MEDICINE

COURSES TAUGHT IN ENGLISH

STUDY MEDICAL SCIENCES @MILANO-BICOCCA

The field of Medical Sciences at the University of Milano-Bicocca is at the forefront of international education and research and cutting-edge practice in clinical medicine and biomedical science. The Department brings together **12 degree courses** across medicine and allied subjects:

B 7 Bachelor degrees
M 2 Master degrees
SCMD 3 Single Cycle Master Degree

OUR INTERNATIONAL OFFER

In the field of Medical Sciences, our University offers the following 2 degree programs in English:

* Single Cycle Master Degree in Medicine & Surgery
* Post Graduate Degree in Biotechnology in Medicine (2 years)

There are a total of 63 individual courses taught entirely in English.

OUR LOCATION

POST GRADUATE DEGREE IN BIOTECHNOLOGY IN MEDICINE is held at our Monza Campus .
SINGLE CYCLE MASTER DEGREE IN MEDICINE & SURGERY is held at the campus of University of Bergamo.
The 2 locations reflect our strong clinical and research partnership with the multi-specialty San Gerardo and Papa Giovanni XXIII hospitals.

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* HISTOLOGY
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* IMAGE DIAGNOSTIC
* IMAGING
* IMMUNOLOGY I
* IMMUNOLOGY II
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* INTERNAL MEDICINE
* LIVER DISEASES
* MECHANISMS AND BIOMARKERS OF NEURONAL DAMAGE
* MECHANISMS AND MODELS OF VASCULAR DISEASES
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* MEDICAL PHYSICS II
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* MICROBIOLOGY AND VIROLOGY
* MODELLING
* MOLECULAR AND ONCOLOGICAL THERAPY
* PATHOLOGY AND MEDICINE
* PHARMACOLOGY
* RADIOLOGICAL ANATOMY
* SCIENTIFIC AND MEDICAL LANGUAGE
* SOCIETY AND HEALTH I
* SOCIETY AND HEALTH II
* TRANSLATIONAL APPROACH TO NEUROLOGICAL DISORSERS
* TRANSLATIONAL APPROACH TO ONCO-HEMATOLOGICAL DISEASES

PROGRAM CODE: F0901D096M

ALTERATIONS OF IRON METABOLISM (module of "From Bench to Bedside")

LECTURER: PIPERNO ALBERTO

CONTENTS

The aim of this course is to present several examples of diseases and their physiopathology, and the role of biotechnology in their diagnosis/ therapeutic approach. A general introduction on the methodologies employed to analyse the molecular mechanisms underlying the pathological processes will be provided.

Detailed program:

* Iron homeostasis (mechanisms of cellular and systemic regulation)
* Iron and hypoxia
* Iron and inflammatory diseases
* Hereditary disorders of iron metabolism
* Iron and damage
* Iron metabolism in the brain
* Neurodegenerative brain iron accumulation syndromes (NBIA)

PREREQUISITES

Advanced knowledge in genetics, biology and molecular biology.

WEBSITE https://elearning.unimib.it/course/info.php?id=19595

M

YEAR: 2
SEM: 1
ECTS: Only if the entire course is frequented
DEGREE in Biotechnology in Medicine
CONTACT: alberto.piperno@unimib.it

PROGRAM CODE: H4102D029M

APPLICATION OF BIOSTATISTICS (module of Biostatistics)

LECTURER: REBORA PAOLA

CONTENTS

The student will be able to calculate the main descriptive indexes and to appreciate the characteristics of a sample by descriptive statistics and plots.

The student will be able to evaluate the accuracy of a diagnostic test by the sensitivity, specificity and predictive value indexes.

The student will be able to calculate specific probabilities from Gaussian and Binomial distribution.

The student will be able to calculate statistical tests for means and proportions and confidence intervals.

The student will know how to critically read the methodology and results paragraphs of a clinical paper.

Methods for data description. Statistical inference: hypothesis testing, sampling and introduction to modelling. Sample size calculation.

PREREQUISITES

None.

WEBSITE https://elearning.unimib.it/course/info.php?id=20912

SCMD

YEAR: 2
SEM: 1
ECTS: Only if the entire course is frequented
DEGREE in Medicine and Surgery
CONTACT: paola.rebora@unimib.it

PROGRAM CODE: H4102D015

BASIC CLINICAL SKILLS

MODULES:
1.Internal Medicine (ref. H4102D045M)
2.General Surgery (ref. H4102D046M)
3.Emergency (ref. H4102D047M)

LECTURER: INVERNIZZI PIETRO

CONTENTS

The medical Clerkship is designed to allow students to develop an integrated approach to the doctor-patient relationship.

In the Medical Clerkship, the focus is on learning core medical concepts and basic professional skills to prepare students for the Clinical program and beyond.

PREREQUISITES

Internal Medicine: Adequate knowledge of: Human anatomy; Biochemistry; ·Physiology; Fundamentals of Radiology.

WEBSITE https://elearning.unimib.it/course/info.php?id=20901

SCMD
YEAR: 2
SEM: 2
ECTS: 9
DEGREE in Medicine and Surgery
CONTACT: pietro.invernizzi@unimib.it

PROGRAM CODE: H4102D004

BASIC COMPUTER SCIENCE

MODULES:
1.Basic Computer Science (ref. H4102D010M)
2.Modelling (ref. H4102D011M)
3.Imaging (ref. H4102D012M)

LECTURER: RIZZI CATERINA

CONTENTS

The course is composed by three modules dealing with:

* Medical informatics: data, information, and communication;
* Information systems and DBMS;
* Telemedicine and Internet for healthcare
* Medical Imaging: generation of digital images and processing, surface models generation and visualization, data analysis and structural quantification.
* Human modelling: Techniques and tools to create 3D geometric model of human body and anatomical districts at different level of details according to the domain of application

PREREQUISITES

None.

WEBSITE https://elearning.unimib.it/course/info.php?id=20929

SCMD
YEAR: 1
SEM: 1
ECTS: 9
DEGREE in Medicine and Surgery
CONTACT: caterina.rizzi@unimib.it

PROGRAM CODE: H4102D010M

BASIC COMPUTER SCIENCE (module of Basic Computer Science)

LECTURER: GARGANTINI ANGELO

CONTENTS

The course is composed by three modules dealing with:

* Medical informatics: data, information, and communication; information systems and DBMS; Telemedicine and Internet for healthcare
* Medical Imaging: generation of digital images and processing, surface models generation and visualization, data analysis and structural quantification.
* Human modelling: Techniques and tools to create 3D geometric model of human body and anatomical districts at different level of details according to the domain of application.

PREREQUISITES

None.

WEBSITE https://elearning.unimib.it/course/info.php?id=20930

SCMD
YEAR: 1
SEM: 1
ECTS: Only if the entire course is frequented
DEGREE in Medicine and Surgery
CONTACT: angelo.gargantini@unimib.it

PROGRAM CODE: H4102D011

BASIC PATHOLOGY

MODULES:
1.Microbiology and Virology (ref. H4102D032M)
2.Immunology I (ref. H4102D033M)
3.Immunology II (ref. H4102D034M)
4.Pathology and Medicine (ref. H4102D035M)

LECTURER: CLEMENTINA ELVEZIA COCUZZA

CONTENTS

See each module.

PREREQUISITES

Pathology and Medicine: knowledge of the introductory courses indicated in the regulation of the degree.

WEBSITE https://elearning.unimib.it/course/info.php?id=20905

SCMD
YEAR: 2
SEM: 1
ECTS: 13
DEGREE in Medicine and Surgery
CONTACT: clementina.cocuzza@unimib.it

PROGRAM CODE: H4102D012

BASIC PHARMACOLOGY

LECTURER: PARENTI MARCO DOMENICO

CONTENTS

The course will examine the general principles underlying the destiny of drugs within the organism and the mechanisms responsible of their therapeutic and toxic effects.

In addition, the preclinical and clinical processes of drug research and development, the post-marketing surveillance, drug patenting and access will be discussed.

PREREQUISITES

Knowledge of human anatomy, physiology, pathology, chemistry, biochemistry.

WEBSITE https://elearning.unimib.it/course/info.php?id=20910

SCMD
YEAR: 2
SEM: 1
ECTS: 4
DEGREE in Medicine and Surgery
CONTACT: marco.parenti@unimib.it

PROGRAM CODE: H4102D001

BASIC SCIENCES

MODULES:
1. Chemistry and Propaedeutic Biochemistry I (ref. H4102D001M)
2. Biochemistry I (ref. H4102D002M)
3. Biochemistry II (ref. H4102D003M)
4. Medical Physics I (ref. H4102D004M)
5. Medical Physics II (ref. H4102D005M)

LECTURER: MASSIMO ERNESTO MASSERINI

CONTENTS

See each module.

