

**Campus Bio-Medico University
of Rome
Departmental Faculty
of Medicine and Surgery**

**Master's Degree Program in
Medicine and Surgery**

**STUDENT HANDBOOK
ACADEMIC YEAR 2019/2020**

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THE DEAN'S WELCOME LETTER

Dear Campus Fellows,

Just a few words for the traditional welcome message and some wishful thoughts on the 2019-2020 Academic Year.

Only a few years ago, our Bio-Medical Campus was considered to be a small but ambitious University. Things have changed a bit. Our University is still small—at least in comparison other Universities in Rome and other areas in the country—but a number of projects have been launched to make our University more attractive, robust, and innovative. The academic scenario is, in fact, moving fast; new training offers are emerging and new frameworks need to be shaped and exploited to improve our socio-academic partnerships.

This Academic Year marks the launch of *Medicine and Surgery*, the English-language counterpart of our venerable and widely appraised Italian-language *Medicina e Chirurgia* course. This how-to guide is for you: our *Medicine and Surgery* rookies. In designing this course, our Institution has taken the longest step forward of the last few years, but it has done so while giving special consideration to you, our students, as the main—if not the only—actor of innovation.

While attending classes with Italian or mother-tongue lecturers, you will soon become aware of the efforts that have been made to light up a new training path in which the traditional barriers between disciplines have been torn down. In sharing your learning and social activities with friends from all over the world, you will realize how much our University values diversity as a driver of medical education. But things can be more stimulating still. Here at the Bio-Medical Campus, lecturers are asked to constantly improve their teaching, clinical, or research performance. This can only be achieved if you, our students, will challenge your mentors with curiosity and intellectual freedom. Reciprocity is, in fact, another keyword to bear in mind in the exploration of this fast changing world.

Thank you for putting our University at the cutting edge of innovation, and thank you for enrolling in Medicine and Surgery as our brand new academic flagship.

The Dean
Giorgio Minotti

Structure of the University and services for students

TEACHING METHOD

ACADEMIC INNOVATION

Bio-Medico University of Rome's teaching project, managed by the Departmental Faculty of Medicine and Surgery, is characterised by the following features:

- Full and constant involvement of students in the learning and training process.

Our *tutorial teaching* stimulates critical and organisational abilities that enables students to deal with any issues and to consistently make the most effective decisions while, at the same time, not disregarding any ethical considerations.

- Student *Clinical training*, starting from the third year, with an emphasis on the integration of theoretical content and practical experiences: the clinical tutor is this project's defining point, as he or she represents the common thread between the students' learning needs and the patients' diagnostic and healing ones.
- The *responsibilisation of students* in the definition of their own training objectives, not only through the use of elective credits, but also through an open and constant dialogue with their tutors in relation to the choice of some of the contexts in which to carry out their internships.
- Care for the *humanistic aspects of medical training*, to be nurtured through both the History of Medicine, Anthropology, Ethics, and Bioethics classes, and a teaching style that places a high degree of attention to issues related to communicating with patients and involving them in the healing process.
- Collegial teaching programming, taking into account each lecturer's own cultural and methodological choices. The constant discussion of training offerings ensures that students can avail themselves of *structured, consistent, and coherent* training classes.
- The use of *IT tools* and of a *Wi-Fi network* to transfer teaching materials between lecturers and students, explore Course topics in-depth, and check the students' degree of readiness for exams. The acquisition of *distance learning* techniques suited to fully exploit the IT network's resources by evaluating new sources of information also falls within this context.
- The definition of a graduate profile armed with the methodological and cultural tools necessary for *lifelong learning* and to effectively respond to the constant evolution of health needs.
- A systematic approach to *multiprofessionalism*; i.e., a team working space in which various competencies and perspectives are specifically coordinated in order to provide more adequate responses to patient needs and for the solution of the issues under consideration.

FRESHMAN DAYS

The principle of the centrality of students, which is expressed in the support provided to their professional and personal development, is applied from the very beginning of the study course during the Freshman Days.

Aimed at new enrollees, freshman days involve a packed schedule of meetings with the lecturers and service heads who make the Campus Bio-Medico University of Rome academic project a reality.

The syllabuses and the operation of the tutoring system, the principles that inspire the University, and the services that support the academic path are illustrated. Meetings on the teaching methodology are also offered.

UNIVERSITY SITES

UNIVERSITY CAMPUS

Via Álvaro del Portillo, 21
00128 Rome

The University Campus hosts the Master's Degree Programs in Medicine and Surgery, the Bachelor's Degree Courses in Nursing, Medical Imaging Radiology and Radiotherapy Techniques, and Physiotherapy.

Besides the Departmental Faculty of Medicine and Surgery Courses, the Courses of the Departmental Faculty of Science and Technology for Mankind and the Environment and of the Departmental Faculty of Engineering are also held at the Campus.

The Campus hosts the University Hospital and Polyspecialistic Health Centre, The Advanced Biomedicine and Bioengineering Research Centre (Polo di Ricerca Avanzata in Biomedicina e Bioingegneria – PRABB), the Elderly Healthcare Centre, and the academic and administrative offices.

UNIVERSITY GOVERNING BODIES

PRESIDENT

Felice Barela

EXECUTIVE COMMITTEE

Felice Barela, Davide Lottieri, Raffaele Calabrò, Paolo Sormani, Andrea Rossi, Marta Risari.

UNIVERSITY DIRECTOR GENERAL

Andrea Rossi

UNIVERSITY HOSPITAL MANAGEMENT

Paolo Sormani	University Hospital Director General
Lorenzo Sommella	Chief Medical Officer
Andrea Rossi	University Director General
Marta Risari	Deputy Director General and Director of Patient Care Management
Daniela Tartaglino	Medical Professions Welfare Manager
Rossana Alloni	Clinical Manager
Giorgio Minotti	Dean of the Departmental Faculty of Medicine and Surgery

ACADEMIC AUTHORITIES

RECTOR

Raffaele Calabrò

ACADEMIC SENATE

Raffaele Calabrò	Rector
Eugenio Guglielmelli	Research Prorector
Simonetta Filippi	Training Prorector
Giorgio Minotti	Dean of the Departmental Faculty of Medicine and Surgery
Giulio Iannello	Dean of the Departmental Faculty of Engineering
Laura De Gara	Dean of the Departmental Faculty of Science and Technology for Mankind and the Environment
Andrea Rossi	University Director General

DEPARTMENTAL FACULTY OF MEDICINE AND SURGERY EXECUTIVE BOARD

Giorgio Minotti	Dean
Sergio Morini	Deputy Dean
Vincenzo Di Lazzaro	Research Coordinator
Daniele Santini	President of the single cycle Master's Degree Program in Medicine and Surgery
Maria Grazia De Marinis	President of the Bachelor's Degree Course in Nursing
Sara Ramella	President of the Bachelor's Degree Course in Medical Imaging Radiology and Radiotherapy Techniques
Silvia Sterzi	President of the Bachelor's Degree Course in Physiotherapy
Paolo Pozzilli	President of the Master's Degree Program in Medicine and Surgery

DEAN

Giorgio Minotti

Office: PRABB – Campus Bio-Medico University of Rome

☎ 06.22541.9601 *Email:* g.minotti@unicampus.it

Office hours: by appointment, via email

DEPUTY DEAN

Sergio Morini

Office: PRABB – Campus Bio-Medico University of Rome

☎ 06.22541.9170 *Email:* s.morini@unicampus.it

Office hours: Mondays, 03:00pm-06:00pm

PRESIDENT OF THE MASTER'S DEGREE PROGRAM IN MEDICINE AND SURGERY

Paolo Pozzilli

Office: PRABB, Campus Bio-Medico University of Rome

☎ 06.22541.9160 *Email:* p.pozzilli@unicampus.it

Office hours: by appointment, via email

ACADEMIC SERVICES ORGANISATION

Head of Academic Services

Donatella Marsiglia

☎ 06.22541.9139 Email: d.marsiglia@unicampus.it

OFFICES

DEAN'S SECRETARY OFFICE OF THE DEPARTMENTAL FACULTY OF MEDICINE AND SURGERY

Location PRABB – Campus Bio-Medico University of Rome, floor 0

Contact person Barbara Fabbri

Tel. 06 22541.1060

Email b.fabbri@unicampus.it

Office hours Mondays to Fridays, 10:00am-12:30pm

EDUCATIONAL SERVICES OFFICE – MASTER'S DEGREE PROGRAM IN MEDICINE AND SURGERY

Location PRABB – Campus Bio-Medico University of Rome, floor 0

Contact person Flavia Daniele

Tel. 06 22541.

Email f.daniele@unicampus.it

Office hours Mondays to Fridays, 10:00am-12:30pm

STUDENT SERVICES OFFICE

Checks the curricular process of the enrolled students, providing forms, certificates and documents relating to enrolments, exams, transfers, and student withdrawals.

Location PRABB – Campus Bio-Medico University of Rome, floor 0

Contact persons Enrica Amadio Zennaro tel. 06 22541.9044
(Head)

Veronique Buyckx tel. 06 22541.9047

Fabio Capecchi tel. 06 22541.9043

Antonio Di Bartolomeis tel. 06 22541.9042

Elena Varasi Cornell tel. 06 22541.9074

Email segreteriaspstudenti@unicampus.it

Office hours are published on the <https://www.unicampus.it/risorse-e-uffici/segreteria-studenti> website

SPECIALIST TRAINING SCHOOLS OFFICE

Location PRABB – Campus Bio-Medico University of Rome, floor 0

Contact persons Emiliano Cassiani tel. 06 22541.9049

Carmine Piscopo tel. 06 22541.9048

Nadia Zagami tel. 06.22541.9120

Email segreteriaspecializzazioni@unicampus.it

RIGHT TO STUDY AND UNIVERSITY LIFE

The “Right to Study” Office provides students with information pertaining to:

- grants, financial contributions, student loans;
- part time collaborations;
- lodging services;
- canteen and refreshments;
- disabilities and SLDs (Specific Learning Disabilities)
- sports activities and concessions.

Location PRABB – Campus Bio-Medico University of Rome, floor 0

Contact persons Anna Maria Tarquilio tel. 06 22541.9040
(Head)

Viviana D’Alaimo tel. 06 22541.1630

Email diritto.studio@unicampus.it

Office hours Mondays and Wednesdays, 10:00am-01:00pm
Tuesdays and Thursdays, 02:00pm-04:00pm

GRANTS AND FINANCIAL CONTRIBUTIONS

The “Right to Study” Office dispenses grants and other types of financial benefits to deserving and/or financially deprived students. The contributions are granted by the University, by the Lazio region, and by Companies with which the University has set up cooperative relationships.

The notices for the assignment of the Grants available for each year can be consulted on the www.unicampus.it website, in the “Right to Study” section.

Facilitations for large families

A 10% discount on the one-off contribution is applied for students from large families; i.e., those families in which there are at least three more children under 26 years of age. Applications for the discount can be made, on enrolment, by filling out the dedicated form, which can be downloaded online or requested to the Students Secretariat. The discount will be deducted from the 2nd instalment of the one-off contribution.

Student loans

Campus Bio-Medico University of Rome, by agreement with Intesa Sanpaolo bank, provides students with unsecured loans to support their training expenses. Info: www.permerito.it.

LODGING AND CATERING

The “Right to Study” Office helps those students who are seeking lodgings to find the best solution based on their needs. The office is available to provide information on:

- availability of housing in the vicinity of the campus;
- RUI Foundation university colleges (www.fondazione.rui.it)

The RUI Foundation’s university colleges provide logistic services (food, lodging, laundry and ironing services, etc.) that are mainly for the benefit of non-resident students. This option requires students to comply with the rules and conventions that regulate college life (active resident cooperation in the development of the colleges’ family feel, participation in cultural initiatives such as study groups, conferences, and tutoring activities).

Among the university colleges, the following are listed

Female: Collegio Universitario Porta Nevia

Via Laurentina, 86/Q - 00142 Rome

Tel. 06 594721

Email: portanevia@fondazionerui.it

Website: www.collegioportanevia.it

Female: Collegio Universitario Celimontano

Via Palestro 7, 00185 – Rome

Tel. 06 48905902

Email: celimontano@fondazionerui.it

Website: www.celimontano.it

Male: Residenza Universitaria Internazionale RUI

Via Sierra Nevada, 10 - 00144 Rome

Tel. 06 54210796 - 06 5926866

Email: info@collegiorui.it

Website: www.collegiorui.it

Foresteria del Borgo Primo Centro

This guesthouse is located within the “Borgo Primo Centro” residential complex. The structure is open to the University’s students and employees and has 21 independent lodgings.

