UNIVERSITÀ DEGLI STUDI DI PALERMO

Department: Biomedicine, Neurosciences and Advanced Diagnostics

A.Y. 2023/2024

DEGREE COURSE IN MEDICAL AND IMAGE DIAGNOSTICS AND RADIOTHERAPY TECHNIQUES

- MEDICAL AND IMAGE DIAGNOSTICS AND RADIOTHERAPY TECHNIQUES - TRAPANI

Characteristics

Class of Bachelor's Degree (BSc) on Technical health professions (L/SNT3)	3 YEARS	TRAPANI	PLANNED ACCESS	2302

Educational objectives

In the context of the profession of technicians in medical radiology, imaging and radiotherapy, graduates are healthcare professional carrying out the activities provided by the DM Ministry of Health 26 September 1994 n. 746 and subsequent amendments and additions; that is, they are responsible for the acts of their competence and are authorized to carry out investigations and radiological activities, in compliance with the radiation protection standards. Graduates in radiological diagnostic techniques are qualified to carry out, in accordance with the provisions of law 31 January 1983 n. 25, independently or in collaboration with other health professionals, all interventions that require the use of artificial and natural ionizing radiation sources, of thermal, ultrasonic energy, nuclear magnetic resonance as well as the interventions for the physical or dosimetric protection; they participate in the planning and organization of work within the facility in which they operate in accordance with their skills; they manage the provision of general performance of their expertise in direct cooperation with the radiologists, with nuclear medicine specialists, with radiation oncologist doctor and with the health physic, according to diagnostic and therapeutic protocols previously defined by the person in charge of the facility; they are responsible for the acts of their competence, in particular by checking the correct operation of the equipment entrusted to them, providing for the elimination of minor problems and implementing programs to monitor and control quality assurance according to indicators and standards; they carry out their activities in public or private health facilities, as employees or freelance; they contribute to the training of support staff and directly contribute to the updating of their professional and research profile. As part of the training of the professional profile, universities ensure appropriate training in the field of protection against ionizing radiation.
The Degree Course has a duration of three years and is organized into a single curriculum. The academic year is divided into 2 semesters. The unit of measurement of student work for the completion of each course in the teaching required in order to achieve the title of the study is the credit (CFU). Each credit corresponds to 25 hours of student work, as provided for by art. 5, paragraph 1 of the Ministerial Decree No. 136 of April 2, 2001 (Official Gazette No. 128 of 5.6.01) including:
for classroom teachings:
a) 12 hours available to the teacher for teaching;
b) 13 hours available to the student for personal study or other individual learning activities needed to complete his training;
for the internships:
a) 15 hours available to the teacher for the internship;
b) 10 hours available to the student.
The credits for each course are acquired by the student after passing the relevant examination. The Degree Course provides a total of 180 credits, 60 for each year of the course, including at least 60 to be acquired in training activities aimed at maturing of specific skills (guided internship).
The educational objectives of the degree course in Medical Radiology Techniques, Imaging and radiotherapy are directed to achieve the graduate preparation that will enable it to:
- Be able to apply scientific and experimental method to the study of anatomical-physiological and technological phenomena, being able to use for this purpose, the basic principles of physics, biology, chemistry, biochemistry, anatomy and physiology applied to technological issues of image diagnostics;
- Know the anatomical-functional role of various biological structures in the organisation of cells as well as of the human organism;
- Acquire the knowledge needed to understand biological phenomena, as well as the main functioning mechanisms of organs

