## COURSE DESCRIPTION

| 1. GENERAL | | | |
|---|---|---|---|
| **SCHOOL** | OF HEALTH SCIENCES | | |
| **DEPARTMENT** | OF MEDICINE | | |
| **STUDY LEVEL** | UNDERGRADUATE | | |
| **COURSE CODE** | AA0101 | **SEMESTER** | 7 THE |
| **COURSE TITLE** | RADIOLOGY I - DIAGNOSTIC IMAGING I | | |
| **COURSE INSTRUCTOR** | VLYCHOU MARIANNA, PROFESSOR | | |
| **CO-INSTRUCTORS** | KAPSALAKI EVTYCHIA, ROUNTAS CHRISTOS, IOANNIDIS IOANNIS, GEORGOULIAS PANAGIOTIS, KYRGIAS GEORGIOS, VALOTASIOU VARVARA, AKADEMIC SCHOLAR | | |

| TEACHING ACTIVITIES | WEEKLY TEACHING HOURS | CREDIT UNITS |
|---|---|---|
| LECTURES, CLINICAL TUTORIALS, ELECTRONIC COURSE, PROGRESSES | 4 | 4 |

| | |
|---|---|
| **COURSE TYPE** | INTERACTIVE LECTURES IN AMPITHEATRE OR ON LINE UNDER SELECTED CIRCUMSTANCES |
| **PREREQUIRED COURSES:** | ANATOMY I, II, III and PATH AN II |
| **LANGUAGE OF TEACHING AND EXAMINATIONS :** | GREEK, ENGLISH |
| **AVAILABLE TO ERASMUS STUDENTS** | YES |
| **WEBSITE (URL)** | From e class |

**2. Learning Outcomes**

The overall aim of the course is to introduce students to the basic principles of imaging modalities and the study of the imaging approach by system, with an introduction to the correct hierarchy of imaging modalities based on clinical indication; and to enable them to plan, analyze and formulate an imaging diagnosis and as well as the combined imaging-based approach to disease. Further, the course seeks to provide students with the fundamentals of the combined imaging-based approach to disease. The specific objectives of the course are specified in the following intended learning outcomes:

**Upon successful completion of the course, the student will be able to:**

He/she will be able to use the acquired knowledge in order to:

- Distinguish the main differences between normal and pathological imaging of the main organs of the human body
- To describe the pathology in an imaging method.
- To know basic differential diagnosis in Medical Imaging
- To be able to collaborate with fellow students to research and analyze the international literature.

**General Abilities**

**3. COURSE CONTENT**

**Unit 1** Introduction to basic principles of radiology.

**Unit 2** Chest Radiology, CNS Radiology, head and neck
**Unit 3** Musculoskeletal Radiology
**Unit 4** Principles of Radiation Therapy Oncology
**Unit 5** Nuclear Medicine
**Unit 6.** Repetitive exercises.

**4. TEACHING AND LEARNING METHODS - EVALUATION**

| | |
|---|---|
| **TEACHING METHOD** | LECTURES |
| **MANDATORY ATTENDANCES - LECTURES** | NO |
| **USE OF INFORMATION AND COMMUNICATION TECHNOLOGIES** | PowerPoint<br>…….<br>……. |
| **TEACHING METHODS** | ***Learning Activity*** \| ***Total Semester Workload*** |
| **STUDENT EVALUATION** | Either MCQ tests during the semester of oral exams at the end of the semester |

**5. RECOMMENDED - BIBLIOGRAPHY**


1. Clinical Radiology: Authors: M. I. Argyropoulou, A. Gouliamos, A. Drevelegas, A. Karantanas, N. L. Kelekis, P. Prasopoulos, D. Siablis, K. Tsampoulas, I. V. Fezoulidis,
   Publishers: I. Constantara.

2. Teaching Notes – Related scientific journals

## COURSE DESCRIPTION

| 1. GENERAL | | | |
|---|---|---|---|
| **SCHOOL** | OF HEALTH SCIENCES | | |
| **DEPARTMENT** | OF MEDICINE | | |
| **STUDY LEVEL** | UNDERGRADUATE | | |
| **COURSE CODE** | AA0102 | **SEMESTER** | 8 th SEMESTER |
| **COURSE TITLE** | RADIOLOGY II – DIAGNOSTIC IMAGING II | | |
| **COURSE INSTRUCTOR** | VLYCHOU MARIANNA, PROFESSOR | | |
| **CO-INSTRUCTORS** | KAPSALAKI EVTYCHIA, ROUNTAS CHRISTOS, IOANNIDIS IOANNIS, GEORGOULIAS PANAGIOTIS, KYRGIAS GEORGIOS, VALOTASIOU VARVARA, AKADEMIC SCHOLAR | | |

| TEACHING ACTIVITIES | WEEKLY TEACHING HOURS | CREDIT UNITS |
|---|---|---|
| LECTURES, CLINICAL TUTORIALS, ELECTRONIC COURSE, PROGRESSES | 5 | 5.00 |

| | |
|---|---|
| **COURSE TYPE** | INTERACTIVE LECTURES IN AMPITHEATRE OR ON LINE UNDER SELECTED CIRCUMSTANCES |
| **PREREQUIRED COURSES:** | ANATOMY I, II, III and PATH AN I |
| **LANGUAGE OF TEACHING AND EXAMS :** | GREEK, ENGLISH |
| **AVAILABLE TO ERASMUS STUDENTS** | YES |
| **WEBSITE (URL)** | From e class |

**2. Learning Outcomes**

The overall aim of the course is to introduce students to the basic principles of imaging modalities and the study of the imaging approach by system, with an introduction to the correct hierarchy of imaging modalities based on clinical indication; and to enable them to plan, analyze and formulate an imaging diagnosis and as well as the combined imaging-based approach to disease. Further, the course seeks to provide students with the fundamentals of the combined imaging-based approach to disease. The specific objectives of the course are specified in the following intended learning outcomes:

**Upon successful completion of the course, the student will be able to:**

He/she will be able to use the acquired knowledge in order to:

- Distinguish the main differences between normal and pathological imaging of the main organs of the human body
- To describe the pathology in an imaging method.
- To know basic differential diagnosis in Medical Imaging
- To be able to collaborate with fellow students to research and analyze the international literature.

**General Abilities**

**3. COURSE CONTENT**

**Unit 1. Gastrointestinal Radiology**
**Unit 2 Interventional Radiology**
**Unit 3 Emergency Radiology**
**Unit 4 Urinary Radiology**
**Unit 5 Nuclear Medicine**
**Unit 6 Principles of Radiation Oncology**
**Unit 7 Pediatric Radiology**
**Unit 8 Gynecological Radiology**

**4. TEACHING AND LEARNING METHODS - EVALUATION**

| | |
|---|---|
| **TEACHING METHOD** | LECTURES |
| **MANDATORY ATTENDANCES - LECTURES** | NO (Mandatory attendances only to Lab) |
| **USE OF INFORMATION AND COMMUNICATION TECHNOLOGIES** | PowerPoint<br>…….<br>……. |
| **TEACHING METHODS** | ***Learning Activity*** \| ***Total Semester Workload*** |
| **STUDENT EVALUATION** | Either MCQ tests during the semester of oral exams at the end of the semester |

**5. RECOMMENDED - BIBLIOGRAPHY**

LEARNING RADIOLOGY Author: William Herring
Publications: I. Constantara

Teaching Notes – Related scientific journals

**COURSE DESCRIPTION (2024-2025)**

**RADIOLOGIC ANATOMY**

| **1.GENERAL** | | | |
|---|---|---|---|
| **SCHOOL** | SCHOOL OF LIFE SCIENCES | | |
| **DEPARTMENT** | MEDICINE | | |
| **STUDY LEVEL** | *Undergraduate* | | |
| **COURSE CODE** | AA0201 | **SEMESTER** | WINTER |
| **COURSE TITLE** | RADIOLOGIC ANATOMY | | |
| **COURSE INSTRUCTOR** | KATERINA VASSIOU | | |
| **CO-INSTRUCTORS** | MARIANNA VLYCHOU | | |

| **TEACHING ACTIVITY** | **WEEKLY TEACHING HOURS** | **TEACHING CREDITS** |
|---|---|---|
| | 2 | 2.00 |

| | |
|---|---|
| **COURSE TYPE** | Optional course |
| **PREREQUIRED COURSES:** | NON |
| **LANGUAGE OF TECHING AND EXAMS:** | ENGLISH |
| **AVAILABLE TO ERASMUS STUDENTS** | YES |
| **MODULE WEB PAGE (URL)** | - |

**2.LEARNING OUTCOMES**

Module Objectives (Key learning benefits):

1. The understanding of the human anatomy via radiological methods: X-Ray, Ultrasound, Computed Tomography, Magnetic Resonance Imaging, Interventional Radiology.
2. Became familiar with the sectional anatomy and the anatomy at multi planar reconstruction.

Standard Requirements

The recognition of the most important anatomical structures of the human body and their topographic relationship at different radiological methods

**3.MODULE CONTENT**

1. Radiologic Anatomy of the Upper Limb – X-Ray, CT, MRI (2 hrs)
2. Radiologic Anatomy of the Lower Limb – X-Ray, CT, MRI (4 hrs)
3. Radiologic Anatomy of the Thorax – X-ray, CT (2 hrs)
4. Radiologic Anatomy of the abdominal organs – X-Ray, CT, MRI, US (4 hrs)
5. Radiologic Anatomy of the Central Nervous System - X-Ray, CT, MRI (4 hrs)
6. Radiologic Anatomy of the head and Neck – CT, MRI (4 hr)
7. Radiologic Anatomy of the Vascular System (2 hr)
8. Radiologic Anatomy of the Spine (2 hr)
9. Radiologic Anatomy of the Pelvis (2hr)

**4.TEACHING METHODS**

| | |
|---|---|
| **TEACHING METHOD** | Lectures, Laboratory work |
| **MANDATORY ATTENDANCES - LECTURES** | No |

| | |
|---|---|
| **USE OF INFORMATION AND COMMUNICATION TECHNOLOGIES** | Communication with students (via e-class) for easy access to teaching material and the organization of tutorials and group learning to elaborate research skills |
| **TEACHING METHODS** | |

| ***Learning activity*** | ***Total semester workload*** |
|---|---|
| Lectures | 26 |
| *Laboratory work* | 28 |
| | |
| | ***54 (27/ECTS)*** |
| | |

| | |
|---|---|
| **STUDENT EVALUATION** | Written Exams |

**5.RECOMMENDED BIBLIOGRAPHY**

- All students are provided with (in electronic form) lecture notes and presentations,

Recommended literature:

1. Harold Ellis, Vishy Mahadevan. Clinical Anatomy: Applied Anatomy for Students and Junior Doctors 14th Edition

2. Jens Waschke, Tobias Bockers, Friedrich Paulsen. Sobotta Anatomy Textbook : English Edition with Latin Nomenclature, 1st Edition

3. Helga Fritsch, Wolfgang Kuehnel. **Color Atlas of Human Anatomy, Vol. 2: Internal Organs** 6th Edition

**RADIATION ONCOLOGY - COURSE DESCRIPTION (2024-2025)**

| **1. GENERAL** | | | |
|---|---|---|---|
| **SCHOOL** | School of Health Sciences | | |
| **DEPARTMENT** | Faculty of Medicine | | |
| **STUDY LEVEL** | Undergraduate | | |
| **COURSE CODE** | **AA501** | **Semester** | SPRING |
| **COURSE TITLE** | RADIATION ONCOLOGY | | |
| **COURSE INSTRUCTOR** | George Kyrgias | | |
| **CO-INSTRUCTORS** | _######_ | | |

| **TEACHING ACTIVITIES** in case credits are awarded in separate parts of the course e.g. Lectures, Laboratory Exercises, etc. If the credits are awarded uniformly for the whole course, indicate the weekly teaching hours and the total number of credits. | **WEEKLY TEACHING HOURS** | **TEACHING CREDITS** |
|---|---|---|
| | TWO (2) | TWO (2) |

| | |
|---|---|
| **COURSE TYPE Background, General Knowledge, Scientific Area, Skills Development** | Mandatory optional |
| **PREREQUIRED COURSES** | NO |
| **LANGUAGE OF TEACHING AND EXAMS** | Greek (and English in case of foreign students participating) |
| **AVAILABLE TO ERASMUS STUDENTS** | Yes |
| **WEBSITE (URL)** | https://eclass.uth.gr/courses/MED_U_112/ |

**2. LEARNING OUTCOMES**

*The learning outcomes of the course are described, the specific knowledge, skills and abilities of an appropriate level that students will acquire after the successful completion of the course.*

*• Description of the Level of Learning Outcomes for each course according to the Qualifications Framework of the European Higher Education Area*

*• Descriptive Indicators of Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning*

The general purpose of the course is to introduce students to the principles of Radiation Oncology. Furthermore, the course seeks to provide students with the basic knowledge for the therapeutic applications of Oncology and Radiotherapy, applying a "hands on" educational process. The specific objectives of the course are specialized in the following intended learning outcomes:

**Upon successful completion of the course, the student will be able to:**

• understand the basic principles of Radiotherapy.

• have knowledge of the main therapeutic applications of Radiation Oncology.

• distinguish between the therapeutic doses of radiation to various cancerous tumors and the

protection of adjacent healthy tissues.

• use radiation therapy planning in clinical practice.

• analyze the possible side effects from radiation therapy in relation to the side effects caused by other anti-neoplastic treatments (Surgery, chemotherapy, hormone therapy, immunotherapy, targeted therapeutic agents)

• collaborate with fellow students to research and analyze international literature.

***General Abilities***

*Taking into account the general skills that the graduate must have acquired (as they are listed in the Diploma Supplement and are listed below), which of them is intended for the course?*

*Research, analysis and synthesis of data and information, using the necessary technologies Adaptation to new situations*
*Decision making*
*Autonomous work Teamwork*
*Working in an international environment*
*Work in an interdisciplinary environment*
*Production of new research ideas*
*Project design and management*
*Respect for diversity and multiculturalism*
*Respect for the natural environment*
*Demonstration of social, professional and moral responsibility and sensitivity in gender issues*
*Exercise criticism and self-criticism*
*Promoting free, creative and inductive thinking*

**3. Module Content**

Section 1. General Principles of Oncology (2 hours)
Section 2. General Principles of Radiotherapy (4 hours)
Section 3. Clinical Radiotherapy (4 hours)
Section 4. Radiotherapy in Breast Cancer (2 hours)
Section 5. Radiotherapy in Prostate Cancer (2 hours)
Section 6. Radiotherapy in Lung Cancer (2 hours)
Section 7. Radiotherapy in Colorectal Cancer (2 hours)
Section 8. Radiotherapy in Stomach Cancer (2 hours)
Section 9. Radiotherapy in Pancreatic Cancer (2 hours)
Section 10. Radiotherapy in Head and Neck Cancer (2 hours)
Section 11. Radiotherapy in Skin Cancer (2 hours)
Section 12. Radiotherapy in CNS Cancer (2 hours)

**4. TEACHING AND LEARNING METHODS - EVALUATION**

| | |
|---|---|
| **Teaching Method** (face to face, tutoring, distance learning etc) | Report on Radiotherapy Oncology topics – Commenting on patient case characteristics – Student's participation in the Radiotherapy Laboratory Analysis of clinical cases in digital format using specialized software. Powerpoint presentations |
| **MANDATORY ATTENDANCES - LECTURES** | In the laboratory lessons of the course. |
| **USE OF INFORMATION AND** | Power point |

<table>
<tr><td>COMMUNICATION TECHNOLOGIES<br>Use of T.P.E in Teaching, in Laboratory Education, in Communication with students</td><td>Sources and publications on the Internet</td></tr>
<tr><td>TEACHING METHODS<br>The way and methods of teaching are described in detail.<br>Lectures, Seminars, Laboratory Exercise, Field Exercise, Bibliography study & analysis, Tutoring, Internship (Placement), Clinical Exercise, Workshop, Interactive teaching, Study visits, Study work, project. etc<br><br>The student study hours as well as the non-guided study hours for each learning activity are indicated so that the total workload at the semester level corresponds to the ECTS standards.</td><td><table><tr><th>Learning activity</th><th>Total semester workload</th></tr><tr><td>Lectures: 14</td><td>28 hours</td></tr><tr><td>SUM (hours workload/ECTS)</td><td>54 hours in total / 2 ECTS</td></tr></table></td></tr>
<tr><td>STUDENT EVALUATION<br>Description of the evaluation process<br><br>Assessment Language, Assessment Methods, Formative or Concluding, Multiple Choice Test, Short Answer Questions, Essay Development Questions, Problem Solving, Written Assignment, Report / Report, Oral Examination, Public Presentation, Explicitly defined assessment criteria are stated and if and where they are accessible to students.</td><td>• Oral exams.<br>• Evaluation of students' participation in the Laboratory of Radiotherapy/Radiation Oncology<br>• The general assessment criteria are analyzed during the introductory course<br><br>Students are provided with Teaching Notes and files in electronic form</td></tr>
<tr><td colspan="2">5.Recommended Bibliography</td></tr>
<tr><td colspan="2">1. “Perez & Brady's Principles and Practice of Radiation Oncology” (7th Ed) – Edward C. Halperin, David E. Wazer, Carlos A. Perez, Luther W. Brady, Wolters Kluwer 2018<br>2. “Clinical Radiation Oncology Indications Techniques and Results” (3d ed), I. Fogelman – S.E.M. Clarke – G. Cook – G. Gnanasegaran, Wiley Blackwell 2017.</td></tr>
</table>

**COURSE DESCRIPTION**

**(2024 – 2025)**

| **1.GENERAL** | | | |
|---|---|---|---|
| **SCHOOL** | School of Health Sciences | | |
| **DEPARTMENT** | Faculty of Medicine | | |
| **STUDY LEVEL** | Undergraduate Course | | |
| **COURSE CODE** | AA0700 | **Semester** | Winter |
| **COURSE TITLE** | Basics of Nuclear Medicine | | |
| **COURSE INSTRUCTOR** | P. Georgoulias (Professor of Nuclear Medicine) | | |
| **CO-INSTRUCTORS** | V. Valotassiou (Assistant Professor of Nuclear Medicine)<br>E. Panagiotidis (Assistant Professor of Nuclear Medicine – PET Imaging)<br>I. Tsougos (Professor of Medical Physics) | | |

| **TEACHING ACTIVITIES** | **WEEKLY TEACHING HOURS** | **TEACHING CREDITS** |
|---|---|---|
| | 2 | 2 |
| | | |
| | | |

| | |
|---|---|
| **COURSE TYPE Background, General Knowledge, Scientific Area, Skills Development** | Optional Course |
| **PREREQUIRED COURSES** | None |
| **LANGUAGE OF TEACHING AND EXAMS** | Greek / English (in case of participation by international students) |
| **AVAILABLE TO ERASMUS STUDENTS** | Yes |
| **WEBSITE (URL)** | https://eclass.uth.gr/courses/MED_U_217/ |

**2.LEARNING OUTCOMES**

The general purpose of the course is to introduce students to the principles of Nuclear Medicine. Furthermore, the course aims to provide basic information regarding the diagnostic and therapeutic applications of Nuclear Medicine, based on a "hands on" educational process.

