

**ESOGU INSTITUTE OF HEALTH SCIENCE**

**DEPARTMENT OF RADIATION ONCOLOGY**

**COURSE INFORMATION FORM**

# Courses – AKTS Credits

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  | | | | | | | |
| Code | | Course Name | | AKTS | D+U+L | R/E | Language |
| Fall Semester | | | | | | | |
| 523203201 | [RADIATION ONCOLOGY (I)](#Radiation_Oncology_I) | | | 7,5 | 1+0+0 | Required | Turkish |
| 523203202 | [RADIOBIOLOGY](#RADIOBIOLOGY) | | | 7,5 | 1+0+0 | Required | Turkish |
| 523203203 | [RADIOTHERAPY PHYSICS (I)](#RadiotherapyPhysics_I) | | | 7,5 | 1+0+0 | Required | Turkish |
| 523203204 | [CANCER-SPECIFIC BASIC STATISTICS CONCEPTS AND BIOSTATISTICS](#CANCERSPECIFICBASICSTATISTICSCONCEP) | | | 7,5 | 2+2+0 | Elective | Turkish |
| 523203205 | [MEDICAL PHYSICS AND RADIOTHERAPY APPLICATIONS](#MedicalPhysicsandRadiotherapyApplica) | | | 7,5 | 1+4+0 | Elective | Turkish |
| 523203206 | [RADIATION MEASUREMENTS](#RadiationDetectionandMeasurements) METHODS | | | 7,5 | 2+0+0 | Elective | Turkish |
| 523203207 | [RADIATION PHYSICS (I)](#RADIATION_PHYSICS_I) | | | 7,5 | 3+0+0 | Elective | Turkish |
| 523203208 | [RADIOLOGY PHYSICS AND ANATOMY](#RadiologyPhysicsandAnatomy) | | | 7,5 | 2+0+0 | Elective | Turkish |
|  | | | |  |  |  |  |
| Spring Semester | | | | | | | |
| 523204209 | [INTRODUCTION TO SYSTEMIC HUMAN ANATOMY](#IntroductiontoSystemicHumanAnatomy) | | 7,5 | | 3+1+0 | Elective | Turkish |
| 523204210 | [RADIATION ONCOLOGY (II)](#RadiationOncology_II) | | 7,5 | | 1+0+0 | Elective | Turkish |
| 523204211 | [BRACHYTHERAPY PHYSICS AND APPLICATIONS](#BrachytherapyPhysicsandApplications) | | 7,5 | | 1+2+0 | Elective | Turkish |
| 523204212 | [RADIOTHERAPY PHYSICS (II)](#RadiotherapyPhysics_II) | | 7,5 | | 1+0+0 | Elective | Turkish |
| 523204213 | [RADIATION PHYSICS (II)](#RADIATION_PHYSICS_2) | | 7,5 | | 3+0+0 | Elective | Turkish |
| 523204214 | [TREATMENT PLANINNG IN RADIOTHERAPY](#TREATMENT_PLANINNG_INRADIOTHERAPY) | | 7,5 | | 1+2+0 | Elective | Turkish |
| 523204215 | [RADIOLOGY APPLICATIONS](#Radiology_Applications) | | 7,5 | | 0+4+0 | Elective | Turkish |
| 523204216 | [RADIOPHARMACY IN MEDICAL PHYSICS AND NUCLEAR MEDICINE](#Radiopharmacy_in_Medical_Physics_and_Nuc) | | 7,5 | | 2+2+0 | Elective | Turkish |
| 523204217 | [QUALITY ASSURANCE OF DEVICES USED IN RADIOTHERAPY AND DOSIMETRIC METHODS](#QualityAssuranceofDevicesUsedinRad) | | 7,5 | | 1+4+0 | Elective | Turkish |
| 523204218 | [RADIATION PROTECTION AND RADIATION SAFETY](#RadiationProtectionandRadiationSafet) | | 7,5 | | 2+2+0 | Elective | Turkish |
| 523204219 | [RADIOLOGICAL IMAGING TECHNIQUES (MAGNETIC RESONANCE IMAGING, TOMOGRAPHIC IMAGING, DIGITAL ROENTGEN)](#RadiologicalImagingTechniques) | | 7,5 | | 2+2+0 | Elective | Turkish |
| 523204220 | [NUCLEAR MEDICINE](#Nuclear_medicine) | | 7,5 | | 1+1+0 | Elective | Turkish |
| 523204221 | [BIOPHYSICS](#Biophysics) | | 7,5 | | 2+1+0 | Elective | Turkish |
| 523204222 | [ENERGY TYPES USED FOR DIAGNOSIS, TREATMENT AND SURGERY AND BIOLOGICAL EFFECTS](#EnergyTypesUsedforDiagnosis_Treatme) | | 7,5 | | 3+0+0 | Elective | Turkish |
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**ESOGU INSTITUTE OF HEALTH SCIENCES**

**DEPARTMENT OF RADIATION ONCOLOGY**

**COURSE INFORMATION FORM**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **COURSE CODE** | 523203201 | **DEPARTMENT** | Radiation Oncology | | |
| **COURSE NAME** | | Radiation Oncology I | | | |
| **INSTRUCTOR NAME** | | **COURSE LANGUAGE** | **COURSE CATEGORY** | | |
| Prof. Dr. Durmuş ETİZ | | Turkish | **Technical** | **Medical** | **Other (…)** |
|  |  |  |

**COURSE LEVEL**

|  |  |  |  |
| --- | --- | --- | --- |
| **PROPAEDEUTIC** | **M.SC.** | **Ph.D.** | **COURSE OF PROVINCE** |
|  |  |  |  |

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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **SEMESTER** | **WEEKLY COURSE PERIOD** | | | | **COURSE OF** | | | | |
| **THEORIC** | **PRACTICE** | **LABORATORY** | | **CREDIT** | | **ECTS** | | **TYPE** |
| Autumn | 1 | 0 | - | | 1 | | 7.5 | | Compulsory |
|  | | | | | | | | | |
| **ASSESSMENT CRITERIA** | | | | | | | | | |
| **MID-TERM EXAM** | | | **Activity** | | | **Quantity** | | **Percentage (%)** | |
| 1st Mid-Term | | | 1 | | 40 | |
| 2nd Mid-Term | | |  | |  | |
| Quiz | | |  | |  | |
| Homework | | |  | |  | |
| Project | | |  | |  | |
| Oral Exam | | |  | |  | |
| Other (………) | | |  | |  | |
| **FINAL EXAM** | | | Quiz | | |  | |  | |
| Homework | | |  | |  | |
| Project | | |  | |  | |
| Oral Exam | | |  | |  | |
| Other (Written Exam) | | | 1 | | 60 | |
| **MAKE-UP EXAM** | | | **Oral** | **Written** | | **Oral and Written** | | **Multiple Choice** | |
|  |  | |  | |  | |
| **PREREQUISITE(S)** | | |  | | | | | | |
| **COURSE CONTENT** | | | Basic principles of Radiation Oncology and its place in cancer treatment. | | | | | | |
| **COURSE AIMS** | | | Terminology and devices used in Radiation Oncology.  The role and role he takes in cancer treatment. | | | | | | |
| **COURSE OBJECTIVES** | | | Description of ionizing radiation methods used in oncological treatments. Determining the place of radiation oncology among these methods. | | | | | | |
| **TEXTBOOK(S)** | | | Gunderson and Tepper’s Clinical Radiation Oncology**5th Edition** **Author:**Joel Tepper  **Hardcover ISBN:** 9780323672467  **eBook ISBN:** 9780323672474  **eBook ISBN:** 9780323672481  **Imprint:** Elsevier  **Published Date:** 6th December 2019  **Page Count:** 1656 | | | | | | |
| **REFERENCES** | | |  | | | | | | |
| **COURSE SYLLABUS** | | | | | | | | | |
| **WEEK** | **DATE** | **SUBJECTS/TOPICS** | | | | | | | |
| **1** |  | Introduction to Oncology | | | | | | | |
| **2** |  | Radiation Oncology Principles and basics | | | | | | | |
| **3** |  | Radiotherapy in the treatment of benign diseases | | | | | | | |
| **4** |  | Radiotherapy in gastrointestinal tumors | | | | | | | |
| **5** |  | Radiotherapy in head and neck cancers | | | | | | | |
| **6** |  | Radiotherapy in lung cancers | | | | | | | |
| **7** |  | MID-TERM EXAM | | | | | | | |
| **8** |  | Radiotherapy in breast cancers | | | | | | | |
| **9** |  | Radiotherapy in central nervous system tumors | | | | | | | |
| **10** |  | Radiotherapy in childhood tumors | | | | | | | |
| **11** |  | Carcinogenic and teratogenic effects of radiation | | | | | | | |
| **12** |  | Radiotherapy in hematological malignancies | | | | | | | |
| **13** |  | Radiotherapy in muscle and soft tissue sarcomas | | | | | | | |
| **14** |  | New treatment methods and artificial intelligence in radiotherapy | | | | | | | |
| **15** |  | New treatment methods and artificial intelligence in radiotherapy II | | | | | | | |
| **16** |  | FINAL EXAM | | | | | | | |

**PROGRAM OUTCOMES**

Place choose never(1), few(2), or many(3) regarding your course

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | | **1** | **2** | **3** |
| **1** | gather as well as apply knowledge of health sciences |  |  |  |
| **2** | ask scientific questions and form a hypothesis |  |  |  |
| **3** | search and interpret scientific literature |  |  |  |
| **4** | design and conduct experiments as well as analyze and interpret the data |  |  |  |
| **5** | learn how to use the experimental equipment effectively |  |  |  |
| **6** | function on multi-disciplinary teams |  |  |  |
| **7** | identify, formulate, and solve medical problems |  |  |  |
| **8** | use a computer effectively both in conducting the experiments and analyzing the data |  |  |  |
| **9** | understand the impact of experimental solutions on national and international sciences |  |  |  |
| **10** | use effective written and oral communication/presentation skills |  |  |  |
| **11** | get an understanding of professional and ethical responsibility |  |  |  |
| **12** | get recognition of the need for, and an ability to engage in lifelong learning |  |  |  |
| **13** | other (get an understanding of basic concepts of medical education) |  |  |  |
| **14** | other (get an understanding of approaching ethical problems with taking basic concepts to center) |  |  |  |

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| **INSTRUCTOR NAME** | **DATE** |
| Prof. Dr. Durmuş ETIZ | **22.04.2021** |



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**COURSE INFORMATION FORM**

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| --- | --- | --- | --- | --- | --- |
| **COURSE CODE** | 523203202 | **DEPARTMENT** | Radiation Oncology | | |
| **COURSE NAME** | | RADIOBIOLOGY | | | |
| **INSTRUCTOR NAME** | | **COURSE LANGUAGE** | **COURSE CATAGORY** | | |
| Assoc. Prof. Dr | | Turkish | **Technical** | **Medical** | **Other (…)** |
|  | X |  |

**COURSE LEVEL**

|  |  |  |  |
| --- | --- | --- | --- |
| **PROPAEDEUTIC** | **M.SC.** | **Ph.D.** | **COURSE OF PROVINCE** |
|  | X |  |  |

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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **SEMESTER** | **WEEKLY COURSE PERIOD** | | | | **COURSE OF** | | | | |
| **TEORIC** | **PRACTICE** | **LABORATORY** | | **CREDIT** | | **ECTS** | | **TYPE** |
| Autum | 1 | 0 | 0 | | 1 | | 7.5 | | Required |
|  | | | | | | | | | |
| **ASSESMENT CRITERIA** | | | | | | | | | |
| **MID-TERM EXAM** | | | **Activity** | | | **Quantity** | | **Percentage (%)** | |
| 1st Mid-Term | | |  | |  | |
| 2nd Mid-Term | | |  | |  | |
| Quiz | | |  | |  | |
| Homework | | | 1 | | 40 | |
| Project | | |  | |  | |
| Oral Exam | | |  | |  | |
| Other (………) | | |  | |  | |
| **FINAL EXAM** | | | Quiz | | |  | |  | |
| Homework | | | 1 | | 60 | |
| Project | | |  | |  | |
| Oral Exam | | |  | |  | |
| Other (Written Exam) | | |  | |  | |
| **MAKE-UP EXAM** | | | **Oral** | **Written** | | **Oral and Written** | | **Multiple Choice** | |
|  | **X** | |  | |  | |
| **PREREQUISITE(S)** | | | Student knows the effects of radiation on cell organelles ,knows mechanisms of radiation, knows the parameters that change the biological effect of radiation | | | | | | |
| **COURSE CONTENT** | | | Course content damage caused by radiation on cells and tissues, the effects of cellular repair process on radiosensitivity | | | | | | |
| **COURSE AIMS** | | | The aim of course is learning damages caused by radiation on cells and tissues, and the effects of cell repair mechanism on radiosensitivity | | | | | | |
| **COURSE OBJECTIVES** | | | At the end of this course student will be learned the effects of radiation on cell organelles, mechanisms of radiation and the parameters that change the biological effect of radiation. | | | | | | |
| **TEXTBOOK(S)** | | | Basic Clinical Radiobiology (G.Gordon Steel) Basic Radiobiology (Atilla Özalpan) | | | | | | |
| **REFERENCES** | | | Electronic databases and scientific books about the subject | | | | | | |

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| **COURSE SYLLABUS** | | |
| **WEEK** | **DATE** | **SUBJECTS/TOPICS** |
| **1** |  | The history of radiobiology |
| **2** |  | Ionizing radiation and levels of in-vivo radiation effects |
| **3** |  | Linear energy transfer and radiobiological effectiveness |
| **4** |  | The effects of radiation on the molecule |
| **5** |  | The effects of radiation on the cell organelles |
| **6** |  | The mechanism of cell death |
| **7** |  | Survival curves |
| **8** |  | MID-TERM EXAM |
| **9** |  | Cell cycle, cell synchronization and autoradiography |
| **10** |  | Radiation damage and repair mechanisms |
| **11** |  | The effects of radiation on the tissues and organs |
| **12** |  | Factors modifying the biological effects of radiation |
| **13** |  | Whole body irradiation, acute effects of radiation |
| **14** |  | The chronic effects of radiation |
| **15** |  | Treatment to be applied in radiation accidents |
| **16** |  | FINAL EXAM |

**PROGRAM QUTCOMES**

Place choose never(1), few(2) or many(3) regarding your course

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | | **1** | **2** | **3** |
| **1** | Gather as well as apply knowledge of health sciences |  |  | X |
| **2** | Ask scientific questions and form hypothesis |  | X |  |
| **3** | Search and interpret scientific literature |  |  | X |
| **4** | Design and conduct experiments as well as analyze and interpret the data | X |  |  |
| **5** | Learn how to use the experimental equipment effectively | X |  |  |
| **6** | Function on multi-disciplinary teams |  | X |  |
| **7** | İdentify, formulate, and solve medical problems |  | X |  |
| **8** | Use computer effectively both in conducting the experiments and analyzing the data |  |  | X |
| **9** | Understand the impact of experimental solutions on national and international sciences |  |  | X |
| **10** | Use effective written and oral communication/presentation skills |  |  | X |
| **11** | Get an understanding of professional and ethical responsibility |  |  | X |
| **12** | Get a recognition of the need for, and an ability to engage in lifelong learning |  |  | X |
| **13** | Other (get an understanding of basic concepts of medical education) |  | X |  |
| **14** | Other (get an understanding of approaching to ethical problems with taking basic concepts to center) | X |  |  |

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| **INSTRUCTOR NAME** | **DATE** |
| Assoc. Prof. Dr. | **19th April, 2021** |



