UNIVERSITÀ
DEGLI STUDI DI MILANO-BICOCCA

COURSE SYLLABUS

Public Health, Occupational Medicine and Medical Statistics

2425-1-I0101D003

Aims

The course aims to:
-Learning the tools and concepts of public health.
-Acquiring the basic elements of Occupational Medicine with particular regard to the aspects of training and information of workers on the specific occupational risks of the health sector.
-Acquiring the main knowledge of descriptive statistics. The student will be able to produce the main descriptive statistics and appreciate the characteristics of a sample from the main statistical indices and graphs. The student will be able to interpret percentiles of a distribution and calculate specific probabilities from the Guessian distribution.
-Acquiring the main knowledge of diagnostic imaging methods and their use in the clinical setting, the principles of radiation physics, the biological effect of radiation, the mode of radioexposure and the related radiobiological risk, and the principles of radiation protection, particularly in the hospital setting.
-Acquiring the main knowledge related to diagnostic imaging and use of the main radiological and nuclear medical imaging methods.

Contents

Introduction to public health; the evolution of the concept of health; demographic and epidemiological evolution; principles and concepts of public health; primary prevention of infectious and chronic diseases.
Reasoned analysis of Italian safety regulations with regard to aspects of interest for the future health professional.
Main knowledge of descriptive statistics.
Topics related to the main diagnostic methods used in clinical radiology and nuclear medicine will be covered, the general principles of radiation physics, the concept of biological risk from radiation, the modalities and effects of radiation exposure, the principles of radiation protection and the fundamental aspects of radiation protection legislation for workers will be illustrated, with particular regard to the working areas of radiology, nuclear medicine and radiotherapy.
Radiation physics, imaging modalities in conventional radiodiagnostics and CT, conventional nuclear medicine,

SPET and PET, magnetic resonance imaging and ultrasonography.

Detailed program

General and applied hygiene: Introduction to public health; the evolution of the concept of health; demographic and epidemiological evolution
demographic and epidemiological; principles and concepts of public health; primary, secondary, tertiary prevention for infectious and chronic diseases. Public health within health systems.

Occupational Medicine: Elements of the history of Occupational Medicine; The Legislative Decree 81/08: generalities; Protective Devices / Personal
Protection / Individual; Pathology from manual handling of loads (Title VI Legislative Decree 8108); Pathology from video terminals/personal computers (Title VII Lgs.D. 8108); Pathology from noise and vibrations (Title VIII Lgs. 8108; Chemical risk (Title IX Legislative Decree 81/08); Carcinogenic risk (Title IX Legislative Decree 81/08); Biological risk
(Title X Lgs.D. 81/08); First Aid in the workplace (DM 388/03); Pregnancy and work (Lgs.
151/01); Radio-protection legislation (Legislative Decree 230/95)

Medical statistics: Quantitative-qualitative variables. Statistical series and seriations. Graphical representation of a distribution. Position indices of a distribution. Dispersion indices of a distribution. Scatter diagrams.
dispersion diagrams. Indices of association between two quantitative characters. Reliability of a measurement, random and systematic errors.
systematic errors. Indices of accuracy and precision. Definition of Gaussian density. Approximation of a histogram using the Gaussian distribution. The definition of standardised Gaussian density and its use.

Diagnostic Imaging and Radiation Protection: Introduction to Diagnostic Imaging and Radiation Protection. Overview of equipment used in diagnostic imaging. Main imaging techniques and their most common clinical applications in radiology (planar radiography, angiography, CT, MRI, ultrasound) and nuclear medicine (scintigraphy, single photon emission tomography (SPET) positron emission tomography (PET)).
General overview of ionising radiation and its radiobiological effect. Classification of irradiation damage. Radiation exposure in Radiodiagnostics and Nuclear Medicine. General principles of radiation protection.

Electronic and computer bioengineering: Hints of radiation physics. Conventional radiology with X-rays.
Computed Tomography (CT) with X-rays. Conventional Nuclear Medicine. Single Photon Emission Tomography Single Photon Emission Tomography (SPECT). Positron Emission Tomography (PET). Magnetic Resonance Imaging. Ultrasound scanning.

Prerequisites

None

Teaching form

In the integrated course there will be a total of 24 2-hour lessons delivered in face-to-face mode for the Monza site and in telededidactic mode for the Bergamo, Faedo Valtellino (SO) and Lecco sites;

the teledidactic mode envisages the "Direct" lesson in progress and the lessons uploaded onto the platform for consultation.
The 4 lessons of 2 hours of the Applied General Hygiene module are delivered in face-to-face mode at each location.
The 8 2-hour lectures of the Medical Statistics module include an exercise part which is aimed at engaging students interactively in the final part of each lecture.

Textbook and teaching resource

Slides of the lessons .
-Signorelli C (editor). Igiene e Sanità Pubblica. SEU, Roma, 2017
D.lgs. 9 aprile 2008, n. 81, Dm 388/03
-Marc M. Triola, Mario F. Triola, Jason Roy. Fondamenti di statistica Per le discipline biomediche. Pearson, seconda edizione 2022
-F.Giovagnorio. Manuale di diagnostica per immagini nella pratica medica. Esculapio Ed. 2017

Semester

first year- first semester

Assessment method

Final written test including:
-2 exercises to test the ability of the student in the application of statistics
-28 questions with closed answer to evaluate the preparation on the overall program

Office hours

on request by email

Sustainable Development Goals

GOOD HEALTH AND WELL-BEING | QUALITY EDUCATION | GENDER EQUALITY