The objectives of the course are described in the following specific learning outcomes. In particular, upon successful completion, students will be able to:

- Understand the basic principles of Nuclear Medicine.
- Understand the main diagnostic and therapeutic applications of Nuclear Medicine.
- Differentiate between the normal radioisotopic distribution and the abnormal imaging patterns in the main organs and systems.

• Incorporate the main diagnostic and therapeutic radioisotope applications in the clinical settings.
• Analyze the scintigraphic findings, in combination with the medical history of the patient, related clinical features, and the laboratory results.
• Collaborate with fellow students in order to search and analyze data from international journals and/or other sources.

*General Abilities*

- Searching, analyzing and synthesizing data and information, using the necessary technologies
- Working in an international environment
- Working in an interdisciplinary environment

**3.Module Content**

Module 1. Introduction to nuclear medicine (2 hours)
Module 2. Principles of radiation protection in nuclear medicine (4 hours)
Module 3. Bone scintigraphy (2 hours)
Module 4. Scintigraphic studies of the endocrine glands (2 hours)
Module 5. Lung scintigraphy (2 hours)
Module 6. Scintigraphic studies of the kidneys - genitourinary system (2 hours)
Module 7. Brain scintigraphy - CNS (2 hours)
Module 8. Scintigraphic studies of the liver, biliary system, spleen, gastrointestinal system (2 hours)
Module 9. Nuclear cardiology (4 hours)
Module 10. Therapeutic applications (2 hours)
Module 11. Introduction to PET/CT imaging (4 hours)

**4. TEACHING AND LEARNING METHODS - EVALUATION**

| | |
|---|---|
| Teaching Method | • Lectures, Power-point presentations<br>• Presentation and analysis of interesting case studies<br>• Participation of the students in the daily practice of the Nuclear Medicine Laboratory<br>• Analysis of digital data related to interesting case studies, using dedicated software |
| **MANDATORY ATTENDANCES - LECTURES** | YES |
| USE OF INFORMATION AND COMMUNICATION TECHNOLOGIES | • Power-point presentations<br>• "Hands on" in dedicated workstations |
| TEACHING METHODS<br>The way and methods of teaching are described in detail. | ***Learning activity*** / ***Total semester workload***<br>**SUM (28 hours workload/ECTS)** / Total workload: 54 hours |

| | |
|---|---|
| Lectures, Seminars, Laboratory Exercise, Field Exercise, Bibliography study & analysis, Tutoring, Internship (Placement), Clinical Exercise, Workshop, Interactive teaching, Study visits, Study work, project. etc<br><br>The student study hours as well as the non-guided study hours for each learning activity are indicated so that the total workload at the semester level corresponds to the ECTS standards. | <table><tr><td></td><td></td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr></table> |
| **STUDENT EVALUATION**<br>Description of the evaluation process | • Oral examination<br>• Evaluation of students based on their participation in the routine clinical practice<br>• More information regarding the evaluation process will be available at the initial lecture of each teaching period |

**5.Recommended Bibliography**

Teaching notes and Power-point files are provided to the students.

Additional sources:

1. J.H. Thrall – J.P. O'Malley – H.A. Ziessman. ''Nuclear Medicine and Molecular Imaging: The Requisites'' (5th ed.), Philadelphia: Elsevier Health Sciences Division, 2020
2. J.F. A. Mettler – M.J. Guiberteau, "Essentials of Nuclear Medicine Imaging" (6th ed), Philadelphia: Elsevier Health Sciences Division, 2012.
3. I. Fogelman – S.E.M. Clarke – G. Cook – G. Gnanasegaran, "An Atlas of Clinical Nuclear Medicine" (3d ed), London: CRC Press (Taylor & Francis), 2014.
4. L.B. Solnes – H.A. Ziessman. ''Nuclear Medicine and Molecular Imaging: Case Review Series'' (3rd ed.), Philadelphia: Elsevier Health Sciences Division, 2019

Related scientific journals:

- European Journal of Nuclear Medicine and Molecular Imaging
- Journal of Nuclear Medicine
- Nuclear Medicine Communications

# COURSE DESCRIPTION 2024-2025

| 1. GENERAL | | | |
|---|---|---|---|
| **SCHOOL** | SCHOOL OF HEALTH SCIENCES | | |
| **DEPARTMENT** | MEDICAL | | |
| **LEVEL OF EDUCATION** | *Undergraduate* | | |
| **COURSE CODE** | BE0300 | **SEMESTER OF STUDIES** | 1st |
| **COURSE TITLE** | MEDICAL PHYSICS | | |
| **COURSE INSTRUCTOR** | THEODOROU KYRIAKI | | |
| **CO-INSTRUCTORS** | TSOUGOS IOANNIS, ACADEMY SCHOLAR | | |

| TEACHING ACTIVITIES | WEEKLY TEACHING HOURS | TEACHING CREDITS |
|---|---|---|
| | 6 | 6 |

| | |
|---|---|
| **COURSE TYPE** | BACKGROUND |
| **PREREQUIRED COURSES:** | NO |
| **LANGUAGE OF TEACHING AND EXAMS :** | GREEK |
| **AVAILABLE TO ERASMUS STUDENTS** | NO |
| **WEBSITE (URL)** | |

## 2.LEARNING OUTCOMES

Students are introduced to the scientific field of Medical Physics through a series of lectures and laboratory exercises.

Upon successful completion of the course the student will be able to:

- Has knowledge and understanding:
    i. the physical basis of the main functions of the human body (pressure, energy metabolism, hemodynamics, muscle and skeletal engineering, gas exchange, osmosis, etc.)
    ii. of radiation - biological tissue interaction (basic principles of radiation, radioactivity, interaction phenomena, physics of radiology, radiotherapy and nuclear medicine, basic principles of radiology)
    iii. of the basic principles of operation of medical devices (defibrillators, physiological parameters meters, X-ray tubes, CT and MRI scans, gamma / SPECT and PET cameras , linear accelerators, etc.)
- Roughly distinguishes natural principles that are hidden in biological phenomena.
- Uses laboratory devices for measuring normal parameters of the human body.
- observes phenomena in the laboratory, records and analyzes data
- solves problems and draws conclusions from data
- constructs graphs from data and extracts information from them
- handles the basic equipment of the Medical Physics laboratory
- works effectively in a team
- works safely in a laboratory environment and follows instructions
- understands laboratory errors and recognizes their sources .

**General Abilities**

**3. MODULE CONTENT**

- **Introduction: Terminology, Standard Design and Measurements**

  Teaching hours: 2

  Course Contents:

  1. Terminology
  2. Modeling
  3. Feedback and homeostasis
  4. Measurements and repeatability

- **Section 1: Energy - Heat - Project and Power**

  Teaching hours: 4

  Course Contents:

  1. Temperature
  2. Material Phase Changes (melting, venting)
  3. Distribution and Transfer of Heat to matter
  4. The human body as a heat engine
  5. Basic Catabolism
  6. Project and Power
  7. Heat Dissemination and Transfer in Biology
  8. Heat loss from the body
  9. Thermography
  10. Other Applications

- **Section 2: Pressure on the Body**

  Teaching hours: 4

  Section Contents:

  1. Measurement of pressure on the body
  2. Pressure inside the skull
  3. Pressure on the eye
  4. Pressure on the digestive system
  5. Pressure (tension) in the frame
  6. Pressure on the bladder
  7. Pressure while diving
  8. Hyperbaric oxygen therapy

- **Section 3: Osmosis and the Kidneys**

  Teaching hours: 4

  Section Contents:

  1. How substances are transported in liquids
  2. How substances are transported through membranes
  3. Regulation of the interstitial (intercellular) fluid
  5. The artificial kidney

- **Section 4: Electrical Signals from the Body**

  Teaching hours: 4

  Section Contents:

  1. The nervous system and the neuron
  2. Electrical potentials of neurons
  3. Electrical signals from the muscles - Electromyogram
  4. Electrical signals from the heart - Electrocardiogram

5. Electrical signals from the brain - Electroencephalogram
6. Electrical signals from the eyes
7. Magnetic signals from the heart and brain
8. Current research on electricity in the human body

- **Section 5: Physics of the Cardiovascular System**
  Teaching hours: 4
  Section Contents:
  1. Main parts of the cardiovascular system
  2. Exchange of oxygen and carbon dioxide in the capillary system
  3. The work of the heart
  4. Blood pressure and its measurement
  5. The pressure on the vessel wall ( transmural pressure)
  6. Application of the Bernoulli principle to the cardiovascular system
  7. How fast does the blood flow?
  8. Blood flow - Flat (linear) and turbulent (turbulent) flow
  9. Sounds of the heart
  10. The physics of some cardiovascular diseases
  11. Some other functions of the blood

- **Section 6: Sound and Speech**
  Teaching hours: 2
  Section Contents:
  1. General properties of sounds
  2. The body as a drum (the percussion in medicine)
  3. The stethoscope
  4. The production of speech (voice)

- **Section 7: Physics of the Ear and Hearing**
  Teaching hours: 2
  Section Contents:
  1. The ear and hearing
  2. Hair cells and sound detection
  3. Sensitivity of the ears
  4. Examination of hearing

- **Section 8: Lung and Breathing Physics**
  Teaching hours: 4
  Section Contents:
  1. The airways
  2. How the blood and lungs interact
  3. Measurement of lung volume
  4. Pressure, air flow, changes in lung volume
  5. Physics of cells
  6. The mechanism of respiration
  7. The resistance of the airways
  8. Work during respiration
  9. Physics of some common lung diseases
- **Section 9: Physics of the Eyes and Vision**
  Teaching hours: 4
  Section Contents:

1. Areas of the eye where the focus is
2. Other parts of the eye
3. The retina - the light detector of the eye
4. The threshold of vision
5. Diffraction phenomena in the eye
6. The visual acuity
7. Optical illusions and related phenomena
8. Defective vision and its correction
9. Color vision and color aberration
10. Organs used in ophthalmology

- **Section 10: Muscles and Strengths**
  Teaching hours: 4
  Section Contents:
  1. Effect of gravity on the body
  2. Friction forces
  3. Strengths, muscles and joints
  4. Forces during the conflict
  5. Physics of the jaw

- **Section 11: Skeleton Physics**
  Teaching hours: 2
  Section Contents:
  1. Skeletal composition and bone strength
  2. Lubrication of joints and bones
  3. Measurement of the body's bone salts

- **Section 12: Atomic Structure**
  Teaching hours: 2
  Section Contents:
  1. Elements of Engineering - Units
  2. Particle nature of electromagnetic radiation
  3. The spectrum of electromagnetic radiation
  4. Principle of uncertainty
  5. Rutherford atomic model
  6. Spectra of individuals
  7. Bohr individual model
  8. Stimulation and ionization
  9. Parameters of the Bohr model
  10. Atoms with many electrons
  11. Quantum mechanics of the individual

- **Section 13: Nuclear Structure, Radioactivity, Nuclear Reactions**
  Teaching hours: 2
  Section Contents:
  1. Nuclear forces and Nuclear radiation
  2. Quantum numbers of nucleons , spin and magnetic moment of nucleus
  3. Kernel model
  4. Elementary particles and forces
  5. Mechanisms of radioactive decay
  6. Quantitative relationship of radioactivity

7. Natural radioactive materials
9. Applications

- **Section 14: Interactions of γ and X of photons, charged particles and neutrons with matter.**
  Teaching hours: 4
  Section Contents:
  1. Interactions of γ and X photons with matter
  2. Interactions of charged particles with matter
  3. Neutron-matter interactions

- **Section 15: Dosimetry Ionizing Radiation**
  Teaching hours: 4
  Section Contents:
  1. Sources and fields of radiation
  2. Energy transfer
  3. Energy Conversion
  4. Deposition and Absorption of Energy
  5. Electronic Balance
  6. Radiation detection

- **Section 16: Dosimetry Methods and Instruments**
  Teaching hours: 2
  Section Contents:
  1. Ionizing radiation detectors with gas
  2. Calorimeters
  3. Chemical Dosimetry
  4. Luminosity dosimetry
  5. Dosimetry with scintillation detectors
  6. Dosimetry luminosity (TLD)
  7. Dosimetry with semiconductors
  8. Dosimetry with film
  9. Dosimetry with gels ( gel dosimetry )
  10. Neutron detectors
  11. Staff dosimeters

- **Section 17: Physical Principles of Nuclear Medicine**
  Teaching hours: 4
  Section Contents:
  1. Nuclear medicine measuring instruments
  2. γ- spectrometry
  3. Radiopharmaceuticals
  4. Biological kinetics of radiopharmaceuticals
  5. Gamma -camera
  6. Tomography γ -Camera and PET Camera
  7. Therapeutic applications of nuclear medicine
  8. in- vitro Nuclear Medicine
- **Section 18: Natural Principles of Radiation Therapy**
  Teaching hours: 6
  Section Contents:
  1. Purpose of radiotherapy
  2. Radiation therapy methods

3. Sources of Radiotherapy with external beams
4. Irradiation with external photon beams
5. Basic radiation parameters with photon beams
6. Examples of Radiotherapy
7. Special treatments
8. Radiation therapy using particles

- **Section 19: Physical Principles of Radiology**
  Teaching hours: 4
  Section Contents:
  1. X-ray
  2. Digital Radiology
  3. Radioscopy
  4. Plain Tomography
  5. Computational CT

- **Section 20: Radiobiology Data**
  Teaching hours: 4
  Section Contents:
  1. Interaction of radiation - biological matter
  2. Radial damage to DNA
  3. Radiation-induced mutations
  4. Radial provocateurs chromosomal alterations
  5. Cell survival curves after irradiation
  6. Patterns of survival curves
  7. Factors affecting the effect of radiation
  8. Human irradiation
  9. Application of Radiobiology in Radiotherapy

- **Section 21: Principles of Magnetic Resonance Imaging**
  Teaching hours: 4
  Section Contents:
  1. Nuclear Magnetic Resonance (NMR) and imaging (MRI)
  2. Static Magnetic Fields
  3. Alternating Magnetic Fields
  4. From NMR to MRI
  5. Nuclear magnetic resonance pulses
  6. Relaxation procedures and their measurement
  7. The NMR imaging equation

- **Section 22: Radiation Protection Elements**
  Teaching hours: 2
  Section Contents:
  1. Principles of etiology and optimization of radiation
  2. protection dosage units in Radiation Protection
  3. Radiation from natural sources
  4. Radiation from artificial sources
  5. Radiation protection system

**4. TEACHING AND LEARNING METHODS - EVALUATION**

| | |
|---|---|
| **TEACHING METHOD** | Live in the amphitheater, Lectures |

| | |
|---|---|
| **MANDATORY ATTENDANCES - LECTURES** | MANADATORY ATTEDANCES ONLY TO LABORATORY EXERCISES |
| **USE OF INFORMATION AND COMMUNICATION TECHNOLOGIES** | ICT is used in communication with students (via e-class) for easier management of material and consultation and creation of working groups. |
| **TEACHING METHODS** | ***Learning Activity*** / ***Total Semester Workload*** |
| | **Total time (Teaching Hours + Student Workload) 27 per ECTS** / **161 hours** |
| **STUDENT EVALUATION** | - Written questions for the examination of the Course - Multiple choice questions for the examination of the Laboratory Exercises.<br>- Laboratory Exhibitions (Assignments) after the completion of each Laboratory Exercise. |

**5. RECOMMENDED - BIBLIOGRAPHY**

- Suggested Bibliography:


- Kappas K & Theodorou K, Radiation and Radiation Protection, Volumes A 'and B', Broken Hill Eds , 2017
- Georgiou E, Giakoumakis E, Kottou S, Dalles K, Serefoglou A & Skyllakou - Louizi A, Physics of the Human Body, Greek edition, Parisianos publications , Athens, 2003
- Georgiou & co. 2014, Georgiou E & co, Diagnostic & Therapeutic applications of radiation, Ed . Broken Hill Pub , 2014
- Georgoulias P, Elements of Nuclear Medicine, University of Thessaly Publications, 2010
- Psarrakos K, Molyvda - Athanasopoulou E, Gotzamani - Psarrakou A & Siountas A, Medical Physics, Elements of Radiophysics and Applications in Medicine. Radiobiology, Radiation Protection, Psarrakos K, University Studio Press , Thessaloniki


-Related scientific journals:

- Physics in Medicine and Biology
- Medical Physics
- Physica Medica
- Radiotherapy and Oncology

# COURSE DESCRIPTION 2024-2025

| 1. GENERAL | | | |
|---|---|---|---|
| **SCHOOL** | SCHOOL OF HEALTH SCIENCES | | |
| **DEPARTMENT** | MEDICAL | | |
| **LEVEL OF EDUCATION** | *Undergraduate* | | |
| **COURSE CODE** | BE0311 | **SEMESTER OF STUDIES** | SPRING |
| **COURSE TITLE** | RADIATION PROTECTION | | |
| **COURSE INSTRUCTOR** | TSOUGOS IOANNIS | | |
| **CO-INSTRUCTORS** | THEODOROU KYRIAKI, ACADEMY SCHOLAR | | |

| TEACHING ACTIVITIES | WEEKLY TEACHING HOURS | CREDIT UNITS |
|---|---|---|
| | 2 | 2 |

| | |
|---|---|
| **COURSE TYPE** | BACKGROUND AND SCIENTIFIC AREA |
| **PREREQUIRED COURSES:** | MEDICAL PHYSICS |
| **LANGUAGE OF TEACHING AND EXAMS :** | GREEK (ENGLISH IF THERE IS ERASMUS STUDENT PARTICIPATION ) |
| **THE COURSE IS OFFERED TO ERASMUS STUDENTS** | YES |
| **WEBSITE (URL)** | |

**2.Learning Outcomes**

The course is the basic tool for learning radiation protection techniques to protect health from the dangers of exposure to ionizing radiation for medical purposes.
The course aims to introduce students to the appropriate theoretical and practical training and to provide professional skills in the field of radiation protection.

It also refers to the practical aspects of radiation protection procedures. In this sense, the course is the basis on which continuous education and training will be provided on the clinical use of new techniques and the relevant requirements of clinical radiation protection.

Finally, the aim of the course is for students to understand the importance of the basic principles of radiation protection outside the area of ionizing radiation and the ever-increasing complex legal framework that governs these procedures.

It should be emphasized that this course differs from the classical radiophysics courses taught in the 1st year of the Medical Department in the following points:

Emphasis is placed on the legal dimension of the need for radiation protection

- The philosophy of professionalism and clinical observance of the necessary regulations is introduced. The student learns that regardless of inclination, direction and specialty he will choose in the future, he is involved in his professional field with radiation either diagnostically or therapeutically.
- Radiation and its consequences are demystified through the description in the hospital and with specific examples of the diagnostic and therapeutic value of radiation, its use, abuse and protection from it.
- For the first time, the student is immersed in the idea of quality assurance. He learns that the faithful observance of work protocols, the application of scientific criteria for the selection

and use of technological equipment, ensures the fidelity and quality of the image with simultaneous minimum radial load.

**Upon successful completion of the course the student will be able to:**
Has knowledge and understanding of:

- The use of radiation in the whole range of human activities
- The dangers of using radiation to hospital staff and patients
- Radiation handling for medical reasons safely for staff and patients, accident prevention and management.
- The legal framework governing the use of radiation
- An additional goal is to ensure quality in radiological operations (patient - staff - machinery - space chain) through the faithful observance of radiation protection rules.