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**COURSE INFORMATION FORM**

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| **COURSE CODE** | 523203203 | **DEPARTMENT** | Radiation Oncology | | |
| **COURSE NAME** | | Radiotherapy Physics (I) | | | |
| **INSTRUCTOR NAME** | | **COURSE LANGUAGE** | **COURSE CATAGORY** | | |
| Prelector Kerem Duruer | | Turkish | **Technical** | **Medical** | **Other (…)** |
|  | X |  |

**COURSE LEVEL**

|  |  |  |  |
| --- | --- | --- | --- |
| **PROPAEDEUTIC** | **M.SC.** | **Ph.D.** | **COURSE OF PROVINCE** |
|  | X |  |  |

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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **SEMESTER** | **WEEKLY COURSE PERIOD** | | | | **COURSE OF** | | | | |
| **TEORIC** | **PRACTICE** | **LABORATORY** | | **CREDIT** | | **ECTS** | | **TYPE** |
| Fall | 1 | - | - | | 1 | | 7.5 | | Compulsory |
|  | | | | | | | | | |
| **ASSESMENT CRITERIA** | | | | | | | | | |
| **MID-TERM EXAM** | | | **Activity** | | | **Quantity** | | **Percentage (%)** | |
| 1st Mid-Term | | | 1 | | 20 | |
| 2nd Mid-Term | | |  | |  | |
| Quiz | | |  | |  | |
| Homework | | | 2 | | 20 | |
| Project | | |  | |  | |
| Oral Exam | | |  | |  | |
| Other (………) | | |  | |  | |
| **FINAL EXAM** | | | Quiz | | |  | |  | |
| Homework | | |  | |  | |
| Project | | |  | |  | |
| Oral Exam | | |  | |  | |
| Other (Written Exam) | | | 1 | | 60 | |
| **MAKE-UP EXAM** | | | **Oral** | **Written** | | **Oral and Written** | | **Multiple Choice** | |
|  | **X** | |  | |  | |
| **PREREQUISITE(S)** | | | - | | | | | | |
| **COURSE CONTENT** | | | It includes the type and characteristics of radiation, as well as the basics of using radiation for therapeutic purposes and the radiotherapy clinic workflow with the basic concepts. | | | | | | |
| **COURSE AIMS** | | | It is aimed to teach the general characteristics of radiation and its use for therapeutic purposes and to teach the basic concepts together with the radiation oncology clinic workflow. | | | | | | |
| **COURSE OBJECTIVES** | | | At the end of this course, basic concepts and information in radiotherapy physics and radiation oncology clinic workflow will be learned. | | | | | | |
| **TEXTBOOK(S)** | | | Faiz M. Khan, John P. Gibbons. “The Physics of Radiation Therapy”. Fifth Edition (2014); Lippincott Williams & Wilkins, Philadelphia | | | | | | |
| **REFERENCES** | | | Electronic databases and scientific books about the subject | | | | | | |

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| **COURSE SYLLABUS** | | |
| **WEEK** | **DATE** | **SUBJECTS/TOPICS** |
| **1** |  | Introduction to radiotherapy and radiotherapy physics, radiotherapy work flow chart |
| **2** |  | Radiation types and areas of use in medicine |
| **3** |  | Production mechanisms of x-ray |
| **4** |  | The interaction of electromagnetic radiation with matter |
| **5** |  | Radiation dose units |
| **6** |  | Simulation devices used in radiotherapy |
| **7** |  | Treatment devices used in external therapy in radiotherapy |
| **8** |  | MID-TERM EXAM |
| **9** |  | Imaging techniques used in radiotherapy |
| **10** |  | Imaging systems in treatment devices |
| **11** |  | Absorbed dose, KERMA and their relationship |
| **12** |  | Photon and electron dosimetry |
| **13** |  | Target volume and critical organ definitions in radiotherapy |
| **14** |  | Stages of treatment planning |
| **15** |  | Specialized accessories used in radiotherapy |
| **16** |  | FINAL EXAM |

**PROGRAM QUTCOMES**

Place choose never(1), few(2) or many(3) regarding your course

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | | **1** | **2** | **3** |
| **1** | gather as well as apply knowledge of health sciences |  | **X** |  |
| **2** | ask scientific questions and form hypothesis |  | **X** |  |
| **3** | search and interpret scientific literature |  |  | **X** |
| **4** | design and conduct experiments as well as analyze and interpret the data |  | **X** |  |
| **5** | learn how to use the experimental equipment effectively | **X** |  |  |
| **6** | function on multi-disciplinary teams | **X** |  |  |
| **7** | identify, formulate, and solve medical problems |  | **X** |  |
| **8** | use computer effectively both in conducting the experiments and analyzing the data | **X** |  |  |
| **9** | understand the impact of experimental solutions on national and international sciences |  |  | **X** |
| **10** | use effective written and oral communication/presentation skills |  |  | **X** |
| **11** | get an understanding of professional and ethical responsibility |  |  | **X** |
| **12** | get a recognition of the need for, and an ability to engage in lifelong learning |  | **X** |  |
| **13** | other (get an understanding of basic concepts of medical education) |  | **X** |  |
| **14** | other (get an understanding of approaching to ethical problems with taking basic concepts to center) | **X** |  |  |

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| **INSTRUCTOR NAME** | **DATE** |
| Prelector Kerem Duruer | **21.04.2021** |

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| logoo | **ESOGÜ ENSTITUTE OF HEALTH SCIENCE**  **DEPARTMENT OF RADIATION ONCOLOGY**  **COURSE INFORMATION FORM** | | | | | | |
|  |  | | | | | | |
| **COURSE CODE:** | | 523203204 | | **DEPARTMENT:** BIOSTATISTICS | | | | |
| **COURSE NAME:** | | CANCER-SPECIFIC BASIC STATISTICS CONCEPTS AND BIOSTATISTICS | | | | | | |
| **INSTRUCTOR NAME** | | | **COURSE LANGUAGE**  **Turkish: X**  **English:** | | **Course Category** | | | |
| Technical | Medical | Other(……) | |
| **Prof. Dr. Setenay ÖNER** | | |  | |  | **X** |  | |

**COURSE LEVEL**

|  |  |  |  |
| --- | --- | --- | --- |
| **PROPAEDEUTIC** | **M.SC.** | **Ph.D.** | **COURSE OF PROVINCE** |
|  | **X** |  |  |

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| --- | --- | --- | --- | --- | --- | --- |
| **SEMESTER** | **WEEKLY COURSE PERIOD** | | | **COURSE OF** | | |
| **Theoric** | **Practice** | **Laboratory** | **Credit** | **ECTS** | **TYPE** |
| FALL | 2 | 2 | 0 | 3 | 7,5 | |  |  | | --- | --- | | COMPULSORY | ELECTIVE | |  | **X** | |

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| --- | --- | --- | --- | --- |
| **ASSESMENT CRITERIA** | | | | |
| **MID-TERM** | **ACTIVITY** | | **Quantity** | **Percentage (%)** |
| 1st Mid-Term | | **1** | **40** |
| 2 nd Mid- Term | |  |  |
| Quiz | |  |  |
| Homework | |  |  |
| Project | |  |  |
| Oral Exam | |  |  |
| Other (………) | |  |  |
| **FINAL** | Quiz | |  |  |
| Homework | |  |  |
| Project | |  |  |
| Oral Exam | |  |  |
| Other(Written) | | **1** | **60** |
| **MAKE-UP EXAM** | Oral | Written | Oral and Written | Multiple Choice |
|  | **1** |  |  |
| **PREREQUISITE(S)** |  | | | |
| **COURSE CONTENT** | This course includes Biostatistical definitions and concepts, distributions used in the field of health, hypothesis tests and survival analysis methods. | | | |
| **COURSE AIMS** | This course aims to teach students biostatistical concepts specific to cancer, biostatistical methods used in cancer studies and to use these methods through package programs.. | | | |
| **COURSE OBJECTIVES** | The aim of this course is to bring the students to the level that they can use biostatistical methods effectively in the field of health. | | | |
| **TEXTBOOK(S)** | ÖZDAMAR, K.: SPSS ile Biyoistatistik, Kaan Kitabevi, 2003, Eskişehir  MARUBINI, E., VALSECCHI, M.G.: Analysing Survival Data from Clinical Trials and Observational Studies, John Wiley & Sons, New York, 1995. | | | |
| **REFERENCES** | ZAR, J.H.: Biostatistical Analysis, Prentice-Hall, Inc., 1974 USA.  SOKAL, R.R., ROHLF, F.J.: Introduction to Biostatistics, W. H. Freeman and Company, 1973, USA. | | | |

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|  | **COURSE SYLLABUS** | |
| **WEEK** | **DATE** | **SUBJECTS/TOPICS** |
| **1** |  | Biostatistics Definitions and Concepts |
| **2** |  | Data Collection in Health Sciences, Data Classification, Calculation of Descriptive Statistics |
| **3** |  | Frequency and Theoretical Distributions |
| **4** |  | Hypothesis Tests |
| **5** |  | Parametric Hypothesis Tests |
| **6** |  | Nonparametric Hypothesis Tests |
| **7** |  | Applications with Package Program |
| **8** |  | **MIDTERM EXAM** |
| **9** |  | Medical Diagnostic Tests |
| **10** |  | Survival Analysis Concepts |
| **11** |  | Introduction to Survival Analysis |
| **12** |  | Life Table Method |
| **13** |  | Kaplan-Meier (KM) Method |
| **14** |  | Cox Regression Method |
| **15** |  | ROC Curve Method |
| **16** |  | **FINAL EXAM** |

**PROGRAM QUTCOMES**

Place choose never(1), few(2) or many(3) regarding your course

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **NO** |  | **1** | **2** | **3** |
| **1** | gather as well as apply knowledge of health sciences |  |  | **X** |
| **2** | ask scientific questions and form hypothesis |  |  | **X** |
| **3** | search and interpret scientific literature |  |  | **X** |
| **4** | design and conduct experiments as well as analyze and interpret the data |  |  | **X** |
| **5** | learn how to use the experimental equipment effectively |  | **X** |  |
| **6** | function on multi-disciplinary teams |  |  | **X** |
| **7** | identify, formulate, and solve medical problems |  |  | **X** |
| **8** | use computer effectively both in conducting the experiments and analyzing the data |  |  | **X** |
| **9** | understand the impact of experimental solutions on national and international sciences |  |  | **X** |
| **10** | use effective written and oral communication/presentation skills |  |  | **X** |
| **11** | get an understanding of professional and ethical responsibility |  |  | **X** |
| **12** | get a recognition of the need for, and an ability to engage in lifelong learning |  |  | **X** |
| **13** | ability to recognize basic concepts in medical education |  |  | **X** |
| **14** | ability to approach ethical problems by putting basic concepts in the center |  |  | **X** |

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| --- | --- |
| **Instructor Name**  **Sign**  Prof. Dr. K. Setenay ÖNER | **Date**  **30.04.2021** |



**ESOGU INSTITUTE OF HEALTH SCIENCE**

**DEPARTMENT OF RADIATION ONCOLOGY**

**COURSE INFORMATION FORM**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **COURSE CODE** | 523203205 | **DEPARTMENT** | Radiation Oncology | | |
| **COURSE NAME** | | Medical Physics and Radiotherapy Applications | | | |
| **INSTRUCTOR NAME** | | **COURSE LANGUAGE** | **COURSE CATAGORY** | | |
| Prelector Kerem Duruer | | Turkish | **Technical** | **Medical** | **Other (…)** |
|  | X |  |

**COURSE LEVEL**

|  |  |  |  |
| --- | --- | --- | --- |
| **PROPAEDEUTIC** | **M.SC.** | **Ph.D.** | **COURSE OF PROVINCE** |
|  | X |  |  |

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **SEMESTER** | **WEEKLY COURSE PERIOD** | | | | | **COURSE OF** | | | | |
| **TEORIC** | **PRACTICE** | | **LABORATORY** | | **CREDIT** | | **ECTS** | | **TYPE** |
| Fall | 1 | 4 | | - | | 3 | | 7.5 | | Elective |
|  | | | | | | | | | | |
| **ASSESMENT CRITERIA** | | | | | | | | | | |
| **MID-TERM EXAM** | | | | **Activity** | | | **Quantity** | | **Percentage (%)** | |
| 1st Mid-Term | | |  | |  | |
| 2nd Mid-Term | | |  | |  | |
| Quiz | | |  | |  | |
| Homework | | | **1** | | **40** | |
| Project | | |  | |  | |
| Oral Exam | | |  | |  | |
| Other (………) | | |  | |  | |
| **FINAL EXAM** | | | | Quiz | | |  | |  | |
| Homework | | | **1** | | **60** | |
| Project | | |  | |  | |
| Oral Exam | | |  | |  | |
| Other (Written Exam) | | |  | |  | |
| **MAKE-UP EXAM** | | | | **Oral** | **Written** | | **Oral and Written** | | **Multiple Choice** | |
| **X** |  | |  | |  | |
| **PREREQUISITE(S)** | | | | - | | | | | | |
| **COURSE CONTENT** | | | | In the content of this course, the principles of operation of imaging or treatment devices used in radiation oncology, radiology and nuclear medicine clinics are briefly explained. On-site teaching of the workflow in these clinics is also among the contents of this course. | | | | | | |
| **COURSE AIMS** | | | | It is aimed to teach the working principles of the devices used in radiation oncology, radiology and nuclear medicine clinics to the students who will graduate from the Health Physics Master's program and to teach the workflows in these clinics on-site. | | | | | | |
| **COURSE OBJECTIVES** | | | | At the end of this course, the work flow in radiation oncology, radiology and nuclear medicine clinics, the role of the medical physicist in these clinics and the working principles of the devices used will be learned. | | | | | | |
| **TEXTBOOK(S)** | | | | Faiz M. Khan, John P. Gibbons. “The Physics of Radiation Therapy”. Fifth Edition (2014); Lippincott Williams & Wilkins, PhiladelphiaDance D.R., Christofides S., Maidment A. D. A., McLean I. D., Ng K. H. “Diagnostic Radiology Physics: A Handbook for Teachers and Students”. International Atomic Energy Agency, Vienna, 2014Bailey D. L., Humm J. L., Todd-Pokropek A., van Aswegen A. “Nuclear Medicine Physics: A Handbook for Teachers and Students”. International Atomic Energy Agency, Vienna, 2014 | | | | | | |
| **REFERENCES** | | | | Electronic databases and scientific books about the subject | | | | | | |
| **COURSE SYLLABUS** | | | | | | | | | | |
| **WEEK** | **DATE** | | **SUBJECTS/TOPICS** | | | | | | | |
| **1** |  | | Principles of computed tomography (CT) imaging for radiotherapy and accessories | | | | | | | |
| **2** |  | | Mold applications in radiotherapy | | | | | | | |
| **3** |  | | Organ at risk (OAR) contouring in radiotherapy | | | | | | | |
| **4** |  | | Definition and contouring of target volume in radiotherapy | | | | | | | |
| **5** |  | | Stages of treatment planning in radiotherapy | | | | | | | |
| **6** |  | | Respiratory monitoring and treatment in radiotherapy (CT scan, OAR and target contouring, treatment stages) | | | | | | | |
| **7** |  | | External radiotherapy applications 1. Part | | | | | | | |
| **8** |  | | MID-TERM EXAM | | | | | | | |
| **9** |  | | External radiotherapy applications 2. Part | | | | | | | |
| **10** |  | | Brachytherapy applications | | | | | | | |
| **11** |  | | Direct radiography, mammography and USG applications | | | | | | | |
| **12** |  | | Computed tomography applications for diagnostic purposes | | | | | | | |
| **13** |  | | Magnetic resonance imaging (MRI) applications | | | | | | | |
| **14** |  | | Gamma camera applications | | | | | | | |
| **15** |  | | Positron emission tomography (PET / CT) applications | | | | | | | |
| **16** |  | | FINAL EXAM | | | | | | | |