and apparatus, and possess deep anatomical and structural knowledge of organs apparatus, above all in their reciprocal topographic distribution;
- Identify diagnostic and therapeutical problems raised by the specialist doctor, through imaging and therapeutical technologies;
- Acquire basic cultural and professional principles to apply diagnostic and therapeutical technology, understand them and exploit all their potentialities, carry out quality controls, and be able to identify and contribute to the choice of best analysis processes;
- Know biological hazards related to their professional actions and be able to optimize the relevant applicative processes, through the surveillance, updating and adaptation to technological development of their professional tasks;
- Be able to analyse, elaborate transmit and file the results of their professional actions, thanks to the acquisition of the needed statistic and computing skills;
- Be able to fit in and to interact with both public and private health production and prevention networks;
The achievement of the professional skills is carried out through a theoretical and practical educational programme including also the acquisition of behavioural competence as well as through adequate practical educational activities and clinical training; this latter, in particular, should comply with European standards, with respect to its duration and to the kind of planned and realized actions.
Graduates of this course should:
- Know general principles of pathology with respect to the relevant aspects, to the effects of ionizing radiations and of radiological, nuclear medical and radio-therapeutical techniques;
- Carry out the most important radiographic incidences and projections and know the various procedural techniques of image diagnostics, acquiring also technical competences to cooperate to the execution of echographic, computer tomographic and magnetic resonance (NMR) tests;
- Know general principles of computer science and of computer applications in the radiologic sector, with respect to the filing of images, medical reports and clinical-medical data; acquire also knowledge for the surveying, filing and transmission of images;
- Know how to use diagnostic and therapeutical radiations and radioactive tracers, as well how to apply the main radioprotection rules;
- Know the sources of ionizing radiations and of other energies used in Diagnostics and/or Radiotherapy and the relevant measurement standard;
- Know the main structural and functioning characteristic of the used equipment;
- Be able to choose and use the adequate technologies and materials in order to produce radiological images and radiant therapies;
- Learn the general principles of interactions between radiations and living beings;
- Learn procedures for radioprotection, environment decontamination, use of radio nuclides and labelling of radio-compounds;
- Know technologies and materials for the production of images and radiant therapies and the parameters characterising the energies used for image extraction;
- Know both static and dynamic nuclear medicine research techniques;
- Acquire competences for the technical assistance to radio-therapeutical treatments, as well as for the preparation and usage of shields and patient constriction systems;
- Be informed about the general principles of NM therapy(radio-metabolic, etc…) and acquire competence for preparing doses, controlling the patient, eliminating organic waste, for decontamination actions;
- Know the bases of work organisation and of cooperation with other healthcare professions, as well as the economic-financial aspects of healthcare;
- Know ethical and deontological issues related to the profession, apply the relevant rules, paying attention to the relation with citizens requiring his/her professional activity, and above all to the respect of their rights, even through self-limitation.

Professional opportunities

Graduates of this course may carry out their professional activity in public or private healthcare facilities, as employees or freelancers.

Final examination features

To be admitted to the Degree examination, the student must : - have attended all the courses and have passed the relevant examinations; - have obtained a total of 174 credits. Pursuant to Article 6, paragraph 3, of Legislative Decree No . 502/1992 and subsequent amendments, the final test of the degree courses in Class 3 of the Degrees in technical professions has the value of qualifying State examination in the practice . The final test : a) consists of the preparation of a paper and of a testing of practical skills; b) is organized in two sessions in periods defined at the national level, by decree of the Minister of Education, University and Research in consultation with the Minister of Health; c) The Board for the final exam is composed of not less than 7 and not more than 11 members, appointed by the Rector on the recommendation of the Board of the Degree Course, and includes at least two members appointed by the professional Board, or by professional associations identified with special decree of the Minister of Health on the basis of representativeness at the national level. The dates of the final examinations are communicated to the Ministry of Education, University and Research and the Ministry of Health that can send experts as their representatives. In the event of failure of the above components, the Rector exercises his power of replacement. The final mark, expressed up to 110/110 with any praise, is attributed taking into account the following parameters: a) the average of the marks obtained in the curricular examinations, expressed in relation to the maximum grade of 110/110; b) the score awarded by the Examining Board in the discussion of the thesis. The overall grade, as determined from processing of the scores provided by the items " a and b", with deliberate act of the Board might be rounded up or down to the nearest whole number The Board of the Degree Course, in the session of 01 February 2013 decided that the final

examination consists of the oral presentation and discussion, in front of the Examining Board, of a short paper investigating issues tackled during the course and typically related to the profession.

Subjects 1 ° year	CFU	Sem.	Val.	SSD	TAF
15285 - HISTOLOGY, ANATOMY, BIOCHEMISTRY AND PHYSIOLOGY - INTEGRATED COURSE	12	1	V		
- BIOCHEMISTRY *Proia(PA)*	*3*	*1*		*BIO/10*	*A*
- HUMAN ANATOMY WITH ELEMENTS OF HISTOLOGY *Alberti(PC)*	*6*	*1*		*BIO/16*	*A*
- HUMAN PHYSIOLOGY *Mudo'(PO)*	*3*	*1*		*BIO/09*	*A*
13580 - STATISTICS, IMAGE PROCESSING AND FILING, PHYSICS - INTEGRATED COURSE	9	1	V		
- GENERAL PHYSICS *Collura(PC)*	*3*	*1*		*FIS/07*	*A*
- IMAGE PROCESSING AND FILING SYSTEMS *Franchini(PC)*	*3*	*1*		*ING-INF/05*	*B*
- MEDICAL STATISTICS *Marcantonio(PC)*	*3*	*1*		*MED/01*	*A*
13588 - GENERAL PATHOLOGY, HYGIENE AND INDUSTRIAL MEDICINE - INTEGRATED COURSE	9	2	V		
- GENERAL PATHOLOGY *La Manna(RD)*	*3*	*2*		*MED/04*	*A*
- HYGIENE *Tramuto(PA)*	*3*	*2*		*MED/42*	*B*
- OCCUPATIONAL MEDICINE *Cirrincione(RD)*	*3*	*2*		*MED/44*	*B*
07558 - PROFESSIONAL PRACTICE I YEAR	12	2	V	MED/50	B
01361 - RADIOLOGICAL EQUIPMENT - INTEGRATED COURSE	15	2	V		
- IMAGE DIAGNOSTICS, IMAGE DIAGNOSTICS TECHNIQUES I *Mercadante(PC)*	*3*	*2*		*MED/50*	*B*
- IMAGE DIAGNOSTICS, IMAGE DIAGNOSTICS EQUIPMENT I *Lo Re(PA)*	*6*	*2*		*MED/50*	*B*
- MEDICAL PHYSICS FOR RADIOPROTECTION *D'Antoni(PC)*	*6*	*2*		*FIS/07*	*A, B*
04731 - FOREIGN LANGUAGE (ENGLISH)	3	2	G		E
	60				