PREREQUISITES

Basic mathematical knowledges.

WEBSITE https://elearning.unimib.it/course/info.php?id=20933

SCMD

YEAR: 1
SEM: 1+2
ECTS: 14
DEGREE in Medicine and Surgery
CONTACT: massimo.masserini@unimib.it

PROGRAM CODE: H4102D039M

BEHAVIOYRAL SCIENCES, COMMUNICATION SKILLS I (module of Medicine and Society)

LECTURER: STREPPARAVA MARIA GRAZIA

CONTENTS

The aim of the course is to enable students to communicate properly with patients, following the recognized guidelines, with humanity and sensitivity, in the different situations and with different types of patients; students will learn how to manage patients' reactions to the disease and to regulate their own behavior and their emotional reactions in the professional interactions with patients and colleagues and to understand psychological and relational elements in the patient-doctor relationship; disease-centred medicine and patient-centred medicine.

PREREQUISITES

None.

WEBSITE https://elearning.unimib.it/course/info.php?id=20924

SCMD

YEAR: 2
SEM: 1+2
ECTS: Only if the entire course is frequented
DEGREE in Medicine and Surgery
CONTACT: mariagrazia.strepparava@unimib.it

PROGRAM CODE: H4102D040M

BEHAVIOYRAL SCIENCES, COMMUNICATION SKILLS II (module of Medicine and Society)

LECTURER: BANI MARCO

CONTENTS

The aim of the course is to enable students to communicate properly with patients, following the recognized guidelines, with humanity and sensitivity, in the different situations and with different types of patients; students will learn how to manage patients' reactions to the disease and to regulate their own behavior and their emotional reactions in the professional interactions with patients and colleagues and to understand psychological and relational elements in the patient-doctor relationship; disease-centred medicine and patient-centred medicine.

PREREQUISITES

None

WEBSITE https://elearning.unimib.it/course/info.php?id=20925

SCMD

YEAR: 2
SEM: 1+2
ECTS: Only if the entire course is frequented
DEGREE in Medicine and Surgery
CONTACT: marco.bani1@unimib.it

PROGRAM CODE: H4102D041M

BEHAVIOYRAL SCIENCES, COMMUNICATION SKILLS III (module of Medicine and Society)

LECTURER: BANI MARCO

CONTENTS

The aim of the course is to enable students to communicate properly with patients, following the recognized guidelines, with humanity and sensitivity, in the different situations and with different types of patients; students will learn how to manage patients' reactions to the disease and to regulate their own behavior and their emotional reactions in the professional interactions with patients and colleagues and to understand psychological and relational elements in the patient-doctor relationship; disease-centred medicine and patient-centred medicine.

PREREQUISITES

The role of the clinician in the simulated interview; the role of the patient in the simulated interview; the role of the observer in the simulated interview.

WEBSITE https://elearning.unimib.it/course/info.php?id=20926

SCMD

YEAR: 2
SEM: 1+2
ECTS: Only if the entire course is frequented
DEGREE in Medicine and Surgery
CONTACT: marco.bani1@unimib.it

PROGRAM CODE: H4102D002M

BIOCHEMISTRY I (module of Basic Sciences)

LECTURER: MASSERINI MASSIMO, CORBO CLAUDIA

CONTENTS

* Provide the concepts necessary to understand biological phenomena and energy changes connected to them;
* Explain the correlation between function and molecular structure, complex communication phenomena, interaction and control of cell and tissue functions;
* Explain how organ functions can be regulated according to their particular biochemical processes, focusing on metabolic integration.

PREREQUISITES

Basic Biology and Chemistry knowledge.

WEBSITE https://elearning.unimib.it/course/info.php?id=20934

SCMD

YEAR: 1
SEM: 1+2
ECTS: Only if the entire course is frequented
DEGREE in Medicine and Surgery
CONTACT: massimo.masserini@unimib.it
claudia.corbo@unimib.it

PROGRAM CODE: H4102D003M

BIOCHEMISTRY II (module of Basic Sciences)

LECTURER: RE FRANSCESCA

CONTENTS

* Provide the concepts necessary to understand biological phenomena and energy changes connected to them.
* Explain the correlation between function and molecular structure, complex communication phenomena, interaction and control of cell and tissue functions;
* Explain how organ functions can be regulated according to their particular biochemical processes, focusing on metabolic integration

PREREQUISITES

Basic knowledge of Biology and Chemistry.

WEBSITE https://elearning.unimib.it/course/info.php?id=20935

SCMD

YEAR: 1
SEM: 1+2
ECTS: Only if the entire course is frequented
DEGREE in Medicine and Surgery
CONTACT: francesca.re1@unimib.it

PROGRAM CODE: H4102D009

BIOSTATISTICS

MODULES: 1.Biostatistics (ref. H4102D028M)
2.Application of Biostatistics (ref. H4102D029M)

LECTURER: PAOLA REBORA

CONTENTS

This course aims to provide the basic tools of medical statistics that are at the basis of a proper methodological approach to a research project in medicine. The student will be able to calculate the main descriptive indexes and to appreciate the characteristics of a sample by descriptive statistics and plots. The student will be able to evaluate the accuracy of a diagnostic test by the sensitivity, specificity and predictive value indexes. The student will be able to calculate specific probabilities from Gaussian and Binomial distribution. The student will be able to calculate and interpret statistical tests for means and proportions and confidence intervals. The student will know how to critically read the methodology and results paragraphs of a clinical paper.

PREREQUISITES

None.

WEBSITE https://elearning.unimib.it/course/info.php?id=20911

SCMD
YEAR: 2
SEM: 1
ECTS: 4
DEGREE in Medicine and Surgery
CONTACT: paola.rebora@unimib.it

PROGRAM CODE: H4102D028M

BIOSTATISTICS (module of Biostatistics)

LECTURER: REBORA PAOLA

CONTENTS

This course aims to provide the basic tools of medical statistics that are at the basis of a proper methodological approach to a research project in medicine.

The student will be able to calculate the main descriptive indexes and to appreciate the characteristics of a sample by descriptive statistics and plots.

The student will be able to evaluate the accuracy of a diagnostic test by the sensitivity, specificity and predictive value indexes. The student will be able to calculate specific probabilities from Gaussian and Binomial distribution.

The student will be able to calculate and interpret statistical tests for means and proportions and confidence intervals. The student will know how to critically read the methodology and results paragraphs of a clinical paper.

Uncertainty in medicine. Methods for data description. Probability. Statistical inference: hypothesis testing, sampling and introduction to modelling. Sample size calculation. Type of studies.

PREREQUISITES

None.

WEBSITE https://elearning.unimib.it/course/info.php?id=20913

SCMD
YEAR: 2
SEM: 1
ECTS: Only if the entire course is frequented
DEGREE in Medicine and Surgery
CONTACT: paola.rebora@unimib.it

PROGRAM CODE: H4102D016

CASE BASED LEARNING AND GENERAL CLINICAL PRACTICE

LECTURER: MANTOVANI LORENZO GIOVANNI

CONTENTS

Early experience of clinical activity to understand how to professionally interact with patients:

* To understand and to learn how correctly to collect the patient's medical history and how;
* To properly perform a physical examination, starting from the most common clinical cases, experience a holistic approach to the patient and the diseases;
* To understand and to learn how correctly to collect the patient's medical history and how;
* To properly perform a physical examination, starting from the most common clinical cases, experience a holistic approach to the patient and the diseases;
* To learn the principles of clinical reasoning;
* To acquire the basics of the doctor professional role, of patient-centred medicine, of clinical responsibility and professionalism;
* Earning to use the correct professional ethics criteria;
* Early clinical experience at the GP facilities, for learning the bio-psycho-social determinants of health and disease;
* Learning basic clinical skills by Case Based Learning;
* Knowledge of the most common factors of health and disease prevention;
* Knowledge of the most common pathologies in the local population and their management by the General Practitioners;
* General knowledge about the organization of the primary care system;

PREREQUISITES

Basic knowledge of anatomy, physiology, pharmacology.

WEBSITE https://elearning.unimib.it/course/info.php?id=20914

SCMD
YEAR: 2
SEM: 2
ECTS: 9
DEGREE in Medicine and Surgery
CONTACT: lorenzo.mantovani@unimib.it

PROGRAM CODE: H4102D006M

CELL AND MOLECULAR BIOLOGY I (module of Fundamentals of Cell Biology and Genetics)

LECTURER: INTRONA MARTINO

CONTENTS

Structure and function of the most important cellular macromolecules; DNA duplication and repair mechanisms; transcription and RNA processing; translation and protein sorting; transcriptional and post-transcriptional regulation; signal transduction pathways; molecular and cellular mechanisms which control the cell cycle, cellular growth and differentiation as well as cell-to-cell interactions.