**PROGRAM QUTCOMES**

Place choose never(1), few(2) or many(3) regarding your course

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | | **1** | **2** | **3** |
| **1** | gather as well as apply knowledge of health sciences |  |  | **X** |
| **2** | ask scientific questions and form hypothesis |  | **X** |  |
| **3** | search and interpret scientific literature | **X** |  |  |
| **4** | design and conduct experiments as well as analyze and interpret the data |  | **X** |  |
| **5** | learn how to use the experimental equipment effectively |  |  | **X** |
| **6** | function on multi-disciplinary teams |  |  | **X** |
| **7** | identify, formulate, and solve medical problems |  |  | **X** |
| **8** | use computer effectively both in conducting the experiments and analyzing the data |  | **X** |  |
| **9** | understand the impact of experimental solutions on national and international sciences |  | **X** |  |
| **10** | use effective written and oral communication/presentation skills |  |  | **X** |
| **11** | get an understanding of professional and ethical responsibility | **X** |  |  |
| **12** | get a recognition of the need for, and an ability to engage in lifelong learning |  | **X** |  |
| **13** | other (get an understanding of basic concepts of medical education) |  |  | **X** |
| **14** | other (get an understanding of approaching to ethical problems with taking basic concepts to center) |  | **X** |  |

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| --- | --- |
| **INSTRUCTOR NAME** | **DATE** |
| Prelector Kerem Duruer | **27.04.2021** |



**ESOGU INSTITUTE OF HEALTH SCIENCE**

**DEPARTMENT OF RADIATION ONCOLOGY**

**COURSE INFORMATION FORM**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **COURSE CODE** | 523203206 | **DEPARTMENT** | Radiation Oncology | | |
| **COURSE NAME** | | Radiation Measurements Methods | | | |
| **INSTRUCTOR NAME** | | **COURSE LANGUAGE** | **COURSE CATAGORY** | | |
| Prelector Kerem Duruer | | Turkish | **Technical** | **Medical** | **Other (…)** |
|  | X |  |

**COURSE LEVEL**

|  |  |  |  |
| --- | --- | --- | --- |
| **PROPAEDEUTIC** | **M.SC.** | **Ph.D.** | **COURSE OF PROVINCE** |
|  | X |  |  |

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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **SEMESTER** | **WEEKLY COURSE PERIOD** | | | | **COURSE OF** | | | | |
| **TEORIC** | **PRACTICE** | **LABORATORY** | | **CREDIT** | | **ECTS** | | **TYPE** |
| Fall | 2 | - | - | | 2 | | 7.5 | | Elective |
|  | | | | | | | | | |
| **ASSESMENT CRITERIA** | | | | | | | | | |
| **MID-TERM EXAM** | | | **Activity** | | | **Quantity** | | **Percentage (%)** | |
| 1st Mid-Term | | | 1 | | 20 | |
| 2nd Mid-Term | | |  | |  | |
| Quiz | | |  | |  | |
| Homework | | | 2 | | 20 | |
| Project | | |  | |  | |
| Oral Exam | | |  | |  | |
| Other (………) | | |  | |  | |
| **FINAL EXAM** | | | Quiz | | |  | |  | |
| Homework | | |  | |  | |
| Project | | |  | |  | |
| Oral Exam | | |  | |  | |
| Other (Written Exam) | | | 1 | | 60 | |
| **MAKE-UP EXAM** | | | **Oral** | **Written** | | **Oral and Written** | | **Multiple Choice** | |
|  | **X** | |  | |  | |
| **PREREQUISITE(S)** | | | - | | | | | | |
| **COURSE CONTENT** | | | General dosimetric properties, working principles and usage areas of different types of ionizing radiation detectors constitute the contents of this course. | | | | | | |
| **COURSE AIMS** | | | It is aimed to learn the general working principles of detectors used in ionizing radiation measurement and spectroscopy. | | | | | | |
| **COURSE OBJECTIVES** | | | At the end of this course, the working principles of radiation detectors and selection of the appropriate detector for different types of ionizing radiation will be learned. | | | | | | |
| **TEXTBOOK(S)** | | | Knoll G. F. 2010. Radiation Detection and Measurement, Fourth Edition, Wiley, 830p., New Jersey | | | | | | |
| **REFERENCES** | | | Electronic databases and scientific books about the subject | | | | | | |

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| **COURSE SYLLABUS** | | |
| **WEEK** | **DATE** | **SUBJECTS/TOPICS** |
| **1** |  | Radiation sources |
| **2** |  | Radiation interactions |
| **3** |  | Counting statistics |
| **4** |  | General properties of radiation detectors |
| **5** |  | General properties and operating principles of ionization chambers |
| **6** |  | Radiation dose measurement with ionization chambers |
| **7** |  | General properties and operating principles of proportional counters |
| **8** |  | MID-TERM EXAM |
| **9** |  | Radiation dose measurement with proportional counters |
| **10** |  | General properties and operating principles of Geiger-Mueller Counters |
| **11** |  | Pulse profile and dead time in Geiger-Mueller detectors |
| **12** |  | General properties and operating principles of Scintillation Detectors (Inorganic Scintillators) |
| **13** |  | General properties and operating principles of Scintillation Detectors (Organic Scintillators) |
| **14** |  | General properties and operating principles of Semiconductor Diode Detectors |
| **15** |  | Personal dosimeter types |
| **16** |  | FINAL EXAM |

**PROGRAM QUTCOMES**

Place choose never(1), few(2) or many(3) regarding your course

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | | **1** | **2** | **3** |
| **1** | gather as well as apply knowledge of health sciences | **X** |  |  |
| **2** | ask scientific questions and form hypothesis | **X** |  |  |
| **3** | search and interpret scientific literature |  | **X** |  |
| **4** | design and conduct experiments as well as analyze and interpret the data |  |  | **X** |
| **5** | learn how to use the experimental equipment effectively |  |  | **X** |
| **6** | function on multi-disciplinary teams | **X** |  |  |
| **7** | identify, formulate, and solve medical problems |  | **X** |  |
| **8** | use computer effectively both in conducting the experiments and analyzing the data |  |  | **X** |
| **9** | understand the impact of experimental solutions on national and international sciences |  |  | **X** |
| **10** | use effective written and oral communication/presentation skills |  | **X** |  |
| **11** | get an understanding of professional and ethical responsibility |  | **X** |  |
| **12** | get a recognition of the need for, and an ability to engage in lifelong learning |  |  | **X** |
| **13** | other (get an understanding of basic concepts of medical education) |  |  | **X** |
| **14** | other (get an understanding of approaching to ethical problems with taking basic concepts to center) |  | **X** |  |

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| --- | --- |
| **INSTRUCTOR NAME** | **DATE** |
| Prelector Kerem Duruer | **21.04.2021** |



**ESOGU INSTITUTE OF HEALTH SCIENCE**

**DEPARTMENT OF RADIATION ONCOLOGY**

**COURSE INFORMATION FORM**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **COURSE CODE** | 523203207 | **DEPARTMENT** | Radiation Oncology | | |
| **COURSE NAME** | | RADIATION PHYSICS I | | | |
| **INSTRUCTOR NAME** | | **COURSE LANGUAGE** | **COURSE CATAGORY** | | |
| Özge BOZDOĞAN | | Turkish | **Technical** | **Medical** | **Other (…)** |
|  | X |  |

**COURSE LEVEL**

|  |  |  |  |
| --- | --- | --- | --- |
| **PROPAEDEUTIC** | **M.SC.** | **Ph.D.** | **COURSE OF PROVINCE** |
|  | X |  |  |

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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **SEMESTER** | **WEEKLY COURSE PERIOD** | | | | **COURSE OF** | | | | |
| **TEORIC** | **PRACTICE** | **LABORATORY** | | **CREDIT** | | **ECTS** | | **TYPE** |
| Autum | 3 | 0 | 0 | | 3 | | 7.5 | | Optional |
|  | | | | | | | | | |
| **ASSESMENT CRITERIA** | | | | | | | | | |
| **MID-TERM EXAM** | | | **Activity** | | | **Quantity** | | **Percentage (%)** | |
| 1st Mid-Term | | | 1 | | 40 | |
| 2nd Mid-Term | | |  | |  | |
| Quiz | | |  | |  | |
| Homework | | |  | |  | |
| Project | | |  | |  | |
| Oral Exam | | |  | |  | |
| Other (………) | | |  | |  | |
| **FINAL EXAM** | | | Quiz | | |  | |  | |
| Homework | | |  | |  | |
| Project | | |  | |  | |
| Oral Exam | | |  | |  | |
| Other (Written Exam) | | | 1 | | 60 | |
| **MAKE-UP EXAM** | | | **Oral** | **Written** | | **Oral and Written** | | **Multiple Choice** | |
|  | **X** | |  | |  | |
| **PREREQUISITE(S)** | | |  | | | | | | |
| **COURSE CONTENT** | | | Includes knowledge of basic concepts and principles of radiation, laws of natural radioactivity and radioactive decay. | | | | | | |
| **COURSE AIMS** | | | It is aimed to have knowledge about the basic concepts and principles of radiation, natural radioactivity and radioactive decay laws. | | | | | | |
| **COURSE OBJECTIVES** | | | At the end of the course, it is aimed that the student will master the basic principles and application areas of radiation. | | | | | | |
| **TEXTBOOK(S)** | | | The Physics of Radiation Therapy (Faiz M. KHAN) Fundamentals of Radiation Oncology (Hasan Murshed) | | | | | | |
| **REFERENCES** | | | Electronic databases and scientific books about the subject | | | | | | |

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| --- | --- | --- |
| **COURSE SYLLABUS** | | |
| **WEEK** | **DATE** | **SUBJECTS/TOPICS** |
| **1** |  | Radiation and basic concepts |
| **2** |  | Radiation types |
| **3** |  | Atomic models |
| **4** |  | Structure of the core |
| **5** |  | Intra-nuclear interactions |
| **6** |  | Nuclear stability |
| **7** |  | Radioactivity |
| **8** |  | MID-TERM EXAM |
| **9** |  | Activity units |
| **10** |  | α decay |
| **11** |  | β decay |
| **12** |  | γ decay |
| **13** |  | Decay series |
| **14** |  | Nuclear reactions |
| **15** |  | Radiation doses |
| **16** |  | FINAL EXAM |

**PROGRAM QUTCOMES**

Place choose never(1), few(2) or many(3) regarding your course

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | | **1** | **2** | **3** |
| **1** | Gather as well as apply knowledge of health sciences |  | X |  |
| **2** | Ask scientific questions and form hypothesis |  |  | X |
| **3** | Search and interpret scientific literature |  | X |  |
| **4** | Design and conduct experiments as well as analyze and interpret the data |  | X |  |
| **5** | Learn how to use the experimental equipment effectively | X |  |  |
| **6** | Function on multi-disciplinary teams | X |  |  |
| **7** | İdentify, formulate, and solve medical problems |  |  | X |
| **8** | Use computer effectively both in conducting the experiments and analyzing the data |  | X |  |
| **9** | Understand the impact of experimental solutions on national and international sciences |  |  | X |
| **10** | Use effective written and oral communication/presentation skills |  | X |  |
| **11** | Get an understanding of professional and ethical responsibility | X |  |  |
| **12** | Get a recognition of the need for, and an ability to engage in lifelong learning |  |  | X |
| **13** | Other (get an understanding of basic concepts of medical education) |  |  | X |
| **14** | Other (get an understanding of approaching to ethical problems with taking basic concepts to center) |  | X |  |

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| --- | --- |
| **INSTRUCTOR NAME** | **DATE** |
| Özge BOZDOĞAN | **26th April, 2021** |



**ESOGU INSTITUTE OF HEALTH SCIENCE**

**DEPARTMENT OF RADIATION ONCOLOGY**

**COURSE INFORMATION FORM**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **COURSE CODE** | 523203208 | **DEPARTMENT** | Radiation Oncology | | |
| **COURSE NAME** | | Radiology Physics and Anatomy | | | |
| **INSTRUCTOR NAME** | | **COURSE LANGUAGE** | **COURSE CATAGORY** | | |
| Assist. Prof. Nevin Aydın | | Turkish | **Technical** | **Medical** | **Other (…)** |
|  | X |  |

**COURSE LEVEL**

|  |  |  |  |
| --- | --- | --- | --- |
| **PROPAEDEUTIC** | **M.SC.** | **Ph.D.** | **COURSE OF PROVINCE** |
|  | X |  |  |

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **SEMESTER** | **WEEKLY COURSE PERIOD** | | | | **COURSE OF** | | | | |
| **TEORIC** | **PRACTICE** | **LABORATORY** | | **CREDIT** | | **ECTS** | | **TYPE** |
| **1.(Autumn)** | 2 | 0 | 0 | | 2 | | 7,5 | | Elective |
|  | | | | | | | | | |
| **ASSESMENT CRITERIA** | | | | | | | | | |
| **MID-TERM EXAM** | | | **Activity** | | | **Quantity** | | **Percentage (%)** | |
| 1st Mid-Term | | | 1 | | 40 | |
| 2nd Mid-Term | | |  | |  | |
| Quiz | | |  | |  | |
| Homework | | |  | |  | |
| Project | | |  | |  | |
| Oral Exam | | |  | |  | |
| Other (………) | | |  | |  | |
| **FINAL EXAM** | | | Quiz | | |  | |  | |
| Homework | | |  | |  | |
| Project | | |  | |  | |
| Oral Exam | | |  | |  | |
| Other (Written Exam) | | | 1 | | 60 | |
| **MAKE-UP EXAM** | | | **Oral** | **Written** | | **Oral and Written** | | **Multiple Choice** | |
|  | **X** | |  | |  | |
| **PREREQUISITE(S)** | | | None | | | | | | |
| **COURSE CONTENT** | | | Radiological anatomy, X-ray and radiographic image | | | | | | |
| **COURSE AIMS** | | | Learning the corss-sectional and radiological anatomy of the parts of the human body | | | | | | |
| **COURSE OBJECTIVES** | | | At the end of this course, the radiological basic anatomical structures of the central nervous system , thoracic section, abdominal section, pelvis section, upper and lower extremity sections will be learned.  At the end of this course power supply circuits in devices used for diagnosisand treatment, defining X-ray in obtaining the radiographic image, determining the factors that make up the radiographic image, defining conventional and digital radiography devices, ability to perform acceptance tests, calibration and quality control tests of conventional X-ray devices, ability to make image recording systems and quality evaluation in conventinal radiography, ability to perform acceptance tests and quality control tests of digital X-ray systems, ability to evaluate image quality in conventional and digital X-ray devices will be learned. | | | | | | |
| **TEXTBOOK(S)** | | | Snell RS. Clinical Anatomy Little, Brown Company;1995  Moore KL, Dalley AF. Clinically Oriented Anatomy: Baltimore Meryland:Lippincott Williams& Wilkins;1999  Rohen JW,Yokochi C, Lütjen-Drecoll E. Color Atlas of Anatomy. Williams and Wilkins USA 4. Edition 1998  Netter Interactive Atlas of Human Anatomy CD  Bor D Diagnostik Radyoloji Fiziği, Ankara Hendee WR, Ritenour ER. Medical Imaging Physics, USA | | | | | | |
| **REFERENCES** | | | Electronic databases and scientific books about the subject | | | | | | |



