

## Biomedical Laboratory Techniques

**Integrated Course: Economic, social and international policy**

**SSD Disciplines: MEDS-25/B, MEDS-02/C, ECON-02/A, MEDS-24/B, ECON-06/A, MEDS-25/A**

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CFU:10

Discipline **Occupational Medicine**

SSD: MEDS-25/B

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CFU: 1

Discipline **History of medicine**

SSD: MEDS-02/C

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CFU: 2

Discipline **Political Economics**

SSD: ECON-02/A

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CFU: 4

Discipline **Igiene e Prevenzione Ambientale / Hygiene and Environmental Protection**

SSD: MEDS-24/B

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CFU: 1

Discipline **ECONOMIA AZIENDALE**

SSD: ECON-06/A

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CFU: 2

Discipline **Medicina Legale**

SSD: MEDS-25/A

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CFU: 1

## PREREQUISITES

There are no mandatory prerequisites. Basic knowledge is required in the following subjects: medical physics, cell and general biology, medical genetics, physiology, biochemistry, microbiology, hygiene and environmental prevention. Moreover, basic concepts of health and illness, determinants of health and the main strategies for prevention of infectious and non-communicable diseases are required.

**MODE OF ATTENDANCE: COMPULSORY WITH AT LEAST 75% ATTENDANCE OF INTEGRATED TEACHING**

## LEARNING OBJECTIVES

The integrated course of Economics, Social and International Sciences has the aim to provide the students the knowledge of the regulatory framework for maintaining the health and safety (H&S) both at individual and community level in the occupational setting; knowledge of the legislation and practice for health promotion and the ability to recognize situations of specialistic pertinence. Knowledge of the norms regulating health organization and their applications in occupational medicine is also required;; knowledge of the history and evolution of medical sciences; to convey the possibilities of applying economic approaches to the real world; to provide essential tools for a better understanding of economic dynamics; to present a careful analysis of the national and international economy from the end of World War II to the present day, with a particular focus on market globalization; to introduce the concepts of demand and supply, markets, labor market, development and underdevelopment, international economic relations; to give an analysis of consumer preferences and the economic aspects of risk management in complex organizations, such as healthcare institutions; to understand the countless factors that can interact with the state of health; to acquire the ability to learn the meaning of prevention strategies; The business administration module aims to provide the fundamentals concepts useful for understanding managerial dynamics in both public and private organizations. In particular, the student will acquire the fundamental elements of businesses operation, with specific reference to economic conditions, corporate governance, costs, and sources of financing. To provide students with knowledge of the essential elements of forensic pathology and of the rules necessary to carry out the health profession; to acquire knowledge of the legal obligations established by current legislation and to develop the ability to recognize which acts and events have or may have legal relevance

## LEARNING OUTCOMES

- Meaning of Occupational Medicine
- Temporal evolution of legislative aspects
- General and specific risks for workers
- Methods for risk assessment
- Health surveillance
- Fitness and unfitness for work
- Understanding of the basilar principles of Occupational Medicine
- Ability to perform risk assessment, and the steps of health surveillance
- Knowledge of the criteria of risk assessment and ability to apply them.
- Knowledge of Italian legislation of health interest
- Knowledge of the various fields of interest of forensic medicine.
- Description of the characteristics of the various types of injury and identify the possible cause.
- Knowledge of the criminal and ethical obligations to which the health professional is subject.
- Know the basis of the regulations in force regarding the professional liability of the health care professional.
- Knowledge of crucial steps of Medical Sciences during their evolution
- Understand the historical aspects related to economic development and underdevelopment.

- Comprehend the role and objectives of economic policy.
- Familiarize themselves with the main production systems in the global context and economic and market laws.
- Analyze the organizational models of production systems.
- Acquire knowledge of the basic elements of risk assessment and its economic components in healthcare organizations;
- Knowledge of the foundations of Epidemiology and general prevention of infectious and chronic-degenerative diseases;
- Know the problems, aims and objectives of public health interventions
- Know the main sources of epidemiological data, methods of analysis and evaluation of the same
- Know the main methods of prevention and their application in the community
- Know the general principles of diffusion and containment of infectious diseases
- Know the environmental risks deriving from air, water and soil pollution
- Know how to dispose of medical waste
- Understand what a company is, its several natures and how they operate;
- Understand the key factors that characterize a company: assets, people, and operations;
- Know the fundamental concepts of the strategic decision-making process;
- Understand the company's operational and financial management functions;
- Learn the basic tools for planning and control

### **Applying knowledge and understanding**

At the end of the course, the student will be able to:

Translate the acquired knowledge into the future professional activities.

