UNIVERSITÀ VITA-SALUTE SAN RAFFAELE

STUDENT GUIDE

FACULTY OF MEDICINE AND SURGERY

MASTER'S DEGREE COURSE
INTERNATIONAL MD PROGRAM

Academic Year 2016/2017

Academic Calendar

VITA-SALUTE SAN RAFFAELE UNIVERSITY
INTERNATIONAL MD PROGRAM - 1st YEAR AND 2nd YEAR

	Sept-16	Oct-16	Nov-16	Dec-16	Jan-17	Feb-17	Mar-17	Apr-17	May-17	June-17	July-17	Aug-17	Sept-17
1			ALL SAINTS		NEW YEAR'S DAY	EXAMS			BANK HOLIDAY	13.		Holidays	EXAMS
2					Holidays	EXAMS				BANK HOLIDAY		Holidays	
3					Holidays	EXAMS					EXAMS	Holidays	
4					Holidays						EXAMS	Holidays	EXAMS
5					Holidays						EXAMS		EXAMS
6					EPIPHANY	EXAMS					EXAMS		EXAMS
7				S.AMBROGIO		EXAMS					EXAMS	Holidays	EXAMS
8				IMMACOLATA		EXAMS						Holidays	EXAMS
9				Holidays		EXAMS						Holidays	
10						EXAMS		extra exam session			EXAMS	Holidays	
11								extra exam session			EXAMS	Holidays	EXAMS
12								extra exam session			EXAMS		EXAMS
13						EXAMS		extra exam session			EXAMS		EXAMS
14						EXAMS		extra exam session			EXAMS	Holidays	EXAMS
15						EXAMS		Holidays				ASSUMPTION	EXAMS
16						EXAMS		EASTER				Holidays	
17						EXAMS		EASTER MONDAY			EXAMS	Holidays	
18								extra exam session			EXAMS	Holidays	EXAMS
19								extra exam session		Study Leave	EXAMS		EXAMS
20						EXAMS		extra exam session		Study Leave	EXAMS		EXAMS
21	Orientation Week for year 1 only					EXAMS		extra exam session		Study Leave	EXAMS	Holidays	EXAMS
22				Holidays		EXAMS				Study Leave		Holidays	EXAMS
23				Holidays	Study Leave	EXAMS				Study Leave		Holidays	
24					Study Leave	EXAMS		Holidays			EXAMS	Holidays	
25				CHRISTMAS	Study Leave			BANK HOLIDAY			EXAMS	Holidays	New Academic Year
26	Beginning Sem.1			BOXING DAY	Study Leave					Study Leave	EXAMS		New Academic Year
27				Holidays	Study Leave	Beginning Sem.2				Study Leave	EXAMS		New Academic Year
28				Holidays						Study Leave	EXAMS	Holidays	New Academic Year
29				Holidays						Study Leave		Holidays	New Academic Year
30				Holidays	Study Leave					Study Leave		Holidays	
31		Holidays			Study Leave						EXAMS	Holidays	

Notice from the University Committee of the enhancement of quality

on the questionnaires for the evaluation of courses and teaching

Vita-Salute San Raffaele University considers a continuous process of monitoring and evaluating the quality of the educational mission, also in terms of planning, as essential for achieving excellence in higher education and research.

UniSR Students can assess the correspondence between the teaching quality offered and their expectation. That is very important to improve teaching and training and develop successful strategies.

At the end of each semester, students' opinions are collected through *evaluation questionnaires*. Filling in the questionnaire is compulsory, according to the guidelines published in November 2013 by ANVUR (the National Agency for the Evaluation of the University and Research Systems). IT techniques have been implemented to speed up questionnaire collection and processing. Anonymity is fully guaranteed.

Filling in the questionnaires is the necessary condition which allows a student to register for the exams. After collection, data are firstly conveyed to the Master's degree course Coordinators and to the Deans of the Faculties and finally to the University Evaluation Commission for the analysis of data.

The data collected will be a fundamental source to spot every sort of issue, thus for future improvement.

In short, filling in the questionnaires represents a key moment of University life in which students take a role of responsibility together with academia and University organization structures in the continuous process of improvement and innovation which makes it possible for our University to rank among the top Universities in the nation and Europe.

We really appreciate all respondents' valuable time to fill up the questionnaires, especially during intense study times and we would like to raise students' awareness of the importance of their contribution by carrying out this task responsibly and sharing the same objectives together with this Institution.

The President of the University Committee
for the enhancement of quality

YEAR 1

- Statistics and Bioinformatics
- Medical Physics
- Medical Humanities
- Chemistry and Biochemistry
- Cell and Molecular Biology
- Genetics and Developmental Biology

STATISTICS AND BIOINFORMATICS

Total Credits: 6

Lectures: 42

Practicals: 24

Scientific Discipline Sector: MED/01 – INF/01

Course Instructors:

Prof. Clelia Di Serio	Email: diserio.clelia@unisr.it **(Coordinator)** (www.unisr.it/k-teacher/diserio-mariacleliastefania)
Prof. Elia Biganzoli	Email: elia.biganzoli@unimi.it
Dr. Paola Rancoita	Email: rancoita.paolamaria@unisr.it (www.unisr.it/k-teacher/rancoita-paolamariavittoria)
Dr. Federica Cugnata	Email: cugnata.federica@hsr.it

Receiving Hour to be requested per e-mail addressed to the single Professor.

Course Description

The course provides an introduction to statistical concepts and quantitative methods used in the Health Sciences. Fundamental concepts in the following fields will be presented: clinical epidemiology, probability, exploratory data analysis, statistical inference. Basic knowledge and tools for data management and data analysis are also provided in the course.

Course Objectives

By the end of the course, students will be able to:

1) understand and perform basic statistical data analysis by means of graphical methods and of descriptive statistics for univariate and bivariate variables;
2) understand the difference between causality and statistical association, compute association measures between variables, calculate least squares regression and interpret the results,
3) perform simple calculations based on the rules of probability (Bayes' Theorem) to interpret diagnostic tests;
4) recognize different study designs used in clinical epidemiology and compute measures of treatment efficacy and risk factors impact;
5) use statistical models (Binomial, Poisson and Normal distribution) to calculate probabilities of events;
6) construct and interpret confidence intervals and one-sample hypothesis tests for population means;
7) construct and interpret two-sample hypothesis tests and confidence intervals for difference of means;
8) understand and use simple statistical methods for analyzing censored survival data;
9) read clinical epidemiological papers and interpret the statistical analyses;
10) use SPSS statistical software to perform basic statistical analyses.

Practicals:

The practicals will be usually structured in the following way: 1) some exercises will be solved and discussed by the teaching assistant; 2) in-class problems will be assigned and asked to be solved in small groups; 3) the solution of the in-class problems will be discussed. The in-class exercises will allow an active learning and discussion of the related statistical and epidemiological concepts. At the end of each lesson, similar homework exercises will be assigned to provide an opportunity for independent practice. The corresponding complete solutions will be given subsequently for auto-correction. Depending on the topic, also the statistical analysis of some examples of published scientific papers will be discussed.

Readings
Main material**:**

- Textbook: Biostatistics. Basic Concepts and Methodology for the Health Sciences (9th edition). Author: Wayne W. Daniel. Wiley
- Supplementary Online Material.

Additional material (one of the following):

- SPSS Survival Manual: A step by step guide to data analysis using SPSS, 4th edition, by Julie Pallant (2010)-Allen & Unwin
- *SPSS Programming and Data Management, 4th Edition*, by Raynald Levesque; SPSS Inc.

Schedule of the Lectures

Session	Topics	SPSS LAB/ Practicals
1	Introduction to Medical Statistics, graphical methods for representing data	
2	Introduction to Evidence Based Medicine reasoning based on quantitative statistical evidence Diagnostic tests: screening and diagnosis Test with dichotomous variables: sensibility and specificity, PPV, NPV	
3	Diagnostic test Test with continuous and ordinal variables, ROC curves Fagan nomogram and practical application in diagnostic testing Information and medical decision making in screening test: examples of early diagnosis	
4	Introduction to clinical epidemiology Evaluating risk factors Probability and disease risk Measures of prevalence, incidence and association Basic concepts of survival analysis	
5	Observational vs. experimental studies. Cross-sectional and case-control studies Cohort studies (prospective/retrospective) Inference on odds ratio and relative risks	
6	Experimental design in clinical research Clinical trial vs. observational studies Phase I, II, III, IV clinical trials Randomized Controlled Trials Ethical issues Inclusion criteria Measures of treatment efficacy Interaction and confounders	
7	Univariate analysis: measures of location	
8	Univariate analysis: measures of dispersion	
		SPSS LAB 1
		Practical 1

9	Bivariate analysis: covariance and correlation	
10	Bivariate analysis: regression and R-squared	
		SPSS LAB2
		Practical 2
11	Probability, Bayes' Theorem and conditional probability	
12	Independency and contingency table (chi-square statistic)	
		SPSS LAB 3
		Practical 3
13	Introduction to discrete probability distributions, Binomial distribution	
14	Poisson distribution	
		Practical 4
15	Introduction to continuous probability distributions, Normal distribution	
		Practical 5
	Screening test, ROC curve	SPSS LAB
16	Sampling distribution for the mean and for the difference of means, Central Limit Theorem	
		Practical 6
17	Confidence intervals for the means (variance known and unknown), Student's t-distribution	
18	Confidence intervals for the for the difference of means	
		Practical 7
19	Hypothesis testing: basic concepts and hypothesis test for the mean (with variance known)	
20	Hypothesis testing: hypothesis test for the mean (with variance known and unknown) and for the difference of means	
		Practical 8
		SPSS LAB 4

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MEDICAL PHYSICS
Total Credits: 5
Lectures: 48 hours
Practicals: 20 hours

Scientific Discipline Sector: FIS/07 – MED/36

Teaching staff

Prof. Tommaso Tabarelli de Fatis (Coordinator)	Email: tommaso.tabarellidefatis@unimib.it
Prof. Giovanni Mauro Cattaneo	Email: cattaneo.mauro@hsr.it
Prof. Antonio Esposito	Email: esposito.antonio@unisr.it (www.unisr.it/k-teacher/esposito-antonio)
Prof. Samuel Zambrano	Email: zambrano.samuel@hsr.it

The course covers the basic principles of Physics, with emphasis on topics useful for understanding biological phenomena and biomedical instrumentation.

Prerequisites

Basic high-school mathematics. Some basic notion of calculus will be introduced as needed during the lectures.

Textbooks

"Physics" or "General Physics", by Morton Sternheim and Joseph Kane, Wiley;
Notes on the specific topics covered during the lectures will be made available as additional material.

Other books with coverage of the topics presented :
"Physics Principles with Applications", by Douglas Giancoli, Pearson/Prentice Hall;
"Fundamentals of Physics Extended", by David Halliday, Robert Resnick, Jearl Walker, Wiley.
"Serway's Essentials of College Physics", by Raymond A. Serway and Chris Vuille, Brooks/Cole.

Other books oriented to Life Science, but less comprehensive
"Physics of Life Science" by Jay Newmann, Springer
"Physics for Life Science", by Morton Sternheim and Joseph Kane, Wiley, 1978 (not anymore available, but some copies around on amazon, and some pdf versions around over the net - beware "SI version" would be needed)

Course Syllabus

The course is organized in five parts, of four lectures each (2 h) followed by one problem/review session (2 h):

Part. I and II - Mechanics, rigid body and fluids (TTdF)

- Motion and fundamental quantities, unit of measure, scalar and vector quantities. Examples.
- The principles of dynamics. Mass and force. Example of forces. "Laws of force".
- Energy and momentum. Conservation laws. Applications.
- Rigid bodies, elements of statics, levers. Application to the human body.

- Deformable bodies: elasticity, stress and strain and applications.
- Fluids (i.e. fully deformable bodies): pressure, density, compressibility. Static of fluids and applications.
- Ideal fluids. Flow rate. Equation of continuity. Work of a fluid. Conservation of energy and Bernoulli's equation.
- Real fluid (blood): viscosity, hydraulic resistance, laminar and turbulent motion. The human circulatory system.

Part.III - Gases and Thermodynamics (SZ)

- Temperature and equation of state. Ideal gas and kinetic theory. Real gases, vapour, and saturated vapour.
- Diffusion and osmosis. Solutions, solubility, dissociation. Matter transport and exchange in the human body.
- Energy transport in gases (and matter). Mechanical waves. Reflection and acoustic impedance.
- Thermodynamics. The first principle (and the second principle) of thermodynamics. Metabolic rate
- Specific heat capacity, heat capacity. Latent heats. Thermal conductivity. Thermoregulation of the human body.

Part.IV - Electrical phenomena and optics (MC)

- Electric charge, the "law of force", electric field, electrostatic potential energy, relation between field and potential difference. Case studies (relevant to physiology). Conductor and insulators. Capacitors.
- Electric current. Drift velocity of the charge carriers. Electric resistance; resistivity. Ohm's law. Resistors in series and parallel. Electrical representation of a cell's membrane: response of RC circuits
- Elements of electrophysiology. Charge transport through the membrane. Nernst equilibrium. The Na-K pump. Action potential. Propagation of pulses in the nerves.
- Optics. Physical and geometrical optics. Lenses. The eye: cornea and lens, defects in vision. Colour vision and photoelectric effect.

Part V - Physics principles of medical imaging (AE)

- Introduction to medical imaging
- Physical principles of image formation: radiography and CT
- Physical principles of image formation: ultrasound
- Physical principles of image formation: magnetic resonance

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CHEMISTRY AND BIOCHEMISTRY
Total Credits: 12
Lectures: 120 hours
Practicals: 46 hours (divided in groups)
Scientific Discipline Sector: BIO/10- BIO/11

Course Coordinator: Prof. Andrea Graziani
Email: graziani.andrea@hsr.it (www.unisr.it/k-teacher/graziani-andrea)
50 hours

Prof. Massimo Degano
Email: degano.massimo@hsr.it
50 hours

Prof. Angelo Corti
Email: corti.angelo@hsr.it (www.unisr.it/k-teacher/corti-angelo)
20 hours

Tutorials: 96 hours to be divided into groups/tutors
Dr. Claudia Minici - Dr. Francesca Giannese - Dr. Marco Patrone – Dr. Valeria Malacarne

Type of subject: Traditional medical discipline
Field: General discipline for the preparation of a doctor: Structure, function and metabolism of molecules of medical interest.