**ESOGU INSTITUTE OF HEALTH SCIENCES**

**DEPARTMENT OF RADIATION ONCOLOGY**

**COURSE INFORMATION FORM**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **COURSE CODE** | 523204209 | **DEPARTMENT** | Radiation Oncology | | |
| **COURSE NAME** | | Introduction to Systemic Human Anatomy | | | |
| **INSTRUCTOR NAME** | | **COURSE LANGUAGE** | **COURSE CATEGORY** | | |
| Assist. Prof. Dr. Hakan AY | | Turkish | **Technical** | **Medical** | **Other (…)** |
|  |  |  |

**COURSE LEVEL**

|  |  |  |  |
| --- | --- | --- | --- |
| **PROPAEDEUTIC** | **M.SC.** | **Ph.D.** | **COURSE OF PROVINCE** |
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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **SEMESTER** | **WEEKLY COURSE PERIOD** | | | | **COURSE OF** | | | | |
| **THEORIC** | **PRACTICE** | **LABORATORY** | | **CREDIT** | | **ECTS** | | **TYPE** |
| Autumn | 3 | 1 | - | | 3.5 | | 7.5 | | Elective |
|  | | | | | | | | | |
| **ASSESSMENT CRITERIA** | | | | | | | | | |
| **MID-TERM EXAM** | | | **Activity** | | | **Quantity** | | **Percentage (%)** | |
| 1st Mid-Term | | | 1 | | 40 | |
| 2nd Mid-Term | | |  | |  | |
| Quiz | | |  | |  | |
| Homework | | |  | |  | |
| Project | | |  | |  | |
| Oral Exam | | |  | |  | |
| Other (………) | | |  | |  | |
| **FINAL EXAM** | | | Quiz | | |  | |  | |
| Homework | | |  | |  | |
| Project | | |  | |  | |
| Oral Exam | | |  | |  | |
| Other (Written Exam) | | | 1 | | 60 | |
| **MAKE-UP EXAM** | | | **Oral** | **Written** | | **Oral and Written** | | **Multiple Choice** | |
|  |  | |  | |  | |
| **PREREQUISITE(S)** | | |  | | | | | | |
| **COURSE CONTENT** | | | To learn the structural elements and organ systems of the human body. Understanding the neighborhoods of organs and their relationships with each other. | | | | | | |
| **COURSE AIMS** | | | Introducing anatomical terminology and basic medical concepts.  To explain the structure, function, neighborhood, and relationships of organ systems. | | | | | | |
| **COURSE OBJECTIVES** | | | At the end of this course; students become familiar with basic medical terminology, know basic human anatomy, the topography of organs, and their neighborhoods. Recognizes abnormal anatomical formations. | | | | | | |
| **TEXTBOOK(S)** | | | Yıldırım M. “Resimli Sistematik Anatomi”, Nobel Tıp Kitabevleri, 2013.Şahin B. “Sağlık Bilimleri İçin Resimli TEMEL ANATOMİ”, İstanbul Tıp Kitabevleri, 2019.Yıldırım M. “Resimli Anatomi Sözlüğü”, Nobel Tıp Kitabevleri, 2020. | | | | | | |
| **REFERENCES** | | | Moeller T.B., Reif E. “Radyografik Anatomi Cep Atlası” Güneş Tıp Kitabevleri, 2020. Tillman B.N. “İnsan Anatomisi Atlası” İstanbul Tıp Kitabevleri, 2018. | | | | | | |
| **COURSE SYLLABUS** | | | | | | | | | |
| **WEEK** | **DATE** | **SUBJECTS/TOPICS** | | | | | | | |
| **1** |  | Introduction to human anatomy, terminology, general information about skeleton, joints, and muscles. The bones of the upper and lower limbs, vertebral column, ribs, sternum, individual cranial bones | | | | | | | |
| **2** |  | The joints of the upper and lower limbs, general features of the skull, the joints of the vertebral column, thorax, and pelvis. Muscles of the head and neck, muscles of the back, muscles of the thorax and diaphragm, abdominal muscles, muscles of the pelvis and perineum. | | | | | | | |
| **3** |  | Muscles of the upper and lower limbs. Introduction to the central nervous system, neurons and their types, organization of senses, features of sensory receptors, classification of receptors. | | | | | | | |
| **4** |  | The spinal cord, bulbus, pons, cerebellum, mesencephalon, diencephalon, rhinencephalon, limbic lobe, and olfactory pathways, basal nuclei, and extrapyramidal system. | | | | | | | |
| **5** |  | Telencephalon, the main cortical areas, ventricular system, meninges of the brain, cranial vessels. The peripheric nervous system. | | | | | | | |
| **6** |  | The cranial and spinal nerves | | | | | | | |
| **7** |  | The autonomic nervous system. The sensory system. | | | | | | | |
| **8** |  | MID-TERM EXAM | | | | | | | |
| **9** |  | Cardiac surfaces, cardiac chambers, localization of the heart, pericardium. Vessels and nerve supply of the heart, lymphatic drainage of heart, conduction system of the heart. | | | | | | | |
| **10** |  | Arterial and venous circulation, aorta, pulmonary trunk and their branches, lymphatic circulation. Nose and paranasal sinuses, larynx. | | | | | | | |
| **11** |  | Trachea and bronchi, lungs, cavitas thoracis, pleurae, and mediastinum. Oral cavity and related structures, fauces, salivary glands, pharynx, esophagus. | | | | | | | |
| **12** |  | Stomach, small and large intestines. Pancreas, liver, biliary ducts, and gallbladder. | | | | | | | |
| **13** |  | Peritoneum, abdominal regions, localizations of abdominal organs. Kidneys, ureters, urinary bladder, male and female urethra. | | | | | | | |
| **14** |  | External and internal genital organs. | | | | | | | |
| **15** |  | Pelvic floor and fossa ischiorectalis. Endocrine glands. | | | | | | | |
| **16** |  | FINAL EXAM | | | | | | | |

**PROGRAM OUTCOMES**

Place choose never(1), few(2), or many(3) regarding your course

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | | **1** | **2** | **3** |
| **1** | gather as well as apply knowledge of health sciences |  |  |  |
| **2** | ask scientific questions and form a hypothesis |  |  |  |
| **3** | search and interpret scientific literature |  |  |  |
| **4** | design and conduct experiments as well as analyze and interpret the data |  |  |  |
| **5** | learn how to use the experimental equipment effectively |  |  |  |
| **6** | function on multi-disciplinary teams |  |  |  |
| **7** | identify, formulate, and solve medical problems |  |  |  |
| **8** | use a computer effectively both in conducting the experiments and analyzing the data |  |  |  |
| **9** | understand the impact of experimental solutions on national and international sciences |  |  |  |
| **10** | use effective written and oral communication/presentation skills |  |  |  |
| **11** | get an understanding of professional and ethical responsibility |  |  |  |
| **12** | get recognition of the need for, and an ability to engage in lifelong learning |  |  |  |
| **13** | other (get an understanding of basic concepts of medical education) |  |  |  |
| **14** | other (get an understanding of approaching ethical problems with taking basic concepts to center) |  |  |  |

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| --- | --- |
| **INSTRUCTOR NAME** | **DATE** |
| Assist. Prof. Dr. Hakan AY | **19.04.2021** |



**ESOGU INSTITUTE OF HEALTH SCIENCES**

**DEPARTMENT OF RADIATION ONCOLOGY**

**COURSE INFORMATION FORM**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **COURSE CODE** | 523204210 | **DEPARTMENT** | Radiation Oncology | | |
| **COURSE NAME** | | Radiation Oncology II | | | |
| **INSTRUCTOR NAME** | | **COURSE LANGUAGE** | **COURSE CATEGORY** | | |
| Prof. Dr. Durmuş ETİZ | | Turkish | **Technical** | **Medical** | **Other (…)** |
|  |  |  |

**COURSE LEVEL**

|  |  |  |  |
| --- | --- | --- | --- |
| **PROPAEDEUTIC** | **M.SC.** | **Ph.D.** | **COURSE OF PROVINCE** |
|  |  |  |  |

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **SEMESTER** | **WEEKLY COURSE PERIOD** | | | | **COURSE OF** | | | | |
| **THEORIC** | **PRACTICE** | **LABORATORY** | | **CREDIT** | | **ECTS** | | **TYPE** |
| Spring | 1 | 0 | - | | 1 | | 7.5 | | Optional |
|  | | | | | | | | | |
| **ASSESSMENT CRITERIA** | | | | | | | | | |
| **MID-TERM EXAM** | | | **Activity** | | | **Quantity** | | **Percentage (%)** | |
| 1st Mid-Term | | | 1 | | 40 | |
| 2nd Mid-Term | | |  | |  | |
| Quiz | | |  | |  | |
| Homework | | |  | |  | |
| Project | | |  | |  | |
| Oral Exam | | |  | |  | |
| Other (………) | | |  | |  | |
| **FINAL EXAM** | | | Quiz | | |  | |  | |
| Homework | | |  | |  | |
| Project | | |  | |  | |
| Oral Exam | | |  | |  | |
| Other (Written Exam) | | | 1 | | 60 | |
| **MAKE-UP EXAM** | | | **Oral** | **Written** | | **Oral and Written** | | **Multiple Choice** | |
|  |  | |  | |  | |
| **PREREQUISITE(S)** | | |  | | | | | | |
| **COURSE CONTENT** | | | Basic principles of Radiation Oncology and its place in cancer treatment. | | | | | | |
| **COURSE AIMS** | | | Terminology and devices used in Radiation Oncology.  The role and role he takes in cancer treatment. Treatment options and radiotherapy efficacy success of tumors. | | | | | | |
| **COURSE OBJECTIVES** | | | Description of ionizing radiation methods used in oncological treatments. Determining the place of radiation oncology among these methods. Tumor-specific radiotherapy options. | | | | | | |
| **TEXTBOOK(S)** | | | Gunderson and Tepper’s Clinical Radiation Oncology**5th Edition** **Author:**Joel Tepper  **Hardcover ISBN:** 9780323672467  **eBook ISBN:** 9780323672474  **eBook ISBN:** 9780323672481  **Imprint:** Elsevier  **Published Date:** 6th December 2019  **Page Count:** 1656 | | | | | | |
| **REFERENCES** | | |  | | | | | | |
| **COURSE SYLLABUS** | | | | | | | | | |
| **WEEK** | **DATE** | **SUBJECTS/TOPICS** | | | | | | | |
| **1** |  | Introduction to Oncology | | | | | | | |
| **2** |  | Radiation Oncology Principles and basics | | | | | | | |
| **3** |  | Radiotherapy in the treatment of benign diseases | | | | | | | |
| **4** |  | Radiotherapy in gastrointestinal tumors II | | | | | | | |
| **5** |  | Radiotherapy in head and neck cancers II | | | | | | | |
| **6** |  | Radiotherapy in lung cancers | | | | | | | |
| **7** |  | MID-TERM EXAM | | | | | | | |
| **8** |  | Radiotherapy in breast cancers II | | | | | | | |
| **9** |  | Radiotherapy in central nervous system tumors II | | | | | | | |
| **10** |  | Radiotherapy in childhood tumors II | | | | | | | |
| **11** |  | Radiotherapy service planning in the community / Cost | | | | | | | |
| **12** |  | Proton therapy | | | | | | | |
| **13** |  | The use of artificial intelligence in radiotherapy | | | | | | | |
| **14** |  | Overview | | | | | | | |
| **15** |  | FINAL EXAM | | | | | | | |

**PROGRAM OUTCOMES**

Place choose never(1), few(2), or many(3) regarding your course

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | | **1** | **2** | **3** |
| **1** | gather as well as apply knowledge of health sciences |  |  |  |
| **2** | ask scientific questions and form a hypothesis |  |  |  |
| **3** | search and interpret scientific literature |  |  |  |
| **4** | design and conduct experiments as well as analyze and interpret the data |  |  |  |
| **5** | learn how to use the experimental equipment effectively |  |  |  |
| **6** | function on multi-disciplinary teams |  |  |  |
| **7** | identify, formulate, and solve medical problems |  |  |  |
| **8** | use a computer effectively both in conducting the experiments and analyzing the data |  |  |  |
| **9** | understand the impact of experimental solutions on national and international sciences |  |  |  |
| **10** | use effective written and oral communication/presentation skills |  |  |  |
| **11** | get an understanding of professional and ethical responsibility |  |  |  |
| **12** | get recognition of the need for, and an ability to engage in lifelong learning |  |  |  |
| **13** | other (get an understanding of basic concepts of medical education) |  |  |  |
| **14** | other (get an understanding of approaching ethical problems with taking basic concepts to center) |  |  |  |

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| **INSTRUCTOR NAME** | **DATE** |
| Prof. Dr. Durmuş ETIZ | **22.04.2021** |



**ESOGU INSTITUTE OF HEALTH SCIENCE**

**DEPARTMENT OF RADIATION ONCOLOGY**

**COURSE INFORMATION FORM**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **COURSE CODE** | 523204211 | **DEPARTMENT** | Radiation Oncology | | |
| **COURSE NAME :** | | **Brachytherapy Physics and Applications** | | | |
| **INSTRUCTOR NAME** | | **COURSE LANGUAGE** | **COURSE CATAGORY** | | |
| Assistant Professor Melek Yakar | | Turkish | **Technical** | **Medical** | **Other (…)** |
|  | X |  |

**COURSE LEVEL**

|  |  |  |  |
| --- | --- | --- | --- |
| **PROPAEDEUTIC** | **M.SC.** | **Ph.D.** | **COURSE OF PROVINCE** |
|  | X |  |  |

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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **SEMESTER** | **WEEKLY COURSE PERIOD** | | | | **COURSE OF** | | | | |
| **TEORIC** | **PRACTICE** | **LABORATORY** | | **CREDIT** | | **ECTS** | | **TYPE** |
| Spring | 1 | 2 |  | | 2 | | 7.5 | | Elective |
|  | | | | | | | | | |
| **ASSESMENT CRITERIA** | | | | | | | | | |
| **MID-TERM EXAM** | | | **Activity** | | | **Quantity** | | **Percentage (%)** | |
| 1st Mid-Term | | | 1 | | 40 | |
| 2nd Mid-Term | | |  | |  | |
| Quiz | | |  | |  | |
| Homework | | |  | |  | |
| Project | | |  | |  | |
| Oral Exam | | |  | |  | |
| Other (………) | | |  | |  | |
| **FINAL EXAM** | | | Quiz | | |  | |  | |
| Homework | | |  | |  | |
| Project | | |  | |  | |
| Oral Exam | | |  | |  | |
| Other (Written Exam) | | | 1 | | 60 | |
| **MAKE-UP EXAM** | | | **Oral** | **Written** | | **Oral and Written** | | **Multiple Choice** | |
|  | **X** | |  | |  | |
| **PREREQUISITE(S)** | | |  | | | | | | |
| **COURSE CONTENT** | | | Basic principles of brachytherapy, brachytherapy physics and its place in cancer treatment | | | | | | |
| **COURSE AIMS** | | | To learn th terminology in brachytherapy, brachytherapy physics and its use in cancer treatment. | | | | | | |
| **COURSE OBJECTIVES** | | | At the end of this course, clinical uses of brachytherapy in oncology, brachytherapy applications and brachytherapy physics will be learned. | | | | | | |
| **TEXTBOOK(S)** | | | 1-Clinical Radiation Oncology Fifth Edition Gunderson &Tepper, ISBN: 978-0-323-67246-72-Perez &Brady’s Principles and Practice of Radiation Oncology , Seventh Edition, eISBN 9781496386823 | | | | | | |
| **REFERENCES** | | | Electronic databases and scientific books about the subject | | | | | | |