Detailed program:

GENERAL BIOLOGY – Classification of living organisms – Structure od prokaryotic and eukaryotic cells – Viruses, classification, lytic and lisogen cycle. MOLECULAR BIOLOGY. Chemical composition and molecular organization of the cell – water, carbohydrates, lipids, proteins and nucleic acids. Identification of the chemical compound carrying the genetic information – Molecular basis of inheritance – DNA replication. Telomerases – Mechanisms of DNA repair. Correlation with human diseases, aging and cancer. - RNA, structure and function – Transcription and RNA maturation – The genetic code, and its biological implication (redundancy, frameshift) – Translation – Protein sorting

CELL BIOLOGY – Structure and function of the cytoskeleton – Cell adhesion mechanisms – Endocytosis and Exocytosis – Cell-to-cell communication in complex organisms – Signal transduction and the role of protein kinases – Cell cycle and its regulatory mechanisms. _ Mytosis and Meiosis – Apoptosis – Cell differentiation processes: embrional and adult stem cells.

PREREQUISITES

Basic sciences (chemistry, physics).

WEBSITE https://elearning.unimib.it/course/info.php?id=20949

SCMD

YEAR: 1
SEM: 1+2
ECTS: Only if the entire course is frequented
DEGREE in Medicine and Surgery
CONTACT: martino.introna@unimib.it

PROGRAM CODE: F0901D081M

CELLULAR AND GENE THERAPY (module of Translational Approach To Onco-hematological Diseases)

LECTURER: BIONDI ANDREA

CONTENTS

The aims of the Course is to provide an overview of the current and most relevant applications of biotech in the development of new treatment strategies. The two tracks of the course include the targeting treatment and the development of cellular and gene therapy. The first part will cover the process of identification of new potential targets for treatment by using high-throughout technologies , the screening of active molecules and the preclinical and clinical development.

* Diseases in the field of cancer will be taken as cases in point. The second part will present the pre clinical and clinical development of a product for cellular and gene therapy in the field of cancer, treatment of infections in immuno-compromised hosts, and tissue regeneration. Emphasis will be given to the knowledge of the process of production under “GMP” conditions.
* Stem cells biology; Hemopoietic stem cell transplantation as the best success of stem cell therapy; stem cells and tissue regeneration (cardiovascular, orthopaedic, etc.)
* Cell therapy in cancer and immunocompromised hosts; immunoregulatory cells: from discovery to application in the clinic.
* Monoclonal antibody: from Koehler & Milstein up to now: a masterpiece in biotech therapy.
* Introduction to gene therapy; the viral and non-viral vectors; successes and problems in gene therapy.
* The concept of GMP production: how a cellular or a gene products become a drug.

PREREQUISITES

Basic knowledge on pathology and immunology. Advanced knowledge in biochemistry, molecular biology and genetics.

WEBSITE https://elearning.unimib.it/course/info.php?id=19603

M

YEAR: 2
SEM: 1
ECTS: Only if the entire course is frequented
DEGREE in Biotechnology in Medicine
CONTACT: andrea.biondi@unimib.it

PROGRAM CODE: H4102D001M

CHEMISTRY AND PROPEDEUTIC BIOCHEMISTRY I (module of Basic Sciences)

LECTURER: SMITH ANDREW JAMES

CONTENTS

In the first part of the course will be illustrated: the principles of chemical kinetics, chemical equilibrium, redox reactions and energy related to them in the general framework of thermodynamics and electrochemistry, and finally the self-ionization of water will be treated, acid / base properties and buffer solutions.

In the second part will be described: the reactivity of the main classes of organic compounds, including the isomerism and the stereoisomerism of organic molecules containing carbon atoms. The properties of the main classes of macromolecules of biological interest (proteins, lipids, carbohydrates and nucleic acids) will be illustrated. In addition, the basic knowledge of proteomics and imaging with MS used for clinical applications will be provided.

PREREQUISITES

Basic chemistry knowledges.

WEBSITE https://elearning.unimib.it/course/info.php?id=20936

SCMD

YEAR: 1
SEM: 1+2
ECTS: Only if the entire course is frequented
DEGREE in Medicine and Surgery
CONTACT: andrew.smith@unimib.it

PROGRAM CODE: H4102D006

CLERKSHIP I

LABORATORIES: 1.Chemistry and Propaedeutic Biochemistry II (ref. H4102D017M)
2.Cell and Molecular Biology (ref. H4102D018M)
3.Basic Computer Science (ref. H4102D019M)

LECTURER: MAGNI FULVIO, INTRONA MARTINO, GARGANTINI ANGELO MICHELE

CONTENTS

* Chemistry and Propaedeutic Biochemistry II : Practical laboratory activities useful for medical students. Practical laboratory activities with computers and personal applications;
* Group discussion of scientific papers useful for medical students;
* Chemistry and Propaedeutic Biochemistry II : To learn basic practical laboratory activities useful for medical students, including basic knowledge and practical aspects of clinical proteomics;
* Basic computer science: Practise the knowledge on computer related methodologies and technologies employed in medical informatics and to apply those methods in solving problems arising in different areas of medicine and the health-care system (starting from personal use);
* Cell and Molecular Biology: To learn the new advances in cell and molecular biology techniques, and critically evaluate their use in a clinical setting.

PREREQUISITES

The attended Chemistry, cell biology and propedeutical biochemistry courses. Basic knowledge in the use of computers. Attendance of the basic computer science course.

WEBSITE https://elearning.unimib.it/course/info.php?id=20939

SCMD
YEAR: 1
SEM: 1
ECTS: 4
DEGREE in Medicine and Surgery
CONTACT: fulvio.magni@unimib.it

PROGRAM CODE: H4102D008

CLERKSHIP II

LABORATORIES:
1. Biochemistry (ref. H4102D023M)
2. Medical Physics (ref. H4102D024M)
3. Histology (ref. H4102D025M)
4. Regional Anatomy (ref. H4102D026M)

LECTURER: CAVALETTI G., CAZZANIGA E., SALERNO D., CAROZZI V., ALBERTI P.

CONTENTS

Students will be able to understand the basic biochemical techniques, to prepare a biochemistry assay of protein, lipid or sugar, under the supervision of qualified laboratory staff and by using an "on field" approach. The last lesson will consist in the discussion of clinical cases based on the biochemical knowledge learned during the course. Biochemistry" Students will be able to understand the basic histological techniques, to prepare histological samples for the observation of the structure and ultrastructure of the main biological tissues, under the supervision of qualified laboratory staff and by using an "on field" approach. Students will receive the practical, theoretical and IT skills to analyse and to correctly understand the experimental data. This knowledge will form the primary basis for a rationale approach to the knowledge of medical sciences. Students will be able to demonstrate the position of palpable landmarks of the different regions and will acquire knowledge of the characteristic features, organ content and 3-D arrangement of the head, neck, thorax, abdomen, pelvis and limbs. The general features of the systems further described in detail in "Locomotor system diseases", "Cardiovascular and Respiratory diseases", Digestive health", "Endocrine, Kidney and Urinary tract diseases" and "Mother and Child" will be addressed. The students are introduced to the main biochemical techniques and to the instruments, reagents and materials needed for biochemistry assay (to analyse protein, lipid and sugar). The students are introduced to the main histological techniques and to the instruments, reagents and materials needed for histological analysis.

PREREQUISITES

College-level scientific knowledge and basic knowledge of mathematics and analysis and IT.

WEBSITE https://elearning.unimib.it/course/info.php?id=20943

SCMD
YEAR: 1
SEM: 2
ECTS: 5
DEGREE in Medicine and Surgery
CONTACT: guido.cavaletti@unimib.it

PROGRAM CODE: H4102D017

CLERKSHIP III

CLERKSHIP: Microbiology and Virology (ref. H4102D017)

LECTURER: COCUZZA CLEMENTINA

CONTENTS

The course aims to provide the student with the fundamental principles and knowledge for the interpretation of the laboratory results in the diagnosis of infectious diseases.

* Laboratory methods for the diagnosis of infectious diseases;
* Laboratory methods for evaluating bacterial susceptibility to antimicrobial agents;
* Phenotypic and genotypic methods for microbial characterization and typing;
* Interpretation of Clinical Microbiology laboratory results.

PREREQUISITES

Knowledge on the content of the Microbiology and Virology module of the course on Basic Pathology.

WEBSITE https://elearning.unimib.it/course/info.php?id=20915

SCMD

YEAR: 2
SEM: 2
ECTS: 2
DEGREE in Medicine and Surgery
CONTACT: clementina.cocuzza@unimib.it

PROGRAM CODE: H4102D043M

CONTRAST MEDIA AND RADIOPHARMACEUTICAL (module of Image Diagnostics)

LECTURER: MORESCO ROSA MARIA

CONTENTS

The pharmacological aspects of diagnostics medicinal products.