To use the acquired knowledge for the autonomous deepening of aspects related to the specific field to which the student will devote himself within the professional activity in the case he/she will deal with topics related to Legal Medicine

Apply economic analysis to understand and assess interventions and policies aimed at reducing social costs and enhancing welfare and well-being.

Utilize economic analysis to comprehend the international landscape and the challenges within the economic sector, while evaluating interventions aimed at enhancing economic and social welfare.

Use what he/she learnt to deepen autonomously aspects useful for his/her profession in the future, if he/she will deal with healthcare management.

### **Communication skills**

At the end of the course, the student will achieve:

The proper use of the specific H&S scientific terminology.

The ability to provide elements for the specific language of the matter.

The appropriate use of economic terms in order to describe and appraise the results of an economic analysis.

The adequate description of prevention models and their adaptation in relation to population risk assessment.

How to use the glossary got during the course in an effective manner.

Use of specific scientific and legal terminology in an appropriate manner.

### **Making judgements**

At the end of the course, the student will achieve:

The ability to perform general assessments related to the topics covered.

The ability to analyze and learn how to correlate the various topics covered according to a logical reasoning for the implementation of prevention strategies, interpreting their objectives and expected results.

The ability to hold management positions within healthcare firms;

The ability to provide basic interpretations about firms trends and overall financial health.

### **Learning Skills**

The student will have acquired learning skills and methods appropriate for the deepening and improvement of his or her skills in the field of legal economic and political disciplines, including through the consultation of scientific literature

## **COURSE SYLLABUS**

### **OCCUPATIONAL MEDICINE**

#### **KEY CONCEPTS:**

1. Occupational Risk
2. Occupational Disease
3. Accident at work
4. Health surveillance

Topic I. Historical evolution of Occupational Medicine (Castellino, Anzelmo, Castellani, Pofi. Breve storia della Medicina del lavoro in Italia. Pag 15-165)

Topic II Chemical risk in Occupational Medicine (Perbellini, Sartorelli, Satta, Cocco, Genovese, Monaco, Miraglia, Oddone, Taino, Imbriani, Colosio, Candura, Manzo. Parte Terza Agenti Chimici. In "Manuale di Medicina del Lavoro" a cura di Tomei, Candura, Sannolo, Sartorelli, Costa, Perbellini, Larese-Filon, Maestrelli, Magrini, Bartolucci, Ricci. Pag 165-245)

Topic III Risk related to physical agents (De Vito, Riva, Cassano, Tomei, Suppi, Albera, Pimpinella, Peretti, Pasqua di Bisceglie, Gambelunghe, Abbritti, Trenta, Gobba. Parte Seconda. Agenti Fisici. In

“Manuale di Medicina del Lavoro” a cura di Tomei, Candura, Sannolo, Sartorelli, Costa, Perbellini, Larese-Filon, Maestrelli, Magrini, Bartolucci, Ricci. Pag 109-161)

Topic IV. Biological risk (Porru, Arici, Rosati, Giubilati, Suppi, Fidanza, Ricci, Nardone, Tomei. Parte Quarta. Agenti Biologici. In “Manuale di Medicina del Lavoro” a cura di Tomei, Candura, Sannolo, Sartorelli, Costa, Perbellini, Larese-Filon, Maestrelli, Magrini, Bartolucci, Ricci. Pag 249-269)

Topic V. Alcohol and drug abuse at work (Bordini, Briatico-Vangosa. Parte Quinta. Alcol e droghe sul luogo di lavoro. In “Manuale di Medicina del Lavoro” a cura di Tomei, Candura, Sannolo, Sartorelli, Costa, Perbellini, Larese-Filon, Maestrelli, Magrini, Bartolucci, Ricci. Pag 347-352)

### HISTORY OF MEDICINE

History of medicine: prehistoric medicine, ancient Egypt, the classical world (Greece and Rome), the Middle Ages, the modern age, the contemporary age.

- History of the concept of health and disease
- Main historical and ethical aspects of the relationship between health professionals and patients
- Historical origins of bioethics
- Birth and structuring of professional ethics
- Books, objects, biological sources as tools of historical research applied

### POLITICAL ECONOMICS

- Historical approach to political economics
- Markets
- Demand and supply
- Development and underdevelopment
- Consumer preferences
- Economic analysis of risk management in health systems.

### HYGIENE AND ENVIRONMENTAL PREVENTION

- General epidemiology of infectious diseases: host-parasite relationships, sources and reservoirs of infection, modes of transmission, modes of appearance of infections in the population.
- General prophylaxis: types and levels of preventive intervention, notification, default measures, diagnostic verification.
- sterilisation, disinfection, disinfestation,
- vaccine prophylaxis, types of vaccines, strategies and vaccination schedule
- passive immunoprophylaxis and chemoprophylaxis.
- Epidemiology and prevention of non-infectious diseases of social importance.
- Environmental hygiene: physical, chemical and biological contaminants and their toxicological aspects.
- Water hygiene: physical, chemical and microbiological criteria, purification treatments.
- Wastewater: biological treatment systems.