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| **COURSE SYLLABUS** | | |
| **WEEK** | **DATE** | **SUBJECTS/TOPICS** |
| **1** |  | Brachytherapy Terminology |
| **2** |  | Biology of Brachytherapy |
| **3** |  | Brachytherapy Physics |
| **4** |  | Brachytherapy Sources |
| **5** |  | LDR Brachytherapy |
| **6** |  | PDR Brachytherapy |
| **7** |  | HDR Brachytherapy |
| **8** |  | MID-TERM EXAM |
| **9** |  | Brachytherapy Implants and Applicators |
| **10** |  | Brachytherapy in Gynecological Cancers |
| **11** |  | Brachytherapy in Lung and Breast Cancer |
| **12** |  | Brachytherapy in Genitourinary Cancers |
| **13** |  | Brachytherapy in Other Cancers |
| **14** |  | Applications |
| **15** |  | History, Brachytherapy Development in Turkey |
| **16** |  | FINAL EXAM |

**PROGRAM QUTCOMES**

Place choose never(1), few(2) or many(3) regarding your course

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | | **1** | **2** | **3** |
| **1** | gather as well as apply knowledge of health sciences |  |  | x |
| **2** | ask scientific questions and form hypothesis |  | **x** |  |
| **3** | search and interpret scientific literature |  | **x** |  |
| **4** | design and conduct experiments as well as analyze and interpret the data | **x** |  |  |
| **5** | learn how to use the experimental equipment effectively | **x** |  |  |
| **6** | function on multi-disciplinary teams |  | **x** |  |
| **7** | identify, formulate, and solve medical problems |  | **x** |  |
| **8** | use computer effectively both in conducting the experiments and analyzing the data | **x** |  |  |
| **9** | understand the impact of experimental solutions on national and international sciences |  | **x** |  |
| **10** | use effective written and oral communication/presentation skills |  |  |  |
| **11** | get an understanding of professional and ethical responsibility |  |  | xx |
| **12** | get a recognition of the need for, and an ability to engage in lifelong learning |  | **x** |  |
| **13** | other (get an understanding of basic concepts of medical education) |  |  | x |
| **14** | other (get an understanding of approaching to ethical problems with taking basic concepts to center) |  |  | x |

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| **INSTRUCTOR NAME** | **DATE** |
| Assistant Professor Melek Yakar | **27,04,2021** |



**ESOGU INSTITUTE OF HEALTH SCIENCE**

**DEPARTMENT OF RADIATION ONCOLOGY**

**COURSE INFORMATION FORM**

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| --- | --- | --- | --- | --- | --- |
| **COURSE CODE** | 523204212 | **DEPARTMENT** | Radiation Oncology | | |
| **COURSE NAME** | | Radiotherapy Physics (II) | | | |
| **INSTRUCTOR NAME** | | **COURSE LANGUAGE** | **COURSE CATAGORY** | | |
| Prelector Kerem Duruer | | Turkish | **Technical** | **Medical** | **Other (…)** |
|  | X |  |

**COURSE LEVEL**

|  |  |  |  |
| --- | --- | --- | --- |
| **PROPAEDEUTIC** | **M.SC.** | **Ph.D.** | **COURSE OF PROVINCE** |
|  | X |  |  |

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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **SEMESTER** | **WEEKLY COURSE PERIOD** | | | | **COURSE OF** | | | | |
| **TEORIC** | **PRACTICE** | **LABORATORY** | | **CREDIT** | | **ECTS** | | **TYPE** |
| Spring | 1 | - | - | | 1 | | 7.5 | | Elective |
|  | | | | | | | | | |
| **ASSESMENT CRITERIA** | | | | | | | | | |
| **MID-TERM EXAM** | | | **Activity** | | | **Quantity** | | **Percentage (%)** | |
| 1st Mid-Term | | | 1 | | 20 | |
| 2nd Mid-Term | | |  | |  | |
| Quiz | | |  | |  | |
| Homework | | | 2 | | 20 | |
| Project | | |  | |  | |
| Oral Exam | | |  | |  | |
| Other (………) | | |  | |  | |
| **FINAL EXAM** | | | Quiz | | |  | |  | |
| Homework | | |  | |  | |
| Project | | |  | |  | |
| Oral Exam | | |  | |  | |
| Other (Written Exam) | | | 1 | | 60 | |
| **MAKE-UP EXAM** | | | **Oral** | **Written** | | **Oral and Written** | | **Multiple Choice** | |
|  | **X** | |  | |  | |
| **PREREQUISITE(S)** | | | Successful completion of the Radiotherapy Physics (I) course | | | | | | |
| **COURSE CONTENT** | | | The content of this course includes basic dosimetric parameters, dose calculation methods, different treatment techniques and quality control methods in terms of radiotherapy physics. | | | | | | |
| **COURSE AIMS** | | | It is aimed that a physicist who will work in a radiotherapy clinic will have enough knowledge to comprehend the whole process in general and to fulfill his duty responsibilities. | | | | | | |
| **COURSE OBJECTIVES** | | | At the end of this course, the theoretical knowledge required before clinical applications will be learned in a fully equipped radiotherapy center with high-tech radiotherapy devices. | | | | | | |
| **TEXTBOOK(S)** | | | Faiz M. Khan, John P. Gibbons. “The Physics of Radiation Therapy”. Fifth Edition (2014); Lippincott Williams & Wilkins, Philadelphia | | | | | | |
| **REFERENCES** | | | Electronic databases and scientific books about the subject | | | | | | |

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| **COURSE SYLLABUS** | | |
| **WEEK** | **DATE** | **SUBJECTS/TOPICS** |
| **1** |  | Dose calculation techniques in classical radiotherapy |
| **2** |  | Dosimetric concepts in radiotherapy |
| **3** |  | Isodose curves |
| **4** |  | Features of dose profiles |
| **5** |  | Principles of treatment planning systems |
| **6** |  | Treatment techniques (3D Conformal Radiotherapy) |
| **7** |  | Treatment techniques (Intensity Modulated Radiotherapy (IMRT)) |
| **8** |  | MID-TERM EXAM |
| **9** |  | Treatment techniques (Image Guided Radiotherapy) |
| **10** |  | Stereotactic Radiosurgery |
| **11** |  | Stereotactic Body Radiation Therapy |
| **12** |  | Respiratory control in radiotherapy |
| **13** |  | Brachytherapy |
| **14** |  | Quality control of devices used in external radiotherapy |
| **15** |  | Quality control in brachytherapy |
| **16** |  | FINAL EXAM |

**PROGRAM QUTCOMES**

Place choose never(1), few(2) or many(3) regarding your course

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | | **1** | **2** | **3** |
| **1** | gather as well as apply knowledge of health sciences |  |  | **X** |
| **2** | ask scientific questions and form hypothesis |  | **X** |  |
| **3** | search and interpret scientific literature |  |  | **X** |
| **4** | design and conduct experiments as well as analyze and interpret the data |  | **X** |  |
| **5** | learn how to use the experimental equipment effectively | **X** |  |  |
| **6** | function on multi-disciplinary teams | **X** |  |  |
| **7** | identify, formulate, and solve medical problems |  | **X** |  |
| **8** | use computer effectively both in conducting the experiments and analyzing the data | **X** |  |  |
| **9** | understand the impact of experimental solutions on national and international sciences |  |  | **X** |
| **10** | use effective written and oral communication/presentation skills |  |  | **X** |
| **11** | get an understanding of professional and ethical responsibility |  |  | **X** |
| **12** | get a recognition of the need for, and an ability to engage in lifelong learning |  | **X** |  |
| **13** | other (get an understanding of basic concepts of medical education) |  | **X** |  |
| **14** | other (get an understanding of approaching to ethical problems with taking basic concepts to center) | **X** |  |  |

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| **INSTRUCTOR NAME** | **DATE** |
| Prelector Kerem Duruer | **21.04.2021** |



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**DEPARTMENT OF RADIATION ONCOLOGY**

**COURSE INFORMATION FORM**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **COURSE CODE** | 523204213 | **DEPARTMENT** | Radiation Oncology | | |
| **COURSE NAME** | | RADIATION PHYSICS 2 | | | |
| **INSTRUCTOR NAME** | | **COURSE LANGUAGE** | **COURSE CATAGORY** | | |
| Özge BOZDOĞAN | | Turkish | **Technical** | **Medical** | **Other (…)** |
|  | X |  |

**COURSE LEVEL**

|  |  |  |  |
| --- | --- | --- | --- |
| **PROPAEDEUTIC** | **M.SC.** | **Ph.D.** | **COURSE OF PROVINCE** |
|  | X |  |  |

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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **SEMESTER** | **WEEKLY COURSE PERIOD** | | | | **COURSE OF** | | | | |
| **TEORIC** | **PRACTICE** | **LABORATORY** | | **CREDIT** | | **ECTS** | | **TYPE** |
| Spring | 3 | 0 | 0 | | 3 | | 7.5 | | Optional |
|  | | | | | | | | | |
| **ASSESMENT CRITERIA** | | | | | | | | | |
| **MID-TERM EXAM** | | | **Activity** | | | **Quantity** | | **Percentage (%)** | |
| 1st Mid-Term | | | 1 | | 40 | |
| 2nd Mid-Term | | |  | |  | |
| Quiz | | |  | |  | |
| Homework | | |  | |  | |
| Project | | |  | |  | |
| Oral Exam | | |  | |  | |
| Other (………) | | |  | |  | |
| **FINAL EXAM** | | | Quiz | | |  | |  | |
| Homework | | |  | |  | |
| Project | | |  | |  | |
| Oral Exam | | |  | |  | |
| Other (Written Exam) | | | 1 | | 60 | |
| **MAKE-UP EXAM** | | | **Oral** | **Written** | | **Oral and Written** | | **Multiple Choice** | |
|  | **X** | |  | |  | |
| **PREREQUISITE(S)** | | |  | | | | | | |
| **COURSE CONTENT** | | | It includes giving information about the interaction of radiation with matter, the formation of x-rays, radiation measurement methods, usage areas in medicine and radiation safety. | | | | | | |
| **COURSE AIMS** | | | It is aimed to give information about the interaction of radiation with matter, the formation of x-rays, radiation measurement methods, usage areas in medicine and radiation safety. | | | | | | |
| **COURSE OBJECTIVES** | | | At the end of the course, it is aimed that the student will have knowledge of radiation in application areas and the measurement and safety of this radiation. | | | | | | |
| **TEXTBOOK(S)** | | | The Physics of Radiation Therapy (Faiz M. KHAN) Fundamentals of Radiation Oncology (Hasan Murshed) | | | | | | |
| **REFERENCES** | | | Electronic databases and scientific books about the subject | | | | | | |

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| --- | --- | --- |
| **COURSE SYLLABUS** | | |
| **WEEK** | **DATE** | **SUBJECTS/TOPICS** |
| **1** |  | Interaction of radiation with matter |
| **2** |  | X rays |
| **3** |  | Parameters of X-ray devices |
| **4** |  | Radiation dose measurement methods |
| **5** |  | Gas filled detectors |
| **6** |  | Proportional counter detectors |
| **7** |  | Geiger Müller detectors |
| **8** |  | MID-TERM EXAM |
| **9** |  | Scintillation detector |
| **10** |  | Semiconductor detectors |
| **11** |  | Biological effects of radiation |
| **12** |  | Biological effects of radiation |
| **13** |  | Basic principles of medical imaging methods |
| **14** |  | Radiotherapy applications |
| **15** |  | Radiation safety |
| **16** |  | FINAL EXAM |

**PROGRAM QUTCOMES**

Place choose never(1), few(2) or many(3) regarding your course

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | | **1** | **2** | **3** |
| **1** | Gather as well as apply knowledge of health sciences |  |  | X |
| **2** | Ask scientific questions and form hypothesis |  |  | X |
| **3** | Search and interpret scientific literature |  | X |  |
| **4** | Design and conduct experiments as well as analyze and interpret the data |  | X |  |
| **5** | Learn how to use the experimental equipment effectively | X |  |  |
| **6** | Function on multi-disciplinary teams |  | X |  |
| **7** | İdentify, formulate, and solve medical problems |  |  | X |
| **8** | Use computer effectively both in conducting the experiments and analyzing the data |  | X |  |
| **9** | Understand the impact of experimental solutions on national and international sciences |  |  | X |
| **10** | Use effective written and oral communication/presentation skills |  | X |  |
| **11** | Get an understanding of professional and ethical responsibility |  |  | X |
| **12** | Get a recognition of the need for, and an ability to engage in lifelong learning |  |  | X |
| **13** | Other (get an understanding of basic concepts of medical education) |  |  | X |
| **14** | Other (get an understanding of approaching to ethical problems with taking basic concepts to center) |  |  | X |

|  |  |
| --- | --- |
| **INSTRUCTOR NAME** | **DATE** |
| Özge BOZDOĞAN | **26th April, 2021** |



**ESOGU INSTITUTE OF HEALTH SCIENCE**

**DEPARTMENT OF RADIATION ONCOLOGY**

**COURSE INFORMATION FORM**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **COURSE CODE** | 523204214 | **DEPARTMENT** | Radiation Oncology | | |
| **COURSE NAME** | | TREATMENT PLANINNG IN RADIOTHERAPY | | | |
| **INSTRUCTOR NAME** | | **COURSE LANGUAGE** | **COURSE CATAGORY** | | |
| Özge BOZDOĞAN | | Turkish | **Technical** | **Medical** | **Other (…)** |
|  | X |  |

**COURSE LEVEL**

|  |  |  |  |
| --- | --- | --- | --- |
| **PROPAEDEUTIC** | **M.SC.** | **Ph.D.** | **COURSE OF PROVINCE** |
|  | X |  |  |

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **SEMESTER** | **WEEKLY COURSE PERIOD** | | | | **COURSE OF** | | | | |
| **TEORIC** | **PRACTICE** | **LABORATORY** | | **CREDIT** | | **ECTS** | | **TYPE** |
| Spring | 1 | 2 | 0 | | 2 | | 7.5 | | Optional |
|  | | | | | | | | | |
| **ASSESMENT CRITERIA** | | | | | | | | | |
| **MID-TERM EXAM** | | | **Activity** | | | **Quantity** | | **Percentage (%)** | |
| 1st Mid-Term | | | 1 | | 40 | |
| 2nd Mid-Term | | |  | |  | |
| Quiz | | |  | |  | |
| Homework | | |  | |  | |
| Project | | |  | |  | |
| Oral Exam | | |  | |  | |
| Other (………) | | |  | |  | |
| **FINAL EXAM** | | | Quiz | | |  | |  | |
| Homework | | |  | |  | |
| Project | | |  | |  | |
| Oral Exam | | |  | |  | |
| Other (Written Exam) | | | 1 | | 60 | |
| **MAKE-UP EXAM** | | | **Oral** | **Written** | | **Oral and Written** | | **Multiple Choice** | |
|  | **X** | |  | |  | |
| **PREREQUISITE(S)** | | |  | | | | | | |
| **COURSE CONTENT** | | | To provide students with the ability to treat patients to be treated with radiation with the most appropriate dose distribution | | | | | | |
| **COURSE AIMS** | | | It is aimed to teach the dose calculations of the patients who will be treated with radiation and those who receive treatment. | | | | | | |
| **COURSE OBJECTIVES** | | | The aim of this course is to give the student the ability to prepare treatment plans that will give the minimum dose to the surrounding normal tissues while giving the desired dose to the tumor in patients treated with radiation. | | | | | | |
| **TEXTBOOK(S)** | | | Practical Radiothreapy Planning (Ann BARRETT) Treatment Planning in Radiation Oncology (Faiz M. KHAN) | | | | | | |
| **REFERENCES** | | | Electronic databases and scientific books about the subject | | | | | | |

|  |  |  |
| --- | --- | --- |
| **COURSE SYLLABUS** | | |
| **WEEK** | **DATE** | **SUBJECTS/TOPICS** |
| **1** |  | Introduction to treatment planning |
| **2** |  | Treatment devices used in radiotherapy |
| **3** |  | Auxiliary elements in radiotherapy treatment planning |
| **4** |  | Tumor dose volume definitions |
| **5** |  | Treatment principles for photon beams |
| **6** |  | Planning principles for photon beams |
| **7** |  | Treatment with electron beams |
| **8** |  | MID-TERM EXAM |
| **9** |  | 3D RT |
| **10** |  | IMRT1 |
| **11** |  | IMRT2 |
| **12** |  | Stereotactic Radiotherapy 1 |
| **13** |  | Stereotactic Radiotherapy 2 |
| **14** |  | Brachytherapy |
| **15** |  | Comparison of different planning station |
| **16** |  | FINAL EXAM |