Casale Primo Centro

Via di Trigoria 60 (via Alvaro del Portillo) – 00128 Rome

Tel. 06.225411402-404

Email: foresteria@cbm-spa.it

The University is provided with restaurants accessible to all Campus Bio-Medico University of Rome students, personnel, and visitors. Students and personnel can avail themselves of the restaurant services at discounted prices by showing their identification badge at the check-out till. The badge also works as an e-wallet that enables electronic payments at the Advanced Research Centre and University Hospital restaurants.

DISABILITIES AND SLDs

The Campus Bio-Medico University of Rome runs a reception service for students that are disabled or have been diagnosed with Specific Learning Disabilities (SLDs).

An appointment for an interview can be requested by sending an email to diritto.studio@unicampus.it.

INTERNATIONAL RELATIONS

Those students who choose a study and/or internship experience abroad can count on the assistance of the International Relations Office (IRO). The IRO provides information on opportunities for transfers abroad and helps with the required process.

Location PRABB – Campus Bio-Medico University of Rome, floor 0

Contact Persons Sidita Kasemi tel. 06.22541.8124

Marco Oliva tel. 06 22541.8887

Email relazioni.internazionali@unicampus.it

erasmus@unicampus.it

Office hours Mondays and Wednesdays, 10:30am-12:30pm

Tuesdays and Thursdays, 02:30pm-04:30pm

Campus Bio-Medico University of Rome has developed a network of international scientific and teaching relations aimed at facilitating the transfer of students, lecturers, and administrative staff to companies and universities in Europe and beyond.

International mobility

Every year, Campus Bio-Medico University of Rome publishes selection notices for the award of grants for international mobility to European countries and beyond. Financial contributions to mobility are aimed at facilitating academic and research experiences through the creation of a study and/or work plan agreed with the relevant lecturers.

The Erasmus Plus programme

The university subscribes to the EU's Erasmus programme for education, training, youth, and sport for the 2014/2020 period. Erasmus Plus is the programme for transnational mobility and cooperation in higher education in the whole of Europe.

The notice for mobility grants, which enables the University's students to spend some time studying at one of the European partner universities, is published during the months of February and March. Selected students will benefit from the opportunity of attending courses abroad, availing themselves of the structures and services of the host universities, taking the exams agreed upon with their lecturers, and having them recognised on their return, or conducting research locally for their dissertation.

The Erasmus Plus programme also involves the possibility of conducting traineeship activities that enable students to enrich their educational curriculum through their professional experience abroad. The traineeships can also be conducted at companies or universities.

Campus Bio-Medico University of Rome gives all students the opportunity to take part in health and food assistance and education activities, inter-university research programmes, and projects for the realisation of socially useful infrastructure in developing countries.

Workcamps are organised, particularly during the summer months, in African and Latin American countries. All year round, "Humanitarian Meeting" cycles are also organised at the University. These meetings provide a setting in which to discuss, with experts in the field, any issues pertaining to international cooperation initiatives and to gain up to date information on specific regions.

LIBRARY

The University's library holds roughly 19,000 volumes, including university texts, manuals, encyclopaedias, and dictionaries. Roughly 4,000 electronic publications can be consulted through the University's IT network. Access to the reading room is free of charge for the University's students, lecturers, and doctors.

The library has its own page on the University's website; from there, the OPAC and the publication catalogue can be accessed, and information regarding the available study and research resources can be obtained: <http://www.unicampus.it/risorse-e-uffici/biblioteca-di-ateneo>

Personnel is on site to provide information and to give instructions for the correct consultation of resources, both digital and on paper.

Among the services provided, it is worth mentioning the *Document delivery*, which automatically forwards the requested literature.

Services

- Local and inter-library literature loans
- On site consultation of works
- Bibliographic information and consultancy
- Document delivery
- Printing/photocopying/scanning service, for a fee, with student badge charge service.
- Institutional database updating service:
- Altea (accessible dissertation database—it enables the loading of the abstract by the grad student or intern)
- Iltithia (accessible doctoral thesis database—it enables the loading of the thesis by the PhD student)

Location

TRAPEZIO – Campus Bio-Medico University of Rome, floor 0

Contact persons

Maria Dora Morgante tel. 06-22541.9050
(Head)

Maria Crapulli tel. 06-22541.9051

Emiliano Iannotta tel. 06-225418060

Simona Rossi tel. 06-225419052

Email

biblioteca@unicampus.it

Office hours

Mondays to Fridays, 08:30am-09:00pm

Saturdays, 08:30am-02:00pm

During exam sessions, from December to February and from May to July, the library is open as a study room but with no library personnel and services.

Extended opening hours: Mondays to Fridays, 08:30am–11:00pm

Saturdays 02:00pm-09:00pm

Sundays, 09:00am-02:00pm

ADMISSIONS AND ORIENTATION

The Campus Bio-Medico University of Rome's Admissions and Orientation service provides consultations for those students who are about to complete their secondary education studies and are thus faced by the sensitive and important choice of their future academic direction. Many initiatives are organised all year round to provide all the information required on the courses of interest, the curricular and extra-curricular activities offered by the University, the Bachelor' Degree Courses' admission process, and the services available to students. The Admissions and Orientation service also provides support during all stages of the admission process for the University's Bachelor's and Master's Degree Programs.

Location	TRAPEZIO – Campus Bio-Medico University of Rome, floor 0	
Contact persons	Sara Bordoni	tel. 06 22541.9056
	Roberto Di Nucci	tel. 06.22541.8715
	Daniela Fallacara	tel. 06.22541.8121
Email	orientamento@unicampus.it	

TUTORING

The University's training system is supported by various knowledgeable tutors who are also involved within the teaching activities.

Subject tutors

They work closely with the respective lecturers, helping them to organise and manage their classes around the students' needs. They thus represent a point of first contact for students, as part of the constant effort to facilitate a conversation and the learning processes.

Personal tutors

Their mandate is to help students to settle in the University's environment—i.e., to become involved in Campus life and to adopt the best study approach—by tackling various aspects:

- motivations and study method (how to deal with each study subject)
- time and workload management
- relationships and communication both inside and outside the University
- balancing study and extracurricular activities (friendships, leisure, sport, volunteering, culture, etc.)

Clinical tutors

They support the students' learning process during their traineeship activities, acting as referees for the acquisition of the *clinical skills* needed to qualify for evaluation of the credits specifically required in the syllabus. They also help students to take their first steps in the professional environment and to make the best choices for their future, by addressing specific facets:

- monitoring the development of the specific competencies pertaining to the profession, also in relation to ward- and lab-appropriate knowledge, attitudes, behaviours, etc.
- acquiring and processing the proper attitudes and behaviours in relation to the chosen profession (collaboration, cooperation, etc.)
- providing orientation in the choice of the future professional field of application

Tutorial conversations are held in a spirit of full respect for the students' freedom and sense of responsibility. Counselling professionals are also at the students' disposal to address any issues pertaining to their emotional sphere and personal development.

Location PRABB – Campus Bio-Medico University of Rome, floor 1

Contact Person Daniele Mascolo

Tel. 06-22541.8122

Email tutoratoMED@unicampus.it
tutoratoSANU@unicampus.it
tutoratoTRR@unicampus.it
tutoratoINF@unicampus.it
tutoratoFIS@unicampus.it

Office hours Mondays to Fridays, 09:30am-01:00pm and 03:00pm-05:00pm (by appointment)

CAREER SERVICE

The University's Career Service is aimed at facilitating the students and graduates of the Campus Bio-Medico University of Rome in accessing the job market, bringing together work demand and supply through the online publishing of job opportunities via the web and the promotion of numerous initiatives.

The Career Service offers students and graduates:

INFORMATION

- Welcome
- Job market regulations
- Information on the local production and entrepreneurial system

ORIENTATION CONSULTANCY

- Requirement analysis
- Profile inclusion in a database
- CV and motivational letter revision
- Coaching for job interviews
- Evaluation of one's own competencies and of those of others
- Definition and processing of the professional plan
- Personalised support and training sessions on active job seeking techniques
- Workshop on how to prepare a CV and on personal branding

PROFESSIONAL PLACEMENT INTERNSHIPS

- Information on the internships' implementation methods
- Identification of the host structure and definition of the training plan
- Administrative management and tutoring

DEMAND/SUPPLY MATCHING

- Promotion of applications at companies
- Meetings with companies
- Recruiting sessions

Location TRAPEZIO – Campus Bio-Medico University of Rome, floor 0

Contact persons Andrea Ceccherini tel. 06.22541.9057
Clio Di Marcello tel. 06.22541-8705

Email: careerservice@unicampus.it

Office hours Mondays to Fridays, 09:30am-01:00pm and 03:00pm-05:00pm (by appointment)

STUDENT SERVICES

SPORT ACTIVITIES

The Associazione Sportiva Dilettantistica Campus Bio-Medico (Bio-Medical Campus Amateur Sport Association), established during the 2011/12 academic year, is a non-profit agency aimed at promoting sport activities among the Campus Bio-Medico University of Rome's students, employees, and lecturers.

The Association follows the Campus Bio-Medico University of Rome's guiding principles, Charter of Objectives and Ethical Code, supporting the idea that the practice of sport may also contribute to the overall development of all the facets of an individual's personality, both from the personal growth perspective (resilience, strength, constancy, and humbleness) and from the relational one (friendship, fairness, collaboration and sharing).

To take part in sport activities, an application to join the association must be made by filling out a form available at the sport counter, attaching a medical certificate of fitness for the practice of non-competitive sports and paying the required fee that is determined yearly by the Association's Board of Directors.

Sport counter

Location PRABB – floor 0 - c/o “Right to Study” Office
Contact person Viviana D’Alaimo tel. 06 22541.1630

Email campusport@unicampus.it

Office hours Tuesdays and Thursdays, 02:00pm-04:00pm

CULTURAL ACTIVITIES

The cultural activities promoted by the Campus Bio-Medico University of Rome complement the technical-scientific training in order to enrich it with artistic-cultural content. Among the initiatives are guided visits to locations of artistic, historic, and cultural interest within Rome and its surroundings and theatrical and musical shows.

Location PRABB – Campus Bio-Medico University of Rome, floor 1
Contact persons Maria Grazia Maruca tel. 06-22541.9014

Email m.maruca@unicampus.it

COUNSELING

The Counselling service is a listening space aimed at helping students to deal with any crisis situations that are negatively affecting the achievement of their academic goals.

The Counsellor provides professional support aimed at identifying the cause of the distress and to develop possible solutions through the empowerment of the students' sense of self-efficacy and an increase in their self-awareness.

Goals of the Service

- Provide support in the resolution of complex situations within the academic environment (relational, integration, and adaptation problems, difficulties in dealing with transitions and their related changes)
- Offer professional support to those students who are experiencing personal issues through the empowerment of their self-efficacy (to learn to manage anxiety attacks related to preparing or failing exams, to graduating, to homesickness, etc.)
- Prevent students from falling behind, dropping out, or failing

Beneficiaries

The Service is aimed at all those students who are experiencing:

- Relational and environmental adaptation issues
- Excessive anxiety linked to exam preparation or failure, graduation, homesickness, etc.
- Study difficulties, with the risk of dropping out
- Difficulties in dealing with transitions and their related changes

Procedures

The Service involves a limited number of individual sessions, to be agreed upon with the Counsellor depending on the issue to be resolved.

The Service is open to all and is free of charge.

The sessions are usually conducted, by appointment (P. Pellegrino) in the Tutoring room, located in the classroom area of the University Hospital.

Requests can be made by phone (+39062254-1084), by email to counseling@unicampus.it, or directly with the service's contact person.

Contacts

Paolo Pellegrino (Psychotherapist/Service Head) – University extension: 1084; or *11008 – p.pellegrino@unicampus.it

CHAPLAINCY

The Chaplaincy provides spiritual support to all the members of the University community who wish to receive assistance. The chaplains are available for those who need advice and direction in relation to the human and spiritual aspects of their personal development.