- Solid waste: treatment and disposal systems.
- Air pollution: the main pollutants and their effect on human health

### BUSINESS ADMINISTRATION

1) The Economic Institute - general characteristics: the corporate objects. “Legal entity” and “Economic entity”. Types of entities.

2) The company - the individual initiative in business: private and public companies. The purpose of the company. Evolution of the studies on firm behaviour. The decision-making structure and power control in the enterprise. The economy of corporate. Efficiency and production costs. The internal accountability.

3) The fund raising in companies - financial need and determination. The cover of needs: sources. The choice of different forms of financing. The dynamic relationship between “equity” and “loan capital” in financial structure. Funding sources in light of company law reform (D.Lgs. 6/2003).<sup>[2]</sup>

### LEGAL MEDICINE

Principles of Thanatology

Injuries from firearms

Injuries from cutting weapons

Injuries from blunt force

Asphysiology

Referto

Professional secrecy

L.219/2017 and informed consent

Code of ethics.

### **COURSE STRUCTURE**

The Course is structured in 110 hours of frontal teaching (10 for Occupational Medicine, 20 for History of Medicine, 40 for Political Economics, 10 of Hygiene and Environmental Protection, 20 of Business Administration, and 10 of Legal Medicine. Tools such as power point presentation, diagrams, movies and animations will be used in support of the explanation of the single topics. An in depth seminar of 3 hour duration will be delivered for each module. A 3 hour specific seminar of Occupational Medicine will be devoted to the following topic “Workplace hazardous chemical agents”

### **COURSE GRADE DETERMINATION**

The Course grade determination will be assessed through a multiple choice written test aimed to verify the student's ability to making judgments, communication skills and learning skills according to the Dublin descriptors. The test will include 30 questions regarding all the teaching courses in proportion to the CFU of the single course. The students will achieve 1 point for each correct answer. The test will last 30 min. No penalty will be given in the case of wrong answers. The minimum threshold for considering the test as successful is a mark of 18. The test will be evaluated according to the following criteria:

Failed: Relevant weaknesses and/or inaccuracies in knowledge and understanding of the topics. Limited analytical and syntetic capabilities.

18-20: Sufficient knowledge and understanding, with possible inaccuracies. Sufficient analytical and synthetic capabilities, and proper personal judgment.

21-23 Average knowledge and understanding. More than sufficient analytical and synthetic capabilities.

24-26 Knowledge and understanding in the upper 50%. Good analytical and synthetic capabilities.

27-29 Extensive knowledge and understanding of the topics. Relevant analytical and syntetic capabilities. Good proper personal judgment.

30-30L Impressive knowledge and understanding of the topics. Very good analytical and synthetic capabilities, and proper personal judgment.

During each teaching course a test aimed to verify possible deficit in understanding will be administered for each module. This intermediate test will not impact on the evaluation of the exam test.

Students achieving a mark of at least 18 points will be offered the possibility to perform an integrative oral exam, aimed to a further in depth evaluation of the knowledge and understanding of the various topics, of their analytical and synthetic capabilities and of their personal judgment. A relevant portion of the oral exam will be devoted to evaluate their communication ability. At the end of the oral exam, the mark achieved with the written test may be maintained, or increased, or decreased. A final evaluation of failure in passing the exam will be also possible.

## **READING MATERIALS**

William Bynum. The History of Medicine. Oxford

L.R. Angeletti, V. Gazzaniga. Storia, filosofia ed etica generale della medicina. Masson

"Medicina del Lavoro. Manuale per le professioni sanitarie" Sacco, Ciavarella, De Lorenzo. Pag 1-195

Roberto Cellini, Politica economica. Introduzione ai modelli fondamentali, Milano : McGraw-Hill Education, 2019

Randy Charles Epping, A Begginers' Guide to the World of Economy, Third Edition, New York : Vintage, 2001

Igiene per le professioni sanitarie – W.Ricciardi – Ed. Sorbona- 2015

Sharon Bell Buchbinder, Nancy H Shanks, (2017), Introduction to health care management, Jones & Bartlett Learning, Burlington, Massachusetts.

Titolo: "Nuovo Compendio di Medicina Legale"

Autori: Natale M. Di Luca, Tommaso Feola, Enrico Marinelli, Serafino Ricci.

Paoloni M., Paoloni P. (a cura di), Introduzione ed orientamento allo studio delle aziende, II ed., Giappichelli, Milano, 2021.

Additional material (Power point slides, articles) provided in class.