**General Abilities**

**3. MODULE CONTENT**

1. Introduction (1 hour)
   1.1. Objectives
   1.2. Necessity of Radiation Protection in the Hospital
2. Physics of Radiation (2 hours)
   2.1. Basic principles
   2.2. Radiation-Matter Interaction
   2.3. Environmental Radiation
   2.4. Radiation of Medical Operations
3. Etiology and Legislation of Radiation Protection (3 hours)
   3.1. Rationale
   3.2. Dose Definition - Dose Limits
   3.3. European and International Legislation
   3.4. Greek legislation
   3.5. Organizations
      3.5.1. GAEC
      3.5.2. IAEA
      3.5.3. ICRU
4. Radiation Protection Training (1 hour)
5. Staff Responsibilities (1 hour)
6. Dosimetry and Radiation Protection of Patients and Staff (3 hours)
   6.1. Control and Dosimetry Instruments
   6.2. Staff dosimetry
   6.3. Sensitive Population Groups
   6.4. Personnel Logistics - Licenses
7. Description of Parts Using Ionizing Radiation (2 hours)
   7.1. External Radiotherapy and Brachytherapy
   7.2. Nuclear Medicine - in vitro , in vivo
   7.3. Radiodiagnostics
      7.3.1. CT scanner
      7.3.2. Classical Radiodiagnostics
      7.3.3. Invasive Radiology - Angiography
      7.3.4. Mammography
   7.4. Surgeries
   7.5. Dentistry - Maxillofacial
   7.6. Computer Radiation
8. Radiobiology - Radiopathology (3 hours )

8.1. Mechanisms Ionizing Radiation Actions
8.2. Biophysical and Cellular Basis of Radial Carcinogenesis
8.3. Biological Base of Maximum Allowed Dose Limits
8.4. Methods for Detection of Hypersensitivity to Radiation
8.5. Danger of Doses from Medical Applications
8.6. Chronic Radiation with low dose
9. Accidents (2 hours)
9.1. Radioactive Contamination
9.2. Information Systems for Radioactive Accidents
9.3. Dosimetric Accident Assessment
9.4. Surgery after a major accident
9.5. Accident History In Hospitals And Outside - Lessons Learned
9.6. Accident Reporting to the Competent Authorities
9.7. Prevention
10. Transportation of Radioactive Materials to and from Hospital (1 hour)
10.1. General Principles of Transport - Procedures
10.2. Transport safety
10.3. Radioactive Residues (disposal - disposal - transport)
11. Radiation Equipment Management (1 hour)
11.1. Standards
11.2. Selection Criteria
11.3. Necessity of Quality Controls
12. Protection from Non- Ionizing Radiation (2 hours)
12.1. Radiation protection bases, High / Low Frequencies
12.2. E / M Fields of very low frequencies
12.3. Mobile
12.4. Effect of magnetic fields on pacemakers - trackers
12.5. Magnetic - Electrical Tomography
12.6. Electrical safety
12.7. Lasers
12.8. Ultrasound
13. Quality Assurance (1 hour)
13.1. Quality Assurance Systems - Responsibilities and Obligations
13.2. Implementation of a Quality Assurance System for Integrated Radiation Protection of a Hospital
14. Ionizing Radiation outside the Hospital (3 hours)
14.1. Industrial Applications of Ionizing Radiation
14.2. Ionizing Radiation Research Applications
14.3. War Use of Ionizing Radiation

**4. TEACHING AND LEARNING METHODS - EVALUATION**

| | |
|---|---|
| **TEACHING METHOD** | Live in the amphitheater, Lectures, Seminars |
| **MANDATORY ATTENDANCES - LECTURES** | Mandatory attendances to Lab exercises |
| **USE OF INFORMATION AND COMMUNICATION TECHNOLOGIES** | ICT is used. in communication with students (via e - class ) for easier management of material and consultation and creation of working groups. |
| **TEACHING METHODS** | |

| ***Learning Activity*** | ***Total Semester Workload*** |
|---|---|
| Lectures | 26 |

| | | |
|---|---|---|
| | *Bibliography study & analysis* | 10 |
| | *Education based on real problems(Problem Based Learning - PBL)* | 16 |
| | ***Course Set (26 Working hours per credit unit)*** | ***52 (26)*** |
| **STUDENT EVALUATION** | Special emphasis is given to the oral examination with emphasis on the possibility of analyzing situations. The student is not asked to memorize terms, mathematical equations or case law but<br>a) be able to research and find answers through this whole set of documents (laws, books, etc.), already being aware of some basic principles;<br>b) become the property of any process to be part of a quality assurance system;<br>c) the student is able to predict what might happen if the procedure approved for the case is not followed.<br><br>The material in which the student is going to be examined in the form of multiple choice questions and problem solving during the course is mentioned in detail.<br><br>Theoretical training by any supervisory means and to be carried out (blackboard, video projections , slides, etc. ) aims to transmit knowledge and experience. Where appropriate, it will be accompanied by demonstrations in clinical and laboratory settings to understand the theory. Two additional elements will allow real consolidation:<br>a) the teacher, as far as possible, mentions and analyzes specific examples from the international literature and reality or his personal experience. For example, the "Accident Prevention" course will include the theoretical part and conclude with a description of the accident at the Radiotherapy Department of Zaragossa State Hospital , Spain (several dead and hundreds injured by overexposure to radiation). The responsibility of all involved will be analyzed (management, radiophysicists , radiotherapists , technicians and construction company). It will be shown that the error is never of one individual but of an entire chain<br>b ) Problem Based Learning - PBL. At the end of each section there will be a general discussion based on a specific example and the possible solutions will be analyzed. In the previous example, the responsibilities of each person involved will be analyzed and the appropriate scenarios will be constructed for the possible developments of the accident if each link in the chain acted differently from what it did. | |
| **5. RECOMMENDED - BIBLIOGRAPHY** | | |
| -Proposed Bibliography:<br>• Printed matter<br>• International Bibliography | | |

- European Union Radiation Protection Directives
- Legislation and Methodology of other European countries
- Greek legislation
- Teacher notes
- Multi-question computer program ( self -education and examination) that includes 2000 topics
- Images, texts and educational simulations from the internet
- Transparencies and slides
- Video projections
- Education based on real problems Based Learning - PBL).

This is a process that is already applied to the education of students in many universities. A series of issues/problems will be given (accidents, machine selection procedures, legal issues, interdepartmental and administration communication issues, etc.) which will be discussed between teachers / students and malfunctions, consequences and possible solutions will be recorded.
-Related scientific journals

**COURSE DESCRIPTION**

**2024-2025**

| **1.GENERAL** | | | |
|---|---|---|---|
| **SCHOOL** | HEALTH SCIENCES | | |
| **DEPARTMENT** | MEDICINE | | |
| **STUDY LEVEL** | UNDERGRADUATE | | |
| **COURSE CODE** | BE 0400 | **Semester** | 1 |
| **COURSE TITLE** | MEDICAL AND COMPUTATIONAL STATISTICS | | |
| **COURSE INSTRUCTOR** | Professor Zintzaras Elias | | |
| **CO-INSTRUCTORS** | Theodoros Mprotsis (Contracted Lecturer) tmprotsis@uth.gr | | |

| TEACHING ACTIVITIES<br>in case credits are awarded in separate parts of the course e.g. Lectures, Laboratory Exercises, etc. If the credits are awarded uniformly for the whole course, indicate the weekly teaching hours and the total number of credits. | **WEEKLY TEACHING HOURS** | **TEACHING CREDITS** |
|---|---|---|
| Lectures- Workshop | 4 | 4 |
| **Tutoring Sessions** | 2 | |
| | | |

| | |
|---|---|
| **COURSE TYPE** | Compulsory Specialization |
| **PREREQUIRED COURSES** | NO |
| **LANGUAGE OF TEACHING AND EXAMS** | GREEK |
| **AVAILABLE TO ERASMUS STUDENTS** | YES |
| **WEBSITE (URL)** | http://biomath.med.uth.gr |

**2.LEARNING OUTCOMES**

*The learning outcomes of the course are described, the specific knowledge, skills and abilities of an appropriate level that students will acquire after the successful completion of the course.*

*• Description of the Level of Learning Outcomes for each course according to the Qualifications Framework of the European Higher Education Area*

*• Descriptive Indicators of Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning*

Statistics is the core of modern scientific methodology. Its role is most important in medical research and practice. With its knowledge we are able to conduct scientific research and to correctly evaluate the findings of studies. Statistics are essential for the design of experiments and studies, their analysis and presentation, and their utilization in drawing conclusions.

In this course the theory is applied, with the help of the computer and the use of the statistical program SPSS
The specific objectives of the course are specialized in the following intended learning outcomes:
**Upon successful completion of the course, the student will be able to**:
He/she will be able to use the acquired knowledge in order:
• to enter and manage medical data in SPSS
• to conduct descriptive statistical analysis of data from clinical studies, i.e. to summarize the available data (with graphical and quantitative methods of data description)
• to conduct statistical analyses of medical data from clinical studies using medical statistical methods (such as t-test, ANOVA, χ2 test, Ratio of proportions, Diagnostic tests-ROC analysis, Regression, Non-parametric tests, Survival analysis, Design and Analysis of clinical studies, Meta-Analysis)
• to present the results of statistical analyses of data from clinical studies
• to interpret the results of statistical analyses of data from clinical studies
• to be able to collaborate with fellow students in order to search and analyze the international medical literature

***General Abilities***

*Research, analysis and synthesis of data and information, using the necessary technologies*
*Decision making*
*Autonomous work*
*Promoting free, creative and inductive thinking*

**3.Module Content**

**Section 1**
Probabilities
**Section 2**
Graphical and Quantitative methods of data description
**Section 3**
Normal distribution
**Section 4**
t-test for paired observations
**Section 5**
t-test for two independent samples
**Section 6**
Analysis of variance
**Section 7**
Compare rates
**Section 8**
Correlation tables -x2 test
**Section 9**
Odds ratio
**Section 10**
Diagnostic tests
**Section 11**
Correlation coefficient
**Section 12**
Linear regression
**Section 13**
Non-parametric tests
**Section 14**
Survival analysis

**Section 15**
Design and Analysis of Clinical Studies
**Section 16**
Meta-Analysis

Each module is followed by laboratory exercises using the SPSS statistical package on PC.

**4. TEACHING AND LEARNING METHODS - EVALUATION**

| | |
|---|---|
| Teaching Method<br>(face to face, tutoring, distance learning) | Face to face lectures in the Laboratory of Biomathematics of the Department and the auditorium |
| MANDATORY PRESENCE | **Mandatory attendance of Workshops** |
| USE OF INFORMATION AND COMMUNICATION TECHNOLOGIES | **Use of statistical package SPSS**<br>**Use of Computer technology in communication with students (website, e-mail, etc.)** |
| TEACHING METHODS<br>The way and methods of teaching are described in detail.<br>Lectures, Seminars, Laboratory Exercise, Field Exercise, Bibliography study & analysis, Tutoring, Internship (Placement), Clinical Exercise, Workshop, Interactive teaching, Study visits, Study work, project. etc<br><br>The student study hours as well as the non-guided study hours for each learning activity are indicated so that the total workload at the semester level corresponds to the ECTS standards. | |

| ***Learning activity*** | ***Total semester workload*** |
|---|---|
| Lectures - | 26 |
| Workshop | 26 |
| Independent Study | 4 |
| Solving Exercises- | 4 |
| *Tutoring sessions* | 2 |
| | |
| | |
| | |
| | |
| | |
| ***Total Course Duration (31 workload hours per credit unit)*** | ***62*** |

| | |
|---|---|
| **STUDENT EVALUATION**<br>**Description of the evaluation process**<br><br>Assessment Language, Assessment Methods, Formative or Concluding, Multiple Choice Test, Short Answer Questions, Essay Development Questions, Problem Solving, Written Assignment, Report / Report, Oral Examination, Public Presentation, *Explicitly defined assessment* | Written final examination in Greek which includes the analysis of both real and educational datasets with a multiple-choice test and a problem-solving test. Compulsory, usually individual, assignments are given during the semester |

| | |
|---|---|
| *criteria are stated and if and where they are accessible to students.* | |

**5.Recommended Bibliography**

*Teaching notes are distributed:*
*Elias Zintzaras (2008) BIOSTATISTICS WITH ELEMENTS OF COMPUTATIONAL MEDICAL STATISTICS. Data Analysis with the help of Statistical Packages (SPSS)*
*(available on the laboratory website as well as teaching materials)*

*In addition, the following bibliography is indicated*

*1. DENNIS HOWITT, DUNCAN CRAMER (Editor: S. Kontakos). Statistics with SPSS 16.0. Kleidaritmos Publications*
*2. Carver and Nash (2006). Doing data analysis with SPSS version 18*

**COURSE DESCRIPTION**

**2024-2025**

| **1.GENERAL** | | | |
|---|---|---|---|
| **SCHOOL** | HEALTH SCIENCES | | |
| **DEPARTMENT** | MEDICINE | | |
| **STUDY LEVEL** | UNDERGRADUATE | | |
| **COURSE CODE** | **BE0401** | **Semester** | SPRING |
| **COURSE TITLE** | EVIDENCE-BASED MEDICINE AND META-ANALYSIS | | |
| **COURSE INSTRUCTOR** | Zintzaras Elias | | |
| **CO-INSTRUCTORS** | Doxani Chrysoula (Contracted Lecturer), doxani@uth.gr<br>Theodoros Mprotsis (Contracted Lecturer), tmprotsis@uth.gr | | |

| TEACHING ACTIVITIES<br>in case credits are awarded in separate parts of the course e.g. Lectures, Laboratory Exercises, etc. If the credits are awarded uniformly for the whole course, indicate the weekly teaching hours and the total number of credits. | **WEEKLY TEACHING HOURS** | **TEACHING CREDITS** |
|---|---|---|
| Lectures- Workshop | 2 | 2 |
| | | |
| | | |

| | |
|---|---|
| **COURSE TYPE** | optional compulsory |
| **PREREQUIRED COURSES** | NO |
| **LANGUAGE OF TEACHING AND EXAMS** | GREEK |
| **AVAILABLE TO ERASMUS STUDENTS** | YES |
| **WEBSITE (URL)** | http://biomath.med.uth.gr |

**2.LEARNING OUTCOMES**

*The learning outcomes of the course are described, the specific knowledge, skills and abilities of an appropriate level that students will acquire after the successful completion of the course.*

*• Description of the Level of Learning Outcomes for each course according to the Qualifications Framework of the European Higher Education Area*

*• Descriptive Indicators of Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning*

The general purpose of the course is to introduce students to the principles of Evidence-Based Medicine and the methodology of Meta-Analyses and to enable them to evaluate and interpret the results of published clinical studies with the ultimate goal of applying them in clinical practice.

The specific objectives of the course are specialized in the following intended learning outcomes:

**Upon successful completion of the course, the student will be able to:**
He/she will be able to use the acquired knowledge in order to:
• To understand the types of clinical trials
• To systematically search for clinical studies from information sources (e.g. Cochrane Library, etc.)
• To methodologically evaluate clinical studies as well as their meta-analyses
• To process and extract clinical trial data
• To meta-analyze the results of clinical studies, to present and interpret them
• To evaluate and meta-analyze the data of diagnostic studies
• To become familiar with the decision-making process based on statistical data

***General Abilities***

*Research, analysis and synthesis of data and information, using the necessary technologies*
*Decision making*
*Autonomous work*
*Teamwork*
*Working in an international environment*
*Promoting free, creative and inductive thinking*

**3.Module Content**

• Categories of medical research and the hierarchy of evidence.
• Search for clinical studies and sources of clinical information (eg Cochrane Library, etc.).
• Critical methodological/statistical evaluation of clinical studies.
• Clinical Review Methodology 1: checking for published reviews, formulating the clinical question and developing the systematic review protocol and planning the search and conducting a literature search.
• Clinical Review Methodology 2. Selection of studies, data extraction and interpretation of results
• Meta-analysis 1: Synthesis of results of clinical studies when there is no heterogeneity between studies.
• Meta-analysis 2. Calculation and investigation of heterogeneity between studies.
• Meta-analysis 3: Synthesis of results of clinical studies when there is heterogeneity between studies.
• Meta-analysis 4: Checking for errors,
• Evaluation of the quality of the studies with the CONSORT, STROBE and PRISMA tools.
• Decision making with a statistical approach.
• Diagnostic studies 1: diagnostic indicators and assessment of study quality based on the STARD questionnaire.
• Diagnostic studies 2: systematic review and meta-analysis

**4. TEACHING AND LEARNING METHODS - EVALUATION**

| | |
|---|---|
| Teaching Method<br>(face to face, tutoring, distance learning) | Face to face lectures in the Laboratory of Biomathematics of the Department and the auditorium |
| MANDATORY PRESENCE | **NO** |
| USE OF INFORMATION AND COMMUNICATION TECHNOLOGIES | **Lectures in powerpoint (ppt) format**<br>**In each session, laboratory exercises are carried out on a computer**<br>**Use of Computer technology in communication with students** |

<table>
<tr><td></td><td colspan="2">(website, e-mail, etc.)</td></tr>
<tr><td>TEACHING METHODS<br>The way and methods of teaching are described in detail.<br>Lectures, Seminars, Laboratory Exercise, Field Exercise, Bibliography study & analysis, Tutoring, Internship (Placement), Clinical Exercise, Workshop, Interactive teaching, Study visits, Study work, project. etc<br><br>The student study hours as well as the non-guided study hours for each learning activity are indicated so that the total workload at the semester level corresponds to the ECTS standards.</td><td colspan="2"><table>
<tr><th>Learning activity</th><th>Total semester workload</th></tr>
<tr><td>Lectures - Workshop</td><td>26</td></tr>
<tr><td>Independent Study</td><td>12</td></tr>
<tr><td>Solving Exercises-</td><td>12</td></tr>
<tr><td></td><td></td></tr>
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<tr><td></td><td></td></tr>
<tr><td>Total Course Duration (25workload hours per credit unit)</td><td>50</td></tr>
</table></td></tr>
<tr><td>STUDENT EVALUATION<br>Description of the evaluation process<br><br>Assessment Language, Assessment Methods, Formative or Concluding, Multiple Choice Test, Short Answer Questions, Essay Development Questions, Problem Solving, Written Assignment, Report / Report, Oral Examination, Public Presentation, Explicitly defined assessment criteria are stated and if and where they are accessible to students.</td><td colspan="2">The evaluation of the students is performed in Greek with written exercise.</td></tr>
<tr><td colspan="3">5.Recommended Bibliography</td></tr>
<tr><td colspan="3">Teaching notes are distributed:<br>Elias Zintzaras (2015) “Methodology of Meta-Analysis”<br>Postgraduate Programme (MSc) «Research Methodology in Biomedicine, Biostatistics and Clinical Bioinformatics at University of Thessaly»<br><br>Elias Zintzaras and Chrysoula Doxani (2015) “Evidence-based Medicine and Translational Medicine”<br>Postgraduate Programme (MSc) «Research Methodology in Biomedicine, Biostatistics and Clinical Bioinformatics at University of Thessaly»<br><br>In addition, the following bibliography is indicated<br>Anne Whitehead, Meta-Analysis Of Controlled Clinical Trials, Wiley, 2013<br><br>Cochrane Handbook for Systematic Reviews of Interventions version 6.2 The Cochrane Collaboration. Cochrane, 2021</td></tr>
</table>

## COURSE DESCRIPTION

| **1. GENERAL** | | | |
|---|---|---|---|
| **SCHOOL** | SCHOOL OF HEALTH SCIENCES | | |
| **DEPARTMENT** | MEDICAL | | |
| **STUDY LEVEL** | *Undergraduate* | | |
| **COURSE CODE** | **BE0500** | **SEMESTER OF STUDIES** | 1 st |
| **COURSE TITLE** | INTRODUCTION TO COMPUTER SCIENCE | | |
| **COURSE INSTUCTOR** | Theodorou Kyriaki | | |
| **CO-INSTURCTORS** | Tsougkos Ioannis, Koutsiaris Aristotelis, Karpetas Georgios and Kylindris Thomas | | |

| **TEACHING ACTIVITIES** *in case the credits are awarded in separate parts of the course e.g. Lectures, Laboratory Exercises, etc. If the credits are awarded uniformly for the whole course, indicate the weekly teaching hours and the total number of credits.* | **WEEKLY TEACHING HOURS** | **TEACHING CREDITS** |
|---|---|---|
| Lectures and laboratory exercises | 3 + 1 | 3 |
| | | |
| | | |
| *Add rows if needed. The teaching organization and teaching methods used are described in detail in 4.* | | |

| | |
|---|---|
| **COURSE TYPE** *Background, General Knowledge, Scientific Area, Skills Development* | Background-Skills Development |
| **PREREQUIRED COURSES:** | --- |
| **LANGUAGE OF TEACHING AND EXAMS :** | Greek |
| **AVAILABLE TO ERASMUS STUDENTS** | NO |
| **WEBSITE (URL)** | http://eclass.uth.gr/eclass/courses/SEYA105/ |

**2.Learning Outcomes**

*The learning outcomes of the course are described, the specific knowledge, skills and abilities of an appropriate level that students will acquire after the successful completion of the course.*

- *Description of the Level of Learning Outcomes for each course according to the Qualifications Framework of the European Higher Education Area*
- *Descriptive Indicators Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning*

*Consult the concise guide for writing learning outcomes*

The course consists the basic introductory course in ICT found in the medical field.
The course material aims to understand the operation of PCs as individual units and as building blocks of the World Wide Web with an emphasis on their use in medical science in general. It also refers to the organization and processing of data that respond to everyday practice such as organized data storage, working with diagnostic images and secure navigation for searching information on the Internet. In this sense, the course is the basis on which the student will understand the existing computer technology and its application to simple everyday computer problems that he may face.