Topics include fundamental of pharmacokinetics, pharmacodynamics and regulatory aspects related to their use in Diagnostic imaging.

Pharmacology of Diagnostic Medicinal Products

PREREQUISITES

None.

WEBSITE https://elearning.unimib.it/course/info.php?id=20920

SCMD

YEAR: 2
SEM: 2
ECTS: Only if the entire course is frequented
DEGREE in Medicine and Surgery
CONTACT: rosa.moresco@unimib.it

PROGRAM CODE: H4102D047M

EMERGENCY (module of Basic Clinical Skills)

LECTURER: LORINI FERDINANDO LUCA

CONTENTS

* Evaluation of the patient general conditions;
* Guidelines for the recovery and maintenance of the vital functions (BLSD and ACLS);
* Acute cardiac failure;
* Neurological emergencies. Coma and syncope;
* Acute Respiratory Failures;
* Shock (diagnosis and treatment);

PREREQUISITES

None.

WEBSITE https://elearning.unimib.it/course/info.php?id=20902

SCMD

YEAR: 2
SEM: 2
ECTS: Only if the entire course is frequented
DEGREE in Medicine and Surgery
CONTACT: llorini@asst-pg23.it

PROGRAM CODE: H4102D013M

ETHICS AND LAW (module of Humanities)

LECTURER: MOLASCHI VIVIANA

CONTENTS

The purpose of this class is to develop an understanding of the relationship bet and ethics in the health care field.

Outline of how law, regulation and governance mechanisms deal with the organization and development of health care systems, medical practice and the guarantee and implementation of health related rights, with particular regard to bioethical issues.

PREREQUISITES

From 1th year of Medical School.

WEBSITE https://elearning.unimib.it/course/info.php?id=20958

SCMD

YEAR: 1
SEM: 1+2
ECTS: Only if the entire course is frequented
DEGREE in Medicine and Surgery
CONTACT: viviana.molaschi@unimib.it

PROGRAM CODE: F0901D050

FROM BENCH TO BEDSIDE: TRANSLATIONAL APPROACH TO DISEASES

MODULES:
1.Liver Diseases (ref. F0901D095M)
2.Alterations of Iron Metabolism (ref. F0901D096M)
3.Gastro-intestinal Diseases (ref. F0901D097M)

LECTURER: BARISANI DONATELLA

CONTENTS

The aim of the Course is to provide the student with a critical knowledge of the technical instruments and strategies normally employed in defining the pathophysiology of the various disorders and possible new therapeutic approaches.
The aim of this course is to present several examples of diseases and their physiopathology, and the role of biotechnology in their diagnosis/ therapeutic approach. A general introduction on the methodologies employed to analyse the molecular mechanisms underlying the pathological processes will be provided.

PREREQUISITES

WEBSITE https://elearning.unimib.it/course/info.php?id=19594

M
YEAR: 2
SEM: 1
ECTS: 6
DEGREE in Biotechnology in Medicine
CONTACT: donatella.barisani@unimib.it

PROGRAM CODE: H4102D002

FUNDAMENTALS OF CELL BIOLOGY AND GENETICS

MODULES: 1.Cell and Molecular Biology I (ref. H4102D006M)
2.Genetics I (ref. H4102D008M)
LABORATORIES: 1.Cell and Molecular Biology II (ref. H4102D007M)
2.Genetics II (ref. H4102D009M)

LECTURER: BARISANI DONATELLA

CONTENTS

The course will provide the essential theoretical knowledge of biology and genetics, also focusing on the possible future application in the medical field. The subjects of the course will provide the necessary knowledge to understand the vital processes, both on the cellular and molecular level, as well as the laws of heredity and the processes involved in the generation of phenotypic diversity. The acquired knowledge will contribute to better understand the processes involved in normal and pathological situations.

* Structure and function of the most important cellular macromolecules;
* DNA duplication and repair mechanisms;
* Transcription and RNA processing; translation and protein sorting;
* Molecular and cellular mechanisms responsible for gene expression and its regulation, analyzing epigenetic mechanisms, transcriptional and post-transcriptional regulation;
* Signal transduction pathways;
* Molecular and cellular mechanisms which control the cell cycle, cellular growth and differentiation as well as cell-to-cell interactions;
* Basic concepts of heredity and the transmission patterns of inherited traits; mechanisms which can generate phenotypic variants in men;
* Methodologies used in genetic analysis;
* Most important biotechnological app. in medicine (gene-based and cell-based therapy).

PREREQUISITES

Basic sciences (chemistry, physics).

WEBSITE https://elearning.unimib.it/course/info.php?id=20948

SCMD
YEAR: 1
SEM: 1+2
ECTS: 11
DEGREE in Medicine and Surgery
CONTACT: donatella.barisani@unimib.it

PROGRAM CODE: H4102D007

FUNDAMENTALS OF HUMAN MORPHOLOGY

MODULES: 1.General Anatomy (ref. H4102D020M)
2.Histology (ref. H4102D021M)
LABORATORY: 1.Microscopic Anatomy (ref. H4102D022M)
LECTURER: CAVALETTI GUIDO

CONTENTS

The student will be able to communicate effectively with colleagues and to use and understand anatomical language appropriately. Knowledge of accepted general anatomical terminology will be achieved. The general features of the systems further described in detail in “Cardiovascular and Respiratory diseases” and “Neuroscience I and II” will be addressed. Specific reference to clinical anatomy features will also be performed. Students will be able to describe the structure and ultrastructure of the eukaryotic cell and the morphology correlate with the function of each organelle; then they will be able to describe the structure and morpho-functional characteristics of human tissues (epithelial, connective, muscle and nervous tissues) as well as to describe the main events of gametogenesis and early embryogenesis. The student will be able to indicate the normal microscopic organization of the main organs of the human organism. The microscopic and functional structure of the organs of the digestive, respiratory, urinary, genital, lymphatic, nervous, endocrine and integumentary organs will be addressed in preparation to histopathological assessment.

Students will be introduced to:

Principles of histology, embryology, and regional anatomy;

* General principles of systematic anatomy
* Use of the light microscope and organ recognition
* Clinical Anatomy
* Lessons contents will be supported by the activities of Clerkship 2, modules “Histology” e “Regional anatomy”

PREREQUISITES

College-level scientific knowledge.

WEBSITE https://elearning.unimib.it/course/info.php?id=20953

SCMD
YEAR: 1
SEM: 2
ECTS: 5
DEGREE in Medicine and Surgery
CONTACT: guido.cavaletti@unimib.it

PROGRAM CODE: H4102D010

FUNDAMENTALS OF HUMAN PHYSIOLOGY

MODULES: 1.General Physiology I (ref. H4102D030M)
2.General Physiology II (ref. H4102D031M)

LECTURER: RIVOLTA ILARIA

CONTENTS

See each module.

PREREQUISITES

Anatomy, biology, genetics and phisics.

WEBSITE https://elearning.unimib.it/course/info.php?id=20916

SCMD
YEAR: 2
SEM: 1
ECTS: 4
DEGREE in Medicine and Surgery
CONTACT: ilaria.rivolta@unimib.it

PROGRAM CODE: F0901D097M

GASTRO-INTESTINAL DISEASES (module of "From Bench to Bed-side")

LECTURER: BARISANI DONATELLA

CONTENTS

The aim of this course is to present several examples of diseases and their physio-pathology, and the role of biotechnology in their diagnosis/ therapeutic approach. A general introduction on the methodologies employed to analyse the molecular mechanisms underlying the pathological processes will be provided.

Detailed program:

* Monogenic and multifactorial diseases:genetic studies and technical approaches
* Celiac disease
* Inflammatory bowel diseases
* Stem cells and their niche in the intestine
* Colon cancer, sporadic and inherited forms

PREREQUISITES

Advanced knowledge in genetics, biology and molecular biology.

WEBSITE https://elearning.unimib.it/course/info.php?id=19596

M

YEAR: 2
SEM: 1
ECTS: Only if the entire course is frequented
DEGREE in Biotechnology in Medicine
CONTACT: donatella.barisani@unimib.it

PROGRAM CODE: H4102D020M

GENERAL ANATOMY (module of Fundamentals of Human Morphology)

LECTURER: CAVALETTI GUIDO ANGELO

CONTENTS

See “Fundamentals of Human Morphology”.

Detailed program:

* Anatomy and its subdivisions (Systematic anatomy, Regional anatomy, Microscopic anatomy, Anatomical terminology, Terms of position, Terms of movements and directions, Systematic anatomy, Topographic anatomy);
* Principles of gross anatomy of the vascular and lymphatic systems;
* Principles of the anatomic organization of the central, peripheral and autonomic nervous system;
* Principles of radiologic anatomy;
* Principles of clinical anatomy.

PREREQUISITES

See “Fundamentals of Human Morphology”.