Course objectives:
The Chemistry and Biochemistry course is one of fundamental importance, in which students are presented with the notions of the chemical and biochemical mechanisms necessary to understand the regulation of biological processes of the cell and of the organism.
This course covers classical aspects of molecular and cellular biochemistry, and molecular physiology. Metabolic interrelationships as they occur in the individual will be stressed and related to disturbances in disease states.
The knowledge and understandings provided by the course constitute the foundations for the following semesters both for the molecular analysis of physiological processes and those of pathogenetic mechanisms in disease. The initial part of the course will focus on the principles of general and organic chemistry with a description of the fundamental chemical reactions for the understanding of biological processes, the structure and function of organic molecules that constitute the building blocks of living matter, and the analysis and structure and function of principle biological polymers, with particular emphasis on the processes of catalytic enzymes. The second part will provide a description at the molecular level of the structures and processes that are essential for cellular life, in particular how energy is obtained from nutrients and is then used in specific processes. A strong focus will be maintained on the relationship between dysfunctionalities in metabolism and human disease.
The students will be also involved in practical activities, carrying out typical biochemical experiments using the techniques encountered during the course.

Course attendance
Students are required to attend more than 70% of the scheduled classes in order to sit at exams. Students who are unable to attend part of the classes (e.g., plan to leave the room before the end of the two hours) must make prior arrangements with the lecturer. Clocking in for other students is not tolerated, and random checks of attendance will be carried out. Violation of the honor code will be sanctioned.

How to follow the course and study for the exam
Experience from the previous years has shown a strong correlation between active attendance and the final result of the exam. It is thus strongly recommended to review the material presented during the lectures, and also to read in advance the topics to be presented.

At the end of this course, students should be able to:
- Solve problems in diagnosis and treatment of human disease by application of biochemical principles.
- Use primary medical and scientific literature as a resource for learning and problem-solving.
- Define, describe and contrast functions of genes and macromolecules in normal and pathologic contexts.
- Define and describe systemic metabolic biochemistry in terms of genes and molecules.
- Deduce therapeutic mechanisms from established molecular mechanisms.
- Interpret new medical discoveries in terms of fundamental principles of biochemistry
- Explain the molecular basis of diseases that affect cellular function or development.

Textbooks
Chemistry:
Timberlake – General, Organic and Biological Chemistry, Pearson eds.
Biochemistry, one of the following:
Berg, Tymoczko, Gatto, Stryer – Biochemistry (8th ed., 2015), Palgrave MacMillan eds.
ISBN 9781137563453
Nelson & Cox - Lehninger Principles of Biochemistry, (6th ed., 2013), Palgrave McMillan eds.
ISBN-13: 9781429234146
Voet & Voet - Biochemistry, Wiley eds. (at least 2nd edition)

The course is a prerequisite for:
Foundation for "Cellular and Molecular Biology" and "Genetics and Developmental Biology".

Evaluation of acquired knowledge
The exam is structured as a **multiple choice written test**, with one correct answer out of four possible. The test will contain 100 questions on the Biochemistry section and 30 questions on the Chemistry section. A correct answer corresponds to 1 (one) point, a wrong answer -0.25 points, a blank answer 0 (zero) points. **A score of at least 54/100 in the Biochemistry section AND 16/30 in the Chemistry section is required to pass the exam**.
Once the students have passed the Biochemistry section, the final score may be integrated with an optional oral exam.
In order to pass, sufficient knowledge in both Chemistry and Biochemistry must be demonstrated on a single exam date. **Hence, for instance, a positive result in Biochemistry cannot compensate for a poor result in Chemistry, and cannot be "saved" from one date to the other**. The final grade is computed considering 30/30 as 90% of the maximum score attainable.
Given the complexity of the course, **a mid-term test concerning the Chemistry part will be administered on November/December and in February** (the precise dates will be made public during the course). Students are **strongly encouraged to take this test**, since a "pass" mark will allow to be tested only on the Biochemistry section at the end of the year (**and all future exam dates**). The mid-term can be taken in either date (or both, in case of a "fail" mark on the first attempt).

No.Theme

1 Introduction to the course. Tips and suggestions for a proficient C&B course. Chemistry and biochemistry
in human physiology

2 Atomic Structure. Electron Configuration and the Aufbau Principle. Atomic and Molecular Orbitals.
Chemical Bonding - Covalent, Ionic and Metallic Bonds.

3 Intermolecular Forces - Dipole-Dipole Forces, Hydrogen Bond, London Forces. Periodic System of
Elements. Trends in the Periodic Table. Nomenclature of Inorganic Compounds. Characterization
of sp-, d- and f-Elements and their Compounds.

4 Classification of Chemical Reactions. Chemical Thermodynamics -the Laws of Thermodynamics, Enthalpy, Entropy, Free Energy. Spontaneity of Chemical Change. Chemical Equilibrium. Equilibrium Constant. Le Chatelier´s Principle.

5 Chemical Kinetics. Reaction Rates and Factors that Influence them. Activation Energy and the Activated Complex. Catalysts and Mechanism of their Effect.

6 Solutions and their Properties. Solubility, Concentration of Solutions. Solutions of Electrolytes, Ionization Constant. Activity (effective concentration). Acids and Bases. The Dissociation of Water. The pH Scale.
Salts, Hydrolysis of Salts, Solubility Product. Buffers, Characterization, pH, Capacity. Buffers of the Blood.

7 Oxidation-Reduction Processes. Hydrogen and Oxygen in these Processes. Standard Reduction Potentials. Osmosis. Osmotic Pressure. Colligative properties. Importance in Medicine.

8 Scope of Organic Chemistry. Formulas, Naming and Classification of Organic Compounds. Resonance, delocalization, conjugation, and aromaticity

9 Hydrocarbons and their Derivatives. Alkanes, Alkenes, Alkynes, Cycloalkanes.

10 Alcohols

11 Ethers, epoxides, and sulfides

12 Amines

13 Ketones and aldehydes

14 Carboxylic acids, esters, amides

15 Amino Acids and their Properties. Important Peptides.

16 Lactones, lactames and antibiotics

17 Phosphoric acids, inorganic and organic phosphates

18 Aromatic compounds

19 Alpha substitution and condensation of enols and enolate ions

20 Synthetic reactions in bioorganic chemistry

21 Monosaccharides - Classification, Configuration, Optical Activity, Anomers, Epimers. The Haworth
Formulas. Reactions of Monosaccharides. Glycosidic Linkage, Reducing and non-Reducing Disaccharides. Polysaccharides and Glycosaminoglycans, Composition, Properties.

22 Proteins - Amino Acid Composition, Conformation of Proteins.

23 Types of Bonds and Interactions. Physical and Chemical Properties. Classification of Proteins.

24 Enzymatic catalysis

25 Enzymatic regulation

26 Protein purification and characterization

27 Myoglobin and Hemoglobin. Allosteric proteins.

28 Protein folding

29 Antibodies

30 Lipids and Steroids. Classification, Structure, Properties, Chemical Reactions.

31 Nucleosides and nucleotides. DNA and RNA structure and properties.

32 Introduction to the cell, compartments and cellular biochemistry.
33 Cell membranes. Lipid digestion, resorption, and transport. Lipoproteins and pathologies
31 Transport across membranes. Passive and active transport.
32 Introduction to metabolism. Synthesis and breakdown of biomolecules.
33 Glycolysis. Metabolism of glucose and other monosaccharides.
34 The Pentose Phosphate Pathway. Gluconeogenesis.
35 Synthesis and breakdown of glycogen. Regulation through hormonal signaling.
36 The pyruvate dehydrogenase complex. The citric acid cycle.
37 The mitochondrial electron transport chain. Oxidative phosphorylation. ATP synthesis through the
mitochondrial ATPase.
38 Metabolism of lipids. Fatty acid oxidation in the mitochondrion and peroxisomes. Fatty acid synthesis.
39 Cholesterol and steroid hormones. Arachidonate metabolism. Glycolipids and storage diseases.
40 Amino acids. Removal of the amino group. The urea cycle. Ammonia in health and disease.
42 Degradation of the carbon skeleton of amino acids. Heme synthesis and degradation.
43 Nucleotide metabolism. Purine and pyrimidine nucleotide synthesis and regulation.
44 Nucleotide degradation and diseases associated with disregulation. Uric acid, gout, and immunodeficiencies.
44 Integrated and organ-specialized metabolism. Extracellular and Intracellular Communication.
45 Molecular physiology 1. Blood clotting. The immune response
46 Molecular physiology 2. Muscle contraction.
47 Hormones and neurotransmission
48 Connective Tissue Proteins, Proteoglycans.

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MEDICAL HUMANITIES

Total Credits: 13

Total Hours: 130

Scientific Discipline Sector: MED/02 – M-FIL/33 – M-FIL/03 – L-LIN/01 – L-LIN/12

Teaching staff

Prof. Michael John john.michael@unisr.it
(Coordinator - Receiving Hours *on appointment*: Wednesday, 13:00 - 14:00 – Room 27, Dibit 1)

Prof. Mariagrazia Strepparava mariagrazia.strepparava@unimib.it
Prof. William Cooke william@maptraining.it
Prof. Massimo Reichlin reichlin.massimo@hsr.it
(www.unisr.it/k-teacher/reichlin-massimo)
Prof. Antonio Siccardi siccardi.antonio@hsr.it

Course objectives

In today's frenetic, high-tech world, where medicine is evidence based and focuses on specialties of all possible kinds, doctors generally have little time to ponder the multifaceted problems of their patients. Indeed, there are innumerable horror stories told by sick people that stem from the uncaring attitudes and the lack of sensitivity shown by many health professionals. Yet medicine should be seen as a caring profession that requires doctors not only to provide valid clinical assistance but, above all, to empathize with patients and their families when they are at their most vulnerable and in need of understanding.

Nowadays, medical school students are encouraged to interact with patients virtually from the beginning of their training and an increasing amount of emphasis is being placed on the teaching of social sciences, ethics and communication skills to help create a new kind of doctor. One way of doing this is by introducing the study of the *Medical Humanities* (literature, music, visual arts, psychology, sociology, philosophy, ethics, history, language, religion etc.) into the medical curriculum. These subjects require imagination, close observation and understanding, which are all fundamental characteristics of a successful and caring doctor.

How otherwise might a 20-year-old medical or nursing student learn about the complexities of the human condition? How would they be able to understand the reactions and feelings of someone with a terminal illness or a crippling disability, let alone a parent who has just lost a child? They certainly will not learn these skills from standard clinical textbooks, where the words fear and anguish do not appear in the index. Yet fear and anguish are at the very center of how a patient faces up to and lives with an illness.

Aim

The aim of the course is to help students understand that patients are people, and not just a mass of molecules, that not only have an illness, but are also suffering fear and anguish. Doctors must therefore strive to empathize with individuals and not simply distribute medication and drugs to faceless and nameless numbers.

Discussion and active student participation will be paramount to the overall success of the course.

Topics dealt with will include

- *empathy and patient-centered communication*
- *use of language*
- *withdrawal of treatment*
- *euthanasia and assisted suicide*
- *ethics committees*
- *chronic illness*

• *old age, death and bereavement*
• *cross-cultural conflicts*
• *alternative and complementary health practices*
• *re-pro ethics and new reproductive technologies*
• *history of science and science education*
• *how to read and write a paper for publication in a peer journal*
• *how to communicate with a peer audience at international congresses*

Final evaluation
The students will receive a final mark based upon a **compulsory** end-of-year multiple-choice based written test on the following topics: *Doctor-patient communication skills (Strepparava parts 1+2, John part 1), Peer-to-peer communication skills (John part 2), Bioethics (Reichlin).*

As will be clearly explained during lesson 1 of the Humanities Course, **the result of the final examination** will be based on the total of the above-mentioned multiple-choice written exercises, together with the marks obtained for group-based classwork exercises (i.e. oral presentation: John part 2, abstract writing: Cooke). The mark for Historical topics in molecular genetics (Siccardi) will be based on an individual essay,

All of these exercises are **compulsory**, and the mark obtained is to be considered **final.** The mark will be calculated using an Excel worksheet where various 'weights' will be given to each exercise. Only those students that fail to reach a positive overall result (18/30) will have the chance to re-sit the entire examination (multiple-choice sections **ONLY**, as all group-exercise results and the Siccardi essay result will be maintained) on a single date during the September examination session.

Students that achieve a positive result (18+) will not be permitted to re-sit any part or all of the examination *merely to 'up the mark'.*

The dates for the mid-term tests and the September re-sit are as follows:

1. Multiple-choice test: 15th June 2017, 10:00h - IT room to be defined
2. September re-sit: 14th September 2017

Cell phones, tablets, and computers must be turned off for the duration of each class, unless they are being used to follow the projected slides or for note-taking.

No eating or drinking in class. Break time must be respected (maximum 10 minutes, or as advised by the teacher); no recording or filming of lessons without written permission from all present.

Any cheating or plagiarism in any of the examination exercises will result in immediate failure.

Please be respectful of all classmates, professors, guests, peers. Any disciplinary or academic problems will be discussed with the Program Director and with the Didactic Committee.

