



UNIVERSITÀ  
DEGLI STUDI DI MILANO-BICOCCA

## SYLLABUS DEL CORSO

### Igiene, Medicina del Lavoro e Statistica Medica

2324-1-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 Gaussian distribution.
- Acquiring the main knowledge related to the principles of radiation physics, the mode of radioexposure and the biological risk arising from exposure to ionising radiation and the principles of radiation protection, particularly in the hospital work environment.
- 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 principles of radiation physics, biological risk from radiation, the radiation exposure modes, radiation protection principles and basic aspects of legislation on exposure to ionising radiation of workers, 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.

Imaging and radiation protection: Modes of exposure in Radiodiagnostics and Nuclear Medicine. General principles of radiation protection. Radiation protection of operators. Classification of radiation damage. The Patient radiation protection. Roles and responsibilities of health personnel. Exposure of patients of childbearing age. Exposures of paediatric patients. Non-"occupational" exposures of informed and voluntary persons who carers of patients.

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

Lectures and exercises.

## **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

---