that this guide will guide you sufficiently through your course studies.

**Department of Nuclear  
Medicine**

## GENERAL INFORMATION on COURSE

**Course Title** : Nuclear Medicine  
**Main Department of Course** : Internal Medicine sciences  
**Department Responsible for Course** : Nuclear Medicine  
**Course Code** : MED-5022  
**Course Type** : Required  
**Duration of the Course** : 1 weeks  
**Teaching Method of the Course** : Formal  
**ECTS** : 1  
**Language** : English  
**Head of the department** : Prof. Dr. Taner Erselcan

**Teaching Staff** :

Teaching Staff	Subject area	Theoretical Course duration (Hours)
Prof. Dr. Taner Erselcan	Nuclear Medicine	5
Prof. Dr. Mustafa Yılmaz	Nuclear Medicine	5
Assist. Prof. Dr. Ozan Kandemir	Nuclear Medicine	5

**Coordinator of the Department Education Program** : Prof. Dr. Mustafa Yılmaz  
**Coordinator of the Course Education Program** : Prof. Dr. Mustafa Yılmaz  
**Coordinator of the Course Examinations** : Assist. Prof. Dr. Ozan Kandemir  
**Coordinator of Course Assessment and Evaluation** : Assist. Prof. Dr. Ozan Kandemir

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## TEACHING METHODS-TECHNIQUES

1. Theoretical lessons
2. Learning Centered Teaching
  - a. Case-based discussion sessions
  - b. Student case reports,
  - c. Practical application at the bedside
  - d. Practical application at the bedside in the outpatient clinic
3. Interactive teaching

## PHYSICAL SPACES

Teaching Activity	Physical Space	Explanation
Theoretical lessons	Morphology building	
Inpatient bedside practice	Nuclear Medicine Clinic	Former hospital; Orhaniye Mahallesi, İsmet Çatak Cd.48000 Muğla Merkez
Policlinic		
Case analysis		
Problem-based teaching		
Special audit applications		
Private field applications	Nuclear Medicine Clinic	Former hospital; Orhaniye Mahallesi, İsmet Çatak Cd.48000 Muğla Merkez

## RELATED LEGISLATION

<http://www.tip.mu.edu.tr/tr/ilgili-mevzuat-6641>

## AIM(S) of the COURSE

<b>1</b>	In this course, it is aimed that the students have information about the diagnostic nuclear medicine methods and treatment applications, with or without visualization, applied in the diagnosis and treatment of diseases within the scope of the National CEP, and to benefit from these in the preliminary diagnosis of clinical pathologies common in our society.
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## OBJECTIVE(S) of the COURSE

1	To be able to explain the physics of radiation and the use of radioactive materials in medicine.
2	To be able to explain the working principles of imaging systems and be able to make practical applications.
3	To be able to explain the biological effects of radiation and protection from radiation.
4	To be able to explain the conscious use of radioionizing sources in terms of patient and employee safety.
5	To be able to explain and practice nuclear medicine applications in cardiovascular system, central nervous system, respiratory system, gastrointestinal system, urinary system, endocrine system diseases.
6	To be able to explain and practice nuclear medicine applications used in oncology and infectious diseases.
7	To be able to explain the use of radioactive materials in treatment.

## INTENDED LEARNING OUTCOME(S)

1	Can explain the physics of radiation and the use of radioactive materials in medicine.
2	Can explain the working principles of imaging systems and be able to make practical applications.
3	Can explain the biological effects of radiation and protection from radiation.
4	Can explain the conscious use of radioionizing sources in terms of patient and employee safety.
5	Can explain and practice nuclear medicine applications in cardiovascular system, central nervous system, respiratory system, gastrointestinal system, urinary system, endocrine system diseases.
6	Can explain and practice nuclear medicine applications used in oncology and infectious diseases.
7	Can explain the use of radioactive materials in treatment.

# DUTIES AND RESPONSIBILITIES OF STUDENTS

Duration of course is 1 weeks.

In addition to the theoretical courses, practical courses including "evaluation and interpretation of scintigraphic images" are also carried out during the course.

Although there is no directive of the medical faculty regarding dress, all students are expected to perform personal care and dress with a style and care worthy of a physician candidate during all practical and theoretical training hours.

It is expected to be worn a white coat in all practical trainings.