Finally, the aim of the course is for students to understand the available technological material for data processing and information retrieval and its use in medical practice and research.

**Upon successful completion of the course the student will be able to:**

- Understands the operation of the PC as a programmable machine.
- Understands the potential security risks and that the PC may be exposed to in individual and network operation.
- Has knowledge of the individual components ( hardware and software ) that make up a personal computer and the basic functions provided by the operating system through the graphical user interface and command line.
- Is able to distinguish the risk of job and data loss from non-compliance with safe operation of PC
- Uses workbook creation and editing programs ( MS Excel , LO Calc ) for data processing and display.
- Uses digital image editing software ( ImageJ ) for digital image processing (noise reduction, image contrast enhancement by setting appropriate window / level values , automatic enumeration of interest structures, physical scale input, and physical scale image measurements.
- Uses the integrated python program development environment to create simple string processing programs that represent genes.

**General Abilities**

*Taking into account the general skills that the graduate must have acquired (as they are listed in the Diploma Supplement and are listed below), which of them is/are intended for the course?.*

*Search, analysis and synthesis of data and information, using the necessary technologies*
*Adaptation to new situations*
*Decision making*
*Autonomous work*
*Teamwork*
*Working in an international environment*
*Work in an interdisciplinary environment*
*Production of new research ideas*
*Project design and management*
*Respect for diversity and multiculturalism*
*Respect for the natural environment*
*Demonstration of social, professional and moral responsibility and sensitivity in gender issues*
*Exercise criticism and self-criticism*
*Promoting free, creative and inductive thinking*

**3. MODULE CONTENT**

1. Evolution of computers. Historical review.
2. Structure and operation of the PC.
3. Principles of Operating Systems.
   Command line / graphical interface operating system .
   Windows 7 Professional - Open Source Operating Systems: Linux .
4. Basic Programming Principles - Programming Languages.
5. Word processing - MS Word 2019.
6. MS data processors Excel 2019.
7. Basic principles for creating scientific presentations - PowerPoint 2010.
8. Computer Networking Principles Internet - Internet the World Wide Web.
9. Viruses & Malware.
10. Security in the use of PC systems.

11. Digital data organization processing using PC.
12. Introduction to digital image editing with ImageJ .
13. Introduction to Python programming .
14. Introduction to Engineering Learning and Artificial Intelligence Techniques and their use in Medicine
15. Demonstration of an Integrated Health Information System "ASKLIPIOS" at GUHOL.
16. Demonstration of Laboratory Examination Management Information System at GUHOL.

**4. TEACHING AND LEARNING METHODS - EVALUATION**

| | |
|---|---|
| **TEACHING METHOD**<br>*Face to face, Distance education etc.* | Lectures in the amphitheater, education and practice in the laboratory. |
| **MANDATORY ATTENDANCES - LECTURES** | Attendance required only for laboratory exercises. |
| **USE OF INFORMATION AND COMMUNICATION TECHNOLOGIES**<br>*Use of ICT in Teaching, in Laboratory Education, in Communication with students* | Use of personal workstations (PCs) per person.<br>Communication with students through the educational platform e-class for the information of the students, the projection and distribution of the slides of the lectures, the provision of educational material the assignment and the reception of assignments to the students. |
| **TEACHING METHODS**<br>*The way and methods of teaching are described in detail.*<br>*Lectures, Seminars, Laboratory Exercise, Field Exercise, Bibliography study & analysis, Tutoring, Internship (Placement), Clinical Exercise, Art Workshop, Interactive teaching, Educational visits, preparation of study (project), writing work/works, artistic creation etc.*<br><br>*The student study hours for each learning activity are indicated as well as the non-guided study hours so that the total workload at the semester level corresponds to the ECTS standards.* | |

| ***Learning Activity*** | ***Total Semester Workload*** |
|---|---|
| Lectures | 10 |
| *Laboratory Exercise* | 15 |
| *Thesis writing* | 2 |
| | |
| | |
| | |
| | |
| | |
| | |
| ***Course Set (…. Working hours per credit unit)*** | ***27*** |

| | |
|---|---|
| **STUDENT EVALUATION**<br>*Description of the evaluation process*<br><br>*Assessment Language, Assessment Methods, Formative or Concluding, Multiple Choice Test, Short Answer Questions, Essay Development Questions, Problem Solving, Written* | Short answer questions,<br>Public presentation of work,<br>Problem solving. |

| | |
|---|---|
| *Assignment, Thesis / Report, Oral Examination, Public Presentation, Laboratory Assignment, Clinical Examination of Patients, Artistic Interpretation, Other/Others*<br>*Explicitly defined assessment criteria are stated and if and where they are accessible to students.* | |

**5. RECOMMENDED - BIBLIOGRAPHY**

*-Proposed Bibliography:*

*Bozanis Panagiotis D., "Introduction to Informatics and Computers", A. Tziola & Sons Publications SA*
*Alan Evans, Kendall Martin , Mary Anne Poatsy "Introduction to Informatics" Theory and Practice, Kritiki Publications 2014.*
*-Related scientific journals: -*

**COURSE DESCRIPTION 2024-2025**

| **1. GENERAL** | | | |
|---|---|---|---|
| **SCHOOL** | SCHOOL OF HEALTH SCIENCES | | |
| **DEPARTMENT** | MEDICAL | | |
| **LEVEL OF EDUCATION** | *Undergraduate* | | |
| **COURSE CODE** | **BE0901** | **SEMESTER OF STUDIES** | SPRING |
| **COURSE TITLE** | MEDICAL INFORMATICS | | |
| **COURSE INSTRUCTOR** | Theodorou Kyriaki | | |
| **CO-INSTRUCTORS** | Tsougos Ioannis, Koutsiaris Aristotelis, Karpetas Georgios and Kylindris Thomas | | |

| **SEPERATE TEACHING ACTIVITIES** *in case the credits are awarded in separate parts of the course e.g. Lectures, Laboratory Exercises, etc. If the credits are awarded uniformly for the whole course, indicate the weekly teaching hours and the total number of credits.* | **WEEKLY TEACHING HOURS** | **CREDIT UNITS** |
|---|---|---|
| Lectures and laboratory exercises | 2 | 2 |
| | | |
| | | |

| | |
|---|---|
| **COURSE TYPE** *Background, General Knowledge, Scientific Area, Skills Development* | Background-Skills Development |
| **PREREQUISITE COURSES:** | NO |
| **LANGUAGE OF TEACHING AND EXAMS :** | ENGLISH |
| **AVAILABLE TO ERASMUS STUDENTS** | YES |
| **WEBSITE (URL)** | http://eclass.uth.gr/eclass/courses/SEYA1 12 / |

**2.Learning Outcomes**

The course deepens in the use of ICT and their applications in the medical field.
The course aims to understand the methods and schemes of data storage and information in the biomedical sciences. It also refers to the need to adopt standards for the representation and transmission of data and medical information as well as their presentation. The concept of the interaction of this cognitive grid with humans is introduced with the use of natural language but also with machines (PC).
Finally, the aim of the course is the understanding by students of the available possibilities provided by information and communication technology in the creation, storage, dissemination and use of structured medical knowledge as well as in the demonstration of these possibilities in the facilitation of medical work.

**Upon successful completion of the course the student will be able to:**

- Knows how to compile a patient's electronic medical record.
- Understands the need to use standards to describe diagnostic, therapeutic actions and anatomical information.

- Understands potential security risks arising from the collection of medical data in information systems.
- Has knowledge of the different diagnostic and identification codings used.
- Has knowledge of the need and operation of medical databases.
- Understands the concept of modeling clinical work.
- Uses databases and knowledge to retrieve medical information and data.

**General Abilities**

Search, analysis and synthesis of data and information, using the necessary technologies
Decision making
Autonomous work
Teamwork
Promoting free, creative and inductive thinking

**3. MODULE CONTENT**

17. Health Management Information Systems (HIS).
18. Electronic patient record management (EHR) systems.
19. Security of medical data during storage and transmission. The need for encryption.
20. Standardization organizations. Operating standards and data encoding. ISO/CEN 13606, HL7, SNOMED CT, MeSH, UMLS, LOINC, ICD-9/10, DICOM, RadLex.
21. Structure and principles of operation of databases.
22. Modeling of clinical practices.
23. Terms, terminology, vocabulary and nomenclature.
24. Implementation of EHR systems with the help of databases (applications in medical data management).
25. Epidemiological information - optimization - error detection optimization of health services provided.
26. From data to knowledge - Cognitive science and Cognitive bases.
27. Instructions Guidelines and decision making.
28. Technology and architecture of health information systems.
29. Multiple evaluation of integrated information systems.
30. Search for medical information in sources (databases, - knowledge). Systematic review and meta- analysis. Introduction to evidence-based medicine.

**4. TEACHING AND LEARNING METHODS - EVALUATION**

| | |
|---|---|
| **TEACHING METHOD** | Lectures in the amphitheater, education and practice in the laboratory. |
| **MANDATORY ATTENDANCES - LECTURES** | MANADATORY ATTEDANCES ONLY TO LABORATORY EXERCISES |
| **USE OF INFORMATION AND** | Use of personal workstations (PCs) per person. |

| | |
|---|---|
| **COMMUNICATION TECHNOLOGIES**<br>*Use of ICT in Teaching, in Laboratory Education, in Communication with students* | Communication with students through the educational platform e - class for the information of the students, the projection and distribution of the slides of the lectures, the provision of educational material the assignment and the reception of assignments to the students. |
| **TEACHING METHODS**<br>*The way and methods of teaching are described in detail.*<br>*Lectures, Seminars, Laboratory Exercise, Field Exercise, Bibliography study & analysis, Tutoring, Internship (Placement), Clinical Exercise, Art Workshop, Interactive teaching, Educational visits, project assignment, thesis writing, artwork creation,etc.*<br><br>*The student study hours for each learning activity are indicated as well as the non-guided study hours so that the total workload at the semester level corresponds to the ECTS standards .* | |

| ***Learning Activity*** | ***Total Semester Workload*** |
|---|---|
| Lectures | 10 |
| *Laboratory Exercise* | 12 |
| *Thesis writing* | 5 |
| | |
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| | |
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| | |
| ***Course Set (13,5 Working hours per credit unit)*** | ***27*** |

| | |
|---|---|
| | Short answer questions,<br>Public presentation of work,<br>Problem solving. |

**5. RECOMMENDED - BIBLIOGRAPHY**

*-Proposed Bibliography:*

*Alan Evans , Kendall Martin , Mary Anne Poatsy "Introduction to Informatics" Theory and Practice, Critique Publications 2014.*

*Ed . Shortlife, Cimino J. Bioinformatics Computer applications in healthcare and biomedicine . Broken Hill Publishers 2013.*

*-Related scientific journals: -*

# COURSE DESCRIPTION 2024-2025

| 1. GENERAL | | | |
|---|---|---|---|
| **SCHOOL** | SCHOOL OF HEALTH SCIENCES | | |
| **DEPARTMENT** | MEDICAL | | |
| **LEVEL OF EDUCATION** | *Undergraduate* | | |
| **COURSE CODE** | **BE0902** | **SEMESTER OF STUDIES** | WINTER |
| **COURSE TITLE** | MEDICAL INFORMATICS II - APPLICATIONS OF ARTIFICIAL INTELLIGENCE AND AUGMENTED REALITY IN MEDICINE | | |
| **COURSE INSTRUCTOR** | Tsougos Ioannis | | |
| **CO-INSTRUCTORS** | Theodorou Kyriaki, Karpetas Georgios and Kylindris Thomas | | |

| **SEPERATE TEACHING ACTIVITIES** *in case the credits are awarded in separate parts of the course e.g. Lectures, Laboratory Exercises, etc. If the credits are awarded uniformly for the whole course, indicate the weekly teaching hours and the total number of credits.* | **WEEKLY TEACHING HOURS** | **CREDIT UNITS** |
|---|---|---|
| Lectures and laboratory exercises | 2 | 2 |
| | | |
| | | |

| | |
|---|---|
| **COURSE TYPE** *Background, General Knowledge, Scientific Area, Skills Development* | Background-Skills Development |
| **PREREQUISITE COURSES:** | --- |
| **LANGUAGE OF TEACHING AND EXAMS :** | ENGLISH |
| **AVAILABLE TO ERASMUS STUDENTS** | YES |
| **WEBSITE (URL)** | http://eclass.uth.gr/eclass/courses/SEYA 274 / |

**2.Learning Outcomes**

*The learning outcomes of the course are described, the specific knowledge, skills and abilities of an appropriate level that students will acquire after the successful completion of the course.*

- *Description of the Level of Learning Outcomes for each course according to the Qualifications Framework of the European Higher Education Area*
- *Descriptive Indicators Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning*

*Consult the concise guide for writing learning outcomes*

The course delves into the use of Artificial Intelligence technologies and their applications in the medical industry with an emphasis on decision support technologies.
Artificial intelligence in medicine refers to the use of technology such as machine learning and analytical algorithms to analyze data, diagnose diseases, provide personalized treatment and improve the quality of care.
Artificial intelligence can be used in many areas of medicine, such as evaluating images of medical examinations (such as X-rays and MRIs), predicting the course of disease, personalizing treatment, managing medical documents and improving the performance of clinical processes .

The application of artificial intelligence in medicine has the potential to improve the accuracy, efficiency and accessibility of health services.

The course material aims to understand the theory and methods related to the creation and operation of decision support systems and patient management. The different imaging modalities of anatomical information are presented. Concepts of remote medical care and practice, real-time monitoring of biomedical data on patients in and out of the clinic are introduced.

Finally, the aim of the course is the students' understanding of the available possibilities provided by information and communication technology in the creation, storage, dissemination and use of structured medical knowledge as well as the demonstration of these possibilities in the facilitation of medical work. Augmented reality (AR) and virtual reality (VR) applications have wide application in medical education and can provide multiple benefits.

These topics will be presented through lectures, examples from real applications and laboratory exercise scenarios where students will apply their knowledge to real data.

**Upon successful completion of the course the student will be able to:**

The learning objectives of the course aim to understand the fundamental principles of artificial intelligence and machine learning, as well as the ability to apply these principles to medical problems.

• Understanding the fundamentals of Artificial Intelligence (AI) and Machine Learning (ML): Students should understand the basic concepts and algorithms of AI and ML, such as neural networks, decision trees, and supervised/semi-supervised learning methods.
• Applying AI and ML to medical data: Students should be able to apply AI and ML techniques to medical data, such as X-ray images, genetic analysis data and clinical patient histories.
• Development of clinical applications: Students should be able to develop clinical applications based on AI and ML technologies, which address real problems in medical practice.
• Evaluation of results: Students should be able to evaluate the effectiveness and accuracy of the models they develop, as well as recognize potential challenges and limitations.
• Understanding AR and VR technology: Students should understand the basic principles and operation of AR and VR technology, as well as the differences between them.
• Applications in medical education: Students should be able to recognize and explore the diverse applications of AR and VR technology in medical education, such as anatomy representation, surgical simulation, and clinical skills training.
• Ethical and legal aspects: Students should be able to understand the ethical and legal aspects related to the use of artificial intelligence in medical practice.

The above learning objectives will help students develop the required knowledge, skills and abilities to successfully practice artificial intelligence in the medical field.

**General Abilities**

- Research, analysis and synthesis of data and information, using the necessary technologies
- Adaptation to new situations
- Decision making
- Autonomous work
- Teamwork

- Exercise criticism and self-criticism
- Promoting creative and inductive thinking

**3. MODULE CONTENT**

1. Introduction to artificial intelligence and machine learning.
2. Applications of artificial intelligence in medicine.
3. Data analysis in medicine: Methods and tools.
4. Machine learning models for medical data analysis.
5. Applications of augmented reality and virtual reality in medical education.
6. Physiological signal and image processing technologies for medical applications.
7. Ethical and legal aspects of artificial intelligence in medicine.