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CELL AND MOLECULAR BIOLOGY
Total Credits: 11
Total Hours: 88+15
Scientific Discipline Sector: BIO/11 – BIO/12 – INF/01

Course Coordinator: Prof. Roberto Sitia (www.unisr.it/k-teacher/sitia-roberto/)
(Receiving Hours: on Thursdays 14:30, Dibit1, A2, 4th Floor, room 36)
Email: sitia.roberto@hsr.it
18 hours

Collaborators:
Prof. Anna Rubartelli
Email: anna.rubartelli@hsanmartino.it
10 hours
Prof. Eelco van Anken
Email: vananken.eelco@hsr.it
40 hours
Prof. Simone Cenci
Email: cenci.simone@hsr.it
10 hours
Prof. Tiziana Anelli
Email: anelli.tiziana@hsr.it
5 hours
Prof. Gianvito Martino (www.unisr.it/k-teacher/martino-gianvito/)
Email: martino.gianvito@hsr.it
5 hours

Tutorials: 6 different groups (15 hours each).
Tutors: Drs. Maurizio D'Antonio, Andrea Orsi, Celine Schaeffer, Thierry Touvier, Edgar Yoboue, Samuel Zambrano.

Each group will be given a scientific paper to read, understand, put in context, summarize and present to the whole class. The interactive lectures cover essential parts of the programme. Student will be asked about their content and significance in the final exam.
This part of the programme is meant also to show how scientific knowledge is created and disseminated, and to stimulate a critical attitude in our students.

Attending lectures and tutorials

We *encourage students to attend to all lectures*, as teachers will cover aspects that are absent or hard to find in textbooks. However, attending a lecture means much more than the mere physical presence in the class.
Students are encouraged to read about the topics that will be covered in class ***before*** attending lectures, so that they can raise questions and focus onto the most relevant or controversial issues. Topics are often tackled in a transversal, multidisciplinary manner.
Unfair behaviour, such as for example clocking for others or having others clocking for you, will not be tolerated*.* Students found to do so will not be admitted to the exam.
Attending tutorials is mandatory**.** Those failing to do so will be admitted to the exam only in exceptional cases and their final grade will be ≤20/30.

Type of subject: Biomedical discipline

Field: General discipline: Structure, function and regulation of cells and organisms, and the molecular bases of disease.

Course objectives:
Proceeding in parallel with Chemistry & Biochemistry and Genetics & Developmental Biology, the Cell and Molecular Biology course addresses the basic mechanisms of life, providing students with essential knowledge to understand the molecular bases of disease. The Course is in part systematic and in part problem oriented. Lectures cover the basic principles of cell architecture and function (molecular motors, organelles, mitosis and meiosis, apoptosis etc. see below) whilst in tutorials students are asked to read and present to the whole class scientific papers on topics that are essential part of the course.
Lectures and tutorials tackle problems of the past (origin of life and evolution), present (how novel imaging and 'omics' technologies impact our understanding of cells and living molecules) and future (new therapeutic strategies; socio-economic implications of novel biotechnologies) and are frequently connected to pathogenic mechanisms.
The course aims also at explaining the processes of scientific proof, publication and divulgation and fostering the communication skills of our students.

At the end of this course, students should be able to:
-Know the basic mechanisms that control the functions of molecules and cells in multicellular organisms
-Understand the bases of some human disease
-Design the principles of novel therapies to restore faulty cellular and molecular mechanisms
-Interpret new medical discoveries in terms of fundamental principles of cell and molecular biology
-Explain the molecular bases of diseases that affect cellular function or interactions
-Read, understand and evaluate a scientific paper
-Prepare and deliver a scientific presentation

Introduction to the Course of Molecular and Cell Biology
What is life? Where do we come from?
What are genes and how do they work?
How cells divide
How cells die
How cells know where they are and where to go
How they interact with the environment
How cells differentiate
Molecular bases of disease

Evolution, Darwin and the adaptable cell structure
Prokaryotes, eukaryotes, multicellular organisms
Mitochondria and other successful symbioses
The evolution of specialized tissues
Homeostasis

Membrane structure
Basic structure of cells
Architecture, composition, membrane proteins

Cytoskeleton and adhesion molecules
Adhesion molecules
Integrins

Tissue organization

Molecular motors and cell movements
Microtubules, microfilaments, molecular motors
Polarity
Axonal transport
Cytoskeleton
Muscular contraction
Cilia and flagella
Microvilli

Cell compartmentalization and intracellular transport
Specific signals target macromolecules to different organelles.
To and from the nucleus
Membrane translocation
Vesicular transport
Exo, endo, pino, phagocytosis
Transcytosis
Mechanisms of cell polarity

Proteostasis as a signal and pathogenetic mechanism
Protein folding, the second genetic code
Anfinsen's demonstration of the central dogma
Chaperones and protein evolution
Protein quality control
Protein degradation: Proteasomes, lysosomes and autophagy
Stress responses in development and disease
Mechanisms of proteotoxicity
Molecular and cellular aging
Conformational diseases: Prions, Amyloidoses, Alzheimer & Parkinson

Nuclear structure
Nuclear pores and transport
Nuclear subcompartments
Chromosome territories
Nuclear membrane and lamins

Chromatin
Nucleosomes
Histones and histone variants
Histone post-translational modifications, and enzymes that affect them.

Studying gene function & expression
Function prediction, genetic screens, tagged libraries, reporter genes
Reverse genetics, knock-out libraries, RNAi, complementation, epistasis & EMAP, microarray

Transcription in eukaryotes
RNA polymerases
Promoters & enhancers
General transcription factors
Specific transcription factors
Coactivators and corepressors
How nucleosome position and histone modifications affect gene expression

Gene expression decisions: Examples of transcriptional regulation and signal transduction
The NF-kB system
Liver specification

Retroviruses, the genome and RNAi
Retroviruses
miRNA, siRNA, heterocromatin and centromeres

Energy conversion
Mitochondria
Chloroplasts, genetics of mitochondria & plastids, evolution of electron transport chains

Cell signaling
Principles of cell communication
G protein coupled cell surface receptors
Enzyme coupled cell surface receptors
Unfolded Protein Response, determining cell shape.

Visualizing cells
Standard microscopy techniques
Advanced microscopy techniques

Manipulating proteins & DNA
Cloning, cDNA libraries, tagging, PCR.

Cell cycle 1
Phases and logics of the cell cycle
Experimental approaches
The Cell Cycle Control System
Engineering checkpoints
Significance of G phases
Molecular players: cyclins, cyclin-dependent kinases, Cdk inhibitors

Cell cycle 2
Regulatory strategies: cyclic degradation, post-translational modifocations, de novo synthesis
Checkpoints in G1 and G2. Preventing DNA re-replication
Cdc25 and regulation of M-Cdk activity
Rb and E2F: the restriction point and the Skp2 autoinduction loop
The DNA damage checkpoints. p53 and p14/19ARF
Cancer as a cell cycle disease.

Mitosis
Phases and mechanics
Cohesins and condensins
Centrosome, microtubules and the mitotic spindle
Role of motor proteins
Mechanisms of high-fidelity segregation: centromere and kinetochore
Mechanics of anaphase. Functions of chromokinesins. Cytokinesis
Drugs targeting mitosis and their clinical relevance.

Apoptosis - I
Functional significance: apoptosis vs. necrosis
Methods to study and monitor apoptosis and its functions in physiology and disease
Mechanisms: extrinsic vs. intrinsic apoptosis
Caspases: redundancy, efficiency, velocity
Death receptors and the Death-Inducing Signaling Complex (DISC)
Mitochondria as signal integrators and death executors
The Apoptosome
Mitochondrial Outer Membrane Permeabilization (MOMP)
The Bcl2 family: sensors/transducers, brakes, and effectors. Inhibitors of Apoptosis (IAPs).

Apoptosis - II
Apoptosis and the **i**ntegrated stress response
Stress specificity of BH3-onlies
The other functions of Bcl2 proteins: daily jobs of night killers
Mitochondria and ER cross-talk. ER calcium homeostasis and apoptosis
Regulation by the unfolded protein response and heat shock proteins
Proteotoxic apoptosis.

Apoptosis - III
Integrating Cell Cycle, Apoptosis, and Cancer
Apoptotic escapes from the cell cycle
Apoptosis from cytotoxic vs. genotoxic stress
Maladaptive thresholds: implications for cancer pathogenesis and therapy
Alternative forms of eukaryotic cell death: autophagy, paraptosis, pyroptosis.
Autophagy in physiology and disease.

Intercellular communication
How cells interact and talk to each other

Mechanisms of secretion
Release of proteins outside the conventional exocytic pathway: mechanisms and pathophysiology

Cytokine networks and inflammation
Damage and pathogen associated molecular patterns (DAMPS and PAMPS). The inflammosome and the origin of many chronic inflammatory disorders.

A historical perspective
The key experiments that changed molecular biology

Science and the future of human society
Towards a DNA driven world

COURSEBOOKS:

Textbooks

Alberts, Bray, et al. *Molecular biology of the cell*
Alberts, Bray, et al. *Essential cell biology* www.garlandscience.com/text**books**/081533480X.asp
Karp, *Cell Biology ED.John Wiley & Sons ISBN 978-0470505762*
Lewin, Cassimeris et al. *Cells*
Lodish et al. *Molecular cell biology* www.whfreeman.com/**lodish**4
Pollard & Earnshaw *Cell Biology* www.us.elsevierhealth.com/.../**book**/.../Cell-Biology/

As the above books contain all the essential notions, differing primarily in the style of presentation, we do not recommend one in particular and leave the choice to the students' tastes and opportunities.

Suggested readings

We encourage our students to read on science, medicine and society. Below are a few tips.

M. Perutz. *Is science necessary?* and/or *I wish I made you angry before.* Two lovely collections of essays on science and scientists.

J. Diamond. *Germs, guns and steel.* A brief summary of the last 13000 years of humans… Why did some civilisations prevail?

J. Monod *Chance and necessity.* A Nobel Prize winner in Medicine tackles fundamental philosophical issues

J.D. Watson. *The double helix.* Watson tells how DNA structure was solved, with the pace of a crime fiction novel.

P. Medawar. *Advice to a young scientist.* Some tips for those tempted to become a physician scientist.

USMLE REQUIREMENTS

Biology of cells

• adaptive cell responses and cellular homeostasis
• intracellular accumulations
• mechanisms of injury and necrosis
• apoptosis
• mechanisms of dysregulation
- cell biology of cancer, including genetics of cancer
- general principles of invasion and metastasis, including cancer staging
• cell/tissue structure, regulation, and function, including cytoskeleton, organelles, glycolipids, channels, gap
junctions, extracellular matrix, and receptors

Molecular biology

• gene expression: DNA structure, replication, exchange, and epigenetics
• gene expression: transcription
• gene expression: translation, post-translational processing, modifications, and disposition of proteins
(degradation), including protein/glycoprotein synthesis, intra/extracellular sorting, and processes/functions
related to Golgi complex and rough endoplasmic reticulum
• structure and function of proteins and enzymes
• energy metabolism

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GENETICS AND DEVELOPMENTAL BIOLOGY

Total Credits: 12
Total Hours: 96
Scientific Discipline Sector: BIO/13 – MED/03

Course Coordinator: Prof. Giorgio Casari
Email: casari.giorgio@hsr.it (www.unisr.it/k-teacher/casari-giorgio/)
(Receiving Hour to be scheduled by email)
35 hours

Collaborators:
Dr. Luca Rampoldi
Email: rampoldi.luca@hsr.it
35 hours

Tutorials: 5 groups for 15 hrs tutorials each.
Tutors: Drs. Maltecca Francesca (www.unisr.it/k-teacher/maltecca-francesca/), Croci Laura, Cassina Laura.

Topics covered by the course

Mendelian and non-Mendelian genetics
Course introduction_The Human Genome Project.
Mendelian Inheritance (I)_Definition of gene, locus, allele. The first Mendel's law.
Mendelian Inheritance (II)_The second and third Mendel's laws. Segregation and independent assortment.
Exceptions to Mendelian inheritance_Incomplete dominance, co-dominance. Penetrance and expressivity.
Exceptions to Mendelian inheritance_Sex-related effects. Pleiotropy. Pedigree design_2
Chromosomes/mitosis/meiosis_Chromosome structure (telomeres, centromere) and segregation during mitosis and meiosis. Crossing-over.
Chromosome structure. Chromatin structure and function. Histones and nucleosomes. Chromatin remodelling.
Recombination/mapping (I)_Molecular basis of recombination.
Recombination/mapping (II)_Recombination as a measure of genetic linkage. Mapping in bacteria and Drosophila.
Non-Mendelian inheritance (I)_Gene conversion.De-novo mutations.Mosaicism (X-inactivation).
Non-Mendelian inheritance (II)_Epigenetic control of gene expression. Imprinting.
Dynamic mutations (I)
Dynamic mutations (II)
Mitochondrial Inheritance
Chromosome mutations
Cytogenetics
CGH
DNA/RNA structure
Transcription/translation_Gene structure and transcription. The genetic code, structure of tRNA and ribosome.
Translation. Mechanisms of splicing
Point mutations and repair_Spontaneus and induced mutations. Repair of mutations and recombination.
Nonsense mediated decay
Complex mutations/polymorphisms/CNVs
Mutation detection techniques
Deep sequencing

Effect of mutations (gain/loss-of-function)_Gain-of-function and loss-of-function effect of mutations. Negative dominance.
Effect of mutations (ESE)
Genetic markers_DNA markers (microsatellites, SNPs). Genetic maps. Haplotype maps (the HaploMap project).
Genetic Mapping (I)_Linkage analysis in human pedigrees. LOD score calculation.
Genetic Mapping (II)_Linkage analysis in human pedigrees. Haplotype analysis.
Probability_Bayes' theorem, application for risk calculation in human pedigrees.
Examples of linkage/positional cloning
Examples of functional cloning
Quantitative Trait Loci
Population genetics_1
Population genetics_2
Molecular Evolution (I)
Non-parametric linkage analysis/association studies
Jolly

Embryology and developmental biology
This part of the course will cover the essentials of normal human development and of its main aberrations, providing information on some recognizable patterns of human malformation.