During the course program (if no change is notified by the relevant faculty member during the course period), students are expected to fully present for theoretical or practical application. According to the regulation, there is an attendance requirement of 70% in theoretical courses and 80% in applied courses in Phase V.



## RECOMMENDED RESOURCE(S)

### KEY RESOURCE(S)

KEY RESOURCE(S)	Matched Course Outcome(s)
Klinik Uygulamada Nükleer Tıp, Eds: T. Erselcan, F.Tamgaç, Ünal Kitapevi, 2001	1,2,3,4,5,6,7
Nükleer Tıp, Ed:A.Mudun, Güneş Tıp Kitapevi, 2015	1,2,3,4,5,6,7

### ADDITIONAL RESOURCE(S)

ADDITIONAL RESOURCE(S)	Matched Course Outcome(s)
Diagnostic Nuclear Medicine, Ed: Christian Schippers, ISBN:3-540-42309-5	1,2,3,4,5,6,7

# ASSESSMENT and EVALUATION

## Assessment and Evaluation Methods in the End of Course Evaluation Exam

Assessment and Evaluation Method	Explanation	Role in the End of Course Evaluation	% Value for the End of Course Evaluation
Attendance to Classes		Compulsory	
Course Logbook		Compulsory	
Multiple Choice Theoretical Test Exam*	20 questions- multiple choice / Classical written exam		50
Bedside Clinical Practice Exam**			
Structured Oral Examination***	Examination evaluation 5 questions		50
<b>Total</b>			<b>100</b>

## Availability of Course Logbook, Place of Course Report in Course Assessment and Evaluation Principles

For the right to take the written exam, the student must be evaluated as “adequate” from the criteria specified in the course report.

## Existence of Attendance Requirement and Its Place in Course Assessment-Evaluation Principles

It is stated at the beginning of the course that the student who is absent from the courses will not be taken to the written exam.

## The Effect of the Assessment and Evaluation Methods to be Applied on the Success Status at the End of the Course

In order to be successful in the course, it is required to get at least 60 points at each stage of the course exams. A student whose score is 59 and below in an assessment-evaluation technique is not allowed to participate in the other exam phase.

**1st stage:** Multiple choice/open-ended theoretical exam

**2nd stage:** Structured practical practice exam

<b>Assessment and Evaluation in Resit Examination</b>
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<b>Assessment and Evaluation Method</b>	<b>Explanation</b>	<b>Role in the End of Course Evaluation</b>	<b>% Value at the End of Course Evaluation</b>
<b>Multiple Choice Theoretical Test Exam*</b>	20 questions- multiple choice / Classical written exam		50
<b>Structured Oral Examination**</b>	Examination evaluation  5 questions		50
<b>Total</b>			<b>%100</b>

<b>Assessment and Evaluation in Single Course Resit Exam</b>
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<b>Assessment and Evaluation Method</b>	<b>Explanation</b>	<b>Role in the End of Course Evaluation</b>	<b>% Value at the End of Course Evaluation</b>
<b>Multiple Choice Theoretical Test Exam*</b>	Multiple choice questions		
<b>Structured Oral Examination**</b>	Under the supervision of at least two faculty members		
<b>Total</b>			<b>%100</b>

# COURSE LOGBOOK

**STUDENT'S NAME AND SURNAME :**

**STUDENT'S SCHOOL NO :**

**COURSE PERIOD :**

<b>APPLICATION</b>	<b>NCEP Clause</b>	<b>TEACHING STAFF (SIGNATURE)</b>
<b>DATE</b>		
1.To be able to evaluate myocardial perfusion scintigraphy	D18	
2.To be able to evaluate bone scintigraphy	D18	
3.To be able to evaluate renal scintigraphy	D18	
4.To be able to evaluate endocrine system scintigraphies	D18	
5.To be able to interpret the results of screening and diagnostic examinations	D18	

**DECISION:**      **PASS**                      **FAIL**

**Head of Department or Coordinator:**

**Date:**

**Signature:**

**Faculty of Medicine**  
**English Medicine Program**  
**Phase V**  
**NUCLEAR MEDICINE COURSE**  
**Competence Matrix**

The Name of the Course	Po1	Po2	Po3	Po4	Po5	Po6	Po7	Po8	Po9	Po10	Po11	Po12	Po13
<b>Nuclear Medicine</b>	<b>5</b>	<b>5</b>	<b>4</b>	<b>5</b>	<b>4</b>	<b>4</b>	<b>3</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>3</b>	<b>0</b>

\* Completed according to the following program outcomes. (Score from 0 to 5.)