WEBSITE https://elearning.unimib.it/course/info.php?id=20954

SCMD
YEAR: 1
SEM: 2
ECTS: Only if the entire course is frequented
DEGREE in Medicine and Surgery
CONTACT: guido.cavaletti@unimib.it

PROGRAM CODE: H4102D030M

GENERAL PHYSIOLOGY I (module of Fundamentals of Human Physiology)

LECTURER: RIVOLTA ILARIA

CONTENTS

The course aims to provide knowledge about cellular functions at the basis of systems physiology. At the end of the course, the student will be able to understand how a cell can perform its vital functions to guarantee the homeostasis of the tissue to which it belongs thanks to its basic mechanisms.

The student will be able to use this knowledge for the interpretation of the pathophysiological signs and symptoms, as a starting point for the study of the physiology of the individual systems subsequently treated in the vertical tracks.

The course is based on the systematic presentation of physiological concepts underlying the functions of the human body. The sequence of events leading to an imbalance of a specific function cannot be appreciated without a deep understanding of the basic biophysical and physiological mechanisms. Therefore, these mechanisms that guarantee functions at the cellular and tissue level will be presented. In particular, membrane transports, neuronal, muscular and cardiac cell excitability, the physiology of sensory systems, the motor control and muscle contraction will be analyzed.

PREREQUISITES

None.

WEBSITE https://elearning.unimib.it/course/info.php?id=20917

SCMD

YEAR: 2
SEM: 1
ECTS: Only if the entire course is frequented
DEGREE in Medicine and Surgery
CONTACT: ilaria.rivolta@unimib.it

PROGRAM CODE: H4102D015M

GENERAL PSYCHOLOGY I (module of Humanities)

LECTURER: STREPPARAVA MARIA GRAZIA

CONTENTS

* To develop the ability to recognize and distinguish relational elements in doctor-patient interactions.
* To become aware of the personal mechanisms of relational functioning.
* Knowing how to recognize and describe the features of different attachment styles and the implications for the relationship with the patient;
* Knowing how to recognize and describe interpersonal motivational systems (activation, deactivation, objectives and related emotions).
* Interpersonal motivational systems
* Attachment in the relationship with patients
* Human dimension in doctor patient relationship

PREREQUISITES

None.

WEBSITE https://elearning.unimib.it/course/info.php?id=20959

SCMD
YEAR: 1
SEM: 1+2
ECTS: Only if the entire course is frequented
DEGREE in Medicine and Surgery
CONTACT: mariagrazia.strepparava@unimib.it

PROGRAM CODE: H4102D031M

GENERAL PHYSIOLOGY II (module of Fundamentals of Human Physiology)

LECTURER: SANCINI GIULIO

CONTENTS

The course aims to provide knowledge about cellular functions at the basis of systems physiology. At the end of the course, the student will be able to understand how a cell can perform its vital functions to guarantee the homeostasis of the tissue to which it belongs thanks to its basic mechanisms. The student will be able to use this knowledge for the interpretation of the pathophysiological signs and symptoms, as a starting point for the study of the physiology of the individual systems subsequently treated in the vertical tracks.

The course is based on the systematic presentation of physiological concepts underlying the functions of the human body. The sequence of events leading to an imbalance of a specific function cannot be appreciated without a deep understanding of the basic bio-physical and physiological mechanisms. Therefore, these mechanisms that guarantee functions at the cellular and tissue level will be presented.

In particular, membrane transports, neuronal, muscular and cardiac cell excitability, the physiology of sensory systems, the motor control and muscle contraction will be analyzed.

PREREQUISITES

None.

WEBSITE https://elearning.unimib.it/course/info.php?id=20918

SCMD

YEAR: 2
SEM: 1
ECTS: Only if the entire course is frequented
DEGREE in Medicine and Surgery
CONTACT: giulio.sancini@unimib.it

PROGRAM CODE: H4102D016M

GENERAL PSHYCOLOGY II (module of Humanities)

LECTURER: BANI MARCO

CONTENTS

* To develop the ability to recognize and distinguish relational elements in doctor-patient interactions.
* To become aware of the personal mechanisms of relational functioning.

At the end of the course the student must be able to:

* provide a definition of emotional regulation; describe the modal model of emotion regulation and its phases;
* provide professional examples of the use of different strategies;
* describe the main features of the basic emotions approach and the conceptual act model;
* Knowing how to describe the concept of "difficult patient" in terms of the narrative of the patient.

The difficult patient and personal narrative; Emotions and emotion regulation in the professional field.

PREREQUISITES

None.

WEBSITE https://elearning.unimib.it/course/info.php?id=20960

SCMD
YEAR: 1
SEM: 1+2
ECTS: Only if the entire course is frequented
DEGREE in Medicine and Surgery
CONTACT: marco.bani1@unimib.it

PROGRAM CODE: H4102D046M

GENERAL SURGERY (module of Basic Clinical Skills)

LECTURER: CASTELLI CLAUDIO CARLO

CONTENTS

* General principles and practical skills for harvesting a medical history;
* The surgical history and documentation;
* Basic physical evaluation skills, oriented for a surgical approach to the patient;
* Basic principles of data interpretation (laboratory, radiology) in relation with the clinical evaluation.

PREREQUISITES

Emergency: Pre-clinical block (anatomy, biochemistry, physiology…) successfully passed.

WEBSITE https://elearning.unimib.it/course/info.php?id=20903

SCMD

YEAR: 2
SEM: 2
ECTS: Only if the entire course is frequented
DEGREE in Medicine and Surgery
CONTACT: ccastelli@asst-pg23.it

PROGRAM CODE: H4102D008M

GENETICS I + II (module of Fundamentals of Cell Biology and Genetics)

LECTURER: BARISANI DONATELLA

CONTENTS

Molecular and cellular mechanisms responsible for gene expression and its regulation, analyzing epigenetic mechanisms, basic concepts of heredity and the transmission patterns of inherited traits; mechanisms which can generate phenotypic variants in men.

PREREQUISITES

Basic sciences (chemistry, physics).

WEBSITE https://elearning.unimib.it/course/info.php?id=20951

SCMD

YEAR: 1
SEM: 1+2
ECTS: Only if the entire course is frequented
DEGREE in Medicine and Surgery
CONTACT: donatella.barisani@unimib.it

PROGRAM CODE: H4102D014M

HEALTH ECONOMICS (module of Humanities)

LECTURER: MARTINI GIANMARIA

CONTENTS

* Generate knowledge of the main dynamics and economic relationships in the health sector.
* Acquire understanding of the main methods of financing expenditure.

The course provides knowledge on the main economic features of the health care sector, both from the demand and supply side.

Health care is one of the most important sector within modern economic systems, since it involves a large amount of public and/or private resources, and for its impact on the quality of life of population, and in turn on economic growth.

It is essential to learn how to efficiently utilize the growing resources demanded by the population, and to evaluate the performance of different forms of insurance and of different health care-systems and organizations and regulations.

PREREQUISITES

None.

WEBSITE https://elearning.unimib.it/course/info.php?id=20961

SCMD

YEAR: 1
SEM: 1+2
ECTS: Only if the entire course is frequented
DEGREE in Medicine and Surgery
CONTACT: gianmaria.martini@unimib.it

PROGRAM CODE: H4102D021M

HISTOLOGY (module of Fundamentals of Human Morphology)

LECTURER: CAROZZI VALENTINA ALDA

CONTENTS

See “Fundamentals of Human Morphology”.

Detailed program:

* Histology and its methods of study
* Cytology: general properties of eukariotic cells
* Plasma membrane: structure, molecular composition, functions.
* Cell connections: tight junctions, gap junctions and desmosomes.
* Cytosol: molecular composition and functions
* Cytoplasmic organelles: Mitochondria, Ribosomes, Endoplasmic reticulum (rough and smooth), Golgi complex, Lysosomes, Peroxisomes
* Cytoskeleton: Microtubules, Actin filaments and intermediate filaments
* Trafficking, sorting and secretion of proteins
* Nucleus and nucleolus
* Cell death: Apoptosis and necrosis.

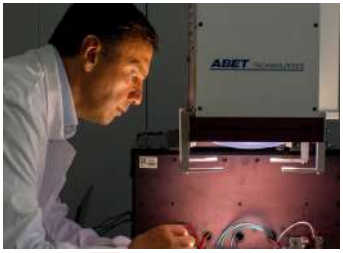
PREREQUISITES

College-level scientific knowledge.