**4. TEACHING AND LEARNING METHODS - EVALUATION**

| | |
|---|---|
| **TEACHING METHOD**. | Lectures in the amphitheater, education and practice in the laboratory. |
| **MANDATORY ATTENDANCES - LECTURES** | Mandatory attendances to Lab exercises |
| **USE OF INFORMATION AND COMMUNICATION TECHNOLOGIES** *Use of ICT in Teaching, in Laboratory Education, in Communication with students* | Use of personal workstations (PCs) per person.<br>XR AUDIOVISUAL EQUIPMENT (AR and VR)<br>Communication with students through the educational platform e-class for the information of the students, the projection and distribution of the slides of the lectures, the provision of educational material the assignment and the reception of assignments to the students. |

| ***Learning activity*** | ***Total Semester Workload*** |
|---|---|
| Lectures | 10 |
| *Laboratory Exercise* | 12 |
| *Thesis writing* | 5 |
| | |
| | |
| | |
| | |
| | |
| | |
| ***Course Set (13,5 Working hours per credit unit)*** | ***27*** |

| | |
|---|---|
| **STUDENT EVALUATION** *Description of the evaluation process* | Short answer questions,<br>Public presentation of work,<br>Problem solving. |

**5. RECOMMENDED - BIBLIOGRAPHY**

*-Proposed Bibliography:*
*"Artificial Intelligence in Medicine: What is important?" από Sussman, A. και McCue, M. J.*

*"Artificial Intelligence in Medicine: Future Prospects" από Deka, G. C. και Choudhury, P..*
*- --Related scientific journals: -*

# COURSE DESCRIPTION (2024-2025)

| **1.GENERAL** | | | |
|---|---|---|---|
| **SCHOOL** | School of Health Sciences | | |
| **DEPARTMENT** | Faculty of Medicine | | |
| **STUDY LEVEL** | Undergraduate | | |
| **COURSE CODE** | EIO101 | **Semester** | 4th |
| **COURSE TITLE** | Medical Microbiology I | | |
| **COURSE INSTRUCTOR** | Professor E. Petinaki | | |
| **CO-INSTRUCTORS** | Assistant Professor Constantinos Papagiannitsis | | |

| **TEACHING ACTIVITIES**<br>in case credits are awarded in separate parts of the course e.g. Lectures, Laboratory Exercises, etc. If the credits are awarded uniformly for the whole course, indicate the weekly teaching hours and the total number of credits. | **WEEKLY TEACHING HOURS** | **TEACHING CREDITS** |
|---|---|---|
| Lectures | 2 | 4 |
| Laboratory Exercises | 2 | |

| | |
|---|---|
| **COURSE TYPE**<br>**Background, General Knowledge, Scientific Area, Skills Development** | Required<br>Background |
| **PREREQUIRED COURSES** | No |
| **LANGUAGE OF TEACHING AND EXAMS** | Greek |
| **AVAILABLE TO ERASMUS STUDENTS** | Yes |
| **WEBSITE (URL)** | **http://eclass.uth.gr** |

**2.LEARNING OUTCOMES**

*The learning outcomes of the course are described, the specific knowledge, skills and abilities of an appropriate level that students will acquire after the successful completion of the course.*

*• Description of the Level of Learning Outcomes for each course according to the Qualifications Framework of the European Higher Education Area*

*• Descriptive Indicators of Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning*

Aim of the course is to introduce the students on the role of bacteria in the pathogenesis of infections. In addition, the lectures are focused on the laboratory diagnostic tests and on the appropriate treatment regarding the microorganism, by the usage of antimicrobial agents. The establishment of measures to limit the dissemination of pathogenic bacteria is also studied.

***General Abilities***

At the end of the course the student is able to

- correlate the clinical manifestations with the causative bacteria
- design the appropriate diagnostic laboratory approach
- establish measures for limiting the dissemination of bacteria
- use targeted therapy according to the pathogen

**3.Module Content**

**Contents**

Differences between Eukaryotes and Prokaryotes
Bacterial Structure, and Replication
Bacterial Metabolism and Growth
Bacterial Genetics
Role of Bacteria in Disease
Pathogenicity of bacteria
Normal Flora–Associated Responses
Elements of Host Protective Responses
Immune Responses to Infectious bacteria
Sterilization, Disinfection, and Antisepsis
Laboratory Diagnosis of Bacterial Diseases
Staphylococci
Enterococci
Streptococci (Viridans Streptococci, Streptococcus pneumoniae)
Neisseria
Enterobacteriaceae
Pseudomonas
Burkholderia
Stenotrophomonas maltophilia
Acinetobacter
Campylobacter
Helicobacter
Haemophilus
Bartonella
Bordetella
Brucella
Cardiobacterium
Francisella
Legionella
Mycobacterium
Nocardia
Treponema, Borrelia, and Leptospira
Bacillus
Listeria
Corynebacterium
Spore-Forming Anaerobic Bacteria
Non– Spore-Forming Anaerobic Bacteria
Mycoplasma
Chlamydia

Rickettsiaceae
Coxiellaceae

**4. TEACHING AND LEARNING METHODS - EVALUATION**

| | |
|---|---|
| **Teaching Method** (face to face, tutoring, distance learning etc) | Lectures<br>Laboratory exercises |
| **MANDATORY ATTENDANCES - LECTURES** | The laboratory exercises are mandatory |
| **USE OF INFORMATION AND COMMUNICATION TECHNOLOGIES** Use of T.P.E in Teaching, in Laboratory Education, in Communication with students | Power point<br>The material of the lectures is downloaded at e-class |
| **TEACHING METHODS** The way and methods of teaching are described in detail. Lectures, Seminars, Laboratory Exercise, Field Exercise, Bibliography study & analysis, Tutoring, Internship (Placement), Clinical Exercise, Workshop, Interactive teaching, Study visits, Study work, project. etc<br><br>The student study hours as well as the non-guided study hours for each learning activity are indicated so that the total workload at the semester level corresponds to the ECTS standards. | |

| ***Learning activity*** | ***Total semester workload*** |
|---|---|
| Lectures | 26 |
| Laboratory Practice (Mandatory) | 26 |
| Tutorials (Mandatory) | 26 |
| Seminars | |
| Study hours | 78 |
| Preparation for lab practical and result reports | |
| **SUM ( hours workload/ECTS)** | 19.5 |

| | |
|---|---|
| **STUDENT EVALUATION** Description of the evaluation process<br><br>Assessment Language, Assessment Methods, Formative | Writing exam (Greek language) |

| | |
|---|---|
| or Concluding, Multiple Choice Test, Short Answer Questions, Essay Development Questions, Problem Solving, Written Assignment, Report / Report, Oral Examination, Public Presentation, *Explicitly defined assessment criteria are stated and if and where they are accessible to students.* | Short Answer Questions |
| **5.Recommended Bibliography** | |
| Medical Microbiology 9th edition. Murray P, Rosenthal K, Pfaller M. (publisher Parissianos)<br>Medical Microbiology, 1st edition. Jawetz, Melnick & Adelberg's. (publisher Constantaras)<br>Relative Articles in pubmed | |

# COURSE DESCRIPTION (2024-2025)

| **1.GENERAL** | | | |
|---|---|---|---|
| **SCHOOL** | School of Health Sciences | | |
| **DEPARTMENT** | Faculty of Medicine | | |
| **STUDY LEVEL** | Undergraduate | | |
| **COURSE CODE** | EIO102 | **Semester** | 5th |
| **COURSE TITLE** | Medical Microbiology II | | |
| **COURSE INSTRUCTOR** | Professor E. Petinaki | | |
| **CO-INSTRUCTORS** | Assistant Professor Constantinos Papagiannitsis | | |

| **TEACHING ACTIVITIES**<br>in case credits are awarded in separate parts of the course e.g. Lectures, Laboratory Exercises, etc. If the credits are awarded uniformly for the whole course, indicate the weekly teaching hours and the total number of credits. | **WEEKLY TEACHING HOURS** | **TEACHING CREDITS** |
|---|---|---|
| Lectures | 2 | 4 |
| Laboratory Exercises | 2 | |

| | |
|---|---|
| **COURSE TYPE**<br>**Background, General Knowledge, Scientific Area, Skills Development** | Required<br>Background |
| **PREREQUIRED COURSES** | No |
| **LANGUAGE OF TEACHING AND EXAMS** | Greek |
| **AVAILABLE TO ERASMUS STUDENTS** | Yes |
| **WEBSITE (URL)** | **https://eclass.uth.gr/modules/auth/courses.php?fc=69** |

**2.LEARNING OUTCOMES**

*The learning outcomes of the course are described, the specific knowledge, skills and abilities of an appropriate level that students will acquire after the successful completion of the course.*

*• Description of the Level of Learning Outcomes for each course according to the Qualifications Framework of the European Higher Education Area*

*• Descriptive Indicators of Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning*

Aim of the course is to introduce the students on the role of viruses in the pathogenesis of infections. In addition, the lectures are focused on the life cycle of various viruses for limiting their dissemination, on the clinical manifestations and on the laboratory diagnostic tests. The most common fungi and parasites associated with infections are also studied.

***General Abilities***

At the end of the course the student is able to

- correlate the clinical manifestations with the causative virus, parasite or fungus
- design the appropriate diagnostic laboratory approach
- establish measures for limiting the dissemination of virus
- use targeted therapy according to the pathogen

**3.Module Content**

**Contents**

***Virology***

-Introduction to the viruses
-Characteristics used to define virus families, genera and species
-Steps in the replication cycles of viruses
-Host defense mechanisms against viruses
-Laboratory tests for viral infections
- Antiviral drugs
- Viruses which cause respiratory tract infection (Rhino, Corona, RSV, Influenza A, B AND c)
-Viruses which cause gastrointestinal tract infections (Rota, Noro)
-Viruses which cause central nervous system infections
-Herpesviridae (Herpes simplex 1, Herpes simplex 2, varicella-zoster virus, human cytomegalovirus, Eps Barr virus, Herpes simplex 6, Herpes simplex 7, Herpes simplex 8)
-Congenital and neonatal viral infections
-Viral Exanthem Rash (measles, parvovirus B19, rubella)
-Enteroviruses
-Hepatitis A
-Hepatitis E
-Hepatitis B
-Hepatitis C
-Hepatitis D
-Retroviruses (HIV)
-Papilloma viruses
-Prions

***Parasitology***

-Toxoplasma
-Leishmania
-Plasmodium
-Trichomonas vaginalis
-Cryptococcus
-Entamoeba

***Mycology***

-Yeasts
-Molds

<table>
<tr><td colspan="2">4. TEACHING AND LEARNING METHODS - EVALUATION</td></tr>
<tr><td>Teaching Method<br>(face to face, tutoring, distance learning etc)</td><td>Lectures<br>Laboratory exercises</td></tr>
<tr><td>MANDATORY ATTENDANCES - LECTURES</td><td>The laboratory exercises are mandatory</td></tr>
<tr><td>USE OF INFORMATION AND COMMUNICATION TECHNOLOGIES<br>Use of T.P.E in Teaching, in Laboratory Education, in Communication with students</td><td>Power point<br>The material of the lectures is downloaded at e-class</td></tr>
<tr><td>TEACHING METHODS<br>The way and methods of teaching are described in detail.<br>Lectures, Seminars, Laboratory Exercise, Field Exercise, Bibliography study & analysis, Tutoring, Internship (Placement), Clinical Exercise, Workshop, Interactive teaching, Study visits, Study work, project. etc<br><br>The student study hours as well as the non-guided study hours for each learning activity are indicated so that the total workload at the semester level corresponds to the ECTS standards.</td><td>
<table>
<tr><th>Learning activity</th><th>Total semester workload</th></tr>
<tr><td>Lectures</td><td>26</td></tr>
<tr><td>Laboratory Practice (Mandatory)</td><td>26</td></tr>
<tr><td>Tutorials (Mandatory)</td><td>26</td></tr>
<tr><td>Seminars</td><td></td></tr>
<tr><td>Study hours</td><td>78</td></tr>
<tr><td>Preparation for lab practical and result reports</td><td></td></tr>
<tr><td>SUM ( hours workload/ECTS)</td><td>19.5</td></tr>
</table>
</td></tr>
<tr><td>STUDENT EVALUATION<br>Description of the evaluation process<br><br>Assessment Language, Assessment Methods, Formative or Concluding, Multiple Choice Test, Short Answer Questions, Essay Development Questions, Problem Solving, Written Assignment, Report / Report, Oral Examination, Public Presentation, Explicitly defined assessment criteria are stated and if and where they are accessible to students.</td><td>Writing exam (Greek language)<br><br>Short Answer Questions</td></tr>
</table>

| **5.Recommended Bibliography** |
| --- |
| Medical Microbiology 9th edition. Murray P, Rosenthal K, Pfaller M. (publisher Parissianos)<br>Medical Microbiology, 1st edition. Jawetz, Melnick & Adelberg's. (publisher Constantaras)<br>Relative Articles in pubmed |

# COURSE DESCRIPTION (2024-2025)

| **1.GENERAL** | | | |
|---|---|---|---|
| **SCHOOL** | SCHOOL OF HEALTH SCIENCES | | |
| **FACULTY** | MEDICINE | | |
| **STUDY LEVEL** | *Undergraduate* | | |
| **COURSE CODE** | EI0200 | **SEMESTER** | $5^{TH}$ |
| **COURSE TITLE** | IMMUNOLOGY | | |
| **COURSE INSTRUCTOR** | MATTHAIOS SPELETAS | | |
| **CO - INSTRUCTORS** | FANI KALALA, STYLIANI SARROU | | |

| **TEACHING ACTIVITIES** | **WEEKLY HOURS** | **ECTS CREDITS** |
|---|---|---|
| | 3 | 4.00 |

| | |
|---|---|
| **MODULE TYPE** | MANDATORY (SCIENTIFIC AREA) |
| **PRE-REQUIRED MODULES:** | NONE |
| **LANGUAGE OF TEACHING AND EXAMS:** | ENGLISH |
| **AVAILABLE TO ERASMUS STUDENTS** | YES |
| **MODULE WEB PAGE (URL)** | |

**2.LEARNING OUTCOMES**

Module Objectives (Key learning benefits):
1. The understanding of immunology as a key life science
2. The learning of basic immune mechanisms
3. The understanding of (a) pathogenic immune mechanisms, (b) immune diagnostic methods, και (c) immune therapeutic interventions
4. Gain of understating of how immune drugs work (vaccines, monoclonal antibodies etc.)

Standard Requirements

Core skills on research data gathering, analysis and merging-using the appropriate technology
Learning in an international and interdisciplinary environment

**3.Module Content**

1. Introduction in Immunology (2 hrs)
2. Innate and Cellular Immunity. Cytokines – Phagocytosis – Inflammation – Complement (2 hrs)
3. Major Histocompatibility Complex. Antigens – Antibodies – Immune complexes (2 hrs)
4. B cell maturation, differentiation and activation (2 hrs)
5. TCR complex – T cell maturation and differentiation – T cell peripheral differentiation (2 hrs)
6. Antigen presentation, innate and cellular immunity crosstalk and immune memory (1 hr)
7. immune response modulation (immune tolerance) (1 hr)
8. Transplantation immunology (1 hr)
9. Immunology of infectious diseases - the role of the microbiome in immunology (1 hr)
10. Autoimmunity – autoimmune disease (1 ώρα)
11. Autoinflammatory disease (1 hr)
12. Cancer immunology (1 hr)
13. Immune response damage on host - IgE-mediated allergic reactions (2 hrs)
14. Innate and acquired immunodeficiencies (2 hrs)
15. Laboratory investigation of immunodeficiencies (2 hrs)

16. Vaccines (1 hr)
17. Immune-interImmune methods in diagnostics – immunoenzymatic methods (2 hrs)
19. Flow cytometry (2 hrs)
20. Molecular Immunology (2 hrs)

**4.TEACHING AND LEARNING METHODS - EVALUATION**

| | |
|---|---|
| **TEACHING METHOD** | Lectures, coursework/Laboratory work |
| **MANDATORY ATTENDANCES - LECTURES** | Laboratory work only |
| **USE OF INFORMATION AND COMMUNICATION TECHNOLOGIES** | Communication with students (via e-class) for easy access to teaching material and the organization of tutorials and group learning to elaborate research skills |
| **TEACHING METHODS** | |

| ***LEARNING ACTIVITY*** | ***Total semester workload*** |
|---|---|
| Lectures | 24 |
| *Literature analysis* | 20 |
| *Coursework* | 6 |
| | ***50 (12.5/ECTS)*** |

| | |
|---|---|
| **ASSESSMENT** | Exams 100% (100 multiple choice questions in one hour duration) |

**5.SUGGESTED LITERATURE**

- All students are provided with (in electronic form): lecture notes and presentations, summary coursework questions

Recommended literature:

1. Selected reviews from International Journals
2. David Male, Stokes Peebles, Victoria Male. Immunology, 9th Edition/2021
3. Abbas KA, Lichtman AH. Basic Immunology. 2004

**COURSE DESCRIPTION "TRANSFUSION MEDICINE "2024-2025**

| **1.GENERAL** | | | | |
|---|---|---|---|---|
| **SCHOOL** | HEALTH SCIENCES | | | |
| **DEPARTMENT** | MEDICAL SCHOOL | | | |
| **STUDY LEVEL** | UNDERGRADUATE | | | |
| **COURSE CODE** | **EI0300** | **Semester** | Spring | |
| **COURSE TITLE** | TRANSFUSION MEDICINE | | | |
| **COURSE INSTRUCTOR** | PARASKEVI KOTSI | | | |
| **CO-INSTRUCTORS** | GEORGIADOU HELEN | | | |
| TEACHING ACTIVITIES<br>in case credits are awarded in separate parts of the course e.g. Lectures, Laboratory Exercises, etc. If the credits are awarded uniformly for the whole course, indicate the weekly teaching hours and the total number of credits. | | | **WEEKLY TEACHING HOURS** | **TEACHING CREDITS** |
| | | | 2 | 2 |
| | | | | |
| | | | | |
| **COURSE TYPE Background, General Knowledge, Scientific Area, Skills Development** | ELECTIVE COURSE | | | |
| **PREREQUIRED COURSES** | NO | | | |
| **LANGUAGE OF TEACHING AND EXAMS** | ENGLISH , GREEK | | | |
| **AVAILABLE TO ERASMUS STUDENTS** | YES | | | |
| **WEBSITE (URL)** | | | | |

**2.LEARNING OUTCOMES**

*The learning outcomes of the course are described, the specific knowledge, skills and abilities of an appropriate level that students will acquire after the successful completion of the course.*

*• Description of the Level of Learning Outcomes for each course according to the Qualifications Framework of the European Higher Education Area*

*• Descriptive Indicators of Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning*

The general purpose of the course is to introduce students to Transfusion Medicine and to enable them to plan, analyze, understand, participate in and manage all transfusion-related procedures and their application in clinical practice. Furthermore, the course seeks to provide students with the basics

of Immunohematology and Hemostasis Disorders and to mobilize their interest in this subject. The specific objectives of the course are specialized in the following intended learning outcomes:
Upon successful completion of the course the student will be able to use the acquired knowledge in order to:
• have the equipment to properly manage transfusion therapy
• to approach diagnostic problems of Immunohematology
• use the appropriate equipment for the Immunohematology laboratory
• collaborate with his / her classmates to present and analyze clinical scenarios

*General Abilities*

**3.Module Content**

Section 1 BLOOD AND ITS DERIVATIVES
Blood donation / Criteria for selection of blood donors
• Immunology and molecular biology of transfusion
• Blood products and preparation

Section 2 TRANSFUSION THERAPY
• Indications for administration of blood products
• Special groups of patients
• Alternative therapies-Cell therapies
• Economics of transfusion therapy

Section 3 TRANSFUSION COMPLICATIONS
• Immediate and distant complications of Transfusion Therapy
• Blood-borne diseases
• Blood vigilance

Section 4 HEMOSTASIS DISORDERS
• Bleeding disorders and Thrombotic disorders
• Laboratory evaluation

