

Master's Degree in Dentistry and Dental Prosthetics 2023/2024

Teaching: Diagnostic imaging and radiotherapy

Scientific Disciplinary Sector: MED/36

Responsible Professor: Prof. Michele Basilicata; e-mail: michele.basilicata@unicamillus.org

Number of University Educational Credits (CFU): 6

Professors:

- Prof. Basilicata Michele (2 CFU), e-mail: michele.basilicata@unicamillus.org
- Prof. Boldrini Luca (2 CFU); e-mail: luca.boldrini@unicamillus.org
- Prof. Placidi Lorenzo (2 CFU); e-mail: lorenzo.placidi@unicamillus.org

PREREQUISITES

For the Diagnostic Imaging and Radiotherapy module it would be desirable that the student knows the basics of anatomy and physiology, such as the different tissues, organs, apparatuses and the concept of homeostasis.

LEARNING OBJECTIVES

The teaching of Diagnostic Imaging and Radiotherapy aims to make the student learn:

- the basic knowledge of physics and chemistry useful to understand the theoretical principles of radiological techniques used in general radiology and especially in oro-maxillo-facial diagnostics;
- the basic knowledge of Radioprotection;
- the knowledge of the modalities of formation, transmission and especially the effects of radiation absorption;
- the recognition of anatomical structures in normal and pathological conditions;
- the main indications for the use of diagnostic imaging methods in all the pathologies of the oro-maxillofacial district and in the main imaging modalities of the cerebral, thoracic and abdominal district;
- the specific aspects of local and systemic pathologies that may affect the oral-maxillofacial district.

LEARNING OUTCOMES

Knowledges and understanding

Knowledge of the basics of diagnostic imaging: the student will learn the general and theoretical principles of radiological techniques used in general radiology and especially in oro-maxillofacial diagnostics.

At the end of this teaching the student will be able to:

- Know the principles of radiological techniques
- Know the principles of Radioprotection
- Know the effects of radiation absorption and radiation protection norms
- Describe the main anatomical structures of the oro-maxillofacial, cerebral, thoracic and abdominal districts.
- Know the radiological aspect of the main pathologies of the oro-maxillo-facial, cerebral, thoracic and abdominal district.
- Know the main imaging of implantology.
- Know the radiological pictures after radiotherapy and chemotherapy

- Understand the main indications and recommendations for the use of imaging of the oro-maxillofacial district

Applying knowledge and understanding

The main objective of the Diagnostic Imaging and Radiotherapy course is to learn the main anatomical structures in normal and pathological conditions and the most important indications for the use of diagnostic imaging methods. At the end of the course, the student will have acquired the tools to interpret radiological images and identify the best and appropriate diagnostic imaging procedure. Moreover, the student will know the basis of Radioprotection and legal aspects related to the diagnostic exams in the dentistry field.

Communication Skills

The student will be able to adequately describe a radiological image demonstrating that he/she has learned scientific language for correct and rigorous communication.

Making judgements

At the end of the course the student will be able to independently develop the logical procedures and strategies to perform diagnostic imaging methods and interpret them correctly. The student will have acquired the ability to synthesize and correlate the various topics and to critically use radiological methods for the diagnosis of the main pathologies of the oro-maxillofacial district.

Learning skills

At the end of the course the student will have developed the ability to investigate topics through the consultation of scientific literature.

COURSE SYLLABUS

- Definition of radiology
- Formation and transmission of ionizing radiation
- Formation of X-rays and radiology instruments and equipment
- Effects of ionizing radiations to the cells
- Physics in Radiology and radioprotection
- Units of measurements in Radioprotection
- Fundamentals of Radioprotection and legislation
- Optimization of Protection of Patients and Workers
- Oral and maxillofacial district: Anatomy and pathology
- RADIOLOGY- Global vision of Radiology and major clinical applications
- Fundamentals of CT imaging
- Fundamentals of MRI imaging
- Imaging in Otorhinolaryngology pathologies
- Radiological pictures after radiotherapy and chemotherapy
- Radiological anatomy of organs and districts
- Overview of thorax imaging
- Overview of Abdominal and pelvic imaging
- Overview of Musculoskeletal imaging
- Overview of Lymphoproliferative imaging
- Overview of Nervous system imaging

- Overview of Endocrinology system imaging
- Fundamentals of CONE BEAM imaging
- Endoral and extraoral radiography
- Nuclear medicine and radiotherapy
- Quality assurance in Dental radiology
- Principles of Oral Radiographic Interpretation
- Dental Caries, Periodontal Diseases, Inflammatory Disease
- Cystic formations
- Dental anomalies, degenerative lesion of the teeth, oromaxillofacial malformations, alterations during eruption
- Odontogenic/non odontogenic tumors
- Temporo mandibular joint imaging
- Dental traumas
- Imaging of implantology
- Salivary glands imaging

COURSE STRUCTURE

The course consists of frontal lessons, for a total of 60 hours. The teachers will use teaching tools such as presentations organized in powerpoint files with explicative diagrams, illustrations and images. The frequency is mandatory.

COURSE GRADE DETERMINATION

The examination consists of a written test on topics covered in class (30 multiple-choice questions; minimum pass mark is 18/30) with additional and optional oral exam. The optional oral test has to be taken within the same session of the written exam and can be taken by students whose written test is sufficient (18/30 or higher).

The examination paper will be graded overall according to the following criteria:

- Unsuitable: major deficiencies and/or inaccuracies in knowledge and understanding of topics; limited ability to analyze and synthesize; frequent generalizations.
- 18-20: barely sufficient knowledge and understanding of topics with possible imperfections; sufficient skills of analysis synthesis and autonomy of judgment.
- 21-23: routine knowledge and understanding of topics; correct analysis and synthesis skills with coherent logical argumentation.
- 24-26: fair knowledge and understanding of topics; good analysis and synthesis skills with rigorously expressed arguments.
- 27-29: comprehensive knowledge and understanding of topics; remarkable analytical, synthesis skills. Good autonomy of judgment.

➤30-30L: excellent level of knowledge and understanding of topics. Remarkable analytical and synthesis skills and independent judgment.

READING MATERIALS

- Learning Radiology: Recognizing the Basics, 4th^redition, William Herring, Edited by Elsevier.
- Oral Radiology. Principles and Interpretation, 7th Edition, by Stuart C. White and Michael J. Pharoah. Edited by Elsevier