



UNIVERSITÀ DEGLI STUDI DI PALERMO

DEPARTMENT	Promozione della Salute, Materno-Infantile, di Medicina Interna e Specialistica di Eccellenza "G. D'Alessandro"
ACADEMIC YEAR	2021/2022
BACHELOR'S DEGREE (BSC)	PREVENTION TECHNIQUES FOR THE ENVIRONMENT AND WORKPLACE
INTEGRATED COURSE	PHYSICAL AND RADIATION SCIENCES - INTEGRATED COURSE
CODE	06349
MODULES	Yes
NUMBER OF MODULES	3
SCIENTIFIC SECTOR(S)	FIS/07, MED/36, ING-IND/11
HEAD PROFESSOR(S)	RASO GIUSEPPE Professore Ordinario Univ. di PALERMO
OTHER PROFESSOR(S)	RASO GIUSEPPE Professore Ordinario Univ. di PALERMO LO BRANO VALERIO Professore Ordinario Univ. di PALERMO LA GRUTTA LUDOVICO Professore Associato Univ. di PALERMO
CREDITS	9
PROPAEDEUTICAL SUBJECTS	
MUTUALIZATION	
YEAR	2
TERM (SEMESTER)	1° semester
ATTENDANCE	Mandatory
EVALUATION	Out of 30
TEACHER OFFICE HOURS	LA GRUTTA LUDOVICO Monday 10:00 12:00 Istituto di Radiologia, Stanza 125 - si prega di concordare via mail LO BRANO VALERIO Thursday 12:00 13:30 edificio 9 RASO GIUSEPPE Wednesday 15:00 16:00 Dipartimento di Fisica e Chimica Thursday 15:00 16:00 Dipartimento di Fisica e Chimica

DOCENTE: Prof. GIUSEPPE RASO

PREREQUISITES	• General concepts of elementary algebra and geometry
LEARNING OUTCOMES	<p>Knowledge and understanding: Knowledge of methods and detection techniques for the control and the detection of physical phenomena even in confined environment, knowledge of energy sources, knowledge on radiation and on radiation protection interventions. The assessment of knowledge is carried out by an oral assessment preceded by a written evaluation.</p> <p>Applying knowledge and understanding: Ability to knowledge of physical principles for the use of the main tools for the detection of risk factors in living and working environments.</p> <p>Making judgments: Independent judgment required for the measurement of parameters aimed at the wellbeing of man especially in indoor environment.</p> <p>Communication skills: Skills in oral communication, written and multimedia with exposure so made for the training of personnel exposed to radiation, to exchange information, to communicate with experts from other fields.</p> <p>Learning skills: Learning skills for the development and deepening of competencies, with reference to the continuous update of knowledge through consultation of library materials, databases, etc, also useful for the purposes of access to degree courses, first-level masters and other postgraduate training activities.</p>
ASSESSMENT METHODS	<p>Test in an ongoing written + Oral Exam.</p> <p>1. Assessment procedure for written tests in the pipeline The course tests are formulated in terms of multiple choice exercises. The course tests tend to verify the possession of skills, abilities and skills required. The stimuli, well-defined, clear and interpretable only, allow to formulate independently the response, and are structured so as to ensure comparability. The closing of the stimulus and the response is used to determine a priori, that is, at the time of the test construction, and therefore before it is administered, the score to be assigned to each question depending on the answer proves correct, incorrect or misleading statement. The assessment is expressed in thirtieth and admission to oral test is determined by a minimum score.</p> <p>2. Evaluation criteria for the oral examination The oral test consists of an interview, in order to check that you have skills and knowledge disciplinary provided by each of the modules provided by the course; the evaluation is expressed in thirtieths. The questions, both open both semi-structured and specifically designed to test the results of learning provided for, will tend to occur) the knowledge captured; b) the processing capacity, c) have adequate display capacity on the contents of the course. The final evaluation will take into account both the score of tests in the pipeline than that of the Oral Exam.</p> <p>Excellent 30-30 and praise, very good knowledge of the topics, excellent properties of language, good analytical ability, the student is able to apply knowledge to solve problems proposed 26-29 Very Good, Good command of the topics, full of language, the student is able to apply knowledge to solve problems proposed 24-25 good, basic understanding of the main topics, discrete properties of language, with limited ability to independently apply the knowledge to the solution of the proposed problems Satisfactory 21-23, has not fully mastered the main teaching subjects but it has the knowledge, satisfactory property language, poor ability to independently apply the knowledge acquired Sufficient 18-20, Minimum basic understanding of the major teaching and technical language issues, very little or no ability to independently apply the knowledge acquired Insufficient, it does not have an acceptable knowledge of the contents of the topics covered in the teaching.</p>
TEACHING METHODS	Frontal lessons. Classroom exercises.