**4. TEACHING AND LEARNING METHODS - EVALUATION**

| | |
|---|---|
| Teaching Method<br>(face to face, tutoring, distance learning) | face to face, tutoring, distance learning |
| MANDATORY ATTENDANCES - LECTURES | **YES** |
| USE OF INFORMATION AND COMMUNICATION TECHNOLOGIES | **Power point** |

<table>
<tr>
<td>TEACHING METHODS<br>The way and methods of teaching are described in detail.<br>Lectures, Seminars, Laboratory Exercise, Field Exercise, Bibliography study & analysis, Tutoring, Internship (Placement), Clinical Exercise, Workshop, Interactive teaching, Study visits, Study work, project. etc<br><br>The student study hours as well as the non-guided study hours for each learning activity are indicated so that the total workload at the semester level corresponds to the ECTS standards.</td>
<td>
<table>
<tr><td></td><td></td></tr>
<tr><td>Laboratory exercise</td><td></td></tr>
<tr><td></td><td></td></tr>
<tr><td>Lectures</td><td></td></tr>
<tr><td>Clinical exercise</td><td></td></tr>
<tr><td>Bibliography study</td><td></td></tr>
<tr><td></td><td></td></tr>
<tr><td></td><td></td></tr>
<tr><td></td><td></td></tr>
<tr><td></td><td></td></tr>
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<tr>
<td>STUDENT EVALUATION<br>Description of the evaluation process<br><br>Assessment Language, Assessment Methods, Formative or Concluding, Multiple Choice Test, Short Answer Questions, Essay Development Questions, Problem Solving, Written Assignment, Report / Report, Oral Examination, Public Presentation, Explicitly defined assessment criteria are stated and if and where they are accessible to students.</td>
<td>Bibliography review or<br>Written examination</td>
</tr>
<tr>
<td colspan="2">5.Recommended Bibliography</td>
</tr>
<tr>
<td colspan="2">BLOOD TRANSFUSION MEDICINE, KALLINIKOU – MANIATI ALIKI<br>ISBN: 9789603941095<br><br>IMMUNOHEMATOLOGY, TRANSFUSION MEDICINE, HEMOSTASIS AND CELLULAR THERAPY<br><br>ISBN 9783031146374</td>
</tr>
</table>

**COURSE DESCRIPTION**

| **1.GENERAL** | | | |
|---|---|---|---|
| **SCHOOL** | School of Health Sciences | | |
| **DEPARTMENT** | Faculty of Medicine | | |
| **STUDY LEVEL** | Undergraduate | | |
| **COURSE CODE** | **KI0200** | **Semester** | 3rd |
| **COURSE TITLE** | Epidemiology and Applied Medical Research | | |
| **COURSE INSTRUCTOR** | Christos Hadjichristoloulou | | |
| **CO-INSTRUCTORS** | G. Rachtiotis, V. A. Mouchtouri, P. Mina, M. Koureas, M. Kyritsi, K. Dadouli | | |

| **TEACHING ACTIVITIES**<br>in case credits are awarded in separate parts of the course e.g. Lectures, Laboratory Exercises, etc. If the credits are awarded uniformly for the whole course, indicate the weekly teaching hours and the total number of credits. | **WEEKLY TEACHING HOURS** | **TEACHING CREDITS** |
|---|---|---|
| | 4 | 5 |

| | |
|---|---|
| **COURSE TYPE Background, General Knowledge, Scientific Area, Skills Development** | Scientific area |
| **PREREQUIRED COURSES** | Monitoring and successful examination in Medical and Computational Statistics |
| **LANGUAGE OF TEACHING AND EXAMS** | English |
| **AVAILABLE TO ERASMUS STUDENTS** | No |
| **WEBSITE (URL)** | **https://eclass.uth.gr/courses/MED_U_151/** |

**2.LEARNING OUTCOMES**

*The learning outcomes of the course are described, the specific knowledge, skills and abilities of an appropriate level that students will acquire after the successful completion of the course.*

*• Description of the Level of Learning Outcomes for each course according to the Qualifications Framework of the European Higher Education Area*

*• Descriptive Indicators of Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning*

The aim of the course is to introduce students to the principles of research and epidemiology, and to qualify them with skills to design, analyze and interpret epidemiological data in the fields of disease prevention, diagnosis / prognosis and treatment. Furthermore, the course aims to provide students with the basic elements for study design of human diseases and outbreaks.

Upon successful completion of the course the student will be able to:

• Appreciate the importance of epidemiology as a tool for producing evidence on the prevention, control and treatment of diseases, as well as the importance of the collective and comparative theory as the main advantage of the epidemiological research over case-based clinical research.

• Demonstrate knowledge on the applications of epidemiology, the basic epidemiological indicators (prevalence, point prevalence and time period prevalence, incidence, cumulative incidence and incidence rate, mortality, mortality, infestation rate), the main sources of epidemiological categorical data, studies (descriptive: contemporary studies, ecological and analytical: patient controls, retrospective series, prospective series, clinical trial) and outcome measures (probability ratio, relative risk, attributed risk) of sampling methods, basic knowledge of medical statistics and principles of collection, recording, analysis and presentation of data.

• Familiarize with the basic principles of epidemiological surveillance for infectious diseases as well as the basic principles of investigating and dealing with an epidemic. In addition, the student will be familiar with the concept of causality as well as the concept of systematic error and confusing factor. Finally, the student will be aware of the basic principles of providing critique of the study design and quantitative methods used in published literature as well as the systematic review and meta-analysis.

• Distinguish the main categories of epidemiological research and classify a given research into one of the above-mentioned categories.

• Uses the acquired knowledge in order to: a. formulate research questions, plan and carry out an epidemiological study, b. use the basic epidemiological indicators, c. present its results and use simple statistical analysis techniques, d. investigate an outbreak, e. critically appraise a published work and make a comprehensive assessment of its results and its overall quality, g. search medical literature through online databases.

• Critically analyze a published work with emphasis on its design, sampling method, determination of exposure and outcome, statistical analysis of data, presentation of results, control of confounding factors and the presence of systematic errors as well as the evaluation of its conclusions regarding the balanced wording of the research findings.

• Collaborate with his/her fellow students to search for medical literature but also to critically evaluate published research work, as well as - in the context of laboratory exercises - in the application of epidemiological indicators and in the scenario of investigation and response to an epidemic

*General Abilities*

*Taking into account the general skills that the graduate must have acquired (as they are listed in the Diploma Supplement and are listed below), which of them is intended for the course?*

| | |
|---|---|
| | *Project design and management* |
| *Research, analysis and synthesis of data and information, using the necessary technologies Adaptation to new situations* | *Respect for diversity and multiculturalism* |
| | *Respect for the natural environment* |
| | *Demonstration of social, professional and moral responsibility and sensitivity in gender issues* |

| | |
|---|---|
| *Decision making*<br>*Autonomous work Teamwork*<br>*Working in an international environment*<br>*Work in an interdisciplinary environment*<br>*Production of new research ideas* | *Exercise criticism and self-criticism*<br>*Promoting free, creative and inductive thinking* |

- Research, analysis and synthesis of data and information, using the necessary technologies
- Adaptation to new situations
- Decision making
- Autonomous work
- Teamwork
- Exercise criticism and self-criticism
- Promoting free, creative and inductive thinking

**3.MODULE CONTENT**

1. THEORY

Introduction to Epidemiology

Epidemiological indicators. Impact, prevalence, mortality, mortality, infection rate, ratio, proportion. Point prevalence, Communicative incidence.

Sources of epidemiological data. By gender and age structure of the population. General and specific mortality rates. Fertility.

Design of a descriptive epidemiological study. Instructions for creating a Questionnaire, Ecological studies, Weighting and reliability of a questionnaire.

Population sample selection, Sampling methods.

Collection, registration and analysis of epidemiological data.

Epidemiological surveillance of infectious diseases. Endemic, epidemic, pandemic. Investigation and treatment of outbreaks.

Epidemiological and Statistical programs

Epidemiological Program EPI - INFO 2000, OSWEGO exercise

Analytical Epidemiology: 1. Studies of patients and witnesses. Selection of the comparison group (reference group). Simulation techniques (matching). Systematic errors (bias).

Analytical Epidemiology: 2. Study studies. Prospective cohort study.

Retrospective cohort study. Systematic errors (bias).

Systematic review - Analysis

Analytical Epidemiology - Clinical trials

Confounders, Causality

Review of published articles, Sources of medical information, Use of Medline

2. EXERCISES

«Introduction to Epidemiology Exercises / Causes Exercises in Diseases»

"Rates and ratio exercises"

"Demographic calculation exercise - Demography"

"Design and organization of a contemporary epidemiological study, questionnaire"

"Sampling using Epi info".

Exercise for organizing epidemiological data. Presentation of results.

"Exercise of epidemiological surveillance". "Investigation and treatment of exacerbations of gastroenteritis at a wedding reception".

"Smoking and lung cancer. Patient and Martyr Study and Retrospective Series »

"Checking the effectiveness and safety of Ephedra"

"Hepatitis A, alcohol and oyster consumption"

"Article Criticism in English and Greek, Study Classification Exercises"

**4. TEACHING AND LEARNING METHODS - EVALUATION**

| | |
|---|---|
| Teaching Method<br>(face to face, tutoring, distance learning) | Lectures (*face to face*) |
| MANDATORY ATTENDANCES - LECTURES | No |
| USE OF INFORMATION AND COMMUNICATION TECHNOLOGIES | Power point<br>Learning process support through e-class electronic platform.<br>Use of ICT (e mail) in communication with them students. |
| TEACHING METHODS<br>The way and methods of teaching are described in detail.<br>Lectures, Seminars, Laboratory Exercise, Field Exercise, Bibliography study & analysis, Tutoring, Internship (Placement), Clinical Exercise, Workshop, Interactive teaching, Study visits, Study work, project. etc<br>The student study hours as well as the non-guided study hours for each learning activity are indicated so that the total workload at the semester level corresponds to the ECTS standards. | |

| ***Learning activity*** | ***Total semester workload*** |
|---|---|
| Lectures | 50 hours |
| Lab. Practical (obligatory presence) | 45 hours |
| Study | 15 hours |
| Preparation for Practical | 15 hours |
| ***SUM***<br>***(25 hours per teaching credit)*** | **125** hours |
| | |
| | |
| | |

| | |
|---|---|
| **STUDENT EVALUATION**<br>**Description of the evaluation process**<br><br>Assessment Language, Assessment Methods, Formative or Concluding, Multiple Choice Test, Short Answer Questions, Essay Development Questions, Problem Solving, Written Assignment, Report / Report, Oral Examination, Public Presentation, *Explicitly defined assessment criteria are stated and if and where they are accessible to students.* | Language of assessment: English<br>Assessment methods: Multiple choice test (60%) and written assignment (40%).<br>The evaluation of the course and the teachers is carried out -at the end of the semester- through the completion of a special questionnaire by the students. Students are encouraged to express their views through the questionnaire both about the educational process of this course, and about any changes that are necessary in their opinion. Students' responses are taken into account in order to make improvements. |

**5.RECOMMENDED BIBLIOGRAPHY**

- Proposed Bibliography:
  General and clinical epidemiology. D. Trichopoulos
  Epidemiology, A. Aschengrau

**COURSE DESCRIPTION**

| **1.GENERAL** | | | |
|---|---|---|---|
| **SCHOOL** | School of Health Sciences | | |
| **DEPARTMENT** | Faculty of Medicine | | |
| **STUDY LEVEL** | Undergraduate | | |
| **COURSE CODE** | **KI0500** | **Semester** | 8th |
| **COURSE TITLE** | Social and Preventive Medicine | | |
| **COURSE INSTRUCTOR** | Varvara A. Mouchtouri | | |
| **CO-INSTRUCTORS** | MEMBERS DEP (Teaching Research Staff): C. Hadjichristodoulou, G. Rachiotis, E. Malisiova<br>EDIP (Special Teaching Research Staff): P. Mina<br>Research associates: M. Koureas, M. Kiritsi, A. Syggelakis, D. Kafetsouli<br>PhD candidates: Ioanna Avakian | | |

| TEACHING ACTIVITIES<br>in case credits are awarded in separate parts of the course e.g. Lectures, Laboratory Exercises, etc. If the credits are awarded uniformly for the whole course, indicate the weekly teaching hours and the total number of credits. | **WEEKLY TEACHING HOURS** | **TEACHING CREDITS** |
|---|---|---|
| | **4** | **4** |

| | |
|---|---|
| **COURSE TYPE Background, General Knowledge, Scientific Area, Skills Development** | Compulsory<br>Scientific area |
| **PREREQUIRED COURSES** | None |
| **LANGUAGE OF TEACHING AND EXAMS** | English |
| **AVAILABLE TO ERASMUS STUDENTS** | Yes |
| **WEBSITE (URL)** | **https://eclass.uth.gr/courses/MED_U_179/** |

**2.LEARNING OUTCOMES**

*The learning outcomes of the course are described, the specific knowledge, skills and abilities of an appropriate level that students will acquire after the successful completion of the course.*

*• Description of the Level of Learning Outcomes for each course according to the Qualifications Framework of the European Higher Education Area*

*• Descriptive Indicators of Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning*

The purpose of this course is to familiarize students with the principles of public health, social medicine, prevention of diseases and evidence-based medicine.

After successfully completing the course students will be able to:

- Understand the importance of a public health/population hygiene and the perspective in daily medical practice and clinical decision-making.

- Demonstrate knowledge in the concepts and applications of prevention strategies and health promotion, as well as, the effect of the environment (natural and hospital environment, nutrition, smoking, alcoholism) on the development of infectious and chronic diseases (cancer, coronary heart disease, diabetes). In addition, they will gain a knowledge of the epidemiology and prevention of infectious diseases (pathogens, mortality, fatality, reservoir, incubation period and prevention and control measures/vaccinations) and chronic diseases, screening and the conditions for its application in clinical practice, as well as, the epidemiology and prevention of accidents, the basic principles of health economics and their applications in preventive medicine. Finally, they will have learnt about the importance of population movements and sea and air transport and trade in the disease spread and the application of International Health Regulations (IHR) for the protection of public health.

- Distinguish the ways of providing preventive medicine services and give relevant examples. Also, be able to distinguish the different levels of effectiveness of each level of prevention in health protection.

- Apply acquired knowledge in order to critically appraise published literature, compose a written assigment related to a disease, with an emphasis on screening for that disease and present results to the public. Also, have the ability to apply guidelines in daily clinical practice not only for the screening of a disease but also for their primary prevention. Additionally, after completing the laboratory exercise in the Microbiological and Chemical laboratory of the Regional Public Health Laboratory of Thessaly, students will be able to evaluate and interpret the chemical and microbiological indicators of food, drinking water, recreational waters and other environmental samples quality.

- Critically appraise published literature highlighting the strengths and limitations of the studied research methods. Additionally, students will be able to collaborate with fellow students to search for and critically process published information relevant to disease screening guidelines (secondary prevention).

*General Abilities*

*Taking into account the general skills that the graduate must have acquired (as they are listed in the Diploma Supplement and are listed below), which of them is intended for the course?*

*Research, analysis and synthesis of data and information, using the necessary technologies Adaptation to new situations*
*Decision making*
*Autonomous work Teamwork*
*Working in an international environment*
*Work in an interdisciplinary environment*
*Production of new research ideas*
*Project design and management*
*Respect for diversity and multiculturalism*
*Respect for the natural environment*
*Demonstration of social, professional and moral responsibility and sensitivity in gender issues*
*Exercise criticism and self-criticism*
*Promoting free, creative and inductive thinking*

- Research, analysis and synthesis of data and information, using the necessary technologies
- Adaptation to new situations
- Decision making
- Autonomous work
- Teamwork
- Exercise criticism and self-criticism
- Promoting free, creative and inductive thinking

**3.MODULE CONTENT**

**1. Theory**

Introduction to Public Health and Preventive Medicine
Epidemiology and prevention of infectious diseases
Screening programmes
Introduction to environmental health
Prevention of nosocomial infections and hospital hygiene
The role of sea and air transport – International Health Regulations
Prevention of waterborne diseases – Drinking and recreational water safety
Climate Change and Public Health
Basic nutrition principles: Mediterranean diet
Zoonosis/Animal disease and Foodborne Diseases prevention
Waste Management and Public Health
Vaccination policies
Transmission and preventive measures of infectious diseases
Epidemiology and prevention of chronic diseases – coronary heart disease, diabetes mellitus
Epidemiology and accident prevention
Smoking, alcoholism, drugs
Health economics
Epidemiology and prevention of cancer

**2. Exercises**

Screening
Exercise: "Climate Change and Public Health"
Exercise: "Study of Air Pollution Episodes (London 1952)" and "Case Study of Dietary Exposure to Mercury During Pregnancy"
Nosocomial infection prevention exercise
Exercise to deal with a public health emergency of international concern
Selection and application of personal protective equipment and infection control practices in the hospital environment

**3. Laboratories:**

A. Microbiological Laboratory: Detection of Hepatitis A virus in food with real-time PCR. Identification of microorganisms with Matrix Assisted Laser Desorption Ionization Time of Flight (MALDI-TOF) mass spectrometry (MS). Demonstration of good hand washing practice and comparison of pre- and post-washing hand comparison of flora using culture techniques. Determination of safety indicators in food based on regulation 2073/2005 of the European Commission on microbiological criteria in food. Detection and enumeration of Legionella spp. in water samples for human consumption based on the international standard (ISO) 11731:2017. Determination of microbiological indicators in samples of water for human consumption in accordance with Joint Ministerial Decision “ΚΥΑ Γ1(d)/ΓΠ οικ.67322”.

B. Chemical Laboratory: Water quality in an Artificial Kidney Unit, Chemical quality control of surface

water and wastewater, Quantitative determination of antibiotics in blood plasma by HPLC.