**PROGRAM QUTCOMES**

Place choose never(1), few(2) or many(3) regarding your course

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | | **1** | **2** | **3** |
| **1** | Gather as well as apply knowledge of health sciences |  |  | X |
| **2** | Ask scientific questions and form hypothesis |  | X |  |
| **3** | Search and interpret scientific literature |  |  | X |
| **4** | Design and conduct experiments as well as analyze and interpret the data |  |  | X |
| **5** | Learn how to use the experimental equipment effectively |  |  | X |
| **6** | Function on multi-disciplinary teams |  |  | X |
| **7** | İdentify, formulate, and solve medical problems |  |  | X |
| **8** | Use computer effectively both in conducting the experiments and analyzing the data |  |  | X |
| **9** | Understand the impact of experimental solutions on national and international sciences |  |  | X |
| **10** | Use effective written and oral communication/presentation skills |  | X |  |
| **11** | Get an understanding of professional and ethical responsibility |  |  | X |
| **12** | Get a recognition of the need for, and an ability to engage in lifelong learning |  |  | X |
| **13** | Other (get an understanding of basic concepts of medical education) |  |  | X |
| **14** | Other (get an understanding of approaching to ethical problems with taking basic concepts to center) |  |  | X |

|  |  |
| --- | --- |
| **INSTRUCTOR NAME** | **DATE** |
| Özge BOZDOĞAN | **26th April, 2021** |



**ESOGU INSTITUTE OF HEALTH SCIENCE**

**DEPARTMENT OF RADIATION ONCOLOGY**

**COURSE INFORMATION FORM**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **COURSE CODE** | 523204215 | **DEPARTMENT** | RADIATION ONCOLOGY | | |
| **COURSE NAME** | | Radiology Applications | | | |
| **INSTRUCTOR NAME** | | **COURSE LANGUAGE** | **COURSE CATAGORY** | | |
| Assist. Prof. Nevin Aydın | | Turkish | **Technical** | **Medical** | **Other (…)** |
|  | X |  |

**COURSE LEVEL**

|  |  |  |  |
| --- | --- | --- | --- |
| **PROPAEDEUTIC** | **M.SC.** | **Ph.D.** | **COURSE OF PROVINCE** |
|  | X |  |  |

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **SEMESTER** | **WEEKLY COURSE PERIOD** | | | | | **COURSE OF** | | | | |
| **TEORIC** | **PRACTICE** | | **LABORATORY** | | **CREDIT** | | **ECTS** | | **TYPE** |
| Spring | 0 | 4 | | 0 | | 2 | | 7,5 | | Elective |
|  | | | | | | | | | | |
| **ASSESMENT CRITERIA** | | | | | | | | | | |
| **MID-TERM EXAM** | | | | **Activity** | | | **Quantity** | | **Percentage (%)** | |
| 1st Mid-Term | | | 1 | | 40 | |
| 2nd Mid-Term | | |  | |  | |
| Quiz | | |  | |  | |
| Homework | | |  | |  | |
| Project | | |  | |  | |
| Oral Exam | | |  | |  | |
| Other (………) | | |  | |  | |
| **FINAL EXAM** | | | | Quiz | | |  | |  | |
| Homework | | |  | |  | |
| Project | | |  | |  | |
| Oral Exam | | |  | |  | |
| Other (Written Exam) | | | 1 | | 60 | |
| **MAKE-UP EXAM** | | | | **Oral** | **Written** | | **Oral and Written** | | **Multiple Choice** | |
|  | **X** | |  | |  | |
| **PREREQUISITE(S)** | | | | None | | | | | | |
| **COURSE CONTENT** | | | | Radyalogy applications (Fluoroscopy and C-arm systems, Computed Tomography, Conventional and Digital X-ray) | | | | | | |
| **COURSE AIMS** | | | | The aim of this course is to recognize the clinical applications of imaging devices used for diagnostic purposes, to evaluate acceptance tests, quality control, calibration and image quality. In addition to this, it is to be able to evaluate the dose in imaging devices and to know and apply the measures taken in the name of radiation safety in the work areas. | | | | | | |
| **COURSE OBJECTIVES** | | | | At the end of this course;  To be able to define conventional and digital x-ray devices, to perform acceptance tests, calibration and quality control tests,  Defining fluoroscopy and C arm systems, acceptance tests, calibration and quality control tests,  Identifying computed tomography devices, performing acceptance tests, calibration and quality control tests,  Providing protection from radiation and radiation safety in these devices,  To be able to evaluate the relationship between image quality and dose in these devices,  Dark room evaluations, ability to perform daily bathroom quality control studies and evaluate the results will be learned. | | | | | | |
| **TEXTBOOK(S)** | | | | User guides of devices used in diagnostic radiology  International studies and reference values | | | | | | |
| **REFERENCES** | | | | Electronic databases and scientific books about the subject | | | | | | |
| **COURSE SYLLABUS** | | | | | | | | | | |
| **WEEK** | **DATE** | | **SUBJECTS/TOPICS** | | | | | | | |
| **1** |  | | Conventional / Digital X-ray applications | | | | | | | |
| **2** |  | | Acceptance tests and quality control studies in X-ray devices | | | | | | | |
| **3** |  | | Darkroom studies daily darkroom and automatic bath machine studies | | | | | | | |
| **4** |  | | Acceptance tests and quality control studies in digital x-ray devices | | | | | | | |
| **5** |  | | Optimization studies on dose and image quality in conventional / digital X-ray | | | | | | | |
| **6** |  | | Applications in C-arm / Fluoroscopic systems | | | | | | | |
| **7** |  | | Acceptance tests and quality control studies in C arm systems | | | | | | | |
| **8** |  | | MID-TERM EXAM | | | | | | | |
| **9** |  | | Parameters affecting image quality and dose in fluoroscopic and C-arm systems | | | | | | | |
| **10** |  | | Optimization studies regarding dose and image quality in fluoroscopy / C arm systems | | | | | | | |
| **11** |  | | Applications in Computed Tomography Devices | | | | | | | |
| **12** |  | | Quality control studies and evaluation of study results in CT | | | | | | | |
| **13** |  | | Image quality and influencing parameters in CT | | | | | | | |
| **14** |  | | Parameters affecting the dose in CT | | | | | | | |
| **15** |  | | Optimization studies on dose and image quality in CT | | | | | | | |
| **16** |  | | FINAL EXAM | | | | | | | |

**PROGRAM QUTCOMES**

Place choose never(1), few(2) or many(3) regarding your course

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | | **1** | **2** | **3** |
| **1** | gather as well as apply knowledge of health sciences |  |  | X |
| **2** | ask scientific questions and form hypothesis |  |  | X |
| **3** | search and interpret scientific literature |  |  | X |
| **4** | design and conduct experiments as well as analyze and interpret the data |  |  | X |
| **5** | learn how to use the experimental equipment effectively |  |  | X |
| **6** | function on multi-disciplinary teams |  |  | X |
| **7** | identify, formulate, and solve medical problems |  |  | X |
| **8** | use computer effectively both in conducting the experiments and analyzing the data |  |  | X |
| **9** | understand the impact of experimental solutions on national and international sciences |  |  | X |
| **10** | use effective written and oral communication/presentation skills |  |  | X |
| **11** | get an understanding of professional and ethical responsibility |  |  | X |
| **12** | get a recognition of the need for, and an ability to engage in lifelong learning |  |  | X |
| **13** | other (get an understanding of basic concepts of medical education) |  |  | X |
| **14** | other (get an understanding of approaching to ethical problems with taking basic concepts to center) |  |  | X |

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| **INSTRUCTOR NAME** | **DATE** |
| Assist. Prof. Nevin Aydın | **27.04.2021** |



**ESOGU INSTITUTE OF HEALTH SCIENCE**

**DEPARTMENT OF RADIATION ONCOLOGY**

**COURSE INFORMATION FORM**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **COURSE CODE** | 523204216 | **DEPARTMENT** | Radiation Oncology | | |
| **COURSE NAME** | | Radiopharmacy in Medical Physics and Nuclear Medicine | | | |
| **INSTRUCTOR NAME** | | **COURSE LANGUAGE** | **COURSE CATAGORY** | | |
| Prof. Dr. Emre ENTOK | | Turkish | **Technical** | **Medical** | **Other (…)** |
|  | X |  |

**COURSE LEVEL**

|  |  |  |  |
| --- | --- | --- | --- |
| **PROPAEDEUTIC** | **M.SC.** | **Ph.D.** | **COURSE OF PROVINCE** |
|  | X |  |  |

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **SEMESTER** | **WEEKLY COURSE PERIOD** | | | | **COURSE OF** | | | | |
| **TEORIC** | **PRACTICE** | **LABORATORY** | | **CREDIT** | | **ECTS** | | **TYPE** |
| Spring | 2 | 2 | - | | 3 | | 7.5 | | Elective |
|  | | | | | | | | | |
| **ASSESMENT CRITERIA** | | | | | | | | | |
| **MID-TERM EXAM** | | | **Activity** | | | **Quantity** | | **Percentage (%)** | |
| 1st Mid-Term | | | 1 | | 40 | |
| 2nd Mid-Term | | |  | |  | |
| Quiz | | |  | |  | |
| Homework | | |  | |  | |
| Project | | |  | |  | |
| Oral Exam | | |  | |  | |
| Other (………) | | |  | |  | |
| **FINAL EXAM** | | | Quiz | | |  | |  | |
| Homework | | |  | |  | |
| Project | | |  | |  | |
| Oral Exam | | |  | |  | |
| Other (Written Exam) | | | 1 | | 60 | |
| **MAKE-UP EXAM** | | | **Oral** | **Written** | | **Oral and Written** | | **Multiple Choice** | |
|  | **X** | |  | |  | |
| **PREREQUISITE(S)** | | | - | | | | | | |
| **COURSE CONTENT** | | | The content of this course includes general information about radiopharmaceuticals and radionuclides, various scintigraphic methods and treatment with radionuclides. | | | | | | |
| **COURSE AIMS** | | | In this course, it is aimed to explain the basics of radiopharmacy application in nuclear medicine. | | | | | | |
| **COURSE OBJECTIVES** | | | At the end of this course, the basics of radiopharmacy application in nuclear medicine will be learned. | | | | | | |
| **TEXTBOOK(S)** | | | Bailey D. L., Humm J. L., Todd-Pokropek A., van Aswegen A. “Nuclear Medicine Physics: A Handbook for Teachers and Students”. International Atomic Energy Agency, Vienna, 2014 | | | | | | |
| **REFERENCES** | | | Electronic databases and scientific books about the subject | | | | | | |

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| --- | --- | --- |
| **COURSE SYLLABUS** | | |
| **WEEK** | **DATE** | **SUBJECTS/TOPICS** |
| **1** |  | Radiopharmaceuticals and Radionuclides |
| **2** |  | Production of radionuclides |
| **3** |  | Marking Methods |
| **4** |  | Quality control in radiopharmaceuticals |
| **5** |  | Endocrine system scintigraphies |
| **6** |  | Heart scintigraphs |
| **7** |  | Bone scintigraphs |
| **8** |  | MID-TERM EXAM |
| **9** |  | Lung perfusion ventilation scintigraphy |
| **10** |  | Urinary system kidney scintigraphies |
| **11** |  | Gastrointestinal and hepatobiliary system scintigraphy |
| **12** |  | Central nervous system scintigraphies |
| **13** |  | Infection and tumor imaging |
| **14** |  | PET (Positron Emission Tomography) |
| **15** |  | Treatment with radionuclides |
| **16** |  | FINAL EXAM |

**PROGRAM QUTCOMES**

Place choose never(1), few(2) or many(3) regarding your course

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | | **1** | **2** | **3** |
| **1** | gather as well as apply knowledge of health sciences |  | **X** |  |
| **2** | ask scientific questions and form hypothesis |  | **X** |  |
| **3** | search and interpret scientific literature |  |  | **X** |
| **4** | design and conduct experiments as well as analyze and interpret the data |  | **X** |  |
| **5** | learn how to use the experimental equipment effectively | **X** |  |  |
| **6** | function on multi-disciplinary teams | **X** |  |  |
| **7** | identify, formulate, and solve medical problems |  | **X** |  |
| **8** | use computer effectively both in conducting the experiments and analyzing the data | **X** |  |  |
| **9** | understand the impact of experimental solutions on national and international sciences |  |  | **X** |
| **10** | use effective written and oral communication/presentation skills |  |  | **X** |
| **11** | get an understanding of professional and ethical responsibility |  |  | **X** |
| **12** | get a recognition of the need for, and an ability to engage in lifelong learning |  | **X** |  |
| **13** | other (get an understanding of basic concepts of medical education) |  | **X** |  |
| **14** | other (get an understanding of approaching to ethical problems with taking basic concepts to center) | **X** |  |  |

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| --- | --- |
| **INSTRUCTOR NAME** | **DATE** |
| Prof. Dr. Emre ENTOK | **30.04.2021** |



**ESOGU INSTITUTE OF HEALTH SCIENCE**

**DEPARTMENT OF RADIATION ONCOLOGY**

**COURSE INFORMATION FORM**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **COURSE CODE** | 523204217 | **DEPARTMENT** | Radiation Oncology | | |
| **COURSE NAME** | | Quality Assurance of Devices Used in Radiotherapy and Dosimetric Methods | | | |
| **INSTRUCTOR NAME** | | **COURSE LANGUAGE** | **COURSE CATAGORY** | | |
| Prelector Kerem Duruer | | Turkish | **Technical** | **Medical** | **Other (…)** |
|  | X |  |

**COURSE LEVEL**

|  |  |  |  |
| --- | --- | --- | --- |
| **PROPAEDEUTIC** | **M.SC.** | **Ph.D.** | **COURSE OF PROVINCE** |
|  | X |  |  |