Subjects 2 ° year	CFU	Sem.	Val.	SSD	TAF
12059 - IMAGE DIAGNOSTICS, IMAGE DIAGNOSTICS TECHNIQUES II	6	1	V	MED/50	B
15287 - PHARMACOLOGY, CONTRAST MEDIA AND ANAESTHESIOLOGY - INTEGRATED COURSE	9	1	V		
- ANAESTHESIOLOGY	*3*	*1*		*MED/41*	*A*
- IMAGE DIAGNOSTICS, CONTRAST RADIOLOGY *Galia(PO)*	*3*	*1*		*MED/36*	*B*
- PHARMACOLOGY	*3*	*1*		*BIO/14*	*A*
13591 - MEDICAL ONCOLOGY, RADIOTHERAPY AND NUCLEAR MEDICINE - INTEGRATED COURSE	9	2	V		
- IMAGE DIAGNOSTICS, DIAGNOSTIC AND THERAPEUTICAL TECHNIQUES IN NUCLEAR MEDICINE	*3*	*2*		*MED/36*	*B*
- IMAGE DIAGNOSTICS, RADIOTHERAPY	*3*	*2*		*MED/36*	*B*
- MEDICAL ONCOLOGY *Valerio(PA)*	*3*	*2*		*MED/06*	*B*
15255 - ORTHOPAEDICS, ODONTOSTOMATOLOGY AND FORENSIC MEDICINE - INTEGRATED COURSE	9	2	V		

Legenda: Per. = periodo o semestre, Val. = Valutazione (V=voto, G=giudizio), TAF= Tipologia Attività Formativa (A=base, B=caratterizzante, C=Affine, S=stages, D=a scelta, F=altre)

Subjects 2 ° year	CFU	Sem.	Val.	SSD	TAF
- FORENSIC MEDICINE Zerbo(PA)	*3*	*2*		*MED/43*	*C*
- LOCOMOTOR SYSTEM DISEASES	*3*	*2*		*MED/33*	*B*
- ODONTO-STOMATOLOGICAL DISEASES	*3*	*2*		*MED/28*	*B*
07580 - PROFESSIONAL PRACTICE II YEAR	27	2	V	MED/50	B
	60				

Subjects 3 ° year	CFU	Sem.	Val.	SSD	TAF
15260 - HISTORY OF MEDICINE, PSYCHOLOGY AND BUSINESS ORGANISATION - INTEGRATED COURSE	9	1	V		
- BUSINESS ORGANISATION	*3*	*1*		*SECS-P/10*	*B*
- HISTORY OF MEDICINE	*3*	*1*		*MED/02*	*B*
- OCCUPATIONAL AND ORGANISATIONAL PSYCHOLOGY	*3*	*1*		*M-PSI/06*	*B*
07248 - IMAGE DIAGNOSTICS TECHNIQUES 3 - INTEGRATED COURSE	9	1	V		
- IMAGE DIAGNOSTICS, IMAGE DIAGNOSTICS TECHNIQUES III	*3*	*1*		*MED/36*	*B*
- IMAGE DIAGNOSTICS, IMAGE DIAGNOSTICS TECHNIQUES IV	*3*	*1*		*MED/36*	*B*
- IMAGE DIAGNOSTICS, IMAGE DIAGNOSTIC TECHNIQUES V	*3*	*1*		*MED/36*	*B*
01192 - OTHER EDUCATIONAL ACTIVITIES	3	1	G		F
09538 - PROFESSIONAL PRACTICE III YEAR	21	2	V	MED/50	B
01391 - ADVANCED PROFESSIONAL PRACTICE ON HIGH TECHNOLOGY EQUIPMENT	3	2	G		F
04203 - COMPUTER SCIENCE LABORATORY	3	2	G		F
05917 - FINAL EXAMINATION	6	2	G		E
ADO Group of subjects	6				D
	60				

PROPAEDEUTICAL TEACHINGS

07580 - PROFESSIONAL PRACTICE II YEAR

07558 - PROFESSIONAL PRACTICE I YEAR

09538 - PROFESSIONAL PRACTICE III YEAR

07580 - PROFESSIONAL PRACTICE II YEAR

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