Activities

- Daily celebration of the Holy Mass
- Eucharistic Adoration
- Administering of the Sacrament of Confession
- Catechesis in preparation for the Sacraments of Confirmation and Marriage
- Personal conversations
- Doctrinal instruction and prayer meetings

Location	PRABB – Campus Bio-Medico University of Rome, floor 0	
Contact persons	Don Robin Weatherill	tel. 06 22541.9035
	Don Luca Fantini	tel. 0622541.8110
	Don Victor Tambone	tel. 06 22541.9033
Email	r.weatherill@unicampus.it	
	l.fantini@unicampus.it	
	v.tambone@unicampus.it	

STUDENT HEALTH MONITORING PROGRAMME

Health checks are scheduled to be carried out when starting the practical traineeships (third year for Medicine students, first years for students of the three-year undergraduate courses).

The health protocol involves a medical check and some blood tests (when subjected to the medical check, students are asked to provide the certificates pertaining to their vaccinations).

At any time, students can ask to be checked by the relevant physician in relation to any symptoms or medical conditions in any way linked to their academic activities. Such requests must be addressed to the Medical Monitoring service, which will take care of fixing an appointment for the student with the relevant physician.

In case of accidents occurring during traineeship, students are required to go to the A&E for a first medical check; then, within the first 48 hours from the occurrence, they must go to the Student Affairs Office to carry out the formalities related to the report to be sent to INAIL (the workplace injury insurance agency)

Contact persons

Valeria Cittadini	Master's Degree Program in Medicine and Surgery – tel.06225411061
Federica Di Giovanni	Bachelor's Degree Course in Nursing – tel. 22541.1051
Sonia Recupido	Bachelor's Degree Course in Medical Imaging Radiology and Radiotherapy Techniques – tel. 06225418181
Tania Di Donato	Bachelor's Degree Course in Physiotherapy – tel. 06.225419145

Health monitoring service

Contact persons	Giuliana Tassone
	Ilaria Vella
Tel.	06 22541.1296
Email	SorveglianzaMedica@unicampus.it

IT TOOLS FOR LEARNING AND COMMUNICATION

MOODLE

MOODLE stands for *Modular Object-Oriented Dynamic Learning Environment*, an IT platform that provides students and lecturers with innovative learning tools and paths.

Created on the basis of the social constructivism and constructionism pedagogical criteria, it enables the exchange of learning materials between students and lecturers, the development of in-depth understandings of the topics discussed during the classes, the verification of the degree of readiness for exams, the carrying out of interactive lectures, the sharing of information, and interaction within forums.

Students can download class lecture notes and slides, and also utilise advanced features such as quizzes, guided lectures, exercises, wikis, surveys, and much more to revise when preparing for exams.

MOODLE can be accessed at **moodle.unicampus.it** from any internet connected computer. All enrolled students can access the platform by logging in with the same username and password used to access the University's IT resources. In almost all classes, an additional "enrolment key" is required, which is given out by lecturers in the classrooms. The key has the function of filtering out students in relation to the classes in which they are actually interested and to simplify content management (forum and calendar messages) by lecturers.

A series of services can be accessed from the platform's first page—such as the multimedia lab, the library, and the degree courses' secretariats—from which the personnel will be able to distribute and make available materials and information of interest to students.

ESSE 3

This is the Student Secretariat's portal, which can be accessed through the www.unicampus.it website.

It includes a public area called "Didactics", which is accessible by all and contains information related to the training offerings, the list of teaching classes, the types of degrees, and the exam session calendar.

Lecturers and students can also access a restricted area that features self-service functionalities including personal details, enrolments, exam sessions, grade transcripts, career analysis, transfers, certificates, and registration.

E-LEARNING PLATFORM

This is an IT platform that provides students and lecturers with innovative learning tools and paths.

Created on the basis of the social constructivism and constructionism pedagogical criteria, it enables the exchange of learning materials between students and lecturers, the development of in-depth understandings of the topics discussed during the classes, the verification of the degree of readiness for exams, the carrying out of interactive lectures, the sharing of information, and interaction within forums.

Students can download class lecture notes and slides, and also utilise advanced features such as quizzes, guided lectures, exercises, wikis, surveys, and much more to revise when preparing for exams.

The platform can be accessed at **<https://elearning.unicampus.it>** from any internet connected computer. All enrolled students can access the platform by logging in with the same username and password used to access the University's IT resources. In almost all classes, an additional "enrolment key" is required, which is given out by lecturers in the classrooms. The key has the function of filtering out students in relation to the classes in which they are actually interested and to simplify content management (forum and calendar messages) by lecturers.

A series of services can be accessed from the platform's dashboard—such as the multimedia lab, the library, and the Career Service and degree courses' secretariats—from which the personnel will be able to distribute and make available materials and information of interest to students.

PERSONAL EMAIL ACCOUNT

On registration, the University assigns a personal email account—structured as name.surname@unicampus.it--to every student.

WEBSITE

Accessible at www.unicampus.it.

**The Master's Degree Program in
Medicine and Surgery
MDPIM&S**

SYLLABUS AND ORGANISATION

DEGREE COURSE STRUCTURE

The Master's Degree Program in Medicine and Surgery is structured over six years for a total of **360 academic credits** (crediti formativi universitari – CFU) required to graduate.

The educational activity includes lectures, small group interactive teaching sessions, mandatory internships, and dissertation preparation activities.

Within the six years, the syllabus also requires students to earn at least 60 CFUs (corresponding to 1,500 hours) through a professionalising **traineeship** in the various clinical fields.

Students must also earn 8 credits in areas of their choosing. These **elective learning activities** (attività didattiche elettive – ADE) are part and parcel of the training curriculum. They can include seminars, clinical and lab internships, and volunteering activities.

TRAINING GOALS

To the end of achieving its training goals, the single cycle English language Master's Degree Program in Medicine and Surgery requires the achievement of a total of 360 CFUs over six years, over 60 of which must be earned through training activities aimed at acquiring specific professional abilities.

The course is organised over 12 semesters; the integrated classes involved correspond to specific CFUs in compliance with the table of mandatory training activities. Each CFU corresponds to 25 hours of student engagement, 12.5 of which normally involve frontal lectures in the basic, characterising, and linked disciplines, or theoretical-practical learning (seminars, lab time, and exercises), or 12.5 hours of assisted study within the academic setting. Each professionalising CFU corresponds to 25 hours of student engagement, under the guidance of a tutor, in small groups within the reference and/or territorial structure. Each final test elective CFU activity corresponds to 25 hours of student engagement.

The Board of the Departmental Faculty of Medicine and Surgery establishes the Study Manifesto and publishes in the Student Guide the integrated class structure for the semesters, the related CFUs, the core curriculum, the learning goals (including those related to the professionalising activity CFUs) specific for each integrated class, and the learning verification test types. These tests, of which there may be up to 36, are scheduled by the designated organism in the didactic structure to take place during the break periods in the frontal lecture activities. Passing the learning verification tests entitles students to be awarded the related CFUs.

The language in which the teaching is administered (English), besides signalling compliance with universally recognised cultural standards, enables interaction with the international scientific community and with a transnational patient audience.

Such openness to international specialist training represents a distinctive added value.

The specific learning project and the teaching method adopted involve the integration of knowledge based on a solid cultural and methodological basis. The study of the pre-clinical disciplines takes place, with a practical imprinting, through lab time and exercises conducted from the first biennium, integrated with morphology and physiology, in order to enable a better understanding of the practical applications of the concepts of genetics, molecular biology, and biochemistry. The teaching method is mainly focused upon the ability to deal with problems (problem oriented learning) through an early contact with patients--already from the second year-- and a thorough acquisition of the clinical ability to establish a personal relation with them.

Therefore, a highly integrated teaching organisation has been set up with the aim of incentivising the students' ability to gain knowledge in an inter-disciplinary, as opposed to sectorial, fashion. Students are thus placed

at the centre of the training process, both in terms of the lecture design and improvements made to the curriculum, in order to enhance their initiative autonomy. True professional competency is only achieved after long term contact with patients and interaction with colleagues, which begins from the first years of the course, and involves the integration of basic sciences with clinical ones along the whole training path. Tutored activities are essential in this regard.

From this perspective, particular relevance is given to a teaching approach that instils training continuity, providing students with the tools needed for a critical access to the knowledge base, to the scientific and statistical method, to evidence based medicine, and to develop an inclination to directly accessing sources. The latter is facilitated by the systematic use of the English language and by the use of the most advanced IT technologies. The reading and understanding of scientific papers is part of the students' training process.

Learning how health provision systems are structured and work represents a distinctive feature of the Medicine and Surgery training path. The universalist Italian Health Service, which is characterised by a notable experience in terms of methodology and result evaluation, represents a model that many countries aspire to adopt and apply in its more qualifying aspects. An in-depth knowledge of the specificities of the health services of other countries represents an important element in the training of foreign doctors, who will go back to their home countries to practice their profession, but is also an aspect of innovation for young Italian doctors who become open to international professional opportunities.

The main features of the single cycle Master's Degree Program in Medicine and Surgery, aimed at the achievement of general, intermediate, and specific goals, can be summarised as follows:

1. Within the scope of the requirements of the applicable laws, the definition of the objectives, syllabuses, and lectures is of a multidisciplinary nature.
2. The applied teaching method is interactive and multidisciplinary, involving daily integration of basic sciences and clinical disciplines and the clinical involvement of the students, who are thus led towards a gradual and appropriate approach to patients. The issues pertaining to the basic and clinical sciences are tackled, albeit in varying degrees depending on the various course years, in compliance with a total integration model; this model is based on the constant need to provide students with a unitary and integrated vision, also through the use of multi-voice teaching and of a learning model based on the responsible assessment and resolution of problems.
3. Doctor-patient relationship is addressed from the very beginning in the teaching activities of the course and continues, with added value, in the integrated teaching of organs and apparatuses. Each lecturer contributes to the students' learning of a relationship model that is centred on the patient. Specific training is provided for personal relationships and for the consideration of each patient's specific characteristics during the course of treatment. The contact with the patient must not generate a tendency towards super-specialisation; it must be open to a global view of the doctor-patient relationship.
4. Training goals addressed during the early classes are defined through a careful analysis of their respective relevance in respect of overall human biology and of the potential outcomes on the current or foreseeable clinical themes, with particular care given to the competencies pertaining to the scientific method.
5. Specific goals of the characterising classes have been defined prioritarily based on epidemiological prevalence, clinical relevance, urgency, and potential for intervention. Special attention is given to aspects of treatment prediction, prevention, and personalisation, always from the evidence based medicine perspective. Great importance is also given to the relationship with the patient, including its psychological aspects.
6. The teaching process benefits from a tutorial system, clinical triggers, problem oriented learning, experiential learning, problem solving, decision making, seminars and conferences. During the early stages of the patients' approach, students are offered a Basic Life Support (BLS) class.
7. To achieve a greater degree of integration within the context of systematic medical pathology, lectures pertaining to pathological anatomy, pharmacology, and diagnostic imaging are given during the 3rd, 4th, and 5th years. The aim is to frame in an integrated fashion each organ or disease condition from the perspective of the aforementioned subjects with the pertinent diagnostic, pathological, and therapeutic knowledge.

8. The use of tutors capable of aiding the students' learning process is crucial; tutors carry out the functions of facilitating the learning process (area tutors) and of providing personal support to students (personal tutors).
9. Great care is given to the acquisition of practical abilities (technical skills) through:
 - a. the ever increasing use of simulation methods, including attendance to University's simulation facility (both to learn the basic manoeuvres of clinical practice and to undergo training on invasive procedures, which are preparatory to patient applications)
 - b. attendance of the University Hospital's wards and surgeries, which takes place through clinical traineeships starting from the 3rd course year. During the 6th year, clinical activities are predominant in the curriculum.
 - c. attendance of territorial health structures, including General Practice surgeries, starting from the 3rd course year, which completes the professionalising training. The aim is to ensure that, on graduating, students will already possess an adequate clinical training that will enable them to begin their specialist training and to practice with suitable competency in the health environment. Thus, on beginning their post-graduate training and in carrying out the professional activities that are accessible straight after graduation, the young doctor will already have acquired the basic professionalising competencies.
 - d. internships, which are finalised to preparing dissertations and/or to a full immersion aimed at completing, in an oriented and finalised fashion, the learning of notions and skills.
10. The use of IT tools/methodologies to access bibliographical items and, more generally, international literature, which is explored in depth and completed with the aid of specific tutorials.
11. A qualifying aspect within the context of the whole course is the great attention paid to of the principles of Clinical Methodology and of the Human Sciences (anthropology, ethics, bioethics), and of their applications in the field of medical and scientific activities. Specifically, students gradually learn medical methodology and its rules, based on the principles of evidence-based medicine applied either to individual patients or to populations. This is also effected through the use of guidelines, conceptual maps, and diagnostic-therapeutical algorithms, without prejudice for the personalisation of treatments, wherever this is possible, and even less for the careful consideration of the uniqueness of each individual patient and of his/her needs. Within the context of such integrated classes, students gradually familiarise with the main concepts of interdisciplinarity, inter-professionalism, health economics, and medical professionalism and social responsibility, and with the main prevention and education measures aimed at patients in their overall humanity.
12. Specific care is given to Elective Learning Activities (Attività Didattiche Elettive – ADEs), to enable students to personalise their curricula in specific training contexts.