COURSEBOOKS:

Human Molecular Genetics 3rd Edition,
Tom Strachan, Andrew Read **-** ED: Garland Science - ISBN:0-8153-4184-9

Langman's Medical Embryology / Edition11,
Thomas W.Sadler, ED. Lippincott Williams & Wilkins ISBN: -13: 9780781790697

USMLE REQUIREMENTS
Human development and genetics
• principles of pedigree analysis
- inheritance patterns
- occurrence and recurrence risk determination
• population genetics: Hardy-Weinberg law, founder effects, mutation-selection equilibrium
• principles of gene therapy
• genetic testing and counselling
• genetic mechanisms

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INSTRUCTORS' CVs

Statistics and Bioinformatics

Elia Biganzoli is qualified as Full Professor in Medical Statistics (MED/01) with 2012 ASN.
• Occupation or position held Professor of the courses of "Medical Statistics" and "Statistics I and II" for the Faculty of Medicine, Master, Specialization and Doctorate School in Medical Statistics of the University of Milan.
Clinical Epidemiology modules in English for University Vita Salute and Humanitas MD courses.
• Main activities and responsibilities Teaching activity to undergraduate and graduate students from different disciplines (Medicine, Biology, Pharmacy, Biotechnology, Veterinary, Natural Sciences)

Federica Cugnata Ph.D. in Statistics, L. Bocconi University, Milan, Italy
Research Fellow, University Centre of Statistics for Biomedical Sciences, Vita Salute San Raffaele University, Milan. Supervisor: Professor Clelia Di Serio.
Teaching experience: *September 2009 - July 2015*
Statistics. Teaching assistant and tutorial activity, L. Bocconi University, Milan.
Co-author of several publications and conference presentations.

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Medical Physics

Tommaso Tabarelli de Fatis is Associate Professor of Physics – Università di Milano Bicocca1.
Main responsibilities in coordination of research:
- *2015-present*: Coordinator of Italy (INFN) contribution to maintenance & operation of the electromagnetic calorimeter (ECAL) of the CMS detector at CERN LHC;
- *2013-present:* Coordinator of Milano-Bicocca research activity in the CMS experiment at CERN LHC (under INFN Grant CNSI - National coordinator M.Pastrone/R.Tenchini); member of CMS Institution Board and ECAL Institution and Finance Boards (IB and FB);
- *2011-2012:* Project Leader of the Electromagnetic Calorimeter (ECAL) of the CMS experiment; Member of the CMS Management Board and Executive Board; Chair of the ECAL Steering Committee; *ex-officio* member of the CMS CB and ECAL IB/FB.
- *2009-2010:* Co-leader of the CMS ECAL Detector Performance Group; *ex-officio* Member of the ECAL Steering Committee.
- *2009-present:* Member of the CMS ECAL Editorial Board.
- *2007-2008:* CMS ECAL calibration manager and group convenor.
- *2014-present:* PI of the i-MCP R&D project on picosecond timing of high-energy photons (INFN grant CSN V); co-coordinator of the Fast-Timing Working group in the CMS collaboration;
- *2006:* PI – R2PC R&D experiment (INFN grant of CSN V).
- *2003-2005:* Local PI – CaPiRe R&D experiment (INFN grant of CSN V).

Giovanni Mauro Cattaneo
Education:
- M.Sc. Physics (Nuclear Physics), University of Milan 1981
- Qualified expert in Radioprotection (3rd level), 1983
Work Experience
- Senior Medical Physicist, Servizio di Fisica Sanitaria, Ospedale San Raffaele (Scientific Institute and Hospital), Milan, Italy, from 1987
Teaching Experience
- 2015 Physics. MD Program, University San Raffaele

2014-2017, "abilitazione scientifica nazionale alla funzione di professore universitario di seconda fascia nel settore congressuale 02/B3"
- Co-author of 81 full papers indexed on "medicine database".

Samuel Zambrano
EDUCATION / TRAINING
2003**:** B. Sc. Physics, Universidad Complutense, Madrid (Spain)
2006: MAS in Computer Science and Mathematical Modeling, Universidad Rey Juan Carlos, Madrid (Spain).
2007: Ph. D. Physics, Universidad Rey Juan Carlos, Madrid (Spain).
POSITIONS HELD
2003-2011: Universidad Rey Juan Carlos, Madrid (Spain). Department of Physics. Nonlinear Dynamics, Chaos
and Complex Systems Group.
- 2003-2007 Ph. D. student.
- 2007-2009 Assistant Professor.
- 2009-2011 Associate Professor.
Research and teaching in the fields of Chaos, Complex Systems and Physics.
2011-present: San Raffaele University and Scientific Institute (SRSI). Division of Genetics and Cell Biology.
- March 2011- March 2012 Postdoctoral fellow (SRSI Postdoctoral Program).
- March 2012- March 2014 Marie Curie IEF Research Fellow.
- March 2014-present. Postdoctoral fellow.
Research: Quantitative and Systems Biology, with emphasis in the mathematical modeling and analysis of the
dynamics of the transcription factor NF-□B.
TEACHING EXPERIENCE
2003-2011: UNIVERSIDAD REY JUAN CARLOS, MADRID (SPAIN)
2011-2015: SAN RAFFAELE UNIVERSITY, MILAN (ITALY)
Tutor for "Systems Biology" in the Molecular and Cell Biology Course coordinated by Prof. Roberto Sitia,
Medical School (2013/2014, Italian, 2014/2015, International).

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Chemistry and Biochemistry

Massimo Degano
Education
1996-1999 - Research Associate, Department of Molecular Biology, The Scripps Research Institute, La Jolla, Ca., USA
1993-1996 - Research Associate, Department of Biochemistry, Albert Einstein College of Medicine of Yeshiva University, Bronx, NY, USA
1992 - Doctoral Degree in Chemistry, University of Padua, Italy
Professional Experiences
2005-today Lecturer in Chemistry and Biochemistry, International MD Program, San Raffaele Medical School, Vita-Salute San Raffaele University, Milan, Italy
2004-today Lecturer in Molecular and Cellular Biology, Vita-Salute San Raffaele Medical School, Milan, Italy
2004-today Lecturer in Chemistry and Introductory Biochemistry, Vita-Salute San Raffaele Medical School, Milan, Italy
2001-today Head of Biocrystallography Unit, Scientific Institute San Raffaele, Milan, Italy
1996-1999 Research Associate, Department of Molecular Biology, The Scripps Research Institute, La Jolla, CA, USA

1993-1996 Research Associate, Department of Biochemistry, Albert Einstein College of Medicine of Yeshiva University, Bronx, NY, USA

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Medical Humanities

Michael John
Michael John has been working in the field of *biomedical communication skills* for almost 20 years. During that time he has taught general communication skills, including medical writing and public speaking, at both undergraduate and postgraduate level. More specifically, his undergraduate courses focus on doctor-patient communication and peer-to-peer communication. Furthermore, he has worked extensively alongside clinicians, surgeons, and research scientists on the editing of well over 200 biomedical manuscripts, thereafter published in impact-factor journals.

William Cooke
Education
1. Lord Williams' School, Thame, Oxon (1966-73)
2. St. Edmund Hall, Oxford University (1973-1976)
   Open Exhibition and M.A. in English Language and Literature.
   Played in the Oxford University Rugby Football Club Team.

Professional Experiences:
Adjunct Professor at the Faculty of Medicine of the University of Pavia post lauream managing education. (2001-).
Founder and onwer of Map Training (1999-)
Adjunct Professor, responsible for the course of English at the Faculty of Psychology at Vita-Salute San Raffaele University (1996-)

Maria Grazia Strepparava
01.11.2002- Associate Professor of Clinical Psychology at State University of Milan-Bicocca

Antonio Siccardi
Education

1975	Specialist in Hematology (Magna cum laude) Medical School, University of Pavia, Italy
1968	MD Degree (Magna cum laude) Medical School, University of Pavia, Italy

Professional experiences

2006-today	Deputy Professor, History of Molecular Genetics, Faculty of Biotechnology, Università Vita Salute San Raffaele, Milan, Italy
2000-2008	Deputy Professor, Genetics, Faculty of Psycology, Università Vita Salute San Raffaele, Milan, Italy
1998-today	Visiting Investigator, DIBIT, San Raffaele Scientific Institute, Milan, Italy
1998-2009	Visiting Professor, Laboratory of Tumor Biology and Immunology, NCI, NIH, Bethesda MD. USA (1 semester in 1998 and 1 semester in 1999); Institute of Virology, Technical University, Monaco, Germania (1 semester in 2000 and 1 semester in 2001); Robert Koch Institute, Berlin (1 semester in 2007 and 1 semester in 2008)
1991-1998	Coordinator of HIV/AIDS basic Research, San Raffaele Scientific Institute, Milano
1990-1994	Operative Director of DIBIT, San Raffaele Scientific Institute, Milano
1984	Visiting Professor, Service de Immunochimie Analitique, Institut Pasteur, Paris
1982-today	Full Professor, Dipartmento di Biologia e Genetica per le Scienze mediche, University of Milano, Italy. Teaching several courses; currently, Gene

	Therapy in the Faculty of Medical Biotechnology and Molecular Medicine
1980-1982	Full Professor, Istituto di Biologia generale, University of Rome, Italy
1974-1980	Deputy Professor, Microbiology, University of Pavia, Italy
1973-1980	Assistant Professor, Istituto di Genetica, University of Pavia, Italy
1965-1973	Visiting Investigator/Post Doctorate Fellow, Hammersmith Hospital, London; Medical Microbiology, Stanford University Medical School, Stanford, Calif. USA; Lister-Guinnes Unit, Lister Institute for Preventive Medicine, London; Service de Genetique Cellulaire, Institut Pasteur, Paris; Laboratory of Biochemistry, NHLI, NIH, Bethesda, MD. USA; Istituto di Biologia Generale, Università di Pavia; Department of Biochemistry, University of Washington, Seattle, WA. USA.

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Cell and Molecular Biology

Anna Rubartelli

Present position and affiliation: Director of the Cell Biology Unit - IRCCS AOU San Martino - IST National Cancer Research Institute Largo Rosanna Benzi 10, 16132 Genova, ITALY

Research and Professional Experience

1999-2003 Group Leader of the Protein Biology Unit, IST, Genova, Italy. 2003-to date: Director of the Cell Biology Unit, IST (from 2011: IRCCS AOU San Martino - IST), Genova, Italy. Research topics include: 1. inflammation and redox: role of redox remodelling in the development and outcome of different inflammatory processes; 2. characterization of the mechanism of secretion of interleukin- 1ß by monocytes in health and autoinflammatory/autoimmune diseases. 3. inflammation and cancer, role of redox and DAMPs of the microenvironment on tumor progression.

Teaching

1999, 2002, 2004, 2009: Member of jury of Doctoral Degree (PhD) theses in France (Centre d'Immunologie de Marseille-Luminy, University of Montpellier, University of Toulouse) and Sweden (Karolinska Institut, Stockholm) 2011-to date: Professor of Cell & Molecular Biology, International MD program, Università Vita-Salute San Raffaele, School of Medicine & Surgery.

Simone Cenci

Education

2000	Specialization in Gerontology and Geriatrics, University of Perugia, Italy
1995	MD Degree, University of Perugia, Italy

Professional experiences

2015-today	Head of Unit, San Raffaele Scientific Institute, Milan, Italy
2006-2015	Staff Scientist and Group leader, San Raffaele Scientific Institute, Milan, Italy
2003-2006	Junior Researcher, Molecular immunology, San Raffaele Scientific Institute, Milan, Italy
1998-2003	Research Associate, Division of Bone and Mineral Diseases, Internal Medicine, Washington University, St. Louis, MO, USA

Research grants (as Principal Investigator)

2014-2014	Italian Association for Cancer Research (AIRC Investigator Grant)
2011-2013	Multiple Myeloma Research Foundation (MMRF)
2010-2015	ian Association for Cancer Research (Special Program 5×1000)
2010-2013	Italian Ministry of Health (Giovani Ricercatori)
2009-2011	European Calcified Tissue Society (Career Establishment Award)

Honors and awards

2014	Abilitazione Scientifica Nazionale (Italian Ministry of University and Research) as Professor of Internal Medicine, Pathology and Molecular and Applied Biology
2011	Multiple Myeloma Research Foundation (MMRF) Senior Research Award
2009	European Calcified Tissue Society (ECTS) Career Establishment Award, Wien,

	Austria
2009	Premio Giovane Ricercatore, Società Italiana Osteoporosi, Metabolismo Minerale e Malattie dello Scheletro (SIOMMMS), Turin, Italy
2000	Società Italiana Osteoporosi (SIOP) Young Investigator Award, Padova, Italy
2000	Young Investigator Award, American Society for Bone and Mineral Research, Toronto, Canada
1998	American Society for Bone and Mineral Research (ASBMR) Young Investigator Award, San Francisco, USA

Eelco van Anken

Education

2003	PhD Chemistry, Utrecht University, The Netherlands
1997	MSc Medical Biology, Utrecht University, The Netherlands

Professional experiences

2010-today	Group Leader, San Raffaele Scientific Institute, Milan, Italy
2006-2010	Postdoctoral Fellow, University of California, San Francisco, USA
2003-2005	Junior Researcher, Utrecht University, The Netherlands

Honors

2013-2016	"My First AIRC Grant" (Associazione Italiana della Ricerca sul Cancro)
2010-2015	Armenise-Harvard Career Development Award
2006-2008	Rubicon Fellowship, Netherlands Organization for Scientific Research (NWO)
2003-2004	Biannual Award "Zilveren Zandloper" for the best PhD thesis in biotechnology, Netherlands Society for Biotechnology
2003	Best PhD Publication Award, Bijvoet Center for Biomolecular Research, Utrecht University, The Netherlands

Tiziana Anelli, PhD.

I got a degree in Biological Sciences at the University of Milan in 1999, and in 2003 the PhD in Immunology at the University of Ancona, during which I isolated and described a protein, identified as key element in Protein Quality Control in the Secretory Pathway. Since 2006, I work as a Post Doc in the Protein Transport and Secretion laboratory, San Raffaele Scientific Institute Milan, in 2008 I started teaching in Vita-Salute University. Since 1st October 2016, I'm hired as Researcher at San Raffaele Scientific Institute Milan. In 2012 I became am a member of the ABCD and since 2014 member of the Editorial Board of BioMed Research International. I was one of the organizers of the Retreat of the OSR Division of Genetics and Cell Biology in 2014 and 2015. During my career I got interested in protein folding and aggregation in the secretory pathway, identifying new steps of quality control and describing how this processes are linked to Calcium signaling from the Endoplasmic Reticulum.