PO: Program Outcomes of Faculty of Medicine

PO Link: <https://muweb.mu.edu.tr/tr/program-yeterlilikleri-6598?site=tip.mu.edu.tr>

## TRAINING ACTIVITY AND ASSESMENT AND EVALUATION METHODS MATCHING OF COURSE GAINS

Intended Learning Outcome	TRAINING ACTIVITY MATCHING	ASSESSMENT AND EVALUATION METHODS MATCHING
1.To be able to explain the physics of radiation and the use of radioactive materials in medicine.	T, R	TE
2.To be able to explain the working principles of imaging systems and be able to make practical applications.	T, R	TE
3.To be able to explain the biological effects of radiation and protection from radiation.	T, R	TE
4.To be able to explain the conscious use of radioionizing sources in terms of patient and employee safety.	T, CR, R	TE
5.To be able to explain and practice nuclear medicine applications in cardiovascular system, central nervous system, respiratory system, gastrointestinal system, urinary system, endocrine system diseases.	T, R	P-L, TE
6.To be able to explain and practice nuclear medicine applications used in oncology and infectious diseases.	T, R	P-L, TE
7.To be able to explain the use of radioactive materials in treatment.	T, R	TE
<p><b>Abbreviations</b>  <b>Teaching Activity:</b> Theoretical lessons (T), Visit (V), Case report (CR), Clinical picture discussion-Outpatient clinic (C), Vocational skills lab (VSL), Radiological evaluation (R), Laboratory evaluation (L), Presentation (Pr)  <b>Assessment Method:</b> Practical - Logbook (P-L), Oral exam (OE), Theoretical exam (TE)</p>		

**INFORMATION AND MATCHING TABLE ON THE THEORETICAL AND PRACTICAL COURSES IN THE COURSE TO BE INCLUDED IN THE 2022- 2023 ACADEMIC YEAR COURSE PROGRAM**

Lecture Code*	Hour	Lecture Type	Lecture Subject	Course Aim Matching	Course Learning Outcome Matching	Activity Matching**	Assessment and Evaluation Method	Vertical Integration	Horizontal Integration
ME D5-NÜT 001	1	T	Radioactivity, Radioactive beam types, Radioactive decay	1	1, 2, 4	T, R	TE		
ME D5-NÜT 002	1	T	Radionuclides used in nuclear medicine and obtaining them	1	1, 2, 4	T, R	TE		
ME D5-NÜT 003	1	T	Interaction of radioionizing rays with matter, biological effects and radiation protection	1	1, 2, 3, 4	T, R	TE		
ME D5-NÜT 004	1	T	Detection of radioactive rays, scintigraphic methods	1	1, 2	T, R	TE		
ME D5-NÜT 005	2	T	Endocrine system scintigraphies	1	5	T, R	TE, P-L		
ME D5-NÜT 006	2	T	Renal scintigraphies	1	5	T, R	TE, P-L		
ME D5-NÜT 007	2	T	Myocardial perfusion scintigraphy	1	5	T, R	TE, P-L		
ME D5-NÜT 008	1	T	Skeletal system scintigraphy and infection imaging	1	5	T, R	TE, P-L		
ME D5-NÜT 009	2	T	Radionuclide treatments	1	6, 7	T, R	TE		
ME D5-	1	T	PET-CT in clinical	1	5, 6	T, R	TE		

NÜT 010			practice						
ME D5- NÜT 011	1	P	Radiation detection devices introduction	1	1, 2, 4	T, R	TE		
ME D5- NÜT 012	3	P	Working with study samples	1	5, 6	R	P-L		
ME D5- NÜT 013	2	P	Report examples	1	5, 6	R	P-L		

**EXPLANATIONS:**

\* Lecture code will be formed by writing 001, 002,... at the end of the code taken from the "Codes for Phase 5 matrix" section.

**\*\*Abbreviations**

**Teaching Activity:** Theoretical lessons (T), Visit (V), Case report (CR), Clinical picture discussion-  
Outpatient clinic (C), Vocational skills lab (VSL), Radiological evaluation (R), Laboratory evaluation  
(L), Presentation (Pr)

**Assessment Method:** Practical - Logbook (P-L), Oral exam (OE), Theoretical exam (TE)