The structuring of the training path over the six course years represents the application of all the above. Specifically, the training path involves, during the first two years and the first part of the third, the unfolding of the two major integrated classes pertaining to the fundamentals of the basic disciplines with a teaching process highly integrated with lab exercises and notions of communication methodology.

The 3rd years sees the beginning of clinical practice, the distinguishing feature of which is that of incorporating special pharmacology, diagnostic imaging, and pathological anatomy, which are thus integrated with their respective clinical subjects, and are administered along the various course years

During the 4th, 5th, and 6th years, the course continues with the clinical practice pertaining to the more specifically clinical subjects.

Having completed almost all the required lectures by the end of the 5th year, students can exploit the 6th year to engage in mainly clinical-professionalising subjects, with particular reference to emergencies and surgery, and to the role played by health economics in the management of each country's care resources.

The single cycle Master's Degree Program in Medicine and Surgery is preparatory for the profession of Doctor/ Surgeon.

Doctors exercise their profession within the National Health Service, and within partner or private structures, in accordance to EU, national, and regional regulations. They work with the objective of ensuring that individuals and society at large can maintaining, or achieve, the best possible health condition (psycho-physical and social wellbeing). To carry out their professional activities, doctors collaborate with their colleagues (intraprofessional collaboration) and other professional profiles who have been trained in healthcare (interprofessional collaboration)

Higher degrees of responsibility and coordination in the interprofessional and intraprofessional groups within which doctors work may, in any case, be achieved through the acquisition of further competencies by means of later training courses, such as Specialisation Schools, Regional General Practitioner Training Schools, Research Doctorates, and second level Master courses.

Competencies associated to the function:

In order to carry out the functions described above, specific technical-scientific and cross-disciplinary competencies are required; students acquire these competencies during their study cycle.

Specifically, the competencies that graduates are intended to develop and acquire at the end of their training are:

- Understanding the effects of a disease not only on individual patients, but also on their family or social group;
- Ability to autonomously analyse and solve the issues linked to medical practice, whether related to evidence-based best clinical practices or involving cultural and ethical aspects;
- Self-learning and self-assessment abilities (continuing skills);
- Ability to correctly evaluate a health care service, its outcomes and its value in terms of its cost/expected benefit ratio (evaluation skills);
- In-depth understanding of the methodological foundations of medical scientific research and of the IT technologies essential for a good clinical practice;
- Time management skills;
- Understanding the relationship between health and society, the environment, politics, and professional employment (social skills);
- Inclination towards constantly updating one's knowledge and skills (continuing professional development);
- Tendency towards interdisciplinarity, interprofessionalism, and interculturality (interprofessional education);
- Understanding and recognising the role played by doctors in a constantly evolving multi-ethnic society;
- good human contact predisposition (communication and judgement skills).

Occupational opportunities:

The course is a preparatory course in order to become a general practitioner. However, it should be pointed out, that the LM-41 class Master's graduates usually continue their training path in specialty postgraduate schools or in the three-year general medicine regional training course.

Admission to the Degree Course

meet for admission to the Master's Degree Program in Medicine and Surgery include: good predisposition towards human contact, good teamwork skills, analysis and problem solving abilities, and the ability to autonomously acquire and critically assess new knowledge and information (Maastricht, 1999). Besides the scientific knowledge useful to attend the first course year, students must also possess a good attitude and be suitably motivated, which is important for the training of "good doctors" who correctly meet the Institutional requirements in terms of social responsibilities.

In order to be admitted to the Master's Degree Program in Medicine and Surgery, possession of a High-School Diploma or an equivalent acceptable title earned abroad is required. The possession or acquisition of

general knowledge, in compliance with the national regulations pertaining to the access to limited admittance courses and in relation to the availability of lecturers, educational facilities (classrooms and labs), and care facilities used for the carrying out of the practical ward activities, in line with the recommendations of the EU's Advisory Committee on Medical Training, applying the parameters and directives set out by the University and the Departmental Faculty.

The planned number of admissions to the first course year is defined in compliance with the applicable regulations pertaining to access to university courses.

Academic credits

The unit of measurement of the work students are required to carry out in relation to their training activities, as prescribed by the Academic Syllabus, is the Academic Credit (Credito Formativo Universitario – CFU).

Each CFU corresponds to 25 hours of student engagement, 12.5 of which normally involve frontal lectures in the basic, characterising, and linked disciplines, or theoretical-practical learning (seminars, lab time, and exercises), or 25 hours of assisted study within the academic setting. Each professionalising CFU corresponds to 25 hours of student engagement, under the guidance of the lecturer, in small groups within the reference and/or territorial structure. Each final test elective CFU activity corresponds to 25 hours of student engagement.

The 25 hours of student engagement that correspond to each CFU are subdivided in:

- a) lectures;
- b) tutored learning activities carried out in labs, wards, surgeries, and day hospitals;
- c) seminars;
- d) time dedicated by students to the other learning activities required by the Syllabus;
- e) autonomous study hours dedicated by students to complete their training.

Types of teaching

Within each class, the subdivision of the CFUs and of the time allocated to the various types of teaching is defined as follows:

Ex-cathedra lectures

An “Ex-cathedra lecture” (henceforth called “Lecture”) involves the discussion of a specific subject identified by a title and included in the training curriculum required for the Study Course, administered by a University Lecturer or Researcher, in accordance with a predefined calendar, and attended by the students enrolled in a specific course year, who can also be split up in small groups.

Seminars

“Seminars” are teaching activities that share some of the features of Lectures but are administered simultaneously by multiple lecturers, even from different disciplines (and with different competencies). They are marked down as such in the registry of lectures.

Any clinical-pathological conferences organised within the context of clinical teaching are also recognised as seminars.

Seminars can be conducted between multiple universities and take the shape of video conferences.

Tutorial teaching

Tutorial teaching activities (conducted in teaching and/or research labs, wards, surgeries, day hospitals, etc.) represent a form of interactive teaching addressed to small groups of students; such teaching activities are coordinated by tutors with the aim of facilitating the acquisition, by the students, of knowledge, abilities, and behavioural models; i.e., professionally useful competencies. Tutorial learning is mainly triggered by the stimulus linked to the analysis of problems, by the mobilisation of the methodological competencies required for their solution and for decision-making, and by the direct and personal carrying out of (physical

and relational) actions within the context of practical exercises and/or of internships in clinical environments, labs, etc.

The Board of the Departmental Faculty of Medicine and Surgery, based on the indications provided by the Study Course Delegate, appoints the tutors among lecturers and researchers, in compliance with the applicable regulations.

Elective Teaching Activities (Attività Didattiche Elettive – ADEs) (chosen by the students)

The ADEs are chosen by students and are an integral part of the training curriculum. Their specificity makes them a cultural expansion needed for the personalisation of each student's curriculum.

The ADEs are aimed at deepening the specific knowledge and training aspects that enhance the training of the Medicine and Surgery graduates by:

- being tailored to the students' personal propensities;
- expanding those topics that are not part of the Courses' Core Curricula.

Those topics that are mere repetitions of those relative to the Core Curricula or are comparable to subjects that are typically covered in the Specialisation Schools are avoided.

The Board of the Departmental Faculty of Medicine and Surgery, based on the indications provided by the President and lecturers of the Study Course, determines which ADEs will be made available—to be either conducted through lectures, seminars, small group interactive classes, and non-coordinates activities or to be linked to “homogeneous teaching paths”—among which students will choose to earn up to 8 CFUs.

Among the ADEs are also considered the elective internships carried out in research labs or in clinical departments to the value of at least 1 CFU, for a total of no fewer than 25 hours. The simultaneous attendance of two lab or clinical elective internships is not allowed.

The ADE calendar is published before the beginning of the academic year or, in any case, of each didactic period, together with the calendar of the mandatory teaching activities.

Types of ADEs

ADEs can be structured in:

- seminars, tutorials, monographic classes, certified attendance of conferences and/or congresses (pre-emptively authorised by the Integrated Class Coordinator or by the Study Course Delegate and by the Board of the Departmental Faculty of Medicine and Surgery), and the discussion of clinical cases, also through IT media (i.e., interactive learning classes conducted in small groups with the aim of facilitating a better lecturer-student integration);
- clinical and lab internships, in Italy and abroad, at university or accredited structures (which must represent high training content activities, such as, for example, attendance of an operating theatre, delivery room, A&E, or research lab for the attainment of a specific goal); attendance of General Practice surgeries in accordance with the agreements concluded with the Departmental Faculty of Medicine and Surgery. Any other activities must be pre-emptively authorised by the Board of the Departmental Faculty of Medicine and Surgery, based on proposals submitted by the pertinent teaching structure; the award of CFUs will be evaluated on a case by case basis.

Choice of ADEs by students

Each student independently chooses ADEs among those on offer. The ADEs must be carried out at times that do not interfere with the other teaching activities.

Certification and evaluation of ADEs

The awarding of the CFUs earned through ADEs only takes place following a 100% attendance rate. The ADEs can be organised during the entire academic year, even outside of the teaching activity periods.

Professionalising training activities

During the clinical teaching stages, students are obliged to acquire specific professionalities in the fields of internal medicine, general surgery, paediatrics, and obstetrics and gynaecology, and in the medical-surgical specialities. To this end, students must carry out professionalising training activities by attending the wards identified and within the periods defined by the Study Course Delegate, for a total of at least 71 CFUs.

The compulsory internship is a form of teaching activity that involves students carrying out practical activities with high degrees of autonomy, and the simulation of professional activities. During each stage of the internship, students are obliged to work under the direct supervision of a clinical tutor. The teaching functions of such clinical tutors are the same as those required by the tutorial teaching conducted within the classes. The clinical competency acquired through the professionalising training activities is assessed within the framework of the attribution of the final exam vote of the class that organised them.

The Study Course President can identify non-university wards in which the internship can be carried out, either in part or as a whole.

Tutoring

Three distinct tutor figures are defined:

- a) The personal Tutor, to whom individual students can turn to get suggestions and advice pertaining to their academic career or, in general, related to their training. The personal Tutor that is assigned to a student by the Tutoring Coordinator, in agreement with the Study Course Delegate, usually remains the same for the whole duration of the study course or for part of it. This figure is not related to teaching, but to support. Personal Tutors are particularly involved in cases of learning difficulties, loss of motivation, and need for orientation in regard to the study path to follow. All the MDCIM&S lecturers and researchers are obliged to make themselves available to take on the role of personal Tutor.
- b) The subject Tutor, to whom a small number of students are entrusted for the carrying out of tutorial teaching activities. These activities are true teaching assignments. All subject Tutors are required to coordinate their functions with the teaching activities of the classes with the same training objectives, and can also be involved in the preparation of the materials to be used for their tutoring activities.
- c) The clinical Tutor, who represents a central figure in the students' professionalising training. Clinical Tutors act as Contact persons for the acquisition of the clinical skills that are essential to qualify for the evaluation of the 60 CFUs specifically envisaged by the Syllabus.

Compulsory attendance

Students are obliged to attend the MDCIM&S formal, informal, and professionalising teaching activities, up to a maximum of 5,500 hours.

Attendance is checked by lecturers through the means established by the Board of the Departmental Faculty of Medicine and Surgery.

In order to take an exam, students are required to have their attendance of the compulsory activities of the related teaching class certified.

Those students who did not obtain attendance certification for at least 75% of the hours required for each class of a specific course year, are enrolled, even in a supernumerary capacity, to repeat the same course year, with the obligation to attend those classes for which they had not obtained attendance certification.