WEBSITE https://elearning.unimib.it/course/info.php?id=20955

SCMD

YEAR: 1
SEM: 2
ECTS: Only if the entire course is frequented
DEGREE in Medicine and Surgery
CONTACT: valentina.carozzi1@unimib.it



PROGRAM CODE: H4102D005

HUMANITIES

MODULES:
1.Ethics and Law (ref. H4102D013M)
2.Health Economics (ref. H4102D014M)
3.General Psychology I (ref. H4102D015M)
4.General Psychology II (ref. H4102D016M)

LECTURER: STREPPARAVA MARIA GRAZIA

CONTENTS

* To develop an understanding of the relationship between law and ethics in the health care field;
* To provide knowledge on the main economic features of the health care sector, both from the demand and supply side;
* To understand psychological functioning in health and illness with main focus on Emotional, cognitive and behavioural responses to illness;
* Outline of how law, regulation and other governance mechanisms deal with the organization and development of health care systems, medical practice and health related rights;
* Health care institutions and organizations, Demand and Supply in health care, Regulation, public and private organizations, Economic evaluation in health care;
* Psychological factors in health and illness.

PREREQUISITES

WEBSITE https://elearning.unimib.it/course/info.php?id=20957

SCMD
YEAR: 1
SEM: 1+2
ECTS: 8
DEGREE in Medicine and Surgery
CONTACT: mariagrazia.strepparava@unimib.it

PROGRAM CODE: H4102D014

IMAGE DIAGNOSTIC

MODULES:
1. Instrumentation for Diagnostic Imaging and Radiotherapy (ref. H4102D042M)
2. Contrast Media and Radiopharmaceutical (ref. H4102D043M)
3. Radiological Anatomy (ref. H4102D044M)

LECTURER: SIRONI SANDRO

CONTENTS

Acquisition of knowledge related to:

* X-ray based, US-based, Magnetic Resonance, Nuclear Medicine and hybrid diagnostic imaging instrumentation;
* Radiotherapy instrumentation;
* Pharmacological aspects of diagnostics medicinal products, including fundamental of pharmacokinetics, pharmacodynamics and regulatory aspects related to their use in Diagnostic imaging;
* Basic comprehension of the key anatomic reference structures, as an introduction to clinical interpretation of radiological images;
* Diagnostic imaging modalities and radiotherapy systems;
* Pharmacology of Diagnostic Medicinal Products;
* Normal anatomy as documented by means of conventional radiology, CT, ultrasound, and Magnetic Resonance Imaging.

PREREQUISITES

Basic knowledge on chemistry, physics, human anatomy, physiology and pharmacology.

WEBSITE https://elearning.unimib.it/course/info.php?id=20919

SCMD
YEAR: 2
SEM: 2
ECTS: 3
DEGREE in Medicine and Surgery
CONTACT: sandro.sironi@unimib.it

PROGRAM CODE: H4102D012M

IMAGING (module of Basic Computer Science)

LECTURER: REMUZZI ANDREA

CONTENTS

* Analogic and numerical techniques for generation of digital images, storage and processing;
* Generation of surface models and graphical visualization;
* Image processing finalized to increase of image quality and to structural quantification;
* Instrumentation and signal processing for the generation of medical images (Xray, CT, MR, PET and SPECT);
* Technologies and algorithms for storage and processing of digital images;
* Image formats and archiving systems, image transmission;
* Image segmentation ad object recognition, image processing by machine learning techniques;
* Numerical generation of surface models and their visualization,
* Spatial and temporal image registration for different acquisition modalities;
* Numerical analysis for structural quantification;
* Visualization techniques and rendering;
* Generation of digital models for stereo visualization and 3D printing.

PREREQUISITES

Basic knowledge in mathematics, algebra, geometry and physics.

WEBSITE https://elearning.unimib.it/course/info.php?id=20931

SCMD

YEAR: 1
SEM: 1
ECTS: Only if the entire course is frequented
DEGREE in Medicine and Surgery
CONTACT: andrea.remuzzi@unimib.it

PROGRAM CODE: H4102D033M

IMMUNOLOGY I (module of Basic Pathology)

LECTURER: ALBINI ADRIANA

CONTENTS

The Immunology I course provides students with the fundamentals of modern cellular and molecular immunology. The course deals with the investigation of pathological mechanisms of immunology common to all pathologies, functional alterations and clinical significance. It focuses on the immunological aspects of various diseases. At the end of the course the student will be able to understand the immunological basis of alterations in human health and associated clinical manifestations and to clarify the physio-pathological principles underlying immunology and therefore of treatment.

* Immune response.
* Cells, tissues and organs of the immune system.
* Antibodies and antibody response.
* Major Histocompatibility Complex (MHC I and MHC II or HLA; Human Leukocyte Antigens) and antigen Presentation.
* Regulation of the immune response.
* Tolerance.
* Immediate hypersensitivity reactions.
* Delayed hypersensitivity reactions.
* Autoimmunity.
* Primary and Acquired Immunodeficiencies.
* Transplant immunology.
* Principles of immunosuppressive therapy.

PREREQUISITES

Immunology II: knowledge relating to the theoretical course of Immunology I.

WEBSITE https://elearning.unimib.it/course/info.php?id=20906

SCMD
YEAR: 2
SEM: 1
ECTS: Only if the entire course is frequented
DEGREE in Medicine and Surgery
CONTACT: adriana.albini@unimib.it

PROGRAM CODE: H4102D034M

IMMUNOLOGY II (module of Basic Pathology)

LECTURER: ALBINI ADRIANA

CONTENTS

The Immunology II course provides students with the knowledge of some basic molecular immunology laboratory techniques.
The course will provide skills on sample preparation to be analyzed as well as basic immunology techniques. At the end of the course the student will be able to understand how the main immunological tests can be applied both to the diagnosis of diseases and to the translational research laboratory.

* Cell culture techniques.
* Preparation of blood sample leukocytes.
* Antibody production. Monoclonal antibodies and their applications.
* Antigen-antibody interaction, direct and indirect immunofluorescence. Immunohistochemistry.
* Immunoassay: immunoblotting, immunoprecipitation. ELISA test.

PREREQUISITES

Microbiology and Virology: knowledge on the principles of Cell Biology, Genetics and Anatomy as acquired during the first year of the degree course.

WEBSITE https://elearning.unimib.it/course/info.php?id=20907

SCMD

YEAR: 2
SEM: 1
ECTS: Only if the entire course is frequented
DEGREE in Medicine and Surgery
CONTACT: adriana.albini@unimib.it

PROGRAM CODE: H4102D042M

INSTRUMENTATION FOR DIAGNOSTIC IMAGING AND RADIOTHERAPY (module of Image Diagnostics)

LECTURER: DE BERNARDI ELISABETTA

CONTENTS

Knowledge on:

* X-ray based, US-based, Magnetic Resonance, Nuclear Medicine and hybrid diagnostic;
* Imaging instrumentation;
* Radiotherapy instrumentation;
* Diagnostic imaging modalities and radiotherapy systems.

PREREQUISITES

Physics basic knowledge.

WEBSITE https://elearning.unimib.it/course/info.php?id=20921

SCMD
YEAR: 2
SEM: 2
ECTS: Only if the entire course is frequented
DEGREE in Medicine and Surgery
CONTACT: elisabetta.debernardi@unimib.it

PROGRAM CODE: H4102D045M

INTERNAL MEDICINE (module of Basic Clinical Skills)

LECTURER: FAGIUOLI STEFANO

CONTENTS

The clerkship program is based on 3 major components:

1) Verbal data-gathering (including communication skills, medical history-taking; Age-specific approach for infants, children, adolescents, and older adults, and the healthy female evaluation;
2) Basic physical examination skills. Key physical exam steps (Inspection, Palpation, Percussion, Auscultation), along with expected and unexpected findings. clues for identifying characteristic symptoms and diagnosing patient problems;
3) Data interpretation (patient-physician relationship, signs & symptoms, diagnostic tests findings evaluation). Reporting and documenting findings for electronic charting.

PREREQUISITES

General Surgery: Successfully passed the propaedeutic courses defined by the previous semester; Pre-clinical block (anatomy, biochemistry, physiology…) successfully passed.

WEBSITE https://elearning.unimib.it/course/info.php?id=20904

SCMD

YEAR: 2
SEM: 2
ECTS: Only if the entire course is frequented
DEGREE in Medicine and Surgery
CONTACT: sfagiuoli@asst-pg23.it

PROGRAM CODE: F0901D095M

LIVER DISEASES (module of “From Bench to Bedside”)

LECTURER: INVERNIZZI PIETRO

CONTENTS

The aim of this course is to present several examples of diseases and their physiopathology, and the role of biotechnology in their diagnosis/ therapeutic approach. A general introduction on the methodologies employed to analyse the molecular mechanisms underlying the pathological processes will be provided.

Detailed program:

* Physiology and pathophysiology of biliary secretion
* Hepatic regeneration and liver fibrosis
* Genetic diseases of the biliary epithelium
* Primary hepatic tumors
* Liver immunopathology
* Autoimmune liver diseases
* Personalized medicine in gastroenterology

PREREQUISITES

None.