**4. TEACHING AND LEARNING METHODS - EVALUATION**

| | |
|---|---|
| Teaching Method<br>(face to face, tutoring, distance learning) | Face to Face<br><br>Lectures<br><br>Laboratories |
| MANDATORY ATTENDANCES - LECTURES | No |
| USE OF INFORMATION AND COMMUNICATION TECHNOLOGIES | Learning process support through the e-class online platform.<br>Use of ICT (e-mail) in communication with students. |
| TEACHING METHODS<br>The way and methods of teaching are described in detail.<br>Lectures, Seminars, Laboratory Exercise, Field Exercise, Bibliography study & analysis, Tutoring, Internship (Placement), Clinical Exercise, Workshop, Interactive teaching, Study visits, Study work, project. etc<br><br>The student study hours as well as the non-guided study hours for each learning activity are indicated so that the total workload at the semester level corresponds to the ECTS standards. | |

| ***Learning activity*** | ***Total semester workload*** |
|---|---|
| Lectures | 45 hours |
| Lab. Practical (obligatory presence) | 40 hours |
| Tutorials (obligatory presence) | 8 hours |
| Preparation for Practical | 8 hours |
| Preparation for Tutorials | 4 hours |
| ***SUM*** ***(25 hours per teaching credit)*** | **105** hours |

| | |
|---|---|
| **STUDENT EVALUATION**<br>**Description of the evaluation process**<br>Assessment Language, Assessment Methods, Formative or Concluding, Multiple Choice Test, Short Answer Questions, Essay Development Questions, Problem Solving, Written Assignment, Report / Report, Oral Examination, Public Presentation, *Explicitly defined assessment criteria are stated and if and where they are accessible to students.* | The language of assessment is English.<br>**Evaluation methods.**<br>Assessment methods: Written or oral exam (100% of the total mark).<br>The course and teachers' evaluation is carried out - at the end of the semester - through the completion of a specific questionnaire by the students. Students are encouraged to express their opinions through the questionnaire both on the educational process of the course in question, and on any changes that are necessary in their opinion. Student responses are taken under consideration in order to make improvement changes. |

**5. RECOMMENDED-BIBLIOGRAPHY**

1. Public Health. Jenny Kourea-Kremastinou. 2007.
2. Hygiene and Epidemiology. M. Arvanitidou- Vagiona. 2023.
-Related bibliography: U.S. Preventive Services Task Force
https://www.uspreventiveservicestaskforce.org/

**COURSE DESCRIPTION**

| **1.GENERAL** | | | |
|---|---|---|---|
| **SCHOOL** | School of Health Sciences | | |
| **DEPARTMENT** | Faculty of Medicine | | |
| **STUDY LEVEL** | Undergraduate | | |
| **COURSE CODE** | **KI0502** | **Semester** | 7th |
| **COURSE TITLE** | Primary Health Care | | |
| **COURSE INSTRUCTOR** | Hadjichristodoulou Christos | | |
| **CO-INSTRUCTORS** | MEMBERS DEP (Teaching Research Staff): C. Lionis, E. Symvoulakis, E. Smyrnakis, I. Tsiligianni, Z. Tsimtsiou, G. Marinos, A. Tatsioni, V. Mouchtouri, G. Rachiotis, M. Tseroni .<br>EDIP (Special Teaching Research Staff): P. Mina<br>Scientific Associates: M. Koureas, K. Melou<br>PhD candidate: Ioanna Avakian | | |

| TEACHING ACTIVITIES<br>in case credits are awarded in separate parts of the course e.g. Lectures, Laboratory Exercises, etc. If the credits are awarded uniformly for the whole course, indicate the weekly teaching hours and the total number of credits. | **WEEKLY TEACHING HOURS** | **TEACHING CREDITS** |
|---|---|---|
| | **2** | **2** |

| | |
|---|---|
| **COURSE TYPE Background, General Knowledge, Scientific Area, Skills Development** | Scientific area |
| **PREREQUIRED COURSES** | None |
| **LANGUAGE OF TEACHING AND EXAMS** | English |
| **AVAILABLE TO ERASMUS STUDENTS** | No |
| **WEBSITE (URL)** | |

**2.LEARNING OUTCOMES**

*The learning outcomes of the course are described, the specific knowledge, skills and abilities of an appropriate level that students will acquire after the successful completion of the course.*

*• Description of the Level of Learning Outcomes for each course according to the Qualifications Framework of the European Higher Education Area*

*• Descriptive Indicators of Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning*

Upon successful completion of the course the student will be able to:

- Describe the relationship of primary health care with the healthcare system and public health.
- Familiarise with the approaches of primary healthcare in supporting the needs of individuals, families and the communities.
- Value the factors influencing health and well-being in communities.
- Apply with the principles of designing primary and community care strategies on individuals,

families and communities.
- Understand the influences and challenges in meeting healthcare needs for individuals, families and communities.

Communicate effectively when providing care during the patient's first contact with the health system.

*General Abilities*

*Taking into account the general skills that the graduate must have acquired (as they are listed in the Diploma Supplement and are listed below), which of them is intended for the course?*

*Research, analysis and synthesis of data and information, using the necessary technologies Adaptation to new situations*
*Decision making*
*Autonomous work Teamwork*
*Working in an international environment*
*Work in an interdisciplinary environment*
*Production of new research ideas*
*Project design and management*
*Respect for diversity and multiculturalism*
*Respect for the natural environment*
*Demonstration of social, professional and moral responsibility and sensitivity in gender issues*
*Exercise criticism and self-criticism*
*Promoting free, creative and inductive thinking*

- Research, analysis and synthesis of data and information, using the necessary technologies
- Adaptation to new situations
- Decision making
- Autonomous work
- Teamwork
- Exercise criticism and self-criticism
- Promoting free, creative and inductive thinking

**3.MODULE CONTENT**

1. Theory

Primary healthcare principles and the concept “health for all”.
Designing Health Promotion Programs and Professional Teams.
Prevention Strategies for Adolescents - Adults – Elderly.
National Immunization Strategy. The role of primary health care.
Organization of Health Prevention and Promotion Programs in the Community.
Introduction to General Practice Guidelines for management of most common diseases and health conditions in Primary Health Care.
Mental Health
Addictions. Preventive strategy programs.
Integrated Primary Care and Management of Chronic Diseases.
Effective communication between the family doctor and the patient and his/her environment.

2. Laboratories

Students will be divided into teams and each team will design a health promotion program regarding a subject of their choice (smoking, diet, exercise, obesity, alcohol, polypharmacy, car accidents etc.) that will be addressed to a certain target group.
Students will be divided into groups and will visit the children’s clinics of Larissa’s TOMYs in order to observe the vaccinations of children as well as to perform vaccinations. Students will get the opportunity to monitor the entries in the national vaccination registry.
Students will be separated into teams and each team will have to design a preventive medical program on a subject that they decide upon (cervical cancer, breast cancer, colon cancer, dental

hygiene, prenatal checkup) that will target a specific group of people (KAPI, KDAP, kindergarten, school, ROMA, refugees).
Students will be divided into groups and they will visit Mental Health Structures in Larissa (OKANA, KETHEA, Selfcare program.

Students' clinical practice is recommended in Larissa's region (Medical Center of Agia, Medical Center of Gonnoi, Medical Center of Tyrnavos) for one week. Students will acquire clinical skills on primary health care, focusing on being able to distinguish patients in need of hospital care from those who can be treated at home or the medical center. Also, they will be exposed to basic emergency medicine management, diagnostic access and treatment of the most common acute and chronic diseases in the community and at home. In the end of Laboratory Practice, students will have to present the results of a descriptive study by using data on acute and chronic diseases from the patients of the Health Centers.

**4. TEACHING AND LEARNING METHODS - EVALUATION**

| | |
|---|---|
| Teaching Method<br>(face to face, tutoring, distance learning) | Lectures (Face to Face) |
| MANDATORY ATTENDANCES - LECTURES | No |
| USE OF INFORMATION AND COMMUNICATION TECHNOLOGIES | Power point<br>Learning process support through the e-class electronic platform<br>Use of ICT (e-mail) in communication with the students. |
| TEACHING METHODS<br>The way and methods of teaching are described in detail.<br>Lectures, Seminars, Laboratory Exercise, Field Exercise, Bibliography study & analysis, Tutoring, Internship (Placement), Clinical Exercise, Workshop, Interactive teaching, Study visits, Study work, project. etc<br><br>The student study hours as well as the non-guided study hours for each learning activity are indicated so that the total workload at the semester level corresponds to the ECTS standards. | |

| ***Learning activity*** | ***Total semester workload*** |
|---|---|
| Lectures | 30 hours |
| Lab. Practical (obligatory presence) | 20 hours |
| Individual Assignments | 10 hours |
| ***SUM (25 hours per teaching credit)*** | 60 hours |

| | |
|---|---|
| **STUDENT EVALUATION**<br>**Description of the evaluation process**<br><br>Assessment Language, Assessment Methods, Formative or Concluding, Multiple Choice | Language of assessment: English.<br>Assessment methods: Multiple choice test (60% of total score) and research paper with presentation (40% of total score).<br><br>The evaluation of the course and its tutors is carried out -at the end of the semester- through the completion of a specific questionnaire by the students. Students are encouraged to |

| | |
|---|---|
| Test, Short Answer Questions, Essay Development Questions, Problem Solving, Written Assignment, Report / Report, Oral Examination, Public Presentation, *Explicitly defined assessment criteria are stated and if and where they are accessible to students.* | express their views through the questionnaire both about the educational process of this course, and about any changes that are necessary according to their opinion. Students' responses are taken into account in order to make improvements. |

**5.RECOMMENDED BIBLIOGRAPHY**


**Introduction to General Medicine(Εισαγωγή στη Γενική Ιατρική)**

(Tatsioni, A., Karathanos, V., & Missiou, A. (2015). *Εισαγωγή στη γενική ιατρική* [Undergraduate textbook]).

**Good practice applications of a primary health care team**

(Kalokairinou, A., Adamakidou, T., Velonaki, V., Vivilaki, V., Kapreli, E., Kriempardis, A., Lagiou, A., Lionis, C., Markaki, A., Bodosakis, P., Papadakaki, M., & Sakellari, E. (2015). Εφαρμογές καλών πρακτικών ομάδας πρωτοβάθμιας φροντίδας υγείας [Laboratory Guide]. Kallipos, Open Academic Editions).

**Community and coordination of care (A practice brief to support implementation of the WHO. Framework on integrated people-centred health services), WHO, 2018**

**Doctor and patient relationship (Theoretical and practical approach0.** University of Crete – School of Health Sciences – Medical department. Lionis C., Eleni Pitelou E. October 2015.

**Planning health promotion programs: introductory workbook.** Public Health Ontario, 4th edition,2015

http://www.greekphcguidelines.gr/

**COURSE DESCRIPTION**

| **1.GENERAL** | | | |
|---|---|---|---|
| **SCHOOL** | School of Health Sciences | | |
| **DEPARTMENT** | Faculty of Medicine | | |
| **STUDY LEVEL** | Undergraduate | | |
| **COURSE CODE** | **KI0700** | **Semester** | Winter |
| **COURSE TITLE** | Occupational Medicine | | |
| **COURSE INSTRUCTOR** | GEORGIOS RACHIOTIS | | |
| **CO-INSTRUCTORS** | Faculty Members: C. Hadjichristodoulou, V. Mouchtouri,<br>F. Malli, O. Kotsiou, D. Papagiannis, I. | | |

| TEACHING ACTIVITIES<br>in case credits are awarded in separate parts of the course e.g. Lectures, Laboratory Exercises, etc. If the credits are awarded uniformly for the whole course, indicate the weekly teaching hours and the total number of credits. | **WEEKLY TEACHING HOURS** | **TEACHING CREDITS** |
|---|---|---|
| | 3 | 2 |

| | |
|---|---|
| **COURSE TYPE Background, General Knowledge, Scientific Area, Skills Development** | Scientific area. |
| **PREREQUIRED COURSES** | None |
| **LANGUAGE OF TEACHING AND EXAMS** | Greek |
| **AVAILABLE TO ERASMUS STUDENTS** | No |
| **WEBSITE (URL)** | **https://eclass.uth.gr/courses/MED_U_167/** |

**2.LEARNING OUTCOMES**

*The learning outcomes of the course are described, the specific knowledge, skills and abilities of an appropriate level that students will acquire after the successful completion of the course.*

*• Description of the Level of Learning Outcomes for each course according to the Qualifications Framework of the European Higher Education Area*

*• Descriptive Indicators of Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning*

**Aim of the course**

The course aim - in the context of the distinct discipline of occupational medicine - to provide medical students with sufficient knowledge and skills to be able to assess the impact of work on health and interpret the occupational history in the context of differential diagnosis and everyday medical practice.

**After the successful completion of this course, the students will be able to:**

- Understand the concept of occupational risk, the importance of proper occupational history in the daily diagnostic/clinical practice, the mechanisms by which the various harmful factors of the work environment are harmful to health and the expediency of implementing various preventive measures
- Have knowledge of the main harmful factors of the working environment, their effects on the health of employees as well as the preventive measures that can be taken.
- Use the acquired knowledge in order to use the information of the professional history in the differential diagnosis of the diseases as well as to organize a plan of medical examination of the employees according to the harmful factors to which they are exposed.
- Analyze work processes and harmful work factors in terms of the risk of developing occupational disease.

*General Abilities*

*Taking into account the general skills that the graduate must have acquired (as they are listed in the Diploma Supplement and are listed below), which of them is intended for the course?*

| | |
|---|---|
| | *Project design and management* |
| *Research, analysis and synthesis of data and information, using the necessary technologies Adaptation to new situations* | *Respect for diversity and multiculturalism* |
| | *Respect for the natural environment* |
| | *Demonstration of social, professional and moral responsibility and sensitivity in gender issues* |
| *Decision making* | *Exercise criticism and self-criticism* |
| *Autonomous work Teamwork* | *Promoting free, creative and inductive thinking* |
| *Working in an international environment* | |
| *Work in an interdisciplinary environment* | |
| *Production of new research ideas* | |

- Decision making
- Autonomous work
- Exercise criticism and self-criticism

**3.MODULE CONTENT**

The content of the course includes the following major items:

A. The content of the lectures together with the relevant clinical insights the students need to learn/acquire per chapter.
B. The content of the tutorials/seminars together with the relevant clinical insights the students need to learn/acquire per seminar.
C. The content of the laboratory practical together with the relevant practical & clinical skills the students need to learn/acquire per exercise.

**A. Lecture content and relevant clinical insights**

Introduction to occupational medicine. Basic concepts

Occupational exposure to natural harmful factors I (Noise)

Occupational exposure to natural harmful factors II (Vibration, radiation, thermal stress)

Principles of occupational epidemiology and toxicology.

Occupational cancer

Basic principles of occupational safety

Specialized occupational toxicology

Occupational diseases of the musculoskeletal system. Principles of ergonomics

Professional exposure to biological harmful factors with emphasis on hospitals Vaccinations of employees with emphasis on hospitals

Psychosocial factors and work. Work stress. Burn out and Mobbing syndromes

Smoking in the work environment.
Introduction to occupational lung diseases

**B. Seminar/Tutorial content and relevant clinical insights**
**Problem-based learning: Presentation, analysis and discussion of clinical cases**

In the context of the tutorial, a case study related to occupational lead poisoning is presented to the students. Special emphasis is given to the importance of obtaining the occupational history in the context of the differential diagnosis.

**C. Laboratory Practical content. Not applicable.**

| **4. TEACHING AND LEARNING METHODS - EVALUATION** | |
|---|---|
| Teaching Method<br>(face to face, tutoring, distance learning) | *Face to Face:*<br><br>Teaching of Occupational Medicine consists of lectures, and seminars/tutorials. Attendance of Seminars/Tutorials is obligatory.<br><br>The lectures content has been described above.<br><br>Seminars/Tutorials<br><br>In the context of the tutorial, a case study related to occupational lead poisoning is presented to the students. Special emphasis is given to the importance of obtaining the occupational history in the context of the differential diagnosis. In this tutorial students prepare answers to the questions related to the examined clinical cases and discuss them with the teachers. |
| MANDATORY ATTENDANCES - LECTURES | No |
| USE OF INFORMATION AND COMMUNICATION | Information and Communication Technologies are used for the preparation of the lecture material, the online information and |

<table>
<tr><td>TECHNOLOGIES</td><td>provision of supplementary learning material to students.<br>Specifically:<br>• Common software (e.g. MS powerpoint) is used to prepare lecture material and display slides and videos.<br>• The study guide (detailed supplementary material & additional bibliography), the tutorial material (clinical cases), the theory and protocols of the laboratory exercises, the slides of each lecture as well as relevant videos and scientific articles made available electronically and online to students through the e-class system of the University of Thessaly.<br>• Information about the course, instructors and their research interests is available online at the website of Medical Faculty (www.med.uth.gr).<br>• Common software (e.g. MS excel) is used to statistically process student’s assessment.<br>Announcements, information etc are available online via e-class.<br>Communication is also possible via e-mail.</td></tr>
<tr><td>TEACHING METHODS<br>The way and methods of teaching are described in detail. Lectures, Seminars, Laboratory Exercise, Field Exercise, Bibliography study & analysis, Tutoring, Internship (Placement), Clinical Exercise, Workshop, Interactive teaching, Study visits, Study work, project. etc<br><br>The student study hours as well as the non-guided study hours for each learning activity are indicated so that the total workload at the semester level corresponds to the ECTS standards.</td><td><table>
<tr><th>Learning activity</th><th>Total semester workload</th></tr>
<tr><td>Lectures</td><td>30 hours</td></tr>
<tr><td>Tutorials</td><td>3 hours</td></tr>
<tr><td>Educational visit to an Occupational Medicine Unit</td><td>2 hours</td></tr>
<tr><td>Study</td><td>19 hours</td></tr>
<tr><td>SUM<br>(25 hours per teaching credit)</td><td>54 hours</td></tr>
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<tr><td>STUDENT EVALUATION<br>Description of the evaluation process<br><br>Assessment Language, Assessment Methods, Formative or Concluding, Multiple Choice Test, Short Answer Questions, Essay Development Questions, Problem Solving, Written Assignment, Report / Report, Oral Examination, Public Presentation,</td><td>The language of assessment is Greek.<br>Evaluation methods.<br>A. For the lecture material: Multiple choice and short answer questions are used for the evaluation of the students.<br>The course exams are written, and have a duration of two hours. The material of the tutorial is examined together with the lecture. In particular, one question related to the case- report of occupational Lead intoxication which has been presented and discussed in the tutorial is incorporated in to the list of the lectures- related questions during the final exam.<br><br>Final Grade:<br>The final grade of the course is the Grade of above-mentioned</td></tr>
</table>

| | |
|---|---|
| *Explicitly defined assessment criteria are stated and if and where they are accessible to students.* | written exam.<br>All of the above are presented in detail in the Course Guide which is distributed in print to all students and is posted electronically in e-class system. |

**5.Recommended Bibliography**

**A. Lecture Material**

***Main suggested textbooks:***

1. Practical Occupational Medicine , R. Agius , A. Seaton

2.Health and Work, E. Velonakis, P. Sourtzi

**COURSE DESCRIPTION**

**(2024-2025)**

| **1.GENERAL** | | | |
|---|---|---|---|
| **SCHOOL** | HEALTH SCIENCES | | |
| **DEPARTMENT** | MEDICINE | | |
| **STUDY LEVEL** | UNDERGRADUATE | | |
| **COURSE CODE** | **KI0910** | **Semester** | SPRING |
| **COURSE TITLE** | BIOINFORMATICS-BIOMETRY | | |
| **COURSE INSTRUCTOR** | Zintzaras Elias | | |
| **CO-INSTRUCTORS** | Doxani Chrysoula (Contracted Lecturer) doxani@uth.gr | | |

| TEACHING ACTIVITIES<br>in case credits are awarded in separate parts of the course e.g. Lectures, Laboratory Exercises, etc. If the credits are awarded uniformly for the whole course, indicate the weekly teaching hours and the total number of credits. | **WEEKLY TEACHING HOURS** | **TEACHING CREDITS** |
|---|---|---|
| Lectures- Workshop | 2 | 2 |
| | | |
| | | |

| | |
|---|---|
| **COURSE TYPE** | optional compulsory |
| **PREREQUIRED COURSES** | NO |
| **LANGUAGE OF TEACHING AND EXAMS** | GREEK |
| **AVAILABLE TO ERASMUS STUDENTS** | YES |
| **WEBSITE (URL)** | http://biomath.med.uth.gr |

**2.LEARNING OUTCOMES**

*The learning outcomes of the course are described, the specific knowledge, skills and abilities of an appropriate level that students will acquire after the successful completion of the course.*

*• Description of the Level of Learning Outcomes for each course according to the Qualifications Framework of the European Higher Education Area*

*• Descriptive Indicators of Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning*