STUDY MANIFESTO

Exam	Subject	Year	Term	CFU
1	Fundamentals of Basic Science 1	I	1°	14
2	Fundamentals of Medicine 1	I	1°	6
3	Fundamentals of Basic Science 2	I	2°	17
4	Fundamentals of Medicine 2	I	2°	5
5	Medical Statistics and Epidemiology	I	2°	11
6	Italian/English language	I	1°/2°	4
7	Fundamentals of Basic Science 3	II	3°	30
8	Fundamentals of Basic Science 4	II	4°	18
9	Fundamentals of Medicine 3	II	4°	16
10	Italian/English language	II	3°/4°	2
11	Fundamentals of Basic Science 5	III	5°	3
12	Fundamentals of Medicine 4	III	5°	4
13	Clinical Medicine 1	III	5°	21
14	Clinical Medicine 2	III	6°	31
15	Clinical Medicine 3	IV	7°	24
16	Clinical Medicine 4	IV	8°	25
17	Clinical Medicine 5	V	9°	35
18	Clinical Medicine 6	V	10°	14
19	Cardiovascular Emergencies	V	10°	10
20	Clinical Medicine 7	VI	11°	26
21	Clinical Medicine 8	VI	12°	24
	Exam CFU TOTAL			340
	<i>Elective Learning Activities (Attività Didattiche Elettive – ADEs) – Chosen by students</i>			8
	<i>CFUs for the preparation of the Dissertation</i>			12
	Overall TOTAL			360

TEACHING ORGANISATION: Integrated Classes and coordinators**FIRST YEAR**

CFUs	Subject	Class name	SSD	Term	Credits SSD	Hours	Coordinating lecturer
14	FUNDAMENTALS OF BASIC SCIENCE (1)	Physics	FIS/07	1°	3	37,5	V. Chiurchiù
		Chemistry	BIO/10	1°	5	62,5	
		Biology	BIO/13	1°	6	75	
6	FUNDAMENTALS OF MEDICINE (1)	Anthropology	M-FIL/03	1°	1	12,5	L. Borghi
		History of Medicine	MED/02	1°	2	25	
		Communication Skills	M-PSI/01	1°	1	12,5	
		Ethics	M-FIL/03	1°	2	25	
		Italian	L-LIN/12	1°			
		English	L-FIL-LET/12	1°			
17	FUNDAMENTALS OF BASIC SCIENCE (2)	Biology	BIO/13	2°	6	75	G. Vivacqua
		Anatomy	BIO/16	2°	4	50	
		Histology	BIO/17	2°	6	75	
		Embryology	BIO/17	2°	1	12,5	
5	FUNDAMENTALS OF MEDICINE (2)	History of Medicine	MED/02	2°	2	25	M. D'Amelio
		Physiology	BIO/09	2°	2	25	
		Biophysics	BIO/09	2°	1	12,5	
11	MEDICAL STATISTICS AND EPIDEMIOLOGY	Medical Humanities	MED/43	2°	6	75	M. Ciccozzi
		Tools of evidence based medicine	INF-01	2°	1	12,5	
		Computational biology and computer science	INF-01	2°	1	12,5	
		Medical statistics	MED/01	2°	3	37,5	
		Italian	L-LIN/12	2°			
		English	L-FIL-LET/12	2°			
1	TE	Teaching Electives	TE	1°/2°	1	12,5	

ACADEMIC CALENDAR

SEMESTER	TEACHING ACTIVITY	EXAM SESSION	TEACHING ACTIVITY BREAKS
I semester	From 30 September 2019 To 17 January 2020	From 08 January 2020 To 06 March 2020	Christmas break From 23 December 2019 To 07 January 2020
II semester	From 02 March 2020 To 29 May 2020	From 03 June 2020 To 31 July 2020	Easter break From 09 April 2020 To 14 April 2020
Catch-up session: Autumn From 01 September 2020 To 02 October 2020			

Note: all beginning and end dates are to be considered as part of the periods.

For the A.Y. 2019-2020, teaching activities are suspended for the following festivities:

All Saints Day: 01 November 2019

Immaculate Conception Day: 08 December 2019

Saint Joseph's Day: 19 March 2020

Liberation Day: 25 April 2020

Labour Day: 01 May 2020

Republic Day: 02 June 2020

Saint Josemaría Escrivà de Balaguer's Day: 26 June 2020

Saints Peter and Paul's Day: 29 June 2020

COORDINATORS OF INTEGRATED CLASSES: CONTACTS, OFFICE HOURS, AND LOCATIONS

V. Chiurchiù

Location: PRABB, Bio-Medical Campus University

Email: v.chiurchiù@unicampus.it

Office hours: by email appointment

L. Borghi

Location: PRABB, Bio-Medical Campus University

Email: l.borghi@unicampus.it

Office hours: by email appointment

Giorgio Vivacqua

Location: PRABB, Bio-Medical Campus University

Email: g.vivacqua@unicampus.it

Office hours: by email appointment

Marcello D'Amelio

Location: PRABB, Bio-Medical Campus University

Email: m.damelio@unicampus.it

Office hours: by email appointment

Massimo Ciccozzi

Location: PRABB, Bio-Medical Campus University

Email: m.ciccozzi@unicampus.it

Office hours: by email appointment

FUNDAMENTALS OF BASIC SCIENCE I CLASS

14 CFU

LECTURERS:	Valerio Chiurchiù	<i>Chemistry (coordinator)</i>
	D. Bini	<i>Physics</i>
	A. Loppini	<i>Physics</i>
	M. Maccarrone	<i>Chemistry</i>
	A. Calcaterra	<i>Chemistry</i>
	M. Van der Stelt	<i>Chemistry</i>
	R. Civitelli	<i>Biology</i>
	A. Nissim	<i>Biology</i>
	C. Watson	<i>Biology</i>
	P. Kreuzaler	<i>Biology</i>
	I. Barbieri	<i>Biology</i>
	P. Amaral	<i>Biology</i>

Class Aims

Knowledge and understanding

Students must achieve an adequate comprehension and knowledge of the physical laws that govern life and are at the base of vital processes. They must learn and understand how atoms and molecules interact with each other, how they behave in solutions, and the reactions in which they engage and that are at the base of vital processes. Knowledge of the main chemical macromolecules involved in biological processes, in human metabolism, and in the composition of cells must also be acquired. These integrated notions will serve as the basis to understand the structure and organization of human cells and how genetic material is organized and transmitted, with the basic mechanisms of human genetic diseases.

Applying knowledge and understanding

At the end of the course, students should be able to correctly explain physical and chemical laws and to recognize the different molecules and macromolecules. They should also be able to describe the properties of such molecules and how they are used to build up complex structures in order to understand structure-function relationships. Furthermore, students should be able to describe the structure and organization of cells, the functions of DNA, and how it is transmitted or mutated in genetic diseases.

Making judgments

Students will be prompted to develop their judgment skills by attending interactive lectures and by being constantly stimulated to reason and to always hold a comprehensive and critical view of the topics. To this end, not only will the students themselves actively participate in the lectures, but the topics to be covered will also be introduced by pushing the students with provocatory questions and through periodic interactive seminars.

Communication skills

During the class, the students must develop a specific and precise scientific terminology, which is critical for an adequate understanding of the complex biophysical and chemical processes. To achieve this, the class is aimed at making communication skills learned, rather than taught.

Learning skills

The students will learn to critically understand the basics and the underlying principles of physics, chemistry, and biology occurring at molecular level. They will also learn to solve quantitative problems and find

relationships between physical-chemical factors and between structures and functions, and to analyse and interpret the different strategies in which cells engage. Finally, students will learn how to take a scientific approach to problems and how to adequately communicate scientific knowledge.

Teaching methodology

The aims of the class will be achieved by a combined approach involving a traditional inductive teaching method, video projections, and interactive learning. These different teaching approaches will be combined in the same weeks and also within the same lectures. The students will always be stimulated and will not be treated as passive learners, but will be called to actively participate in the lectures. The class will be closely integrated with the biochemistry and physiology ones to further highlight the interconnection between the structure of the molecules and their role in the metabolism and the functions of organs. Multidisciplinary seminars will also be organized by experts, during which specific topics will be discussed in-depth.

Final exam

The final exam will take place on completion of the class, in accordance with the sessions scheduled in the academic calendar. For this class, the knowledge acquired and the ability to apply it will be verified through both a written and an oral exam. The written exam will involve open questions, exercises, and multiple choice questions. Those students who will pass the written exam will then undergo an oral interview in which they will need to demonstrate adequate levels of understanding of all the topics covered and suitable language skills.

PHYSICS CLASS CONTENTS

Mechanics, Motion in one dimension. Objects in free fall. Vectors. Motion in two dimensions. The laws of motion: the concept of force. The inertial principle and the inertial frames. Mass. Newton's second law. The gravitational force. Newton's third Law. Friction forces. Circular motion. Universal Gravitation: Newton's law of Universal Gravitation. Kepler's laws and the motion of planets. Gravitational potential energy. Satellite motion. Energy: kinetic energy and potential energy. Conservative and non-conservative forces. The conservation of energy. The linear momentum conservation law. Multiparticle systems: the centre of mass. Rotation of a rigid object about a fixed axis. Angular position, velocity and acceleration. Torque. Rigid body dynamics. Moments of inertia. Rotational kinetic energy. Angular momentum. Equilibrium of a rigid body. Applications in medicine: fractures. Fluid mechanics and dynamics. Oscillations and mechanical waves: the motion of an object attached to a spring. Thermodynamics and the laws of thermodynamics. Electric fields and electric current. Magnetic fields. Faraday's law and Maxwell's equations: Electromagnetic induction. Light and Optics: the propagation of light and the principles of ray optics and wave optics.

Selected Topics in Modern Physics:

An introduction to Special Relativity: basic principles. An introduction to Quantum Physics: basic principles. The photoelectric and Compton effects. The Wave properties of particles and Schrödinger's equation. An introduction to the nuclear structure and to the basic properties of nuclei: radioactivity. An introduction to Particle Physics: the fundamental forces in nature.

Suggested textbooks:

- Douglas C. Giancoli, "Physics for Scientists & Engineers with Modern Physics" Pearson New International Edition (English Edition)
- Raymond A. Serway and John W. Jewett Jr. "Physics for Scientists & Engineers with Modern Physics" Ninth Edition, Brooks/Cole

Lecture notes on specific topics will be made available during the class.

CHEMISTRY CLASS CONTENTS

Inorganic chemistry.

The atomic structure: nuclei and electrons. Electronic configuration: electronegativity. Covalent bond types on the basis of the electronegativity of the atoms involved. Molecules: reactivity and molecular chemical bonding. The spatial distribution of electrons and the shape of molecules. Acidic and basic oxides. Acid-basic theories. Salts. Fundamentals of chemical kinetics, the meaning of activation energy. Chemical equilibrium: acidic and basic solutions. The fundamentals of thermochemistry and thermodynamics. Chemical reactions and energy exchanges.

Organic Chemistry.

Structure and chemical bonds in organic molecules. Reactions types: addition, elimination, and substitution. Reaction mechanisms: radicalic and polar. Reagent types: nucleophiles, electrophiles, and radicals. Functional groups: nomenclature, physical properties, and chemical reactivity of biological interest: aliphatic, olefinic, and aromatic hydrocarbons. Functional groups: alcohols, phenols, thiols, amines, carbonylic compounds: aldehydes, ketones, carboxylic acids, and derivatives. Preparatory biochemistry: the chemistry of biological system molecules. Carbohydrates: monosaccharides, oligosaccharides, and polysaccharides. Lipids: fatty acids, lipids, complex lipids and steroids. Proteins: aminoacids and peptide bonds. Peptides. Nucleic Acids: purines, pyrimidines, nucleotides, and nucleosides; the phosphodiesteric bond. DNA and RNA structures and functions.

Suggested textbooks:

- Chemistry by Zumdahl SS and Zumdahl SA, Brooks/Cole eds.
- Chemistry by M.S. Silberberg, McGraw-Hill International Edition.
- Introduction to General, Organic and Biochemistry by F.A. Bettelheim, W.H. Brown, M.K. Campbell, S.O. Farrell, Brooks/Cole.
- Organic chemistry, a brief course by Atkins R.C. and Carey F.A., McGraw- Hill International Edition.

BIOLOGY CLASS CONTENTS

The main concepts and definitions of cell biology. The theory of evolution. The biology of the cell. Prokaryotic and eukaryotic cells. The structure and function of DNA and ribosomes. Organization of nuclei and chromatin.