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **SEMESTER** | **WEEKLY COURSE PERIOD** | | | | **COURSE OF** | | | | |
| **TEORIC** | **PRACTICE** | **LABORATORY** | | **CREDIT** | | **ECTS** | | **TYPE** |
| Spring | 1 | 4 | - | | 3 | | 7.5 | | Elective |
|  | | | | | | | | | |
| **ASSESMENT CRITERIA** | | | | | | | | | |
| **MID-TERM EXAM** | | | **Activity** | | | **Quantity** | | **Percentage (%)** | |
| 1st Mid-Term | | |  | |  | |
| 2nd Mid-Term | | |  | |  | |
| Quiz | | |  | |  | |
| Homework | | | 2 | | 20 | |
| Project | | |  | |  | |
| Oral Exam | | | 1 | | 20 | |
| Other (………) | | |  | |  | |
| **FINAL EXAM** | | | Quiz | | |  | |  | |
| Homework | | |  | |  | |
| Project | | |  | |  | |
| Oral Exam | | | **1** | | **60** | |
| Other (Written Exam) | | |  | |  | |
| **MAKE-UP EXAM** | | | **Oral** | **Written** | | **Oral and Written** | | **Multiple Choice** | |
| **X** |  | |  | |  | |
| **PREREQUISITE(S)** | | | - | | | | | | |
| **COURSE CONTENT** | | | Description and application of mechanical, dosimetric and image tests of computed tomography, linear accelerator and brachytherapy devices in Radiation Oncology Clinic. | | | | | | |
| **COURSE AIMS** | | | The aim of this course is to teach the quality control of the basic treatment and imaging devices in the radiation oncology clinic with certain periods. | | | | | | |
| **COURSE OBJECTIVES** | | | At the end of this course, it will be learned how the quality controls of different treatment and imaging devices in the radiation oncology clinic are performed. | | | | | | |
| **TEXTBOOK(S)** | | | Faiz M. Khan, John P. Gibbons. “The Physics of Radiation Therapy”. Fifth Edition (2014); Lippincott Williams & Wilkins, Philadelphia | | | | | | |
| **REFERENCES** | | | Electronic databases and scientific books about the subject | | | | | | |

|  |  |  |
| --- | --- | --- |
| **COURSE SYLLABUS** | | |
| **WEEK** | **DATE** | **SUBJECTS/TOPICS** |
| **1** |  | Definition and importance of quality control in radiotherapy |
| **2** |  | Computed tomography device quality control tests (Part 1) |
| **3** |  | Computed tomography device quality control tests (Part 2) |
| **4** |  | Linear accelerator device mechanical quality control tests (Part 1) |
| **5** |  | Linear accelerator device mechanical quality control tests (Part 2) |
| **6** |  | Linear accelerator device dosimetric quality control tests (Part 1) |
| **7** |  | Linear accelerator device dosimetric quality control tests (Part 2) |
| **8** |  | MID-TERM EXAM |
| **9** |  | Linear accelerator device dosimetric quality control tests (Part 3) |
| **10** |  | Linear accelerator device image quality control tests (Part 1) |
| **11** |  | Linear accelerator device image quality control tests (Part 2) |
| **12** |  | Brachytherapy device mechanical quality control tests (Part 1) |
| **13** |  | Brachytherapy device mechanical quality control tests (Part 2) |
| **14** |  | Brachytherapy device dosimetric quality control tests (Part 1) |
| **15** |  | Brachytherapy device dosimetric quality control tests (Part 2) |
| **16** |  | FINAL EXAM |

**PROGRAM QUTCOMES**

Place choose never(1), few(2) or many(3) regarding your course

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | | **1** | **2** | **3** |
| **1** | gather as well as apply knowledge of health sciences |  |  | **X** |
| **2** | ask scientific questions and form hypothesis |  | **X** |  |
| **3** | search and interpret scientific literature |  | **X** |  |
| **4** | design and conduct experiments as well as analyze and interpret the data |  |  | **X** |
| **5** | learn how to use the experimental equipment effectively |  |  | **X** |
| **6** | function on multi-disciplinary teams | **X** |  |  |
| **7** | identify, formulate, and solve medical problems | **X** |  |  |
| **8** | use computer effectively both in conducting the experiments and analyzing the data |  | **X** |  |
| **9** | understand the impact of experimental solutions on national and international sciences |  |  | **X** |
| **10** | use effective written and oral communication/presentation skills | **X** |  |  |
| **11** | get an understanding of professional and ethical responsibility |  |  | **X** |
| **12** | get a recognition of the need for, and an ability to engage in lifelong learning |  | **X** |  |
| **13** | other (get an understanding of basic concepts of medical education) | **X** |  |  |
| **14** | other (get an understanding of approaching to ethical problems with taking basic concepts to center) |  | **X** |  |

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| **INSTRUCTOR NAME** | **DATE** |
| Prelector Kerem Duruer | **21.04.2021** |



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**COURSE INFORMATION FORM**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **COURSE CODE** | 523204218 | **DEPARTMENT** | Radiation Oncology | | |
| **COURSE NAME** | | Radiation Protection and Radiation Safety | | | |
| **INSTRUCTOR NAME** | | **COURSE LANGUAGE** | **COURSE CATAGORY** | | |
| Prelector Kerem Duruer | | Turkish | **Technical** | **Medical** | **Other (…)** |
|  | X |  |

**COURSE LEVEL**

|  |  |  |  |
| --- | --- | --- | --- |
| **PROPAEDEUTIC** | **M.SC.** | **Ph.D.** | **COURSE OF PROVINCE** |
|  | X |  |  |

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **SEMESTER** | **WEEKLY COURSE PERIOD** | | | | **COURSE OF** | | | | |
| **TEORIC** | **PRACTICE** | **LABORATORY** | | **CREDIT** | | **ECTS** | | **TYPE** |
| Spring | 2 | 2 | - | | 3 | | 7.5 | | Elective |
|  | | | | | | | | | |
| **ASSESMENT CRITERIA** | | | | | | | | | |
| **MID-TERM EXAM** | | | **Activity** | | | **Quantity** | | **Percentage (%)** | |
| 1st Mid-Term | | | 1 | | 20 | |
| 2nd Mid-Term | | |  | |  | |
| Quiz | | |  | |  | |
| Homework | | | 2 | | 20 | |
| Project | | |  | |  | |
| Oral Exam | | |  | |  | |
| Other (………) | | |  | |  | |
| **FINAL EXAM** | | | Quiz | | |  | |  | |
| Homework | | |  | |  | |
| Project | | |  | |  | |
| Oral Exam | | |  | |  | |
| Other (Written Exam) | | | 1 | | 60 | |
| **MAKE-UP EXAM** | | | **Oral** | **Written** | | **Oral and Written** | | **Multiple Choice** | |
|  | **X** | |  | |  | |
| **PREREQUISITE(S)** | | | - | | | | | | |
| **COURSE CONTENT** | | | It includes the basic concepts of radiation and radiation protection, national and international regulations, radiation measurement and shielding. | | | | | | |
| **COURSE AIMS** | | | It is aimed to gain the basic information required for radiation safety and to teach the necessary measurements and legal regulations for this purpose. | | | | | | |
| **COURSE OBJECTIVES** | | | At the end of this course, basic knowledge will be learned to ensure radiation safety in any clinic where ionizing radiation is used. | | | | | | |
| **TEXTBOOK(S)** | | | Radyasyon ve Radyasyondan Korunma Fiziği, J.E.MARTIN (Çeviri Ed. A.Güneş TANIR, M.Hicabi BÖLÜKDEMİR, Kemal KOÇ) Palme Yayıncılık, 2013 | | | | | | |
| **REFERENCES** | | | Electronic databases and scientific books about the subject | | | | | | |

|  |  |  |
| --- | --- | --- |
| **COURSE SYLLABUS** | | |
| **WEEK** | **DATE** | **SUBJECTS/TOPICS** |
| **1** |  | Definition of radiation and basic principles of radiation protection |
| **2** |  | Radiation dose and units |
| **3** |  | Detectors and dosimetry |
| **4** |  | Dose measurement and calculation methods |
| **5** |  | External and internal radiation and protection methods |
| **6** |  | Radiation protection of radiation workers |
| **7** |  | Radiation protection methods in radiology |
| **8** |  | MID-TERM EXAM |
| **9** |  | Radiation protection methods in radiation oncology |
| **10** |  | Radiation protection methods in nuclear medicine |
| **11** |  | Radioactive wastes |
| **12** |  | Shielding principles, shielding of different medical systems |
| **13** |  | National regulation |
| **14** |  | Radiation accidents |
| **15** |  | Emergency procedures |
| **16** |  | FINAL EXAM |

**PROGRAM QUTCOMES**

Place choose never(1), few(2) or many(3) regarding your course

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | | **1** | **2** | **3** |
| **1** | gather as well as apply knowledge of health sciences | **X** |  |  |
| **2** | ask scientific questions and form hypothesis |  |  | **X** |
| **3** | search and interpret scientific literature |  |  | **X** |
| **4** | design and conduct experiments as well as analyze and interpret the data |  | **X** |  |
| **5** | learn how to use the experimental equipment effectively |  |  | **X** |
| **6** | function on multi-disciplinary teams |  |  | **X** |
| **7** | identify, formulate, and solve medical problems |  |  | **X** |
| **8** | use computer effectively both in conducting the experiments and analyzing the data | **X** |  |  |
| **9** | understand the impact of experimental solutions on national and international sciences |  | **X** |  |
| **10** | use effective written and oral communication/presentation skills |  |  | **X** |
| **11** | get an understanding of professional and ethical responsibility | **X** |  |  |
| **12** | get a recognition of the need for, and an ability to engage in lifelong learning |  |  | **X** |
| **13** | other (get an understanding of basic concepts of medical education) | **X** |  |  |
| **14** | other (get an understanding of approaching to ethical problems with taking basic concepts to center) |  | **X** |  |

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| --- | --- |
| **INSTRUCTOR NAME** | **DATE** |
| Prelector Kerem Duruer | **21.04.2021** |



**ESOGU INSTITUTE OF HEALTH SCIENCE**

**DEPARTMENT OF RADIATION ONCOLOGY**

**COURSE INFORMATION FORM**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **COURSE CODE** | 523204219 | **DEPARTMENT** |  | | |
| **COURSE NAME** | | **Radiological Imaging Techniques** | | | |
| **INSTRUCTOR NAME** | | **COURSE LANGUAGE** | **COURSE CATAGORY** | | |
| Assoc. Prof. Elif Gündoğdu | | Turkish | **Technical** | **Medical** | **Other (…)** |
|  | X |  |

**COURSE LEVEL**

|  |  |  |  |
| --- | --- | --- | --- |
| **PROPAEDEUTIC** | **M.SC.** | **Ph.D.** | **COURSE OF PROVINCE** |
|  | x |  |  |

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **SEMESTER** | **WEEKLY COURSE PERIOD** | | | | **COURSE OF** | | | | |
| **TEORIC** | **PRACTICE** | **LABORATORY** | | **CREDIT** | | **ECTS** | | **TYPE** |
| 2. (Spring) | 2 | 2 |  | | 3 | | 7,5 | | Elective |
|  | | | | | | | | | |
| **ASSESMENT CRITERIA** | | | | | | | | | |
| **MID-TERM EXAM** | | | **Activity** | | | **Quantity** | | **Percentage (%)** | |
| 1st Mid-Term | | | 1 | | 40 | |
| 2nd Mid-Term | | |  | |  | |
| Quiz | | |  | |  | |
| Homework | | |  | |  | |
| Project | | |  | |  | |
| Oral Exam | | |  | |  | |
| Other (………) | | |  | |  | |
| **FINAL EXAM** | | | Quiz | | |  | |  | |
| Homework | | |  | |  | |
| Project | | |  | |  | |
| Oral Exam | | |  | |  | |
| Other (Written Exam) | | | 1 | | 60 | |
| **MAKE-UP EXAM** | | | **Oral** | **Written** | | **Oral and Written** | | **Multiple Choice** | |
|  | **X** | |  | |  | |
| **PREREQUISITE(S)** | | |  | | | | | | |
| **COURSE CONTENT** | | | Radiological Imaging Techniques (CT, MRI, DR). | | | | | | |
| **COURSE AIMS** | | | The aims of this course are to define computed tomography (CT), magnetic resonance imaging (MRI) and digital x-ray (DR), to learn the working principles, to evaluate calibration and image quality. However, the other aim of this course is also to teach dose assessment on the imaging instruments and radiation safety in radiologic imaging. | | | | | | |
| **COURSE OBJECTIVES** | | | At the end of this course, the working principles of CT, MRI and DR, factors affecting image quality are learned, and the subject of radiation safety in radiological imaging is understood. | | | | | | |
| **TEXTBOOK(S)** | | |  | | | | | | |
| **REFERENCES** | | | Electronic databases and scientific books about the subject | | | | | | |

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| **COURSE SYLLABUS** | | |
| **WEEK** | **DATE** | **SUBJECTS/TOPICS** |
| **1** |  | CT device, device components and generations |
| **2** |  | Image acquisition and evaluation of image quality in CT |
| **3** |  | Relationship between CT artifacts, dose, and image quality |
| **4** |  | DR device, device components, computed radiography, direct and indirect DR systems |
| **5** |  | Image acquisition in DR, parameters affecting image quality and dose |
| **6** |  | Digital mammography systems, dose and image quality |
| **7** |  | Features of DR and CT applications in pediatric cases |
| **8** |  | MID-TERM EXAM |
| **9** |  | MRI device, device components, magnetic field strength |
| **10** |  | Imaging physics and image formation in MRI |
| **11** |  | Advanced techniques in MRI |
| **12** |  | Image quality and sequence optimization in MRI |
| **13** |  | MRI artifacts and relationship between image quality |
| **14** |  | Safety in MRI |
| **15** |  | MRI applications in pediatric cases |
| **16** |  | FINAL EXAM |

**PROGRAM QUTCOMES**

Place choose never(1), few(2) or many(3) regarding your course

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | | **1** | **2** | **3** |
| **1** | gather as well as apply knowledge of health sciences |  |  | x |
| **2** | ask scientific questions and form hypothesis |  |  | x |
| **3** | search and interpret scientific literature |  |  | x |
| **4** | design and conduct experiments as well as analyze and interpret the data |  |  | x |
| **5** | learn how to use the experimental equipment effectively |  |  | x |
| **6** | function on multi-disciplinary teams |  |  | x |
| **7** | identify, formulate, and solve medical problems |  |  | x |
| **8** | use computer effectively both in conducting the experiments and analyzing the data |  |  | x |
| **9** | understand the impact of experimental solutions on national and international sciences |  |  | x |
| **10** | use effective written and oral communication/presentation skills |  |  | x |
| **11** | get an understanding of professional and ethical responsibility |  |  | x |
| **12** | get a recognition of the need for, and an ability to engage in lifelong learning |  |  | x |
| **13** | other (get an understanding of basic concepts of medical education) |  |  | x |
| **14** | other (get an understanding of approaching to ethical problems with taking basic concepts to center) |  |  | x |

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| **INSTRUCTOR NAME** | **DATE** |
| Assoc. Prof. Elif Gündoğdu | **27.04.2021** |



**ESOGU INSTITUTE OF HEALTH SCIENCE**

**DEPARTMENT OF RADIATION ONCOLOGY**

**COURSE INFORMATION FORM**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **COURSE CODE** | 523204220 | **DEPARTMENT** | Radiation Oncology | | |
| **COURSE NAME** | | Nuclear medicine | | | |
| **INSTRUCTOR NAME** | | **COURSE LANGUAGE** | **COURSE CATAGORY** | | |
| Prof. Dr. Emre ENTOK | | Turkish | **Technical** | **Medical** | **Other (…)** |
|  | X |  |

**COURSE LEVEL**

|  |  |  |  |
| --- | --- | --- | --- |
| **PROPAEDEUTIC** | **M.SC.** | **Ph.D.** | **COURSE OF PROVINCE** |
|  | X |  |  |