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Genetics and Developmental Biology

Luca Rampoldi

Education

1998 PhD in Genetics, Università degli Studi of Padua

1994 Master's Degree with honor, Università degli Studi of Milan

Professional Experience

2009- Associate Telethon Scientist, Head of Research Group, Telethon Dulbecco Institute, DIBIT San Raffaele Scientific Research Institute

TIMETABLE

Please note that changes may always occur in the daily lesson schedule.
Please refer to the online timetable for the latest version.

International MD Program A.Y. 2016/2017 Year 1

TIME	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
	26/09/2016	**27/09/2016**	**28/09/2016**	**29/09/2016**	**30/09/2016**
09-11			Humanities MJ	Humanities MJ	Humanities MJ
11-13	11-12 Humanities MJ	Humanities MJ	Chemistry and Biochemistry MD	Chemistry and Biochemistry MD	Statistics & Bioinformatics EB
14-16	Chemistry and Biochemistry MD			Statistics & Bioinformatics CDS	Statistics & Bioinformatics EB
16-18					

TIME	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
	3-Oct-16	**4-Oct-16**	**5-Oct-16**	**6-Oct-16**	**7-Oct-16**
09-11			Chemistry and Biochemistry MD	Humanities MJ	Humanities MJ
11-13	Chemistry and Biochemistry MD	Humanities MJ	Humanities MJ	Medical Physics TTDF Introduction + scalars and vectors	Medical Physics SZ Kinematics
14-16	Humanities MJ	Statistics & Bioinformatics EB	Precourse test in SLM	Precourse	Precourse
16-18		16:00-19:00 ITALIAN	Precourse test in SLM	16:00-19:00 ITALIAN	

TIME	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
	10-Oct-16	**11-Oct-16**	**12-Oct-16**	**13-Oct-16**	**14-Oct-16**
09-11	Humanities AS	Humanities MJ IT room	Chemistry and Biochemistry MD	Humanities AS	Humanities MJ
11-13	Chemistry and Biochemistry MD	Statistics & Bioinformatics EB	Statistics & Bioinformatics CDS	Humanities AS	
14-16	Precourse	Statistics & Bioinformatics EB	Medical Physics SZ Statics and levers	Statistics & Bioinformatics CDS	Precourse
16-18	Medical Physics SZ Forces	16:00-19:00 ITALIAN		16:00-19:00 ITALIAN	

TIME	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
	17-Oct-16	**18-Oct-16**	**19-Oct-16**	**20-Oct-16**	**21-Oct-16**
09-11	Humanities AS	Humanities MJ	Humanities AS	Humanities MJ	Statistics & Bioinformatics CDS
11-13	Chemistry and Biochemistry MD	Chemistry and Biochemistry MD	VIVA! Resuscitation course	Medical Physics TTDF Fluids: static	Medical Physics TTDF Fluids: static
14-16	Statistics & Bioinformatics Lab 1 Group A PR; SPSS Lab 1 Group B- SLM FC		Statistics & Bioinformatics CDS	Statistics & Bioinformatics Lab 1 Group B PR; SPSS Lab 1 Group A- SLM FC	
16-18	Medical Physics SZ Energy / momentum	16:00-19:00 ITALIAN		16:00-19:00 ITALIAN	

TIME	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
	24-Oct-16	**25-Oct-16**	**26-Oct-16**	**27-Oct-16**	**28-Oct-16**
09-11	Humanities AS	10-13 Constitutional Referendum	Chemistry and Biochemistry MD	Humanities AS	Statistics & Bioinformatics CDS
11-13	Chemistry and Biochemistry MD		Humanities MJ	Medical Physics TTDF Fluids: dynamics (ideal)	Medical Physics TTDF Fluids: dynamics (real)
14-16	Statistics & Bioinformatics Lab 2 Group A- PR; SPSS Lab 2 Group B- SLM FC	Statistics & Bioinformatics Lab 2 Group B- PR ; SPSS Lab 2 Group A SLM FC		Medical Physics ese group B SZ	
16-18	Medical Physics ese group A SZ	16:00-19:00 ITALIAN		16:00-19:00 ITALIAN	

TIME	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
	31-Oct-16	**1-Nov-16**	**2-Nov-16**	**3-Nov-16**	**4-Nov-16**
09-11	Holiday	Holiday		Chemistry and Biochemistry MD	Humanities MJ
11-13			Chemistry and Biochemistry MD	Medical Physics TTDF Fluids: transport in fluids + examples	Medical Physics SZ
14-16			Humanities MJ	Humanities MJ	Chemistry and Biochemistry MD
16-18			Statistics & Bioinformatics CDS	16:00-19:00 ITALIAN	Statistics & Bioinformatics Lab 3 Group A- PR

TIME	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
	7-Nov-16	**8-Nov-16**	**9-Nov-16**	**10-Nov-16**	**11-Nov-16**
09-11	Humanities MS	Humanities MS	Chemistry and Biochemistry MD	Statistics & Bioinformatics CDS	Statistics & Bioinformatics CDS
11-13	Chemistry and Biochemistry MD	Humanities AS	Medical Physics SZ	Statistics & Bioinformatics SPSS Lab 3 Group B SLM FC	Chemistry and Biochemistry MD
14-16	Medical Physics ese group B SZ	Medical Physics ese group A SZ	Humanities AS	Chemistry and Biochemistry MD	Statistics & Bioinformatics Lab 3 Group B- PR; SPSS Lab 3 Group A SLM FC
16-18		16:00-19:00 ITALIAN		16:00-19:00 ITALIAN	

TIME	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
	14-Nov-16	**15-Nov-16**	**16-Nov-16**	**17-Nov-16**	**18-Nov-16**
09-11	Humanities AS	Humanities AS	Chemistry and Biochemistry MD	Humanities AS	Medical Physics SZ
11-13	Medical Physics ese group A SZ	Humanities AS	Medical Physics SZ	Medical Physics SZ	Medical Physics MC
14-16	Statistics & Bioinformatics Lab 4 Group A PR	Medical Physics ese group B SZ	Statistics & Bioinformatics Lab 4 Group B- PR	Statistics & Bioinformatics CDS	
16-18		16:00-19:00 ITALIAN		16:00-19:00 ITALIAN	

TIME	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
	21-Nov-16	**22-Nov-16**	**23-Nov-16**	**24-Nov-16**	**25-Nov-16**
09-11		Statistics & Bioinformatics Test SLM	Chemistry and Biochemistry MD	Statistics & Bioinformatics CDS	Medical Physics MC
11-13	Chemistry and Biochemistry MD	Statistics & Bioinformatics Test SLM		Medical Physics MC	Statistics & Bioinformatics PR
14-16	Medical Physics ese group B SZ		Medical Physics ese group A SZ	Statistics & Bioinformatics Lab 5 Group B PR	
16-18		16:00-19:00 ITALIAN		16:00-19:00 ITALIAN	

TIME	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
	28-Nov-16	**29-Nov-16**	**30-Nov-16**	**1-Dec-16**	**2-Dec-16**
09-11		Humanities MS	Chemistry and Biochemistry MD	Chemistry and Biochemistry MD	Medical Physics MC
11-13	Chemistry and Biochemistry MD	Chemistry and Biochemistry MD		Medical Physics MC	
14-16	Statistics & Bioinformatics Lab 5 Group A PR		Medical Physics ese group B SZ	Statistics & Bioinformatics PR	
16-18	Medical Physics ese group A SZ	16:00-19:00 ITALIAN		16:00-19:00 ITALIAN	

TIME	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
	5-Dec-16	**6-Dec-16**	**7-Dec-16**	**8-Dec-16**	**9-Dec-16**
09-11	Chemistry and Biochemistry MD		Holiday	Holiday	Holiday
11-13	Statistics & Bioinformatics PR	Statistics & Bioinformatics Lab 6 Group B PR			
14-16					
16-18					

TIME	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
	12-Dec-16	**13-Dec-16**	**14-Dec-16**	**15-Dec-16**	**16-Dec-16**
09-11		Humanities MS	Humanities MS		Medical Physics AE
11-13	Statistics & Bioinformatics Lab 6 Group A PR		Statistics & Bioinformatics PR	Medical Physics AE	
14-16				Statistics & Bioinformatics Lab 7 Group A PR	
16-18		16:00-19:00 ITALIAN		16:00-19:00 ITALIAN	

TIME	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
	19-Dec-16	**20-Dec-16**	**21-Dec-16**	**22-Dec-16**	**23-Dec-16**
09-11	Chemistry midterm?	Medical Physics AE	Chemistry and Biochemistry AC	Holiday	Holiday
11-13		Chemistry and Biochemistry AC	Statistics & Bioinformatics Lab 7 Group B PR		
14-16					
16-18		16:00-19:00 ITALIAN			

TIME	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
	26-Dec-16	**27-Dec-16**	**28-Dec-16**	**29-Dec-16**	**30-Dec-16**
09-11	Holiday	Holiday	Holiday	Holiday	Holiday
11-13					
14-16					
16-18					

TIME	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
	2-Jan-17	**3-Jan-17**	**4-Jan-17**	**5-Jan-17**	**6-Jan-17**
09-11	Holiday	Holiday	Holiday	Holiday	Holiday
11-13					
14-16					
16-18					

TIME	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
	9-Jan-17	**10-Jan-17**	**11-Jan-17**	**12-Jan-17**	**13-Jan-17**
09-11		Chemistry and Biochemistry AC			
11-13	Statistics & Bioinformatics PR	Statistics & Bioinformatics Lab 8 Group A PR; SPSS Lab4 Group A SLM FC	**Humanities Mandatory Midterm 1**	Medical Physics AE	Statistics & Bioinformatics Lab 8 Group B PR; SPSS Lab4 Group B SLM FC
14-16	Chemistry and Biochemistry AC			Chemistry and Biochemistry AC	
16-18					

TIME	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
	16-Jan-17	**17-Jan-17**	**18-Jan-17**	**19-Jan-17**	**20-Jan-17**
09-11		Chemistry and Biochemistry AC			Chemistry and Biochemistry AC 20
11-13				Chemistry and Biochemistry AC	Statistics & Bioinformatics TEST SLM
14-16	Chemistry and Biochemistry AC		Chemistry and Biochemistry AC		Statistics & Bioinformatics TEST SLM
16-18					

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UNIVERSITÀ VITA-SALUTE SAN RAFFAELE

STUDENT GUIDE

FACULTY OF MEDICINE AND SURGERY

MASTER'S DEGREE COURSE
INTERNATIONAL MD PROGRAM

Academic Year 2016/2017

Academic Calendar

Notice from the University Committee of the enhancement of quality

on the questionnaires for the evaluation of courses and teaching

Vita-Salute San Raffaele University considers a continuous process of monitoring and evaluating the quality of the educational mission, also in terms of planning, as essential for achieving excellence in higher education and research.

UniSR Students can assess the correspondence between the teaching quality offered and their expectation. That is very important to improve teaching and training and develop successful strategies.

At the end of each semester, students' opinions are collected through *evaluation questionnaires*. Filling in the questionnaire is compulsory, according to the guidelines published in November 2013 by ANVUR (the National Agency for the Evaluation of the University and Research Systems). IT techniques have been implemented to speed up questionnaire collection and processing. Anonymity is fully guaranteed.

Filling in the questionnaires is the necessary condition which allows a student to register for the exams. After collection, data are firstly conveyed to the Master's degree course Coordinators and to the Deans of the Faculties and finally to the University Evaluation Commission for the analysis of data.

The data collected will be a fundamental source to spot every sort of issue, thus for future improvement.

In short, filling in the questionnaires represents a key moment of University life in which students take a role of responsibility together with academia and University organization structures in the continuous process of improvement and innovation which makes it possible for our University to rank among the top Universities in the nation and Europe.

We really appreciate all respondents' valuable time to fill up the questionnaires, especially during intense study times and we would like to raise students' awareness of the importance of their contribution by carrying out this task responsibly and sharing the same objectives together with this Institution.