**MODULE
APPLIED PHYSICS**

Prof. GIUSEPPE RASO

SUGGESTED BIBLIOGRAPHY

D. Scannicchio - E. Giroletti, Elementi di Fisica Biomedica, EdiSES, 2015

G. Raso - Dispense del corso

email: giuseppe.raso@unipa.it

AMBIT	10357-Scienze propedeutiche
INDIVIDUAL STUDY (Hrs)	45
COURSE ACTIVITY (Hrs)	30

EDUCATIONAL OBJECTIVES OF THE MODULE

Acquire the basic knowledge of the principles of physics necessary for understanding the operation of the main systems that constitute the human body and for the use of biomedical instrumentation.

SYLLABUS

Hrs	Frontal teaching
2	Introduction
6	Mechanics
2	Static
4	Thermology
4	Electromagnetism
3	Overview of radiation physics.

Hrs	Practice
4	Mechanics and static
2	Thermology
3	Electromagnetism

**MODULE
RADIOLOGY AND RADIOPROTECTION**

Prof. LUDOVICO LA GRUTTA

SUGGESTED BIBLIOGRAPHY

Dispense del docente
Cittadini. Diagnostica per immagini e radioterapia. Ediz. illustrata Copertina flessibile – 30 giu 2015.
Editore: Edra - Masson.
ISBN-10 : 8821440001. ISBN-13: 978-8821440007.

AMBIT	10363-Scienze della prevenzione e dei servizi sanitari
INDIVIDUAL STUDY (Hrs)	45
COURSE ACTIVITY (Hrs)	30

EDUCATIONAL OBJECTIVES OF THE MODULE

To provide the students with the key information pertaining the ionizing radiation (IR) and the Non Ionizing Radiation (NIR) in order to create a knowledge framework, so that they can autonomously and properly assess risk, benefit and main diagnostic and therapeutic applications of IR and NIR.

Knowledge and understanding:

To know preventive, educational and support topics for individual and community health in the field of diagnostic imaging, radioprotection and radiotherapy.

Ability to apply knowledge and understanding:

To be able to identify the principles of the discipline to use them in their own area but also to make integrative use of them to other disciplines, with autonomous paths of use. To know how to choose the appropriate interventions and tools necessary for the clinical or scientific path identified.

Autonomy of judgment:

Collect and interpret relevant data for preventive and diagnostic intervention for individual and collective health.

Communicative skills:

Ability to communicate information, ideas and solutions to issues related to the acquired knowledge.

Learning ability:

To develop the necessary skills to undertake subsequent studies with a high degree of autonomy in the field of diagnostic imaging, radioprotection and radiotherapy.

SYLLABUS

Hrs	Frontal teaching
8	Physics of ionizing radiations (IR). Health issues related to the use of IR.
2	Physics of non ionizing radiations (NIR). Use of NIR in Diagnostic Imaging.
8	Fundamentals of Radiobiology.
2	Contrast agents: classification and properties. Clinical applications. Adverse events and treatment. Patient preparation and management.
8	Health hazard due to Ionizing Radiation. Protection from Ionizing Radiations.
2	Legislation concerning population, patients and worker protection. Risk assessment.

**MODULE
ENVIRONMENTAL TECHNICAL PHYSICS**

Prof. VALERIO LO BRANO

SUGGESTED BIBLIOGRAPHY

Steven V. Szokolay. Introduzione alla progettazione sostenibile. Hoepli ISBN-10 : 8820335220
 Marco Beccali, Maristella Gussoni, Francesca Tosi; Ergonomia e ambiente. Progettare per i cinque sensi. Metodi, strumenti e criteri d'intervento per la qualita' sensoriale dei prodotti e dello spazio costruito. Il Sole 24 Ore ISBN-10 : 8832452057
 Testi forniti durante il corso

AMBIT	10360-Scienze della prevenzione nell' ambiente e nei luoghi di lavoro
INDIVIDUAL STUDY (Hrs)	45
COURSE ACTIVITY (Hrs)	30

EDUCATIONAL OBJECTIVES OF THE MODULE

The course aims to provide scientific knowledge (both theoretical and applied) regarding the laws of energy. In particular, the first phase deals with thermodynamics (quantity and quality of energy), followed by the problem of heat transfer. The course aims to provide the basic knowledge to deal with the energy balance of systems and plants

SYLLABUS

Hrs	Frontal teaching
4	Course introduction; introductory notes on energy and thermodynamics
8	Fundamental thermodynamic transformations; principle of conservation of energy; Applications and exercises;
4	Definition of mechanical work; Heat; Internal energy; First principle of thermodynamics; Applications and exercises; Applications and exercises;
7	Direct and inverse thermal machines; Applications and exercises.
7	Heat transfer in steady state; Applications and exercises;