The basics of Mendelian genetics: the structure and functions of somatic and sexual chromosomes. Mendel's laws. the idea of the gene. From genes to proteins. The genetic code. Non-Mendelian genetics. Polygenic hereditary mechanisms. Genetic mutations and aberrations. The classification of human genetic diseases: Mendelian and complex diseases. Human chromosomes and their alterations in number and structure. The transmission of genetic traits and diseases: autosomic dominant, autosomic recessive, X-linked. Linkage disequilibrium. The basics of the genetics of populations: The Hardy-Weinberg equilibrium. Calculation of allelic and genotypic frequencies. Atypic hereditary mechanisms: digenic and mitochondrial hereditary conditions, imprinting.

Suggested textbooks

- Alberts, B. et al. Essential Cell Biology, 4th edition, Garland, 2014
- Strachan, T and Read, A. P. Human Molecular Genetics, Garland Science,

FUNDAMENTALS OF MEDICINE I CLASS

6 CFU

LECTURERS:	L. Borghi	<i>History of Medicine (coordinator)</i>
	R.D.G. Leslie	<i>History of Medicine</i>
	G. Ghilardi	<i>Anthropology and Ethics</i>
	B. Barcaccia	<i>Communication Skills</i>

Class aims

The “Fundamentals of Medicine 1” integrated class aims to provide students with some essential tools from the humanities (philosophy, history, and communication) that are today critical for the education of professionals who can no longer rely on a hyper-specialized and reductionist approach to biomedical knowledge. William Osler said “The good physician treats the disease; the great physician treats the patient who has the disease.” In order to be able to achieve this goal in their profession, medical students need to know themselves, as well as their future patients, as human beings, in the context of their respective histories, cultures, and values.

Anthropology and ethics. Edmund Pellegrino used to say: “Fundamentally, medicine is moral. It is neither a natural nor a social science, although it often depends upon both for its technical and communal progress. Medicine, especially as a clinical practice, is moral because the defining element of its practice is the patient-physician relationship; and that relationship is profoundly principled and often based upon ethical rules and duties”. According to this view, we will investigate the anthropological questions underlying the medical practice to gain a better understanding of human beings and their nature.

History will try to retrace the milestones of the evolution of medicine and healthcare, to understand their relationship with the evolution of human thought and the social context from the origins to the nineteenth century. We will pay special attention to the “human factor” of the biomedical revolution that occurred since the early 1800s, and to the relevance gradually taken on by the experimental scientific method on the one hand, and by biomedical technologies on the other.

Communications skills. This part of the class will help students to learn the basic communication skills on which they will continue to build throughout their six years of medical school. They will gain an understanding of the importance of effective communication between doctor and patient, which significantly improves accuracy, efficiency, health outcomes for patients, and satisfaction for both doctor and patient. Good self-awareness, active listening, empathy, verbal and non-verbal communication skills, and a thorough knowledge of emotions and their relations to events and cognitions (the ABC model) will be fostered and explored through lectures, group discussions, and experiential role-playing. Effective self-awareness and self-regulation strategies will also be briefly illustrated.

Teaching Methodology

The teaching methods promote classroom engagement and cooperation. Both the interactive lectures and group activities will entail the active involvement of students.

Final exam

The students will be tested through three short oral talks with the professors for each part of the class. Part of the final grading will be assigned based on the results of the group presentations (history of medicine) and other intermediate tests.

CONTENTS

Anthropology (1 CFU, 12 hours)

Programme

Introduction/general overview. What anthropology is. On Truth. Anthropology and Technologies. Homo faber/homo sapiens. Anthropology and industry 4.0. Anthropology and Medicine. Transhumanism. Posthumanism. Humanism and humanities. Leonardo and humanism. Recap of the programme.

Suggested textbooks

- James. A. Marcum, *The virtuous physician, the role of virtue in Medicine*, Springer, 2012
- G. Ghilardi, "Analogia Sensuum: The knowing body", in: N. Di Stefano, V. Tambone (eds.), *About the living body*, Nova science, New York 2016, pp. 15-31
- G. Ghilardi, L. Campanozzi, V. Tambone, "Humanities: Methods for Medical Training", in *Journal of Medical Diagnostic Methods*, vol. 5, Issue 1, 2016

Ethics (2 CFUs, 24 hours)

Programme

Introduction/general overview. What ethics are. Why ethics in medicine. Ethical schools. Free will. Libet's experiments on free will. The trolley dilemma. Utilitarianism and consequentialism. Consciousness. Agency. What does it mean to be a moral agent. Ethics and rhetoric. The good words. Ethics and communication between doctor and patient. The notion of personhood. Virtues. Epistemic virtues. Happiness and its value in professionalism. Professional virtues. Virtues for science. The good doctor. Precision Medicine or Personalized Medicine. Recap of the programme. Recap of the programme.

Suggested textbooks

- J. Seifert, *The philosophical diseases of medicine and their cure, philosophy and ethics of medicine*, Springer, 2004
- V. Tambone, G. Ghilardi, "An ethical evaluation methodology for clinical cases", *Persona y Bioética*, 20 (1), 2016, pp. 48-61
- G. Ghilardi, "Epistemological remarks on Libet's experiments on free will", *Rivista Internazionale di Filosofia e Psicologia*, 6 (1), 2015, pp. 110-119

History of Medicine (2 CFUs, 24 hours)

- From the origins to the Nineteenth Century

Programme

Introduction. Ancient medicine. Medieval medicine. Modern medicine (Vesalius, Harvey, and Morgagni). Edward Jenner and smallpox. René Laennec and tuberculosis. John Snow and cholera. Ignac Semmelweis and puerperal fever. Louis Pasteur and Robert Koch: the birth of Microbiology – Part 1. Louis Pasteur and Robert Koch: the birth of Microbiology – Part 2. The golden age of Surgery. The golden age of Surgery. A general overview on the history of disease and death – Part 1 (David Leslie). A general overview on the history of disease and death – Part 2 (David Leslie). The evolution of medicine through times: the case of diabetes – Part 1 (David Leslie). The evolution of medicine through times: the case of diabetes – Part 2 (David Leslie). Women in medicine. Elizabeth Blackwell. Rome's physician. Guido Baccelli and his legacy in the new Italian Capital. Group work. Group work. Group work. Group work. Group work. Group work.

Suggested textbooks

- Sherwin B. Nuland, *Doctors. The Illustrated History of Medical Pioneers*, Black Dog & Leventhal, New York 2008
- Luca Borghi, "Do moral concerns check the advancement of scientific and medical knowledge? The lesson of René Laennec after the bicentennial of the invention of the stethoscope (1816-2016)", *Scienze e Ricerche Magazine, Supplemento a Scienze e Ricerche* n. 46, March 2017, pp. 19-20
- Luca Borghi, "Rome's physician: Guido Baccelli and his legacy in the new Italian Capital". *Medicina nei secoli*, (2013) 25/2, pp. 395-414

Communication Skills (1 CFU, 12 hours)

Programme

Preparation: Putting aside the last task and focussing attention. Establishing an initial rapport. Introducing yourself. Clarifying your role and the nature of the interview. Demonstrating interest and respect. Verbal and non-verbal communication. The opening question. Active and empathic listening. Information gathering. Questioning techniques. Facilitative response. Understanding the patient's perspective: ideas, concerns and expectations. The interviewer's emotions. The cognitive ingredients of emotions. The ABC cognitive model: the relationship between events, beliefs, emotions, and behaviours. Cognitive biases and psychological suffering. Fostering emotional self-regulation. Enhancing the physician's well-being: acceptance, compassion, and mindfulness.

Suggested textbooks

- Jonathan Silverman, Suzanne Kurtz and Juliet Draper, *Skills for communicating with patients*, CRC Press, Boca Raton 2016, pp. 305

FUNDAMENTALS OF BASIC SCIENCE II CLASS

17 CFU

LECTURERS:	G. Vivacqua	<i>Human Anatomy I (coordinator)</i>
	S. Morini	<i>Human Anatomy I</i>
	T. Wilkinson	<i>Human Anatomy I</i>
	R. Civitelli	<i>Biology</i>
	A. Nissim	<i>Biology</i>
	C. Watson	<i>Biology</i>
	A. Schwartz	<i>Biology</i>
	T. Wilkinson	<i>Histology</i>
	M. Falchi	<i>Histology</i>
	K. Moore	<i>Embryology</i>

Class Aims

Knowledge and understanding

Students must gain an adequate knowledge of the organization of the cell, becoming able to connect cell structure with molecular biology and cellular function, and highlighting cell differentiation and specialization, as the fundamental concepts needed to understand the organization of tissues and the development of the body. They must understand the molecular mechanism of life from the genome's organization, to the gene's expression and the biosynthesis of functional proteins. They must understand the functional and structural organization of the different cellular subtypes, as well as the functional organization of the main body tissues and of the molecular and cellular mechanisms underlying gametogenesis, fertilization, and embryological development. Then, they have to start their systematic study of the human anatomy, acquiring the bases of anatomical terminology and understanding the general organization and the topographical anatomy of the main body regions. Finally, they must understand the morphological organization of the locomotor apparatus and its close interconnections with movements and kinematics. The principal aim of the course is to highlight the close relationship between cytology and molecular biology, in the context of the cell's function and specialization. Moreover, to convey the importance of histological and anatomical knowledge to critically resolve clinical problems and to interpret the wide array of diagnostic imaging and laboratory tests.

Application of knowledge and understanding

At the end of the course, the students should be able to describe the structural and functional organization of the cell and the interconnections that exist between gene expression and regulation, functional protein synthesis, and cell differentiation and specialization. Considering the increasing importance of genomics and molecular biology in the understanding of disease pathogenesis and diagnostic procedures, students should also acquire the appropriate skills pertaining to the laboratory and multimedia tools used in bioscience and applicable to medical practice (planning and carrying out basic laboratory experiments and obtaining reproducible data, analysing and interpreting data, and reporting results). Furthermore, they should be able to take an experimental biological approach as a preparatory basis for evidence based medicine.

Starting from cell differentiation and specialization, students should be able to describe the molecular and cellular bases of gametogenesis and fertilization, and of early embryological development. They should be able to describe the functional organization of different body tissues, understanding their integration in the make-up of the various organs and being able to perform the diagnosis and analysis of different tissues under the microscope.

Thereafter, they should start to interconnect the morphological knowledge of the body at different levels: topographic, macroscopic, microscopic, and ultrastructural, starting to recognize anatomical specimens and being able to describe the different body regions and the morphology of bones, joints, and muscles, understanding the anatomo-functional basis of movements and kinematics. Consequently, they should start to apply their biological, histological, and anatomical knowledge to clinical problem solving and biomedical innovation, beginning to take a scientific and critical approach to their future medical practice.

Making Judgements

Judgment skills will be stimulated through the individual and guided solving of problems of molecular biology and basic clinical cases. Moreover, students will be stimulated to conduct critical reviews of scientific papers, focussed on innovations in the fields of molecular biology, anatomy, histology, and embryology. To this end, different interpretative theses will be analysed for each scientific case, stimulating the students to a critical discussion. Their independence of judgment will be verified through periodic small group interactive seminars, where both clinical cases and innovative aspects of the fields will be discussed with the students.

Communication skills

Communications skills will be developed at two different levels: first of all, students must be able to use a precise histological and anatomical terminology, which is crucial for adequate communication in their future clinical practice. On the other hand, they will be stimulated to develop general communication skills by organizing individual presentations and discussions of the biological problems and clinical cases proposed, in the presence of the faculty. In this way, they will start to integrate multimedia and communicative skills with their specific knowledge of the field and will learn to apply an integrated logic and technical approach to achieve communication effectiveness, also acquiring good interpersonal skills suited to manage team work activities.

Learning skills

The students must acquire not only knowledge adequate to pass their exams, but above all the stimuli, skills and learning methods suited to pursue the continuous updating of their knowledge in the field of the biological and morphological bases of medicine and of their critical application to clinical practice. Particular attention will be devoted to the comprehension of the interconnections that exist between morphology and function at different levels (from cell differentiation and specialization to the gross anatomy of organs and systems). Students will be motivated and will be taught the methods and the technical fundamentals (multimedia methods, use of the optic microscope, dissection abilities, problem solving, and basic clinical discussion) suited to progress towards increasingly advanced levels in the field of the biological bases of medicine, pursuing an independent, self-directed and critical learning.

Teaching Methodology

The aims of the class will be achieved through a combined approach between the traditional inductive teaching method, practical activities, problem based learning (PBL), and case based learning (CBL). Different teaching activities will be combined in the same week. Each week will focus on specific topics and will start with an overview of each topic, through a plenary frontal teaching session during which biological problems or focussed clinical cases will also be presented. This will be followed by practical sessions during which the students will be guided and stimulated to conduct autonomous analyses and descriptions of anatomical macroscopic specimens or microscopic preparations, or to plan and carry out basic laboratory experiments. Small group PBL or CBL sessions, during which students will discuss the biological problems and the clinical cases administered in the introductory frontal section, will be conducted in the same week. At the end of the week, a plenary review teaching session will be administered. Lecturers and facilitators will be available for the students, to guide the PBL/CBL and practical activities, and for tutorial and question-time sessions during the week.