WEBSITE https://elearning.unimib.it/course/info.php?id=19597

M

YEAR: 2
SEM: 1
ECTS: Only if the entire course is frequented
DEGREE in Biotechnology in Medicine
CONTACT: pietro.invernizzi@unimib.it

PROGRAM CODE: F0901D092M

MECHANISMS AND BIOMARKERS OF NEURONAL DAMAGE (module of Translational Approach To Neurological Disorsers)

LECTURER: FERRARESE CARLO, TREMOLIZZO LUCIO

CONTENTS

This course aims at contributing to the training of a medical biotechnologist able to integrate basic principles of neuroscience in order to understand the biological basis, main pathogenic mechanisms and experimental models regarding nervous system disorders. Models will be analyzed stressing critical aspects and role in the development of novel therapeutic strategies.

Detailed program:

Neuroscience, an integrative approach: (1) structure and function; (2) your brain, your self; (3) thought processes; (4) the dynamic brain; (5) breaking from neurodogma; (6) emerging technologies and challenges;

Neurological disorders, a translational approach: mechanisms and biomarkers of neuronal damage; role of glutamate and GABA in CNS disorders; link between inflammation, oxidative stress and excitotoxicity; physiopathology of stroke and multiple sclerosis; genetics of Parkinson; Alzheimer and amyotrophic lateral sclerosis; molecular mechanisms of neurodegenerative disorders.

PREREQUISITES

Basic kn owledge of anatomy and istology, physiology and neuropharmacology. Advanced knowledge of biochemistry, molecular biology and genetics.

WEBSITE https://elearning.unimib.it/course/info.php?id=19600

YEAR: 2
SEM: 1
ECTS: Only if the entire course is frequented
DEGREE in Biotechnology in Medicine
CONTACT: carlo.ferrarese@unimib.it
lucio.tremolizzo@unimib.it

PROGRAM CODE: F0901D093M

MECHANISMS AND MODELS OF VASCULAR DISEASES (module of Translational Approach To Neurological Disorsers)

LECTURER: FROIO ALBERTO

CONTENTS

This course aims at contributing to the training of a medical biotechnologist able to integrate basic principles of vascular pathophysiology in order to understand the biological basis, main pathogenic mechanisms and experimental models regarding vascular diseases. Models will be analyzed stressing critical aspects and role in the development of novel therapeutic strategies.

Detailed program:

* Experimental models of vascular injury.
* Experimental models of coronary atherosclerotic disease.
* Experimental models of carotid atherosclerosis inducing cerebral ischemia.
* Experimental models of peripheral artery disease.
* Experimental models of intimal hyperplasia and restenosis.
* Experimental models of abdominal aortic aneurysms.
* Experimental models of aortic dissection.

PREREQUISITES

Basic kn owledge of anatomy and istology, physiology and neuropharmacology. Advanced knowledge of biochemistry, molecular biology and genetics.

WEBSITE https://elearning.unimib.it/course/info.php?id=19601

M
YEAR: 2
SEM: 1
ECTS: Only if the entire course is frequented
DEGREE in Biotechnology in Medicine
CONTACT: alberto.froio@unimib.it

PROGRAM CODE: H4102D004M

MEDICAL PHYSICS I (module of Basic Sciences)

LECTURER: MANTEGAZZA FRANCESCO

CONTENTS

The student must know:

* The fundamental concepts of mechanics with particular reference to the balance of the human body;
* The basic concepts of radiation physics, with particular emphasis on biomedical applications;
* The basic concepts of fluid dynamics, with particular reference to the human circulatory system;
* The basic concepts of electrodynamics with particular reference to the transport of the electrical signal in the nervous system

PREREQUISITES

Basic knowledges of mathematics and analysis.

WEBSITE https://elearning.unimib.it/course/info.php?id=20937

SCMD

YEAR: 1
SEM: 1+2
ECTS: Only if the entire course is frequented
DEGREE in Medicine and Surgery
CONTACT: francesco.mantegazza@unimib.it

PROGRAM CODE: H4102D005M

MEDICAL PHYSICS II (module of Basic Sciences)

LECTURER: SALERNO DOMENICO

CONTENTS

The student must know:

* The fundamental concepts of mechanics with particular reference to the balance of the human body;
* The basic concepts of radiation physics, with particular emphasis on biomedical applications;
* The basic concepts of fluid dynamics, with particular reference to the human circulatory system;
* The basic concepts of electrodynamics with particular reference to the transport of the electrical signal in the nervous system

PREREQUISITES

Basic knowledges of mathematics and analysis.

WEBSITE https://elearning.unimib.it/course/info.php?id=20938

SCMD

YEAR: 1
SEM: 1+2
ECTS: Only if the entire course is frequented
DEGREE in Medicine and Surgery
CONTACT: domenico.salerno@unimib.it

PROGRAM CODE: H4102D013

MEDICINE AND SOCIETY

MODULES:
1.Society and Health I (ref. H4102D037M)
2.Society and Health II (ref. H4102D038M)
3.Behavioural Sciences, Communication Skills I (ref. H4102D039M)
4.Behavioural Sciences, Communication Skills II (ref. H4102D040M)
5.Behavioural Sciences, Communication Skills III (ref. H4102D041M)

LECTURER: STREPPARAVA MARIA GRAZIA

CONTENTS

Understanding the cultural, social and relational aspects of medicine, taking into account its history, evolution, sanitary structure, the main determinants of population health and risk factors of disease and patient-doctor relationship and the psychological variables affecting patient-doctor relationship.

This knowledge is the basis for understanding and adequately placing individual medical practice in the contemporary and international social context.

PREREQUISITES

None.

WEBSITE https://elearning.unimib.it/course/info.php?id=20923

SCMD

YEAR: 2
SEM: 1+2
ECTS: 10
DEGREE in Medicine and Surgery
CONTACT: mariagrazia.strepparava@unimib.it

PROGRAM CODE: H4102D032M

MICROBIOLOGY AND VIROLOGY (module of Basic Pathology)

LECTURER: COCUZZA CLEMENTINA, MCFADDEN JOHN JOSEPH

CONTENTS

The course aims to provide the students with knowledge on the fundamental principles of the microbial etiology and pathogenesis of the major human infectious diseases.
General characteristics of microbial pathogens.

* Microbial genetics.
* Microbial pathogenesis.
* General characteristics of bacterial pathogens.
* Virulence factors and mechanisms of bacterial pathogenesis.
* Bacterial pathogens and associated diseases.
* Viral pathogens and associated diseases and viral-induced oncogenesis.
* Major fungal and protozoal human pathogens.
* Principles of laboratory diagnosis of infectious diseases.
* Antimicrobial agents and resistance.
* Strategies for infectious diseases prevention and control.
* Health Care Associated Infections.

PREREQUISITES

Immunology I: knowledge of the introductory courses indicated in the regulation of the degree course.

WEBSITE https://elearning.unimib.it/course/info.php?id=20908

SCMD
YEAR: 2
SEM: 1
ECTS: Only if the entire course is frequented
DEGREE in Medicine and Surgery
CONTACT: clementina.cocuzza@unimib.it

PROGRAM CODE: H4102D011M

MODELLING (module of Basic Computer Science)

LECTURER: RIZZI CATERINA

CONTENTS

The module contents concern:

* Techniques and tools to create and use 3D geometric model of human body and anatomical districts at different level of details;
* Simulation techniques;
* 3D printing of anatomical districts and organs;
  Systems for the human body acquisition (3D scanners);
* Devices for motion capture;
* Generation of the geometric models of the human body, anatomical districts and organs from medical images (e.g. from TC or MRN) and 3D scanners;
* Numerical simulation and devices for Virtual amd Augmented Reality;
* Technologies and materials for 3D printing for medicine;
* Applicative examples in the medical fields and use of SW tools for 3D acquisition and modelling of the human body.

PREREQUISITES

None.

WEBSITE https://elearning.unimib.it/course/info.php?id=20932

SCMD
YEAR: 1
SEM: 1
ECTS: Only if the entire course is frequented
DEGREE in Medicine and Surgery
CONTACT: caterina.rizzi@unimib.it

PROGRAM CODE: F0901D082M

MOLECULAR AND ONCOLOGICAL THERAPY (module of Translational Approach To Onco-hematological Diseases)

LECTURER: GAMBACORTI PASSERINI CARLO

CONTENTS

The students will learn the following items:

* Use of TKIs in different neoplastic diseases;
* Mechanisms of resistance to TKIs;
* Methods to identify and analyze genetic lesions causally connected to the transformed phenotype;
* DNA and Histone methylation as a therapeutic targets;
* The RNA interference targeting strategy;
* High Throughput Sequencing applied to neoplastic diseases.