The general purpose of the course is to introduce students to Bioinformatics and to familiarize them with the use of computers to manage and analyze genomic and proteomic data, and to retrieve such data from web databases.
The specific objectives of the course are specialized in the following intended learning outcomes:
Upon successful completion of the course, the student will be able:

• To retrieve genomic and proteomic data from web databases
- To manage and analyze this data
- To use easily databases of biological and genetic data on the internet
- To retrieve easily data from the literature databases of biological and medical research
- To choose the appropriate database depending on the research question
- To fully retrieve all information that can be extracted from an online database

***General Abilities***

*Research, analysis and synthesis of data and information, using the necessary technologies*
*Decision making*
*Autonomous work*
*Teamwork*
*Working in an international environment*
*Promoting free, creative and inductive thinking*

**3.Module Content**

During this course, the following are achieved with the assistance of computer technology
- search of bioinformatics websites
- Retrieval of genetic data from databases–GenBank
- Analysis of nucleotide and amino acid sequences
- Pairwise sequence alignment analysis-FASTA
- Multiple sequence alignment analysis-CLUSTAL
- Protein data sources–SWISSPROT.
- Secondary and composite protein sequence databases–PROSITE, PRINTS and OWL.
- Comparison of protein structures with intramolecular and intermolecular methods
- Categorization of protein structures-SSAP, CE and CATH.
- Genetic analysis data.
- Testing the association between genes and diseases.
- Analysis of genomic scans
- Data analysis of gene expression microarrays (Microarrays)

**4. TEACHING AND LEARNING METHODS - EVALUATION**

| | |
|---|---|
| Teaching Method<br>(face to face, tutoring, distance learning) | Face to face lectures in the Laboratory of Biomathematics of the Department and the auditorium |
| MANDATORY PRESENCE | **NO** |
| USE OF INFORMATION AND COMMUNICATION TECHNOLOGIES | **Lectures in powerpoint (ppt) format**<br>**In each session, laboratory exercises are carried out on a computer**<br>**Use of Computer technology in communication with students (website, e-mail, etc.)** |
| TEACHING METHODS<br>The way and methods of teaching are described in detail.<br>Lectures, Seminars, Laboratory Exercise, Field Exercise, | |

| ***Learning activity*** | ***Total semester workload*** |
|---|---|
| Lectures - Workshop | 26 |
| Independent Study | 12 |
| Solving Exercises- | 12 |

<table>
<tr>
<td>Bibliography study & analysis, Tutoring, Internship (Placement), Clinical Exercise, Workshop, Interactive teaching, Study visits, Study work, project. etc<br><br>The student study hours as well as the non-guided study hours for each learning activity are indicated so that the total workload at the semester level corresponds to the ECTS standards.</td>
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<tr><td>Total Course Duration (25 workload hours per credit unit)</td><td>50</td></tr>
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<td>STUDENT EVALUATION<br>Description of the evaluation process<br><br>Assessment Language, Assessment Methods, Formative or Concluding, Multiple Choice Test, Short Answer Questions, Essay Development Questions, Problem Solving, Written Assignment, Report / Report, Oral Examination, Public Presentation, Explicitly defined assessment criteria are stated and if and where they are accessible to students.</td>
<td>The evaluation of the students is performed in Greek with written presentation of laboratory exercises/applications having been presented during the lectures.</td>
</tr>
<tr>
<td colspan="2">5.Recommended Bibliography</td>
</tr>
<tr>
<td colspan="2">Teaching notes are distributed:<br>Elias Zintzaras (2008) LABORATORY NOTES OF APPLIED BIOMETRY-BIOINFORMATION<br>(available on the course website as well as teaching materials)<br><br>In addition, the following bibliography is indicated<br>A Practical Guide to Gene and Protein Analysis (3rd ed. 2016). Author: Baxevanis AD, Ouellette BFF (Editor of Greek Edition: Hamodrakas S.I.) Publishing House: Scientific Publications Parisianou SA<br>Introduction to Bioinformatics Algorithms Author: NEIL C. JONES, PAVEL A. PEVZNER (1st/2010) ISBN: 978-960-461-388-5 Publisher: KLEIDARITHMOS</td>
</tr>
</table>

**COURSE DESCRIPTION**

| **1.GENERAL** | | | |
|---|---|---|---|
| **SCHOOL** | School of Health Sciences | | |
| **DEPARTMENT** | Faculty of Medicine | | |
| **STUDY LEVEL** | Undergraduate | | |
| **COURSE CODE** | **KI0950** | **Semester** | Spring |
| **COURSE TITLE** | Epidemiology and prevention of infectious diseases – Global public health threats | | |
| **COURSE INSTRUCTOR** | Varvara A. Mouchtouri | | |
| **CO-INSTRUCTORS** | Christos Hadjichristodoulou | | |

| TEACHING ACTIVITIES<br>in case credits are awarded in separate parts of the course e.g. Lectures, Laboratory Exercises, etc. If the credits are awarded uniformly for the whole course, indicate the weekly teaching hours and the total number of credits. | **WEEKLY TEACHING HOURS** | **TEACHING CREDITS** |
|---|---|---|
| | 2 | 2 |

| | |
|---|---|
| **COURSE TYPE Background, General Knowledge, Scientific Area, Skills Development** | Scientific area |
| **PREREQUIRED COURSES** | No |
| **LANGUAGE OF TEACHING AND EXAMS** | English |
| **AVAILABLE TO ERASMUS STUDENTS** | Yes |
| **WEBSITE (URL)** | **https://eclass.uth.gr/modules/contact/index.php?course_id=879** |

**2.LEARNING OUTCOMES**

*The learning outcomes of the course are described, the specific knowledge, skills and abilities of an appropriate level that students will acquire after the successful completion of the course.*

*• Description of the Level of Learning Outcomes for each course according to the Qualifications Framework of the European Higher Education Area*

*• Descriptive Indicators of Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning*

**Aims of the course**

The course provides medical students with knowledge regarding the epidemiology and prevention of infectious diseases, the risk of their cross-border spread, as well as the framework of the International Health Regulations (IHR) in preventing, protecting, controlling and providing a public health response to the international spread of disease.

**Specific objectives**

The specific objectives of the course are to provide students with the knowledge and in-depth understanding about the epidemiology and prevention of infectious diseases with an emphasis on global threats to public health. In particular, topics to be covered are: pathogens and their characteristics, epidemiology, mortality, morbidity, reservoir, incubation period and prevention and control measures (national and international). In addition, the framework of the International Health Regulation in the global health security will be analyzed.

The module also seeks for students to acquire skills in order to search for and process critically bibliographic data.

An additional specific objective of the course is – through the optional educational visit to a country on the African continent – for students to acquire skills and experience of providing supervised medical assistance for the prevention and control of public health risks to residents of developing countries.

**After the successful completion of this course, the students will be able to:**

1. Demonstrate knowledge on the basic elements of infectious diseases epidemiology, the risk of their cross-border spread, as well as prevention and control measures, including the framework of the International Health Regulations.
2. Apply the principles of prevention and control of infectious diseases and adapt them considering given real-world conditions.
3. Distinguish the differences in the modes of transmission of infectious diseases, and the geographical variability in their occurrence and prognosis, while being able to distinguish the degrees of effectiveness of the various preventive measures applied.
4. Use the knowledge and skills acquired to provide medical and advisory assistance in the context of prevention of infectious diseases under supervision (vaccinations) to residents of developing countries.
5. Critically appraise the findings of studies on the epidemiology and prevention of infectious diseases with a focus on global public health issues.
6. Perform research and interpretation of literature in the field of epidemiology and prevention of infectious diseases and global public health threats.
7. Work with fellow students to provide supervised medical and advisory assistance in the field in the context of infectious disease prevention to residents of developing countries.

*General Abilities*

*Taking into account the general skills that the graduate must have acquired (as they are listed in the Diploma Supplement and are listed below), which of them is intended for the course?*

| | |
|---|---|
| | *Project design and management* |
| *Research, analysis and synthesis of data and information, using the necessary technologies Adaptation to new situations* | *Respect for diversity and multiculturalism* |
| | *Respect for the natural environment* |
| | *Demonstration of social, professional and moral responsibility and sensitivity in gender issues* |
| *Decision making* | *Exercise criticism and self-criticism* |

*Autonomous work Teamwork* *Promoting free, creative and inductive thinking*
*Working in an international environment*
*Work in an interdisciplinary environment*
*Production of new research ideas*

- Research, analysis and synthesis of data and information, using the necessary technologies
- Adaptation to new situations
- Decision making
- Autonomous work
- Teamwork
- Exercise criticism and self-criticism
- Promoting free, creative and inductive thinking
- Working in an international environment
- Work in an interdisciplinary environment
- Project design and management
- Respect for diversity and multiculturalism
- Respect for the natural environment
- Demonstration of social, professional and moral responsibility and sensitivity in gender issues

**3. MODULE CONTENT**

1. International Health Regulations and cross-border public health threats
2. Epidemiological surveillance of infectious diseases
3. Investigation and response to epidemics
4. Vaccines: needs assessment, evaluation of new vaccines, immunization and herd immunity, vaccination strategy, vaccination schedules
5. Effectiveness of vaccinations and effectiveness in the field
6. Vaccination records
7. Occupational infectious diseases – vaccines to healthcare professionals
8. Special issues of vaccine-preventable diseases (meningitis, rubella, measles, mumps, tetanus, etc.): pathogen, epidemiology, mortality, reservoir, mode of transmission, incubation period, period of communicability, susceptibility to infection, prevention and control measures, response to outbreaks, international measures.
10. Sexually transmitted diseases: AIDS, syphilis, gonorrhea: pathogen, epidemiology, mortality, reservoir, mode of transmission, incubation period, period of communicability, susceptibility to infection, prevention and control measures, response to outbreaks, international measures.
11. Airborne diseases (influenza, tuberculosis etc.): pathogen, epidemiology, mortality, reservoir, mode of transmission, incubation period, period of communicability, susceptibility to infection, prevention and control measures, response to outbreaks, international measures.
12. Waterborne diseases (cryptosporidiosis, cholera, legionnaires' disease): pathogen, epidemiology, mortality, reservoir, mode of transmission, incubation period, period of communicability, susceptibility to infection, prevention and control measures, response to outbreaks, international measures.
13. Foodborne diseases (viral gastroenteritis, food poisoning, etc.): pathogen, endemicity, mortality, reservoir, mode of transmission, incubation period, period of communicability, susceptibility to infection, prevention and control measures, response to outbreaks, international measures.
14. Hepatitis A, B, C, D, E: pathogen, endemicity, mortality, reservoir, mode of transmission, incubation period, period of communicability, susceptibility to infection, prevention and control measures, response to outbreaks, international measures.
15. Vector-borne diseases (malaria, yellow fever, dengue fever, West Nile fever): pathogen, endemicity, mortality, reservoir, mode of transmission, incubation period, period of

communicability, susceptibility to infection, prevention and control measures, response to outbreaks, international measures.

16. Other diseases of international concern (COVID-19, etc.): pathogen, endemicity, mortality, reservoir, mode of transmission, incubation period, period of communicability, susceptibility to infection, prevention and control measures, response to outbreaks, international measures.

**4. TEACHING AND LEARNING METHODS - EVALUATION**

| | |
|---|---|
| Teaching Method<br>(face to face, tutoring, distance learning) | Face to Face |
| MANDATORY ATTENDANCES - LECTURES | No |
| USE OF INFORMATION AND COMMUNICATION TECHNOLOGIES | Support of the learning process through the electronic platform e-class. Course delivery is computer-based. Use of Information and Communication Technologies (e-mail) in communication with students. Educational videos broadcasted related to the evolution of infectious diseases in developing countries. |
| TEACHING METHODS<br>The way and methods of teaching are described in detail.<br>Lectures, Seminars, Laboratory Exercise, Field Exercise, Bibliography study & analysis, Tutoring, Internship (Placement), Clinical Exercise, Workshop, Interactive teaching, Study visits, Study work, project. etc<br><br>The student study hours as well as the non-guided study hours for each learning activity are indicated so that the total workload at the semester level corresponds to the ECTS standards. | |

| ***Learning activity*** | ***Total semester workload*** |
|---|---|
| Lectures | 30 hours |
| Tutorials<br>(obligatory presence) | 10 hours |
| Preparation for Tutorials | 4 hours |
| Individual Assignments | 10 hours |
| ***SUM***<br>***(25 hours per teaching credit)*** | **54** hours |

| | |
|---|---|
| **STUDENT EVALUATION**<br>**Description of the evaluation process**<br><br>Assessment Language, Assessment Methods, Formative or Concluding, Multiple Choice Test, Short Answer Questions, Essay Development Questions, Problem Solving, Written Assignment, Report / Report, Oral Examination, Public Presentation, *Explicitly defined assessment criteria are stated and if and where they are accessible to* | The language of assessment is English.<br>**Evaluation methods.**<br>**A. For the lecture material:** Written assignment.<br><br>The evaluation of students is done by submitting a written assignment on issues of international public health. The submission of the assignment is made at the end of the semester. The evaluation of the assignment determines 100% of the student's grade.<br>The evaluation of the course and the tutors is carried out - at the end of the semester - through the completion by the students of a special questionnaire. Students are encouraged to express their views through the questionnaire both on the educational process of the course in question, as well as on the possible changes that are necessary in their opinion. Student responses |

| | |
|---|---|
| *students.* | are considered in order to make improvements. |

**5.RECOMMENDED BIBLIOGRAPHY**


1. Jenny Kourea Kremastinou. Public Health
2. Control of Communicable Diseases Manual. David L. Heymann. 2015. American Public Health Association.
3. M. Arvanitidou-Vagiona. Hygiene and Epidemiology. UNIVERSITY STUDIO PRESS. 2023.
4. International health regulations (2005) - 3nd ed. World Health Organization. 2016.
5. Norman Noah. Controlling communicable disease. London School of Hygiene and Tropical Medicine. 2011.


***Relevant Scientific Journals:***

*Emerging Infectious Diseases, WHO Bulletin, Epidemiology and Infection*

## COURSE DESCRIPTION (2024-2025)

| **1.GENERAL** | | | |
|---|---|---|---|
| **SCHOOL** | School of Health Sciences | | |
| **DEPARTMENT** | Faculty of Medicine | | |
| **STUDY LEVEL** | Undergraduate | | |
| **COURSE CODE** | **KI0951** | **Semester** | WINTER |
| **COURSE TITLE** | INTERVENTIONAL NEURORADIOLOGY | | |
| **COURSE INSTRUCTOR** | IOANNIS IOANNIDIS, ASSISTANT PROFESSOR OF RADIOLOGY | | |
| **CO-INSTRUCTORS** | MARIANNA VLYCHOU, PROFESSOR OF RADIOLOGY<br>KONSTANTINOS FOUNTAS, PROFESSOR OF NEUROSURGERY<br>EUTHYMIOS DARDIOTIS, PROFESSOR OF NEUROLOGY | | |

| **TEACHING ACTIVITIES**<br>in case credits are awarded in separate parts of the course e.g. Lectures, Laboratory Exercises, etc. If the credits are awarded uniformly for the whole course, indicate the weekly teaching hours and the total number of credits. | **WEEKLY TEACHING HOURS** | **TEACHING CREDITS** |
|---|---|---|
| | 2 | 2 |

| | |
|---|---|
| **COURSE TYPE Background, General Knowledge, Scientific Area, Skills Development** | SCIENTIFIC AREA |
| **PREREQUIRED COURSES** | DIAGNOSTIC IMAGING I & II |
| **LANGUAGE OF TEACHING AND EXAMS** | GREEK/ENGLISH |
| **AVAILABLE TO ERASMUS STUDENTS** | YES |
| **WEBSITE (URL)** | |

**2.LEARNING OUTCOMES**

The course aims to provide theoretical knowledge regarding the most common vascular diseases of the Central Nervous System (CNS), their clinical manifestations, imaging findings, as well as the endovascular techniques applied to their treatment.

Upon successful completion of the course, the student will be familiar with:

1. The clinical manifestations of the most common vascular diseases of the CNS.
2. The CT and MRI imaging findings.
3. The techniques of endovascular treatment.
4. The most important clinical, imaging, and therapeutic dilemmas.

***General Abilities***

*Taking into account the general skills that the graduate must have acquired (as they are listed in the Diploma Supplement and are listed below), which of them is intended for the course?*

*Research, analysis and synthesis of data and information, using the necessary technologies Adaptation to new*

*Project design and management*
*Respect for diversity and multiculturalism*
*Respect for the natural environment*
*Demonstration of social, professional and moral*

| | |
|---|---|
| *situations*<br>*Decision making*<br>*Autonomous work Teamwork*<br>*Working in an international environment*<br>*Work in an interdisciplinary environment*<br>*Production of new research ideas* | *responsibility and sensitivity in gender issues*<br>*Exercise criticism and self-criticism*<br>*Promoting free, creative and inductive thinking* |

**3.Module Content**

Section 1
Introduction to the basic clinical conditions associated with vascular diseases of the CNS.
Section 2
Introduction to the diagnostic imaging of the vascular lesions of the CNS.
Section 3
Description of the treatment options with an emphasis on the endovascular techniques.
Section 4
Review of the related literature, and selection of a presentation topic
Section 5
Presentations and discussions of each topic will be held.

**4. TEACHING AND LEARNING METHODS - EVALUATION**

| | |
|---|---|
| **Teaching Method**<br>(face to face, tutoring, distance learning etc) | The clinical manifestations, imaging findings, and therapeutic options with a particular focus on endovascular techniques for vascular diseases of the Central Nervous System are presented. An overview of the recent literature and an analysis of topics related to interventional neuroradiology will be provided. |
| **MANDATORY ATTENDANCES - LECTURES** | NO |
| **USE OF INFORMATION AND COMMUNICATION TECHNOLOGIES**<br>Use of T.P.E in Teaching, in Laboratory Education, in Communication with students | Use of Information and Communication Technology. |

**TEACHING METHODS**

The way and methods of teaching are described in detail.
Lectures, Seminars, Laboratory Exercise, Field Exercise, Bibliography study & analysis, Tutoring, Internship (Placement), Clinical Exercise, Workshop, Interactive teaching, Study visits, Study work, project. etc

The student study hours as well as the non-guided study hours for

| *Learning activity* | *Total semester workload* |
|---|---|
| Lectures | 54 |
| Laboratory Practice (Mandatory) | |
| Tutorials (Mandatory) | |
| Seminars | |
| Study hours | |
| Preparation for lab practical and result reports | |
| **SUM (27 hours workload/ECTS)** | |

| | |
|---|---|
| each learning activity are indicated so that the total workload at the semester level corresponds to the ECTS standards. | |
| **STUDENT EVALUATION**<br>Description of the evaluation process<br><br>Assessment Language, Assessment Methods, Formative or Concluding, Multiple Choice Test, Short Answer Questions, Essay Development Questions, Problem Solving, Written Assignment, Report / Report, Oral Examination, Public Presentation, *Explicitly defined assessment criteria are stated and if and where they are accessible to students.* | Oral presentations by the participating students. |

**5.Recommended Bibliography**

P. Pearse Morris, "Practical Neuroangiography" Lippincott Williams & Wilkins (LWW), 3rd edition.

Journals:

1. American Journal of Neuroradiology
2. Neuroradiology,
3. Interventional Neuroradiology
4. JNIS
5. Stroke.