The President of the University Committee
for the enhancement of quality

YEAR 2

- Human Morphology
- Histology
- Physiology
- Principles of Pharmacology
- Introduction to Surgery

HUMAN MORPHOLOGY
Total Credits: 21
Lessons: 165 h
Practicals: 16 h

SSD BIO/16, MED/36, MED/37, MED/33

Course Coordinator: Ottavio Cremona
Email: cremona.ottavio@unisr.it

Professors:
Ottavio Cremona Email: cremona.ottavio@hsr.it
(www.unisr.it/k-teacher/cremona-ottavio/)
Andrea Falini Email: falini.andrea@hsr.it
(www.unisr.it/k-teacher/falini-andrea/)
Filippo Casoni Email: casoni.filippo@hsr.it
(www.unisr.it/k-teacher/casoni-filippomarco/)
Antonio Esposito Email: esposito.antonio@hsr.it
(www.unisr.it/k-teacher/esposito-antonio/)
Laura Mangiavini Email: mangiavini.laura@hsr.it
Giangiacomo Consalez Email: consalez.giangiacomo@hsr.it
(www.unisr.it/k-teacher/consalez-giangiacomogermano/)
Marco Vitale Email: marco.vitale@unipr.it
Angelo Lombardo Email: lombardo.angelo@hsr.it
(www.unisr.it/k-teacher/lombardo-angeloleone/)
Fabrizio Michetti Email: fabrizio.michetti@unicatt.it

Goals
Aim of the course is to provide the morphological basis of the various functions and pathologies of the human body. Approaches to morphological education include the acquisition of foundational knowledge in microscopic observation and in dissection with the aim of correlating structure with function and pathology. Our course emphasizes clinical aspects by integrating radiologic imaging techniques, effective peer teaching and the use of electronic resources to facilitate the understanding and memorization of morphological data. The study of tissue and organ architecture by different microscopic techniques is structured to provide the structural basis for tissue and organ function; principles of tissue development and homeostasis, cellular turnover, isolation and properties of stem cells will be given as a priming for tissue pathology.
Pre-Requisites
Although there are no formal restrictions to the access to the final exam, we strongly advise students to have solid foundations in:

- Histology
- Cell Biology and Cytology

Evaluation
Final marks will be the results of in-course and end-of-course exams, including:
- A multiple-choice exam on "Dynamics of Movement"
- A multiple-choice exam on "Splanchnology"
- A multiple-choice exam on "Neuroanatomy"

Program

1st semester:

MORPHOLOGY OF ORGAN SYSTEMS

- *Support and Movement*
  - *i. Skin*
  - *ii. Skeletal Tissues*
    - **1.** Histology of the skeletal muscle
    - **2.** Histology of Muscle, Bone & Cartilage
    - **3.** Bone remodeling
    - **4.** Dynamics of Movement
      - Upper limb
      - Lower limb
      - Thorax
      - Rachis

- *Transportation & Defense*
  - *i. Blood*
    - **1.** Blood.
    - **2.** Hematopoiesis
  - *ii. Cardiovascular system*
    - **3.** Heart.
    - **4.** Structure of Vessels
    - **5.** Major Vessels. General Organization.
    - **6.** Major Vessels.
      - Head and neck.
      - Thorax.
      - Abdomen.
  - *iii. Lymphatic system*
    - **7.** Overview and structure of the system
    - **8.** Major lymphatic vessels
  - *iv. Immune system*
    - **9.** General overview of the Immune system
    - **10.** Immune organs (MV)

- *Respiratory System*
  - **1.** Nasal Cavity & pharynx
  - **2.** Larynx, trachea & bronchi
  - **3.** Lung & Pleura

- *Digestive System*
  - **1.** Oral Cavity.
  - **2.** Teeth
  - **3.** Esophagus & topography of the mediastinus
  - **4.** Peritoneum
  - **5.** Stomach
  - **6.** Small Intestine
  - **7.** Large intestine & rectum
  - **8.** Gut stem cells
  - **9.** Liver
  - **10.** Gallbladder & Pancreas

- *Urinary System*
    1. Kidney
    2. Urinary tract
    3. Topography of the abdomen.
    4. Topography of the pelvis
    5. Perineum

- *Endocrine System*

    1. Pituitary gland
    2. Thyroid & Parathyroid glands
    3. Adrenal glands
    4. Topography of head and neck

- *Reproductive Systems*

  i. Male reproductive system

    1. Testis
    2. Reproductive tract
    3. Accessory reproductive glands & Supporting structures

  ii. Female reproductive system

    4. Ovaries & Uterine tubes (OC)
    5. Uterus & placenta (OC)
    6. Vagina, Vulva & Breast (OC)

Human Morphology book list

Suggested textbooks (kindle versions are strongly recommended and indicated with ASIN numbers):

Moore - Clinically Oriented Anatomy by Keith L. Moore, Anne M. R. Agur, Arthur F. Dalley **ISBN:** 978-1451119459

Atlas of Human Anatomy by Frank H. Netter **ISBN**:978-1455704187

Neuroanatomy: An Atlas of Structures, Sections, and Systems by D.H. Haines. **ISBN**: 9781605476537

Neuroanatomy: Text and Atlas by John Martin **ISBN**: 978-0071603966

Reference textbooks:

Gray's Anatomy: The Anatomical Basis of Clinical Practice by Susan Standring. ISBN: 978-0443066849

Neuroanatomy through Clinical Cases by Hal Blumenfeld **ISBN:** 978-0878930586

Atlas of Anatomy (Thieme Anatomy) by Anne Gilroy, Brian MacPherson, Lawrence Ross and Michael Schuenke **ISBN:** 978-1604060621

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HISTOLOGY
A.Y. 2016/2017

Total Credits: 9 - SSD: BIO-17

Coordinator: Luigi Naldini

Professors: Luigi Naldini (www.unisr.it/k-teacher/naldini-luigi/),
Angelo Lombardo (www.unisr.it/k-teacher/lombardo-angeloleone/)

Tutors: Alessio Cantore, Andrea Raimondi, Angela Gritti, Renato Ostuni

Course Objectives:

The aim of this course is to provide a comprehensive understanding of structure and composition of basic tissue types and their contribution to organ architecture. The course will start with the morphological description of tissues, accompanied by direct observation of histological specimens at the optical microscope, during practical sessions. Particular emphasis will be given to histogenetic mechanisms and functional aspects that characterize the differentiated state in different tissues and to cellular and extra-cellular specializations, interactions among different cell types and the tissue microenvironment. Moreover, recent updates on tissue homeostasis, stability/reversibility of the differentiated state, tissue turnover, aging, regeneration and functional aspects of the different stem cell compartments will also be covered. Also related, we will touch upon the main methods of research and experimental models and the possible therapeutic implications of regenerative medicine, including cell and gene therapy.

Books:
Wheater – Functional histology – A text and color atlas
Young B., O'Dowd G., Woodford P.
Elsevier
ISBN: 9780702047473

Histology: A Text and Atlas, with Correlated Cell and Molecular Biology, 7th Edition
Michael H. Ross, Wojciech Pawlina.
Wolters Kluwer
ISBN: 9781451187427

Langman's Medical Embryology. Thirteenth Edition
Sadler T. W.
Wolters Kluwer
ISBN: 9781451113426

Assessment
Oral exam composed of:
1. An interview with one of the professors on one or more topics of the program
2. Microscopy test on one or more histological specimens.

PROGRAM:

LN 1 *Introduction and method of study:*

- Ontogenesis and maintenance of the differentiated states: Stability and Plasticity
- Tissue dynamics at various stages: embryological development, pre- and post-natal growth, homeostasis and turnover in adult life, ageing and regeneration

AC 1

- Tissue preparations for optical microscopy, dyes and histological / histochemical analysis, immunofluorescence
- Flow cytometry

AL

- Cell cultures, cell marking and lineage tracing *in vivo*, cell transplants

LN 1 *Epithelial Tissue:*

- Embryological origin and histogenetic mechanisms
- Architecture, cellular composition and functions
- Epithelial classifications and cellular specialization
- Cellular polarity, cell-to-cell communication and adhesion, basal membranes
- Trophism, differentiation and cellular turnover, regeneration
- Glands and regulated secretion

LN 2 *Connective Tissue:*

- Embryological origin and histogenetic mechanisms
- Epithelial-Mesenchymal Transition (EMT)
- Architecture, cellular composition and functions
- Extracellular Matrix composition, synthesis, deposition

LN 3

- Matrix organization, turnover and functions
- Mechanoreception, Mechanical homeostasis, tissue tension and its regulation
- Differentiated cell types

DG

- Progenitors and Mesenchymal Stromal/Stem Cells
- Trophism, cell turnover and regeneration
- Classification:
    - Mesenchyme

- Loose, Dense and Reticular Connective Tissue

- White and brown adipose tissue

AL 8 *Cartilage:*

- Embryological origin, architecture and functions
- Extracellular matrix composition, synthesis, deposition, organization, turnover and functions
- Differentiated cell types, progenitors and turnover
- Trophism and regeneration

AL 8

- Classification: Hyaline, Elastic and Fibrocartilage

Bone:

- Embryological origin, architecture and functions
- Osteogenesis (Intramembranous and endochondral ossification), growth, remodeling
- Genesis and structure of the osteon
- Lamellar, compact and trabecular bone
- Extracellular matrix composition, synthesis, deposition, organization, turnover and functions
- Osteoprogenitors and Osteoblasts
- Osteoclasts: Origin, regulation, differentiation and specialization
- Regulatory mechanisms: Local and Hormonal

LN 4 *Muscle:*

- Embryological origin, development, architecture and functions

LN 5

- Skeletal Muscle
    - Muscle fibers: Tissue organization and function
    - The Neuromuscular Junction
    - Sarcomere: structure of the molecular motor, mechanism of contraction and relaxation
    - Cytoskeleton and Adhesion, homeostasis and mechanical regulation
    - Types of muscular fibers
    - Trophism, nervous and hormonal control

- Satellite cells (Skeletal Muscle Stem cells)
- Myogenesis, growth, turnover and regeneration

- Cardiac Muscle
  - Cardiomyocytes: Morphological characteristics and their functions, tissue organization
  - Specific characteristics of the contractile apparatus and its regulation, load adaptation
  - Spontaneous and rhythmic contraction, Pacemakers
  - Types of cardiomyocytes and specialized functions
  - Trophism and turnover

- Smooth Muscle
  - Structure and tissue organization in different organs
  - Contractile apparatus, mechanism of contraction and relaxation
  - Spontaneous and rhythmic contraction and local, hormonal and nervous regulation

Blood and Hematopoiesis:

- Blood: Composition (plasma and cellular fraction), coagulation

LN 6

- Hematocrit, absolute and relative cell counts, proportions of different hematopoietic lineages
- Erythrocytes: Structure, function, tropism and lifespan
  - hemocatheresis
- Platelets: Structure, function, lifespan, adhesion regulation, contraction and secretion
- Cells of the Innate Immunity

LN 7
- RO

  - Origin and tissue migration: vascular adhesion molecules, extravasation and tissue specific homing
  - PAMPs and DAMPs danger signal identification using TLR and NLR
  - Professional phagocytosis, intra- and extracellular killing
  - Granules and regulated secretion, chemotaxis
    - Neutrophils: Structure, function, trophism, lifespan and tissue residence

        - Eosinophils: Structure, function, trophism, lifespan, tissue residence and specializations
        - Basophils: Structure, function, trophism, lifespan, tissue residence and specializations

LN 8

        - Mast Cells
    - Monocyte/Macrophage populations: Different origin and turnover
        - Circulating monocytes, structure, function, lifespan and specializations
        - Tissue resident and Inflammatory macrophages

LN 9

        - Tissue specific monocytes/macrophages
    - Dendritic cells
- Bone marrow and Hematopoiesis
    - Architecture and composition of hematopoietic tissue, undifferentiated and differentiated cell types
    - genealogy and functional compartments
    - Hematopoietic Stem Cells: origin, properties, asymmetric division, self maintenance and commitment, quiescence and dormancy, mobilization, senescence and stem cell pool conservation, regeneration and transformation
    - Hematopoietic progenitors, CFC e CSF, homeostasis and regulation
    - Erythropoiesis
    - Myelopoiesis e granulocytopoiesis
    - Thrombopoiesis
    - Hematopoietic Niches: anatomical sites, composition, function
    - Primitive and definitive hematopoiesis
    - *In vitro and In vivo* methods to study hematopoiesis

AG 1 <u>*Introduction to Nervous Tissue:*</u>

- Embryogenesis

AG 2

- Types of neurons and glial cells in central and peripheral nervous tissues

- Synapses
- Neural stem cells and neurogenetic niches

Pluripotent Stem Cells, Gene and Cell Therapy

AL 10
- Embryonic Stem Cells and Induced Pluripotent Stem Cells, Cellular reprogramming

LN 17
  - Possible applications in regenerative medicine
- Gene transfer and Gene editing
  - Background on the methodologies and possible applications of Cell and Gene Therapy

Circulatory System

LN 13
- Histological and morpho-functional characteristics of elastic and muscular arteries, Veins and Lymphatic ducts
- Microcirculation: arterioles, venules and capillaries (types of capillaries and cellular basis of permeability)
- Endothelium: embryological origin and its function in the mechanical homeostasis of the circulatory system
- Vasculogenesis and Angiogenesis
  - Characteristics and phases, cells and molecules involved, regulation

Integumentary System:

AL 1
- Function and Skin layers
- Epidermis
  - Resident cells
- Dermis and Hypodermis
- Cutaneous annexes:

AL 2
  - Sweat and sebaceous glands
  - Hair follicles
- Skin circulation and innervation
- Homeostasis and Epidermal regeneration
  - Stem cells and their properties
  - Hair follicle cycle
  - Stem cell marking and tracing

Immune System

LN 11

- General principles and main features of adaptive immunity and genetic mechanisms underlying the generation of polyclonal repertoire
- Main classes of Lymphocytes: T (CD4, CD8, Treg), B, NK
- Main cellular interactions and histological structures involved in:

LN 12

  - Generation, selection, activation and maturation of B and T lymphocytes;
  - Induction and maintenance of immunological tolerance;
  - Antigen presentation and lymphocyte cooperation

LN 13

  - Lymphocyte recirculation

- Primary and secondary lymphoid organs
- Thymus
  - Origin, architecture and cellular composition, blood-thymus barrier, positive and negative selection of T lymphocytes, promiscuous gene expression of the thymus
- Lymph Nodes
  - Architecture, cortex and medulla, specific functional areas and germinal center, antigen and lymphocyte flow, lymphatic and hematic vascularization
- Spleen
  - Architecture and functional organization of white and red pulp; Peri-arteriolar lymphoid sheaths, marginal zone and antigen flow; Open circulation and hemocatheresis

Gastrointestinal Tract

- Tongue and oral cavity

AL 4

  - Mucosa, gustatory papillae and muscular layers

- General descriptions of layers
  - Mucosa
  - Submucosa
  - External muscular
  - Adventitia

AL 5

- Esophagus

- Mucosa

- Stomach
  - Gastric Mucosa: cell types and their function
- Small Intestine
  - Mucosa, resident cells and their function
  - Gut microbiome: function and relationship with epithelial cells
- Large Intestine
  - Epithelial mucosa variation
- Intestinal epithelium: Homeostasis and regeneration
  - Stem cells, characterization and function

Annexed GI structures

- Salivary glands

AL 6

  - Functional subclasses and histological description
- Liver
  - Histology
  - Hepatic lobules and biliary system
  - Cell types
  - Liver regeneration and stem cells
- Exocrine Pancreas
  - Architecture and histology