Multidisciplinary seminars on selected topics will be conducted and the innovative aspects of selected topics in the field of molecular biology, histology, anatomy and development will be administered to the students,

through interactive seminars, during which they will be also stimulated to research and critically review the medical literature of the fields.

Final exam

The final exam will take place at the end of the course, in the sessions scheduled by the academic calendar. The acquisition of knowledge and the ability to apply it will be verified through a written test for each subfield of the class.

For molecular biology, this will consist in a combined written test involving multiple choice questions, data analysis questions, and short essays.

For histology and embryology, it will consist in open questions and short essays concerning selected histology and embryology topics and a practical test to verify the ability of the students in performing tissue diagnosis under the microscope.

For anatomy, it will consist in a written test that will require describing anatomical specimens and answering open questions, including focussed clinical cases related to the topic.

After the written tests for each subfield of the course, students will be subjected to a final oral interview, to verify their acquisition of the integrated aspects of the class and their problem solving and basic clinical discussion abilities.

Class programme

Molecular and Cell Biology: the molecular mechanisms of cell survival, cell proliferation, and cell death: mitosis, meiosis, apoptosis, necrosis, and autophagy. Growth factors. The molecular mechanisms of cell differentiation.

DNA replication and its regulation: semiconservative and progressive replication, replicons, DNA polymerases. The basic mechanisms of DNA repair.

Chromatin structure and remodelling. Epigenetic control of gene expression. Exons and intron sequences. DNA methylation and acetylation. microRNA.

RNA processing and editing. DNA transcriptase. Messenger RNA and transfer RNA. RNA polymorphisms and their importance in cell biology and pathology.

Gene translation into functional proteins and their regulation. The importance of genome translation and regulation for cell differentiation and specialization.

The different classes of proteins and their functions in cell biology: structural proteins, receptors, enzymes. The post-translational modification of proteins and their importance in cell biology. Molecular biology techniques. DNA sequencing and cloning. Real-time PCR. Spectrophotometry. Southern, Northern and Western blotting. Centrifugations. Recombinant technologies.

Cytology:

The general organization, shapes, and sizes of the different cell subtypes. The concept of cell specialization and differentiation. Stem cells and pluripotent cells.

Biological membranes: the organization of the phospholipids layers and transmembrane proteins. Membrane specializations. Passive and active membrane transport. Transmembrane receptors and second messengers.

The cytoplasmic matrix. The cytoplasmic membrane systems. The Golgi complex. The endoplasmic reticulum. The intracellular trafficking of proteins. Ribosomes. Lysosomes. Centrioles. Mitochondria: the morphological bases of bioenergetics.

The nucleus and the nucleolus: the different shapes and sizes of nuclei in the different cell subtypes. Chromatin and methodologies for chromatin visualization. Nuclear receptors.

The organization and function of the cytoskeleton: cell motility and membrane stabilization. Cell junctions and mechanisms of intercellular communications.

Histology:

The origin of the tissues. Cell interaction and cell differentiation as the bases for functional tissue constitution.

Epithelial tissues: types of epithelial cells, classification of epithelia. Lining epithelia: mono-stratified and pluristratified lining epithelia, specialized lining epithelia. Squamous epithelia: the skin. Endothelia. Transitional epithelia. Mesothelium. Glandular epithelia: exocrine and endocrine glands. secretion modalities, neuro-endocrine correlations.

Connective tissues: classification, structural components: intracellular matrix and cellular components. Specialized connective tissues: cartilaginous tissue: intracellular matrix, cartilaginous lacunae, chondrocytes and chondroblasts. Bone tissue: osteocytes and osteoblasts, mechanisms of osteogenesis and mineralization. Blood and Immune tissue: circulating blood cells, serum and plasma, biological mechanisms of coagulation. Haematopoiesis: precursors of blood cells and their maturation and differentiation. Adipose tissues and the mechanisms of thermogenesis.

Muscular tissue. Skeletal muscle structure: endomysium, perimysium. Skeletal muscular cells: sarcomeres and myofibrils, actine/myosin interactions. Sarcolemma, sarcoplasmic reticulum. Extra-myofibrillar cytoskeletal proteins. The mechanism of muscular contraction. Neuromuscular junction. Muscular stem cells. Cardiac muscular tissue: myocardial cells. Gap junctions and inter-cellular communications. The mechanisms of myocardial contraction. Conduction myocardial tissue. Smooth muscular tissue.

Nervous tissue: white matter and grey matter. The neuron: the sizes, shapes, and morphologies of the different neuronal subtypes. The neuronal cytoskeleton: axons, dendrites, and axonal transport. The neuronal membrane and its specializations. The main classes of neurotransmitters and their receptors. The synapses: morphological classification and ultrastructure. The glial cells: astrocytes, oligodendrocytes, Schwann cells. The formation and constitution of myelin sheets. The microglia and mesenchymal cells of the central nervous system. Neuronal stem cells and neuronal precursors. Ependymal cells. The peripheral nerve: axonal organization, the histological classification of neuronal fibres. Myelin sheets, endoneuric and perineuric sheets. Unmyelinated peripheral fibres.

The basic concepts of histochemistry, immunohistochemistry/immunofluorescence, RNA in situ hybridization, and optic and electron microscopy.

Embryology:

Life cycle stages. Gametogenesis. The development of the gonads. Spermatogenesis. Oogenesis. Fertilization. Embryo implantation. Segmentation. Gastrulation. The cellular and molecular mechanisms of cell differentiation in early development. Germ layers and derivatives. The endoderm and the formation of the primitive intestine. Mesoderm and mesenchyme. Notochord formation. Ectoderm and neuro-ectoderm, neuronal crests. Somites. The general development of the foetus. Embryonic appendages.

Human Anatomy I:

Overview of the organization of the body. Nomenclature and anatomical terminology. Superficial anatomy. Reference planes. The general classification of the organs.

General concepts of anatomical dissection and organ fixation and preservation.

Topographic and superficial anatomy of the body regions—generalities: the head and the neck, the thorax, the abdomen and the pelvis. The upper and lower limbs. The clinical importance of superficial anatomy.

The locomotor Apparatus—generalities: the classification of bones: long bones, short bones, and flat bones. The classification of joints: diarthrosis and nearthrosis. The classification of muscles. The nomenclature and classification of movements. The anatomical principles of kinematics.

The skull and the neck: splanchnocranium and neurocranium. The jaw. The temporomandibular joint. The muscles of the head and the neck. The masticatory muscles. The topographical regions of the neck.

The spine: the vertebrae. The joints of the spine. The intervertebral disks and ligaments. The prevertebral and paravertebral muscles. The biodynamics of the erectile posture.

The thorax: the ribs and sternum. The sterno-costal joints. The diaphragm and the inter-costal muscles. The

biomechanics of respiration: the primary and secondary respiratory muscles.

The abdomen: the muscles of the abdomen. Aponeurosis and fasciae. The constitution of the abdominal wall. The inguinal region and the inguinal canal.

The upper limbs: bones, joints, and muscles.

The lower limbs: bones, joints, and muscles.

The anatomo-functional principles of the kinematics and biophysics of movement

Suggested textbooks

Molecular Biology:

- Alberts et al. Molecular Biology of the Cell. 6th edition. Garland Science Editor.

Cytology and Histology:

- Barbara Young et al. Weather: Histology and Microscopic Anatomy. 6th edition. Elsevier.
- James Lowe and Peter Anderson. Stevens and Lowe's Human Histology. 5th edition. Elsevier.

Embryology:

- Keith Moore and T.V.N Persaud et al. The Developing Human. Clinically oriented Embryology. 11th revisited edition. Elsevier.

Anatomy:

- Susan Standing et al. Grey's Anatomy: The Anatomical Basis of Clinical Practice. 41st Edition. Elsevier;
- Friedrich Paulsen et al. Sobotta Atlas of Human Anatomy. 15th edition. Urban & Fisher (Elsevier);
- Frank H. Netter. Atlas of Human Anatomy. 7th edition. Elsevier.

FUNDAMENTALS OF MEDICINE (II) CLASS

5 CFU

LECTURERS:	M. D'Amelio	<i>Physiology and Biophysics (coordinator)</i>
	M. J Schmeisser	<i>Physiology</i>
	L. Borghi	<i>History of Medicine</i>
	S. Mangione	<i>History of Medicine</i>

Physiology is the study of how the human body works and is a core discipline area in medical sciences. It plays a central role in the biomedical sciences, integrating from the molecular and cellular levels through to the whole tissue and organs to understand whole body function.

The bringing together of *History of Medicine* and *Physiology* in an integrated course aims at offering medical students a **historical viewpoint** of how the physiological approach has dramatically contributed to the unprecedented progress that clinical medicine has undergone during the last hundred years.

The progressive knowledge of the physiology of the human body has led to a progressive understanding of the mechanisms of disease and, in several cases, to the development of an array of pharmacological strategies aimed at blocking or slowing-down disease progression.

Final exam (integrated class)

At the end of the class, students will be evaluated through a written exam involving:

- a multiple-choice test pertaining to all the subjects presented during the physiology lectures;
- problems of applied physiology, including focussed clinical cases related to the topic;
- open answer questions relative to the History of Medicine.

Physiology and Biophysics Modules: I Year, II Term

Knowledge and understanding

The Physiology class, spread out over three terms, is aimed at providing students with knowledge of the functional organization of the human body.

Medical students must be able to describe how the various organs of the human body work, their dynamic integration into all apparatus, and the general mechanisms of control in physiological conditions.

The Physiology class is aimed at providing students with the bases necessary to *understand* pathophysiology and predict the responses of the body to pharmacological therapies or drugs. To fully benefit from the physiology of a given system, it is necessary to first understand its anatomy; therefore, much coordination work has gone into ensuring that each topic is presented sequentially, first in the Anatomy class and then in the Physiology one.

At the end of the first term, medical students will gain a good knowledge of:

- the mechanisms by which the human organism obtains and maintains the homeostasis at the cell and tissue levels, the mechanisms of transportation and communication, and the basal metabolism;
- nerve and muscle cells, which are capable of generating rapidly changing electrochemical impulses at their membranes, which are used to transmit signals along the nerve or muscle membranes;
- the basic physics of membrane potentials.

Applying knowledge and understanding

The students should gain the skills and expertise aimed at being able to transfer the theoretical information acquired as part of human physiology to the medical context. In particular, they should be able to: a) solve simple applied physiology problems; b) identify the most common pathological processes, and the alteration of a physiological function; c) predict what type of intervention (pharmacological or surgical) will counter some diseases.

Students should be able to understand how the biochemical mechanisms—i.e., neurotransmitter synthesis, metabolic pathways and their control—are closely connected to physiological conditions and how their alterations may be clinically relevant.

Lastly, students should be able to functionally correlate the structure of cells (cytology), tissues (histology), and organs (anatomy) to their function in an integrated system.

Thus, upon completion of the physiology class, medical students should have acquired knowledge of the organization, structure, and normal function of the human body, with a view to maintaining good health and understanding any pathological changes.

Teaching Methodology

The aims of the class will be achieved by a combined approach involving frontal lectures, practical activities, and case based learning (CBL).

The class will be closely integrated with that of Anatomy to further highlight the interconnection between morphology and function. Multidisciplinary seminars for selected topics will be also administered.

The innovative aspects of selected topics in the field of physiology will be conveyed to the students through interactive seminars, during which they will be also encouraged to research and critically review the medical literature of the field.

Making judgments

Students will be encouraged to develop their judgment skills through interactive lectures and by constant stimulation to reason and to always keep a comprehensive and critical view of the topics. For this purpose, the students will not only actively participate in the lectures but the topics to be covered will also be introduced by pushing the students with engaging questions and through periodic interactive seminars.

Communication skills

During the class, the students must develop a specific and precise scientific terminology, which is critical for an adequate understanding of the complex physiological processes.

Learning skills

The students will learn to critically understand the basics and the underlying principles of physiology from the molecular level to the whole tissue and organ one. They will also learn to solve quantitative problems and find relationships between structure and function of the human body. Finally, students will learn how to take a scientific approach to problems and how to adequately communicate scientific knowledge.