Students will be trained on the main targeting stragegies using small molecules in Hematology and Oncology.
In particular, the students will learn how to critically evaluate targets and the importance of the relationships between targets and mechanisms of neoplastic transformation.

PREREQUISITES

Basic knowledge on pathology and immunology. Advanced knowledge in biochemistry, molecular biology and genetics

WEBSITE https://elearning.unimib.it/course/info.php?id=19604

M
YEAR: 2
SEM: 1
ECTS: Only if the entire course is frequented
DEGREE in Biotechnology in Medicine
CONTACT: carlo.passerini@unimib.it

PROGRAM CODE: H4102D035M

PATHOLOGY AND MEDICINE (module of Basic Pathology)

LECTURER: FOTI MARIA

CONTENTS

The course aims to introduce the student to the knowledge of the causes of human diseases, the students will be able to understand the fundamental pathogenetic and pathophysiological mechanisms.

During the course, topics for in-depth knowledge on the molecular mechanisms underlying the disease pathogenesis to identify potential therapeutic targets will be developed.

* Introduction to General pathology
* Physical, chemical and biological agents as a cause of illness
* Tissue changes in response to chronic and acute pathological stimuli
* The inflammatory process
* The healing and repair process
* Cardiovascular Disorders
* The body's response to infection
* Neoplastic growth
* Environmental and Nutritional Diseases

PREREQUISITES

Knowledge of the introductory courses indicated in the regulation of the degree course.

WEBSITE https://elearning.unimib.it/course/info.php?id=20909

SCMD

YEAR: 2
SEM: 1
ECTS: Only if the entire course is frequented
DEGREE in Medicine and Surgery
CONTACT: maria.foti@unimib.it

PROGRAM CODE: F0901D045

PHARMACOLOGY

LECTURER: PARENTI MARCO

CONTENTS

The students will learn:

* The biological mechanisms underlying the effects induced by drugs acting on CNS, their abuse and dependence, the genetic determinants that influence their responses;
* The differences between conventional and biological drugs and what are the biosimilars;
* The principles that regulate drug patenting and their accessibility. In addition, through the discussion of scientific articles, the students will learn the main experimental methods to study drugs;
* Drugs acting on the Central Nervous System (CNS): mechanisms of action, effects, and experimental methods of study;
* Drug abuse and dependence;
* Pharmacogenetics and pharmacogenomics. Biological drugs and biosimilars;
* Drug patents and access.

PREREQUISITES

Basic notions of Biology, Genetics, Human Anatomy, Chemistry, Biochemistry, Physiology, Pathology.

WEBSITE https://elearning.unimib.it/course/info.php?id=19615

M

YEAR: 1
SEM: 2
ECTS: 6
DEGREE in Biotechnology in Medicine
CONTACT: marco.parenti@unimib.it

PROGRAM CODE: H4102D044M

RADIOLOGICAL ANATOMY (module of Image Diagnostics)

LECTURER: SIRONI SANDRO

CONTENTS

Basic comprehension of the key anatomic reference structures, as an introduction to clinical interpretation of radiological images.

Normal anatomy as documented by means of conventional radiology, CT, ultrasound, and Magnetic Resonance Imaging.

PREREQUISITES

Basic knowledge on chemistry, physics, human anatomy, physiology and pharmacology.

WEBSITE https://elearning.unimib.it/course/info.php?id=20922

SCMD

YEAR: 2
SEM: 2
ECTS: Only if the entire course is frequented
DEGREE in Medicine and Surgery
CONTACT: sandro.sironi@unimib.it

PROGRAM CODE: H4102D003

SCIENTIFIC AND MEDICAL LANGUAGE

LECTURER: GIANNONI DAVIDE

CONTENTS

Familiarity with the special terminology, grammar and rhetorical features of medical communication.

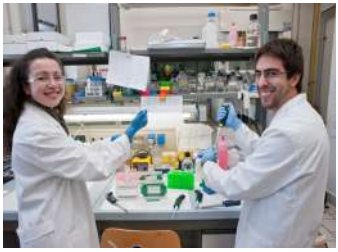
Scientific and medical language.

PREREQUISITES

English B2 level.

WEBSITE https://elearning.unimib.it/course/info.php?id=20962

SCMD
YEAR: 1
SEM: 1
ECTS: 4
DEGREE in Medicine and Surgery
CONTACT: davide.giannoni@unimib.it



PROGRAM CODE: H4102D037M

SOCIETY AND HEALTH I (module of Medicine and Society)

LECTURER: CORTESI PAOLO

CONTENTS

At the end of the course, participants will have an understanding of the Health care systems, of the main determinants of population health and main risk factors of disease, main strategies for promotion and prevention of public health.

PREREQUISITES

None.

WEBSITE https://elearning.unimib.it/course/info.php?id=20927

SCMD

YEAR: 2
SEM: 1+2
ECTS: Only if the entire course is frequented
DEGREE in Medicine and Surgery
CONTACT: tbd

PROGRAM CODE: H4102D038M

SOCIETY AND HEALTH II (module of Medicine and Society)

LECTURER: RIVA AUGUSTO MICHELE

CONTENTS

To provide students with the tools for understanding the cultural and social aspects of modern medicine, through the analysis of its historical and epistemological evolution.

The knowledge provided is the basis for knowing how to properly place the activity of the physician in the current socio-cultural context.

PREREQUISITES

As described in the course Medicine and Society.

WEBSITE https://elearning.unimib.it/course/info.php?id=20928

SCMD

YEAR: 2
SEM: 1+2
ECTS: Only if the entire course is frequented
DEGREE in Medicine and Surgery
CONTACT: michele.riva@unimib.it

PROGRAM CODE: F0901D047

TRANSLATIONAL APPROACH TO NEUROLOGICAL DISORSERS

MODULES: 1.Mechanisms and Biomarkers of Neuronal Damage (ref. F0901D092M)

2.Mechanisms and Models of Vascular Diseases (ref. F0901D093M)

LECTURER: FERRARESE CARLO

CONTENTS

The student should be able to integrate basic knowledge regarding the field of neuroscience, besides pathogenic mechanisms, therapeutic goals and present research trends in the main nervous system and cardiovascular diseases.

This course aims at contributing to the training of a medical biotechnologist able to integrate basic principles of neuroscience in order to understand the biological basis, main pathogenic mechanisms and experimental models regarding nervous system and cardiovascular diseases.

Models will be analyzed stressing critical aspects and role in the development of novel therapeutic strategies.

PREREQUISITES

Basic kn owledge of anatomy and istology, physiology and neuropharmacology. Advanced knowledge of biochemistry, molecular biology and genetics.

WEBSITE https://elearning.unimib.it/course/info.php?id=19599

M

YEAR: 2
SEM: 1
ECTS: 6
DEGREE in Biotechnology in Medicine
CONTACT: carlo.ferrarese@unimib.it

PROGRAM CODE: F0901D048

TRANSLATIONAL APPROACH TO ONCO-HEMATOLOGICAL DISEASES

MODULES: 1.Cellular and Gene Therapy (ref. F0901D081M)
2.Molecular and Oncological Therapy (ref. F0901D082M)

LECTURER: BIONDI ANDREA

CONTENTS

Course: CELLULAR AND GENE THERAPY

The aims of the Course is to provide an overview of the current and most relevant applications of biotech in the development of new treatment strategies. The two tracks of the course include the targeting treatment and the development of cellular and gene therapy. The first part will cover the process of identification of new potential targets for treatment by using high-throughout technologies , the screening of active molecules and the preclinical and clinical development. Diseases in the field of cancer will be taken as cases in point. The second part will present the pre clinical and clinical development of a product for cellular and gene therapy in the field of cancer, treatment of infections in immuno-compromised hosts, and tissue regeneration. Emphasis will be given to the knowledge of the process of production under “GMP” conditions.

Course: MOLECULAR AND ONCOLOGICAL THERAPY

Students will be trained on the main targeting stragegies using small molecules in Hematology and Oncology. In particular, the students will learn how to critically evaluate targets and the importance of the relationships between targets and mechanisms of neoplastic transformation.

PREREQUISITES

Basic knowledge on pathology and immunology. Advanced knowledge in biochemistry, molecular biology and genetics.

WEBSITE https://elearning.unimib.it/course/info.php?id=19602

M
YEAR: 2
SEM: 1
ECTS: 6
DEGREE in Biotechnology in Medicine
CONTACT: andrea.biondi@unimib.it

THANKS FOR YOUR ATTENTION.

FOR FURTHER INFORMATION, PLEASE CONSULT OUR WEBSITE: WWW.UNIMIB.IT

IT'S IMPORTANT TO FOLLOW ALL UPDATE ON THE WEBSITE: HTTPS://ELEARNING.UNIMIB.IT

COURTESY OF THE INTERNATIONAL PROMOTION OFFICE OF THE MILANO-BICOCCA UNIVERSITY.