AL 3 *Respiratory system*

- Nasal Cavities: functions
  - Respiratory epithelium: cell types and functions
  - Olfactory system: cell types and functions
- Trachea
  - Epithelium
- Pulmonary tree
  - Bronchi and bronchioles: epithelial and wall variation

- Pulmonary alveolus: resident cells and function

AL 7 *Urinary Tract*

- Kidney
  - General architecture
  - Renal Corpuscle: cell types and functions
  - Nephron: functional and histological variations
- Ureter and Bladder:
  - Mucosa and wall

Endocrine System

LN 14
- Functional organization of the endocrine system: feed-forward and feed-back, rhythmic secretions
- Hormones: synthesis, regulated secretion, distal effects
- Pituitary gland
  - Embryogenesis, histology, cellular composition, peculiarity of pituitary vascularization; Main hormones secreted
- Thyroid and parathyroid
  - Embryogenesis, histological architecture, cellular composition, follicle and interfollicular areas and their function;
- Adrenal Gland
  - Embryogenesis, histological architecture, cellular specialization and main secretions of the various cortical layers (Glomerulosa, Fasciculata and Reticularis) and the medulla; Vascularization
- Endocrine pancreas (Islets)
  - Architecture, cellular composition, main secretions and vascularization

Male Reproductive System

AL 10
- Testes
  - Embryonic development, tissue organization and cellular basis of gonadal and endocrine functions; Hormonal control
  - Seminiferous tubules and germinal epithelium
  - Male gametogenesis and spermatogenesis
- Intra- and extra-testicular ducts, seminal vesicles

- Histology

- Prostate
  - Histology

Female Reproductive System

- Ovaries

LN 15

  - Embryonic development, tissue organization and cellular basis of gonadal and endocrine functions; Hormonal control
  - Oogenesis and folliculogenesis, cellular and functional organization of the oocyte-granulosa unit, follicle maturation, ovulation and formation of the corpus luteum
  - Hormonal control: ovarian cycle

- Uterus

LN 16

  - Myometrium and endometrium histology of the body and cervix of the uterus;
  - Functional layers of the endometrium and variations throughout the menstrual cycle, decidual reaction
  - Cellular and tissue mechanisms prior to embryo implantation

- Oviduct
  - mucosa

- Embryo annexes and placenta
  - syncytiotrophoblast
  - Primary, secondary and tertiary villi

- Mammary Gland
  - Histogenesis, architecture, hormonal control and function in the various stages: fetal, before puberty, virginal, pregnancy, puerperal in lactation
  - Mammary stem cells

Practical Sessions

On top of the aforementioned lectures, practical sessions will be laid out throughout the course. The practicals will involve examining histological preparations with various staining techniques using light microscopes. The practical will be divided into two parts:

1. The tutor will examine histological sections using a light microscope connected to a projector. This part serves to demonstrate the correct protocol when examining a sample and the most relevant structures within the specific samples
2. Individual observation of selected histological samples, with students applying what has been learnt in the first part of the lesson in an independent manner, with the support of the tutor

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PHYSIOLOGY

Total Credits: 17
Lessons: 150 hrs
Practicals: 24 hrs
SSD: BIO/09

Course Coordinator: Federico Esposti Email: esposti.federico@hsr.it

Professors Teaching:
Giacomo Concone Email: giacomo.concone@ospedaleniguarda.it
Dario Di Francesco Email: dario.difrancesco@unimi.it
Federico Esposti Email: esposti.federico@hsr.it
(www.unisr.it/k-teacher/esposti-federico/)
Marco Paoli Email: marco.paoli@unitn.it
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Maddalena Ripamonti Email: ripamonti.maddalena@hsr.it
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Tutors
Gabriella Racchetti
Maddalena Ripamonti

COURSE INTRODUCTION

The purpose of this course is to provide a complete training in biophysics and human physiology. This course is designed to promote learning by practice, with a particular emphasis on stimulating student experimental creativity and interdisciplinary approaches. We all know that *Physiology* is the investigation of cell and body functions, hence the major goal is to understand and be able to predict the acute and adaptive responses of the body to external stimuli but also to understand how the body can maintain a stable set of internal conditions while the external environment is constantly changing. Physiology can be studied at many different levels including biophysics, cell physiology, organ physiology and systems physiology. In this course you will be exposed to all of these levels, initially to the biophysical and cellular physiology level, then quickly moving up to the organ and system levels. In the mainframe of this M.D. program, clearly Physiology and Anatomy must be closely related subjects. To fully appreciate the physiology of a given system it is necessary to first know its anatomy, therefore much coordination work has gone into ensuring that each topic will be presented sequentially, first in the Anatomy and then in the Physiology Course. Indeed, in most cases true understanding of physiology can only take place if structure and function are concurrently learned. A complete and in depth understanding of physiology would be essential to appreciate in subsequent courses how the human body might be functionally altered by diseases (pathophysiology) and also to predict the response of the body to pharmacological therapies or drugs.

SPECIFIC GOALS AND OBJECTIVES

The goals of this M.D. Course in Physiology are to train students:

1. To be able to demonstrate comprehensive understanding of biophysics and physiology as well as the integration of these with basic and applied disciplines;
2. To understand the molecular and cellular mechanisms of physiological processes, in order to provide a foundation for understanding pathophysiology and therapeutics in subsequent courses;

3. To integrate knowledge and concepts from cellular physiology and organ physiology to understand the integrative body functions, e.g., maintenance of blood gas levels; responses to stresses; regulation of fluid volumes and compositions; digestion; reproduction, etc.;
4. To use and develop adequate knowledge of the most current developments in basic and medical sciences as related to biophysics and physiology;
5. To acquire skills in research methodologies used in biophysics and physiology to be able to understand experimental research more effectively;
6. To develop communication skills by frequent in-class discussions and be capable understanding scientific papers dealing with physiological results;
7. To function as a productive member of a student team engaged in learning and designing experimental strategies to understand structure-function problems;

DETAILED PROGRAM

FIRST SEMESTER

Review of Electricity (Prof. Eugenio Rapisarda)

1. Electrical Fundamentals and Basic Electricity, basic concepts and units, charge, conductors and capacitors
2. Ohm's Law, Series and parallel circuits, Kirchhoff's Laws
3. Conductances, Batteries and Capacitor as Circuit Elements
4. The RC Circuit, its steady state and transient Response
5. Alternating (AC) and direct (DC) currents, test meters and Safety

Biophysics and Cell Physiology (Prof. Marco Paoli)

6. Historical grounds of physiology; Units and Scales in physiology; The concept of homeostasis
7. Cellular Membranes and Transmembrane Transport of Solutes and Water
8. Thermodynamics of membrane transport
9. Mechanisms of carrier-mediated transport: facilitated diffusion, cotransport, and countertransport. Sodium pump function, Na+ - Ca2+ exchange currents
10. Diffusion and permeability
11. Osmosis and regulation of cell volume
12. Intracellular pH Regulation
13. Ionic Equilibria and the concept of equilibrium potential.
14. Origin of resting membrane potentials. The driving force for ionic-fluxes.
15. Gibbs-Donnan equilibrium potentials. Intracellular chloride regulation
16. Patch-clamp techniques and analysis of cell currents and ion channels
17. Ion channel families
18. Structure-function of voltage-gated ion channels
19. Electrogenesis of membrane excitability
20. Generation and conduction of action potentials
21. The H.H. Model
22. Cable properties and propagation of action potentials
23. Derivation of the Cable Equation and the AC length constant

24. Effects of toxins, drugs, genetic diseases of ion channels and variation in extracellular ions concentration on resting membrane potential and membrane excitability

Renal Physiology (Prof. Giacomo Concone)

25. Elements of Renal Function
26. The Nephron; The ultrafiltration process
27. Solute and Water Transport Along the Nephron. Tubular Function
28. Feedback mechanisms and autoregulation of the kidney function
29. Control of Body Fluid Osmolality and Extracellular Fluid Volume
30. Potassium, Calcium, and Phosphate Homeostasis
31. Intracellular pH Regulation and role of the Kidneys in Acid-Base Balance

Physiology of the Digestive System (Prof. Vincenzo Zimarino)

32. Introduction to the digestive system
33. Nutrition and energy metabolism
34. The enteric nervous system
35. Motility of the Gastrointestinal Tract
36. Gastrointestinal Secretions
37. Digestion and Absorption for lipids, carbohydrates, proteins
38. The liver physiology (Prof. Giacomo Concone)

Physiology of the Endocrine System (Prof. Vincenzo Zimarino)

39. General Principles of Endocrine Physiology
40. Whole-Body Metabolism
41. Hormones of the Pancreatic Islets
42. Endocrine Regulation of the Metabolism of Calcium and Phosphate
43. Hypothalamus and Pituitary Gland
44. Thyroid Gland
45. Adrenal Cortex
46. Adrenal Medulla

Physiology of the Reproductive System (Prof. Federico Esposti)

47. Male Reproductive System
48. Female Reproductive System
49. Pregnancy and Lactation

SECOND SEMESTER

Physiology of the Cardiovascular System (Prof. Dario Di Francesco)

50. Overview of the heart and circulation
51. The autonomic nervous system and its control
52. Introduction to Cardiac Muscle Physiology
53. Electrical Activity of the Heart
54. Natural Excitation of the Heart and the pacemaker ion channels
55. ECG recording techniques
56. Excitation-contraction coupling in the cardiac and skeletal muscle; regulation of Ca2+ release from the sarcoplasmic reticulum

57. Cardiac Pump
58. Regulation of the Heartbeat
59. Hemodynamics
60. Arterial System
61. Microcirculation and Lymphatics
62. Peripheral Circulation and Its Control
63. Control of Cardiac Output. Coupling of the Heart and Blood Vessels
64. Interplay of Central and Peripheral Factors in Control of the Circulation

Physiology of the Respiratory System (Prof. Dario Di Francesco)

65. Overview of the Respiratory System
66. Mechanical Properties of the Lung and Chest Wall
67. Ventilation, Perfusion, and their Relationship
68. Oxygen and Carbon Dioxide Transport
69. Control of Respiration
70. Nonrespiratory Functions of the Lung

Physiology of the Muscle (Prof. Giacomo Concone)

71. Muscular contraction
72. Sport and Exercise physiology

Physiology of the Nervous System (Prof. Federico Esposti)

73. Cellular and functional organization of the nervous system
74. Introduction to synaptic transmission
75. Synaptic transmission and ligand-gated ion channels
76. Synaptic transmission and release of neurotransmitter molecules. Quantal analysis of synaptic transmission
77. Associative and non-associative forms of synaptic plasticity
78. The Autonomic Nervous System
79. Emotions and the Limbic System
80. Psychophysics laws
81. The general structure of sensory nervous systems
82. The somatosensory system
83. The visual system
84. Attention and Eye Movements
85. The auditory system
86. Chemical senses
87. The central organization of the motor system and the motor pathways, the role of brainstem, basal nuclei and cerebellum
88. The spinal reflex and locomotor activity centers in the spinal cord
89. Brain rhythms, sleep, wakefulness, consciousness. EEG recordings
90. Pain
91. Food and water intake
92. Generalities on higher brain functions
93. Learning and memory
94. Decision making and the prefrontal cortex
95. Language processing.

FORMATIVE ASSESSMENT AND EXAMS

Class attendance is compulsory to all theoretical lectures and class presentations. Teachers will keep daily record of the attendance of students in class independently of the automatic lecture attendance system (on a daily basis any discrepancy between these two modalities will be officially notified to the Dean).

The evaluation process will be performed in **four steps**.

1. Students will be evaluated at the **end of the first semester** in a **multiple-choice test** concerning all the subjects presented during the lessons of the first semester. This test will give the students a **mark between 0 and 14 points**. The test will be considered as ***positive*** if the student obtains a **mark of 9 or above**. The participation to this test is compulsory.
2. In the course of the **first semester**, students will be evaluated in small groups on the **oral presentation to the class of a scientific paper** provided at the beginning of the course. This presentation will be awarded with **1 point** if evaluated positively by the Professor. The participation to this test is compulsory.
3. In the course of the **second semester**, students will be evaluated in small groups on the **oral presentation to the class of a physiology topic, prepared by the students based on a book or a collection of papers** provided in the course of the first semester. This presentation will be awarded with a **mark comprised between 0 and 3 points**. The participation to this test is compulsory.
4. Students will be evaluated at the **end of the second semester** in a **multiple-choice test** concerning all the subjects presented during the lessons of the second semester. This test will give the students a **mark between 0 and 14 points**. The test will be considered as ***positive*** if the student obtains a **mark of 9 or above**. The participation to this test is compulsory.

In the multiple-choice tests, students will gain 0.50 points for each correct answer, 0 points for any blank answer, and -0.2 points for any wrong answer.

The final mark will be the arithmetic sum of the points gained in the four tests. Full marks (30 cum laude) will be awarded to students reaching a total of 31 points or above. Non-integer sums will be rounded to the closest integer.

If a student did not obtain a positive evaluation in one of (or both) the multiple-choice tests, he/she will have to repeat that (or both the) multiple-choice test(s). The two small-group presentations will not be repeated; the student will keep the points gained at the first time of his/her presentation.

The students that got a total evaluation equal or higher than 18, but willing to redo one or both of the multiple-choice tests, will have this option. However, please be aware that **participating to one of such tests will automatically delete the corresponding evaluation that the student gained in the previous test**.

Intermediate and final scores will be posted on the intranet course page (to maintain privacy, score will be listed in a file where students can identify themselves by their private student registration number). When students are satisfied by their achieved grade, if enrolled on the intranet in one of the official Appelli, they can ask this grade to be put on record. No score will be registered until students communicate to the teachers their willingness to accept score registration.