Core Curriculum – I Year, II term

-The Functional Organization of the Human Body and Control of the “Internal Environment”

-Transport of solutes and water

- Solute transport across cell membranes
- Regulation of Intracellular ion concentrations
- Water transport and the regulation of cell volume

-The electrophysiology of the cell membrane (biophysics)

- The ionic basis of membrane potentials
- The electrical model of the cell membrane
- The molecular physiology of ion channels

- Electrical excitability and action potentials (biophysics)

- The mechanism of nerve and muscle action potentials
- The physiology of voltage-gated channels and their relatives
- Congenital and drug-induced cardiac arrhythmias linked to K⁺ channels
- The propagation of action potentials

- The structural and functional organisation of synapses

- The types of synapses
- Electrical synapses
- Chemical synapses
- The principles of chemical synaptic transmission
- The neurotransmitter systems of the brain
- Neurotransmitter synthesis and storage
- Neurotransmitter release
- Neurotransmitter receptors and effectors
- Neurotransmitter recovery and degradation
- The principles of synaptic integration
- Synaptic integration
- Synaptic modulation

- The cellular physiology of skeletal and smooth muscle

- The contraction of skeletal muscle
- The physiological anatomy of skeletal muscle
- The general mechanism of muscle contraction
- The molecular mechanism of muscle contraction
- The energetics of muscle contraction
- The characteristics of whole muscle contraction
- The excitation of skeletal muscle: neuromuscular transmission and excitation-contraction coupling
- The transmission of impulses from nerve endings to skeletal muscle fibres
- The molecular biology of acetylcholine formation and release
- Drugs that enhance or block transmission at the neuromuscular junction
- Myasthenia gravis causes muscle paralysis
- Muscle action potential

Excitation-contraction coupling

The excitation and contraction of smooth muscle

The nervous and hormonal control of smooth muscle contraction

Suggested textbooks

- Guyton and Hall Textbook of Medical Physiology 13th Edition. Elsevier;
- Boron and Boulpaep Medical Physiology 3th Edition. Elsevier;
- Bear et al., Neuroscience, Exploring the brain 3th Edition. Lippincott Williams & Wilkins;
- Kandel et al., Principles of neural science 5th Edition. McGraw-Hill Education

History of Medicine Module – I Year, II Term

Class aims

Knowledge and understanding

This second part of the History of Medicine and Healthcare class will focus on the dramatic developments occurring in the second half of the 19th and the first half of the 20th centuries, especially regarding therapeutics, medical specialties, healthcare organization, and medical education. The “human factor” of such changes will remain a central issue, along with the scientific and technical breakthroughs.

Application of knowledge and understanding

By the end of the class, the students will be expected to be able to use the acquired knowledge of the History of Medicine to: properly evaluate the context of today's medical practice with autonomous and proactive judgment; to identify, face, and prevent the critical elements that characterize the relationship of medicine with society at large, especially from the inter-professional and technological points of view.

Teaching methodology

The teaching methods are intended to promote classroom engagement and cooperation. Both the interactive lectures and group activities imply the active involvement of students.

At the end of each of the six sessions (lecture + reflection) guided by Professor Mangione (topics 3-12), each student will be asked to prepare a short essay of about 500 words with her/his personal reflections on the topic.

A significant part of the class will be dedicated to group work. The students will be organized in small groups three/four strong. Each group will have to choose a topic in the history of medicine or other health-related subject and agree upon it with Professor Borghi. Then, each group will prepare an oral presentation of about 15' (+5' of discussion) and present it to the class according to an agenda. Each group presentation will be evaluated in relation to a list of pre-defined subjects by the other students (35% of the final score) and by the professor (65% of the final score).

Core Curriculum

1. Charles West and the invention of paediatrics
2. William Osler and the take-off of American Medicine
3. The history of malaria
4. The history of cardiac surgery

5. Brain and Mind: the history of a troublesome relationship (I)
6. Brain and Mind: the history of a troublesome relationship (II)
7. Lecture: The (Lost) Archetypes of Medicine
8. Reflection: what kind of Doctor do you want to become?
9. Lecture: Hemingway in Italy and Osler in Flanders. Lessons from WWI
10. Reflection: why is war such a catalyst for medical discoveries?
11. Lecture: Taussig, Thomas, and Blalock. How a Dyslexic and Legally Deaf Jewish Woman, a Black Technician, and a White Southern Gentleman Defeated Falot but Only One Person Got the Credit
12. Reflection: does medicine still discriminate?
13. Lecture: knowledge vs. certainty - Lessons from the Holocaust and Nazi Medicine
14. Reflection: why is tolerance for ambiguity important? What can you do to prevent future evils?
15. Lecture: turning points in history: when disease hits leaders
16. Reflection: what are the physician's responsibilities?
17. The birth of modern therapeutics (Ehrlich, Domagk, and Fleming)
18. "Medical material memories". The Himetop project, and how you can collaborate with it.
- 19-24. Group work

Suggested textbooks

- Sherwin B. Nuland, *Doctors. The Illustrated History of Medical Pioneers*, Black Dog & Leventhal, New York 2008
- Luca Borghi, "When Human Touch makes the difference. The legacy of Charles West (1816-1898), paediatrics pioneer", in *Medicina Historica* 2017; Vol. 1, N. 1:13-17
- Luca Borghi, Anna Marchetti, "Introducing the trained and educated gentlewoman into the wards of a children's hospital. The role of Charles West, M.D. (1816-1898) in the rise of paediatric nursing", in *Medicina Historica* 2018; 2(2): 63-74

EPIDEMIOLOGY & BIostatISTICS AND MEDICAL HUMANITIES CLASS

11 CFU

LECTURERS:	M. Ciccozzi	<i>Medical Statistics (coordinator)</i>
	V. Tambone	<i>Medical Humanities</i>
	A. Agazzi	<i>Medical Humanities</i>
	R. Dell'Oro	<i>Medical Humanities</i>
	N. Di Stefano	<i>Medical Humanities</i>
	D. Black	<i>Tools of evidence based medicine</i>
	D. Black	<i>Computational biology and computer science</i>
	A. Schwartz	<i>Computational biology and computer science</i>

Class Aims and Objectives

The Epidemiology and Biostatistics class has three broad aims defined below. The Medical Humanities class has four broad aims, Several objectives are identified for each of these two aims.

Epidemiology & Biostatistics

To introduce students to key principles and methods of biostatistics and epidemiology (Basic and Molecular) that are important for the interpretation and assessment of published studies.

While students consult the literature, they should be able to interpret graphs or tables describing patient outcomes or characteristics, and make judgments about the associated probabilities.

Students should be able to understand the meaning of the evidence presented in a journal article in the form of confidence intervals or p-values.

Students should be familiar with the uses and interpretations of some of the most common statistical tools they will encounter in publications.

Students should understand that published conclusions may be affected by errors due entirely to sampling fluctuation, and/or to any biases inherent in the design of a study or in the sampling plan used.

Students should understand the principles of study design involved in epidemiological research and in clinical trials, and the strengths and weaknesses conferred by various designs.

Students should be aware of the ethical issues surrounding studies on people in such contexts as epidemiological studies and clinical trials.

Students should be able to assess how the results presented in a paper should or should not influence the clinical care for their patients.

To understand how biological and random variability are measured; to promote an understanding of the principles underlying the application of the standard statistical tests that serve as tools in clinical decision-making and in the interpretation of laboratory results.

Students should be able to use and explain the clinical prediction models used to assess the risk of disease outcomes for individual patients.

Students should understand the impact of patient characteristics on clinical laboratory results, and be able to

do simple calculations concerning the variability in the predictive value that would be associated with changing prevalence of disease or risk factors.

Students should be able to discuss the utility of screening programmes for cancer and other conditions.

Students should be aware of the importance of disease surveillance systems and their relationship to public health and clinical decision-making.

Students should be familiar with the steps taken in the investigation of an outbreak or epidemic

To introduce students to key principles and methods of Molecular Epidemiology that are important for the interpretation and assessment of published studies on this issue. Students should be able to understand the principles of molecular epidemiology phylogenetics and molecular evolution.

Students should be able to understand the meaning of the Basic principles of phylogenetic analysis: character evolution, homologies and homoplasies, evolutionary tree types, types of data sets for analysis, etc.

Students should be able to use and explain the methods of phylogenetic inference: parsimony, distances, maximum likelihood, and Bayesians

Students should be familiar with the uses and interpretations of some of the most common models of molecular evolution. Substitution rates and patterns. Methods of model selection. Search algorithms and optimization solutions. Exhaustive and heuristic searches.

Students should be familiar with the steps taken in the investigation of an outbreak or epidemic using the phylogenetic tools

Students should be able to assess how the results presented in a paper should or should not influence epidemiology, starting from molecular phylogenesis

Teaching Methodology

The aims of the class are achieved by a combination of lectures and small group discussions. The lectures will usually focus on one or two examples of published studies and/or cases as a vehicle to present general principles. Homework will be assigned and reviewed in small group sessions. Class time will be approximately evenly divided between lectures and small group sessions. There will be also a short practical PC session with software for molecular epidemiology freely available on the internet.

Final exam

The final exam will take place at the end of the course, in the sessions scheduled by the academic calendar. The exam will be written, involving a combination of multiple choice and short answer questions. The questions will test the knowledge related to the Aims and Objectives of the course, described above, and ability to apply it.

Core Curriculum – I Year, II term

The following topics will be included in the Biostatistics and Epidemiology curriculum:

Introduction to Biostatistics

Sampling and descriptive statistics

Hypothesis testing and p-values

Confidence intervals

The interpretation of survival analysis, including Kaplan-Meier

An introduction to linear, logistic, and proportional hazard models

An introduction to Clinical Research

Study design overview – observational vs. clinical trials

Measures of disease occurrence: prevalence vs. incidence, risks, rates

Measures of disease association: risk ratio, rate ratio, hazard ratio, odds ratio

Study designs: cross-sectional, cohort, case-control
Sources of bias in studies: measurement error, confounding
Understanding screening and diagnostic tests, including cancer screening
Randomized clinical trials
Surveillance epidemiology and outbreak investigation
An introduction to molecular epidemiology
A brief historic perspective on phylogenetic and molecular epidemiology
How to build a database and phylogenetic tree
How to read and interpret a phylogenetic tree in an epidemic
Statistics and bias

Required and recommended reading

The required class reading will consist of short articles or excerpts that will be made available at the start of the class.

Textbooks suggested:

- Douglas G Altman Practical Statistics for Medical Research;
- Lemey - Salemi - Vandamme : The Phylogenetic Handbook - A Practical Approach to Phylogenetic Analysis and Hypothesis Testing • 2009 Cambridge University Press
- Leon Gordis; Epidemiology 5th edition. Saunders

Suggestions for recommended reading will be also provided.

Medical Humanities

The Medical Humanities class has four broad aims, defined below. Several objectives are identified for each of these aims.

To introduce students to key principles and methods of Medical Humanities that are important for the interpretation and assessment of published studies.

While students consult the literature, they should be able to interpret it through critical thinking.

Students should be able to understand the meaning of the most important Schools of thought.

Students should be familiar with the uses and interpretations of some preliminary notions such as “how humanism should be understood” and “what is the role of medical humanities?”

To introduce students in the epistemological nature and developments of an original theory of scientific objectivity

This original theory of scientific objectivity will be explained, in a weak sense, as an intersubjective agreement among specialists and, in a strong sense, as having precise concrete referents.

This justifies a form of scientific realism. Such perspectives are also the result of a complex cultural-historical situation.

To introduce students to key principles and methods of Humanities that are important for the development of judgement abilities in the ethical field and in Social Humanities

Professionalism and virtues

The climate of Western bioethics: between individual liberalism and social solidarity

To introduce students to the importance of the arts in medical training

Music and painting in medicine

Aesthetics and medicine

Required and recommended reading

The required class reading will consist of short articles or excerpts that will be made available at the start of the class.

Teaching Methodology

The aims of the class will be achieved through a combination of lectures and small group discussions. Homework will be assigned and reviewed in the small group sessions.

Final exam

The final exam will take place at the end of the class, in the sessions scheduled by the academic calendar. The exam will be written, involving a combination of multiple choice and short answer questions. The questions will test the knowledge related to the aims and objectives of the class, described above, and the ability to apply it.

Textbook suggested for the course:

- Agazzi Evandro, Scientific Objectivity and its context, Springer International, 2014