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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **SEMESTER** | **WEEKLY COURSE PERIOD** | | | | **COURSE OF** | | | | |
| **TEORIC** | **PRACTICE** | **LABORATORY** | | **CREDIT** | | **ECTS** | | **TYPE** |
| Spring | 1 | 1 | - | | 1,5 | | 7.5 | | Elective |
|  | | | | | | | | | |
| **ASSESMENT CRITERIA** | | | | | | | | | |
| **MID-TERM EXAM** | | | **Activity** | | | **Quantity** | | **Percentage (%)** | |
| 1st Mid-Term | | | 1 | | 40 | |
| 2nd Mid-Term | | |  | |  | |
| Quiz | | |  | |  | |
| Homework | | |  | |  | |
| Project | | |  | |  | |
| Oral Exam | | |  | |  | |
| Other (………) | | |  | |  | |
| **FINAL EXAM** | | | Quiz | | |  | |  | |
| Homework | | |  | |  | |
| Project | | |  | |  | |
| Oral Exam | | |  | |  | |
| Other (Written Exam) | | | 1 | | 60 | |
| **MAKE-UP EXAM** | | | **Oral** | **Written** | | **Oral and Written** | | **Multiple Choice** | |
|  | **X** | |  | |  | |
| **PREREQUISITE(S)** | | | - | | | | | | |
| **COURSE CONTENT** | | | Fundamentals of nuclear medicine physics and operating principles of the devices used | | | | | | |
| **COURSE AIMS** | | | It is aimed to teach the students the fundamentals of nuclear medicine physics, the working principles of the devices used and the quality control procedures. | | | | | | |
| **COURSE OBJECTIVES** | | | At the end of this course, the fundamentals of nuclear medicine physics, the working principles and quality controls of the devices used will be learned. | | | | | | |
| **TEXTBOOK(S)** | | | Bailey D. L., Humm J. L., Todd-Pokropek A., van Aswegen A. “Nuclear Medicine Physics: A Handbook for Teachers and Students”. International Atomic Energy Agency, Vienna, 2014 | | | | | | |
| **REFERENCES** | | | Electronic databases and scientific books about the subject | | | | | | |

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| --- | --- | --- |
| **COURSE SYLLABUS** | | |
| **WEEK** | **DATE** | **SUBJECTS/TOPICS** |
| **1** |  | Radioactivity, types and principles of radioactive decay |
| **2** |  | What are the principles of radiation detection? Gas-filled, semiconductor and scintillation detectors |
| **3** |  | Components of gamma cameras. SPECT / SPECT / BT working principles. Quality control security practices |
| **4** |  | PET, PET / CT working principles and Quality control safety applications |
| **5** |  | PET, PET / CT quality control security applications |
| **6** |  | Production, marking methods and quality control of radionuclide and radiopharmaceuticals |
| **7** |  | Radiation protection principles in nuclear medicine applications |
| **8** |  | MID-TERM EXAM |
| **9** |  | Nuclear Medicine applications in the clinic |
| **10** |  | Teranostic applications in thyroid diseases |
| **11** |  | Teranostic applications in Prostate Ca |
| **12** |  | Somatostatin receptor applications and therapy |
| **13** |  | Pain palliation and radiosynovectomy applications in bone diseases |
| **14** |  | Microsphere therapy applications in malignant liver diseases Part-1 |
| **15** |  | Microsphere therapy applications in malignant liver diseases Part-2 |
| **16** |  | FINAL EXAM |

**PROGRAM QUTCOMES**

Place choose never(1), few(2) or many(3) regarding your course

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | | **1** | **2** | **3** |
| **1** | gather as well as apply knowledge of health sciences |  | **X** |  |
| **2** | ask scientific questions and form hypothesis |  | **X** |  |
| **3** | search and interpret scientific literature |  |  | **X** |
| **4** | design and conduct experiments as well as analyze and interpret the data |  | **X** |  |
| **5** | learn how to use the experimental equipment effectively | **X** |  |  |
| **6** | function on multi-disciplinary teams | **X** |  |  |
| **7** | identify, formulate, and solve medical problems |  | **X** |  |
| **8** | use computer effectively both in conducting the experiments and analyzing the data | **X** |  |  |
| **9** | understand the impact of experimental solutions on national and international sciences |  |  | **X** |
| **10** | use effective written and oral communication/presentation skills |  |  | **X** |
| **11** | get an understanding of professional and ethical responsibility |  |  | **X** |
| **12** | get a recognition of the need for, and an ability to engage in lifelong learning |  | **X** |  |
| **13** | other (get an understanding of basic concepts of medical education) |  | **X** |  |
| **14** | other (get an understanding of approaching to ethical problems with taking basic concepts to center) | **X** |  |  |

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| **INSTRUCTOR NAME** | **DATE** |
| Prof. Dr. Emre Entok | **30.04.2021** |



**ESOGU INSTITUTE OF HEALTH SCIENCE**

**DEPARTMENT OF RADIATION ONCOLOGY**

**COURSE INFORMATION FORM**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **COURSE CODE** | 523204221 | **DEPARTMENT** | Health Physics | | |
| **COURSE NAME** | | Biophysics | | | |
| **INSTRUCTOR NAME** | | **COURSE LANGUAGE** | **COURSE CATAGORY** | | |
| Asst. Prof. Seckin TUNCER | | Turkish | **Technical** | **Medical** | **Other (…)** |
|  | X |  |

**COURSE LEVEL**

|  |  |  |  |
| --- | --- | --- | --- |
| **PROPAEDEUTIC** | **M.SC.** | **Ph.D.** | **COURSE OF PROVINCE** |
|  | X |  |  |

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **SEMESTER** | **WEEKLY COURSE PERIOD** | | | | **COURSE OF** | | | | |
| **TEORIC** | **PRACTICE** | **LABORATORY** | | **CREDIT** | | **ECTS** | | **TYPE** |
| Fall | 2 | - | - | | 2 | | 7.5 | | Elective |
|  | | | | | | | | | |
| **ASSESMENT CRITERIA** | | | | | | | | | |
| **MID-TERM EXAM** | | | **Activity** | | | **Quantity** | | **Percentage (%)** | |
| 1st Mid-Term | | | 1 | | 40 | |
| 2nd Mid-Term | | |  | |  | |
| Quiz | | |  | |  | |
| Homework | | |  | |  | |
| Project | | |  | |  | |
| Oral Exam | | |  | |  | |
| Other (………) | | |  | |  | |
| **FINAL EXAM** | | | Quiz | | |  | |  | |
| Homework | | |  | |  | |
| Project | | |  | |  | |
| Oral Exam | | |  | |  | |
| Other (Written Exam) | | | 1 | | 60 | |
| **MAKE-UP EXAM** | | | **Oral** | **Written** | | **Oral and Written** | | **Multiple Choice** | |
|  | **X** | |  | |  | |
| **PREREQUISITE(S)** | | | Not any. | | | | | | |
| **COURSE CONTENT** | | | Fundamentals of radiation and electromagnetic waves, the physical basis of the source of radiation and its formation mechanisms, non-ionizing and ionizing radiation, detection of radiation, application areas of radiation. | | | | | | |
| **COURSE AIMS** | | | Giving basic concepts and information about radiations. | | | | | | |
| **COURSE OBJECTIVES** | | | At the end of this course, basic principles of radiations will be learned. | | | | | | |
| **TEXTBOOK(S)** | | | -Tıbbi Fizik, Ferit Pehlivan, 2016, Pelikan Kitabevi. -Biyofizik; Yöntemler, Biyolojik Etkiler, Önlemler, Hamza Esen ve Ferhan Esen, 2017, Nobel Tıp Kitabevi. | | | | | | |
| **REFERENCES** | | | Electronic databases and scientific books about the subject | | | | | | |

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| --- | --- | --- |
| **COURSE SYLLABUS** | | |
| **WEEK** | **DATE** | **SUBJECTS/TOPICS** |
| **1** |  | Radiation and living beings |
| **2** |  | Electromagnetic waves |
| **3** |  | Non-ionizing radiations |
| **4** |  | Ionizing radiations |
| **5** |  | Nucleus structure and reactions |
| **6** |  | X-rays |
| **7** |  | Radioactivity |
| **8** |  | MID-TERM EXAM |
| **9** |  | The interaction of rays with matter |
| **10** |  | Units and concepts related to the absorption of radiation and its effects |
| **11** |  | Detection of radiation |
| **12** |  | Applications of non-ionizing radiation |
| **13** |  | Applications of ionizing radiation |
| **14** |  | Applications of ionizing radiation |
| **15** |  | Information obtained by radiation |
| **16** |  | FINAL EXAM |

**PROGRAM QUTCOMES**

Place choose never(1), few(2) or many(3) regarding your course

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | | **1** | **2** | **3** |
| **1** | gather as well as apply knowledge of health sciences |  |  | X |
| **2** | ask scientific questions and form hypothesis | **X** |  |  |
| **3** | search and interpret scientific literature |  | **X** |  |
| **4** | design and conduct experiments as well as analyze and interpret the data | **X** |  |  |
| **5** | learn how to use the experimental equipment effectively | **X** |  |  |
| **6** | function on multi-disciplinary teams |  |  | X |
| **7** | identify, formulate, and solve medical problems |  | **X** |  |
| **8** | use computer effectively both in conducting the experiments and analyzing the data | **X** |  |  |
| **9** | understand the impact of experimental solutions on national and international sciences |  | **X** |  |
| **10** | use effective written and oral communication/presentation skills |  | **X** |  |
| **11** | get an understanding of professional and ethical responsibility |  |  | X |
| **12** | get a recognition of the need for, and an ability to engage in lifelong learning |  | **X** |  |
| **13** | other (get an understanding of basic concepts of medical education) |  |  | X |
| **14** | other (get an understanding of approaching to ethical problems with taking basic concepts to center) |  | **X** |  |

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| **INSTRUCTOR NAME** | **DATE** |
| Asst. Prof. Seckin TUNCER | 26.04.2021 |



**ESOGU INSTITUTE OF HEALTH SCIENCE**

**DEPARTMENT OF RADIATION ONCOLOGY**

**COURSE INFORMATION FORM**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **COURSE CODE** | 523204222 | **DEPARTMENT** | Radiation Oncology | | |
| **COURSE NAME** | Energy Types Used for Diagnosis, Treatment and Surgery and Biological Effects |  | | | |
| **INSTRUCTOR NAME** | | **COURSE LANGUAGE** | **COURSE CATAGORY** | | |
| Prof. Dr. Ferhan ESEN | | Turkish | **Technical** | **Medical** | **Other (…)** |
|  | X |  |

**COURSE LEVEL**

|  |  |  |  |
| --- | --- | --- | --- |
| **PROPAEDEUTIC** | **M.SC.** | **Ph.D.** | **COURSE OF PROVINCE** |
|  | X |  |  |

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **SEMESTER** | **WEEKLY COURSE PERIOD** | | | | **COURSE OF** | | | | |
| **TEORIC** | **PRACTICE** | **LABORATORY** | | **CREDIT** | | **ECTS** | | **TYPE** |
| 2 | 3 | - | - | | 3 | | 7,5 | | Elective |
|  | | | | | | | | | |
| **ASSESMENT CRITERIA** | | | | | | | | | |
| **MID-TERM EXAM** | | | **Activity** | | | **Quantity** | | **Percentage (%)** | |
| 1st Mid-Term | | | 1 | | 40 | |
| 2nd Mid-Term | | |  | |  | |
| Quiz | | |  | |  | |
| Homework | | |  | |  | |
| Project | | |  | |  | |
| Oral Exam | | |  | |  | |
| Other (………) | | |  | |  | |
| **FINAL EXAM** | | | Quiz | | |  | |  | |
| Homework | | |  | |  | |
| Project | | |  | |  | |
| Oral Exam | | |  | |  | |
| Other (Written Exam) | | | 1 | | 60 | |
| **MAKE-UP EXAM** | | | **Oral** | **Written** | | **Oral and Written** | | **Multiple Choice** | |
|  | **X** | |  | |  | |
| **PREREQUISITE(S)** | | | - | | | | | | |
| **COURSE CONTENT** | | | Energy types and biological effects used for diagnosis, treatment and surgery in medicine. | | | | | | |
| **COURSE AIMS** | | | The students are aimed to learn and comprehend the types of energy used for diagnosis, treatment and surgery in medicine and their biological effects. | | | | | | |
| **COURSE OBJECTIVES** | | | At the end of this course, the types of energy used for diagnosis, treatment and surgery in medicine and its biological effects will be learned. | | | | | | |
| **TEXTBOOK(S)** | | | Prof. Dr. Hamza Esen, Prof. Dr. Ferhan Esen. Biyofizik: Yöntemler, Biyolojik Etkiler ve Önlemler. Anlara Nobel Tıp Kitabevleri, Ankara. (2017) | | | | | | |
| **REFERENCES** | | | Prof. Dr. Gürbüz Çelebi Tıp ve Diş Hekimliği Öğrencileri için Biyofizik Cillt-1, Barış Yayınları, Fakülteler Kitabevi, İzmir. (2011). | | | | | | |

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| **COURSE SYLLABUS** | | |
| **WEEK** | **DATE** | **SUBJECTS/TOPICS** |
| **1** |  | Types of Energy: Electromagnetic Waves and Material Waves |
| **2** |  | Electrical Energies Used for Diagnosis and Treatment |
| **3** |  | Biological Effects of Electric Current and Electric Shock |
| **4** |  | Time-Varying Electric and Magnetic Fields, Their Biological Effects |
| **5** |  | Electrosurgery |
| **6** |  | Radio Waves, Microwaves and Diathermy: Biological Effects of Thermal Stimulation |
| **7** |  | Infrared (Thermal Radiation) |
| **8** |  | MID-TERM EXAM |
| **9** |  | Ultraviolet and Biological Effects |
| **10** |  | Laser and Biological Effects |
| **11** |  | Applications of Ionization Energy |
| **12** |  | Interaction of Matter with Ionizing Radiation |
| **13** |  | Medical Imaging Techniques |
| **14** |  | Biological Effects of Ionizing Radiation |
| **15** |  | Ultrasound and XBiological Effects |
| **16** |  | FINAL EXAM |

**PROGRAM QUTCOMES**

Place choose never(1), few(2) or many(3) regarding your course

|  |  |  |  |  |
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|  | | **1** | **2** | **3** |
| **1** | gather as well as apply knowledge of health sciences |  |  | X |
| **2** | ask scientific questions and form hypothesis |  | **X** |  |
| **3** | search and interpret scientific literature |  |  | X |
| **4** | design and conduct experiments as well as analyze and interpret the data |  | **X** |  |
| **5** | learn how to use the experimental equipment effectively |  | **X** |  |
| **6** | function on multi-disciplinary teams |  |  | X |
| **7** | identify, formulate, and solve medical problems |  |  | X |
| **8** | use computer effectively both in conducting the experiments and analyzing the data |  | **X** |  |
| **9** | understand the impact of experimental solutions on national and international sciences |  | **X** |  |
| **10** | use effective written and oral communication/presentation skills |  |  | X |
| **11** | get an understanding of professional and ethical responsibility |  |  | X |
| **12** | get a recognition of the need for, and an ability to engage in lifelong learning |  |  | X |
| **13** | other (get an understanding of basic concepts of medical education) |  |  | X |
| **14** | other (get an understanding of approaching to ethical problems with taking basic concepts to center) |  |  | X |

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| **INSTRUCTOR NAME** | **DATE** |
| Prof. Dr. Ferhan ESEN | **26.04.2021** |