COURSE TEXTBOOKS

5) Guyton and Hall, Textbook of Medical Physiology, Elsevier, 13th Edition [Renal Physiology, Gastrointestinal Physiology, Endocrine Physiology, Reproductive Physiology, Muscle Physiology, Cardiovascular Physiology, Respiratory Physiology]

2) Kandel and Schwartz, Principles of neural science V ed. McGrawHill, 2012 [Biophysics & Cell Physiology, Physiology of the Nervous System]

3) Course Syllabus and other reading material provided on the intranet (course page)

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PRINCIPLES OF PHARMACOLOGY

Total Credits: 9
Lessons: 80 hrs
Practicals: 16

Scientific Discipline Sector: BIO/14

Teaching Staff

Course Coordinator: Dr. Daniele Zacchetti Email: zacchetti.daniele@hsr.it
Receiving Hour: on Fridays from 16:00 to 17:00 in (Dibit1, 3A3, lab 58 – to be confirmed by email)

Prof. Michele Simonato Email: simonato.michele@hsr.it
Prof. Riccardo Fesce Email: riccardo.fesce@uninsubria.it

Tutors:
Barbara Bettegazzi Email: bettegazzi.barbara@hsr.it
Daniele Carettoni Email: daniele.carettoni.dc@axxam.com
Silvia Zucchini Email: zcs@unife.it
Ilaria Prada Email: prada.ilaria@hsr.it

The course of Principles of Pharmacology, offered to the students already at the IV semester, is one of the unique features of our MD course. Pharmacology is the science that studies the effects of the exogenous substances to the physiology and pathology of the organism. Within the traditional Italian MD curriculum, pharmacology is proposed after the other basic science disciplines, being thought to introduce concepts and instruments not emendable to the practical use of drugs (in diagnostics, anesthesia and, most importantly, therapy). For this reason this course in the other Italian Universities is still offered at the IV year, being addressed to the students already being exposed to Clinics and that have already acquired topics such as General Pathology and Microbiology. In the last years, however, this way of teaching has started to show its limitations. On one side the comprehension of the mechanisms of drug actions and the new therapeutic perspectives have been developed in an extraordinary way thanks to the knowledge at the molecular, cellular, genetic and physiological levels; on the other side the relationship between pharmacology and the clinics has tightened, due to the fact that drugs are not anymore "magic bullets", rather disease-modifying instruments and tools to understand pathology. The aim of our discipline has now widened in both operative and didactic-cultural terms. Teaching pharmacology at the boundary between basic topics and clinical courses is not anymore suitable for a modern School of Medicine. For this reason at the "Vita-Salute" San Raffaele University Pharmacology has been divided in two parts. This course, Principles of Pharmacology (coordinator Prof. Daniele Zacchetti), is offered together the other basic science courses and allows to recall and highlight, under a different point of view, information and basic biological concepts, opening them to problems that lead to clinics and therapeutics. The specific pharmacological issues known as Therapeutics (responsible Prof. Flavia Valtorta) is now integrated within the clinical courses and allows putting the pharmacological topics in the specific issues as a fundamental tool for the approach to the patient. This is an important example of the integration, between basic and clinical teaching, that is a specific feature of our MD course. The two aspects of Pharmacology are so tethered that they make use to the same textbook, i.e. the Goodman and Gilman's, the classical compendium, known to all the physicians and that, not by chance, is entitled 'The Pharmacological Basis of Therapeutics'.

How is the course organized?
The aim of the course on Principles of Pharmacology is to provide the tools to understand drugs and their effects, answering a long list of questions such as 'why a drug has got one (or several) effect(s) and another molecule, possibly almost identical at the molecular level, has got a completely different profile of action?' up to "How a new drug is being developed?". Most of the concepts that will be provided are somehow new for the students of the second year, in the sense that they will be proposed from a different perspective; moreover, the topic of drugs is by itself comprehensive since it involves the entire organism. For this as well as several other reasons academic lessons are being held aimed to the explanation of concepts and issues. Presentation from groups of students might be also organized on specific topics. Last, the course is implemented with an experimental part represented by tutorials in which the techniques employed in pharmacological research are presented and explained. Pharmacology does not have its own techniques but, rather, employs the methods of the other disciplines. The point of view of Pharmacology is anyway often specific and there is always a lot to discuss, to critically nalyse and to understand.

DIDACTIC MATERIAL
The textbook of reference is the Goodman e Gilman's, XII edition, published in English at the end of 2010 (mind! Of this book there are obviously 11 editions before this one, published every 5 years, approximately; Pharmacology is a discipline in fast development!).
Goodman & Gilman's, The Pharmacological Basis of Therapeutics, XII Edition, Ed. McGraw Hill, 2011
Clementi and Fumagalli, General and Molecular Pharmacology: Principles of Drug Action 1st Edition, Whiley 2015
Katzung and Trevor, Basic and Clinical Pharmacology 12/E (LANGE Basic Science) 12th Edition, 2014

Meetings with students
Meetings with the coordinator of the course on Principles of Pharmacology can be organized by appointment organized by email (zacchetti.daniele@hsr.it) or calling the 02-2643.4817

Evaluation procedures
The exam is based on two steps: a multiple choice test with 30 questions, to be completed within 45 min and aimed to highlight students still far from an adequate knowledge of the discipline; then, an oral exam based on the critical discussion of wide and important topics, all included in then teaching program, on the basis of which the final grade will be established.

Program of the course
The Course is organized in the following topics. In details we will deal with
1. Introduction to the course, definitions, drugs and their molecular and biological properties.
2. Pharmacokinetics, i.e. the journey of the drug within the organism, the time-dependence of drug effects and the process that are responsible for them:
- Absorption and distribution of drugs: way of administration, proteins of the plasma;
- Drug elimination: drug metabolism, excretion, kinetic aspects.
3. Pharmacodynamics, i.e. the features and the quantification of the drug effects:
- Drug effects, dose-dependency
- Dose-effect curves.
4. Pharmacogenetics, pharmacogenomics and mechanisms of resistance.
5. Molecular targets of drugs – the receptors and their transduction mechanisms:
- Surface receptors;
- Circulation of receptors;
- Intracellular receptors.
6. Effects of drugs on cellular analyses:
- Second messengers – spatial coordination;

- Cross-talk among transduction pathways.
7. Pharmacology of the peripheral nervous system as a paradigm for the drug action:
- Sympathetic system; α and β adrenergic receptors;
- Direct and indirect agonists, receptor antagonists;
- Parasympathetic system and neuromuscular transmission;
- Muscarinic e nicotinic receptors;
- Cholinergic agonists; cholinesterase blockers;
- Antagonists: ganglioplegics and curare.
8. Autacoids, specific endogenous factors that act locally, and their pharmacology:
- the arachidonic acid cascade;
- the nitric oxide;
- histamine, serotonin, bradykinin, cytokines;
- ATP;
9. General pharmacology of the central nervous system:
- neurons and glia, the synaptic signalling;
- excitatory and inhibitory transmissions; drugs of abuse;
- neurodegeneration.
10. Introduction to chemotherapy (bacteria, viruses, tumors):
- introduction to antibacterial drugs;
- introduction to antiviral drugs;
- growth and death of cells. Antitumoral drugs.
11. Principles of pharmacognosy, toxicology and biologic therapy.
12. Principles of Pharmacovigilance and Pharmacoeconomy
13. Development of new drugs: history, rules and future of pharmacology.

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INTRODUCTION TO SURGERY

Total Credits: 3
Lessons: 30 hrs
Practicals: 8 hrs
Scientific Discipline Sector: MED/18 – MED/19

Course Coordinator: Prof. Riccardo Rosati
Professors Teaching:
Riccardo Rosati Email: rosati.riccardo@hsr.it (www.unisr.it/k-teacher/rosati-riccardo/)
(by appointment writing to: massaron.simonetta@hsr.it)
Andrea Vignali Email: vignali.andrea@hsr.it
Franz Baruffaldi Preis Email: f@preisurgery.com

Tutors:
Andrea Cossu Email: cossu.andrea@hsr.it
Maria Lemma Email: lemma.maria@hsr.it

Course aims

The course will give to the students the basic information on:

1) Operating room environment
2) Rules of asepsis and sterilization
3) Pre-habilitation and re-habilitation
4) Approach to the surgical patients: taking a history; reviewing the existing data and exams; programming further diagnostic exams; taking a physical exam; obtaining an informed consent
5) Approach to the acute patient
6) Anaesthesia and perioperative management; principles of enteral and parenteral nutrition.
7) Surgical instruments; energy devices. Patient positioning in the operating table; surgical incisions; tissue manipulation
8) Surgical dissection, recognition of anatomical structures and planes, principles of haemostasis
9) Principles of visceral suturing; manual and mechanical sutures; visceral anastomotic techniques; pathophysiology of intestinal anastomosis; anastomotic complications;
10) Tissue healing, cicatrization, tissue repair. Suture technique and materials
11) Sutures in plastic surgery
12) The adipose tissue: anesthesiology and surgery
13) Tumors of the skin and subcutaneous tissue; the non-oncologic breast

The course will be articulated in 12 lessons of two hours each and 30 hours of practical activity. It will also give basic knowledge of the surgical culture and skills which shall be part of the general medicine. A doctor has to deal with health problems on a daily basis, which require the knowledge of basics of surgery in order to understand diagnostic process, treatment modalities, and possible complications.

The course represents an approach to these issues, which will be followed consistently and completed in the other surgery courses that will enter in details in diagnostic situations.

Introduction to Surgery book list: Texbook of Surgery – Sabiston

Lesson plans of Plastic Surgery

Within 8 hours made available by the university for the treatment of the topics of reconstructive plastic surgery and aesthetics will be held by Prof. FW Baruffaldi Preis four lessons of two hours each, chosen from among the four topics listed below:

1) The integumentary repair and healing
2) The suture in surgery
3) benign and malignant lesions of the skin and breast
4) The surgical treatment of adipose tissue

5) The repair tegmental provides an introduction to the many causes responsible for the deterioration of the integument.

In particular, we consider all those physical, biological, metabolic able to modify the characteristics of the skin mantle.
Follows the classification of different types of repair that lead to the creation of a repair tissue of a normal or pathological tissue.
In the discussion of the pathophysiology of tissue repair are considered those factors that can facilitate the process (protection, antiseptic agents, systemic factors) and those responsible for the chronicity of the disease and possible complicating local and general.
Are taken into consideration the peculiarities of tissue repair depending on the area concerned: face-lip-nose-eyelid
Arts
trunk
Is treated the disease burn both as regards the skin lesions that as regards the systemic involvement for major burns .
Introduces the principles underlying the use of skin substitutes.
It decrypts the action of Vaacum therapy used for cleansing of skin ulcers.

2) The suture in plastic surgery
The topic is introduced describing the evolution had in the synthesis of the margins of a wound in surgery.
Are analysed biomaterials used for skin and subcutaneous tissue, their interaction with tissue, the mechanical strength and their degradation.
It analyses the tools applied to the phase of the suture.
Nodes are explained and made examples of how to stabilize the suture manual and instrumental.
Explanations are given on the classification of the sutures according to the type of thread, type of August
Mention the use of glues and staplers.

3) benign and malignant lesions of the skin and subcutaneous tissue
It starts from the histological classification of tumours pigmented and non-pigmented skin. We analyse the therapeutic strategies related to the severity of the injury and the district concerned: direct closure or by grafting or skin flap.
Are taken into account the concepts of tissue autologous, homologous and heterologous.

It describes the characteristics of the skin flaps, skin and muscle cutaneous flaps. We analyse systemic diseases linked to predisposition to develop tumours of the skin.
Marjolin ulcers.
Angioma and MAV.
4) The introduction of the concept of breast reconstruction post –mastectomy: cutaneous expansion, immediate reconstruction, delayed reconstruction with muscle-skin flaps .I always in the context of breast surgery you enter into the merits of
- gigantomastia: Technical reductive
- Gynecomastia: its aetiology and surgical correction
- Breast ptosis: the pathophysiology of aging and breast mastopexy
- Breast hypoplasia, surgical techniques to increase the biocompatibility of silicone and synthetic materials
-asymmetry mammary gland and malformations of the cone and the areola complex nipple

5) The subcutaneous tissue. Pathophysiology of subcutaneous adipose tissue. Use of the adipose tissue in plastic surgery.
Lipofilling: principles concerning the grafting of fat cells, fields of application, reparative activities related to preadipocitiche cells (stem cells).
Removal of localized fat in the adipose tissue, in the correction of body volumes and in states of obesity.
The post-bariatric surgery

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INSTRUCTORS' CVs

Alessio Cantore

Alessio Cantore graduated in Biotechnology in 2004 at the University of Bologna, Italy. In 2006 he got his Master degree in Medical Biotechnology at the San Raffaele "Vita-Salute" University in Milano. In 2012, he got an international Ph.D. in Cellular and Molecular Biology, by "Vita-Salute" San Raffaele University, Milan and the Open University, London, UK. After a 3-year post-doctoral training in Prof. Luigi Naldini laboratory at the San Raffaele Telethon Institute for Gene Therapy, in 2016 he was appointed Project Leader at the same institute. He has 10-year experience in regenerative medicine, lentiviral vector development and liver gene transfer and therapy, in several animal models of different diseases. He is author on 9 original research articles in peer-reviewed international scientific journals, of which 4 as first author, 4 as second author, that have been collectively cited more than 750 times (as of August 2016).

Laura Mangiavini

Current Position	Attending orthopaedic surgeon at IRCCS Galeazzi, Milan
Education	
University Vita-Salute San Raffaele	M.D. Medicine and Surgery (10/2001-07/2007)
University of Milan	Italian National Board Medicine and Surgery (01/2008)
University of Milan-Bicocca	Specialization in Orthopaedics and Traumatology (03/2013)
Postdoctoral Training	
University of Milan-Bicocca/	Residency in Orthopaedics and Traumatology (04/2008-03/2013) c/o Hospital San Gerardo, Milan
Massachusetts General Hospital and Harvard Medical School	Research fellow Medicine/Endocrinology

Marco Vitale

1985: MD degree, cum laude, University of Bologna.
1988: Ph.D. Hematology, cum laude.
1992: Ph.D. Biomedical Technologies.
1986: visiting scientist at the New York Medical College, Dept. of Microbiology and Immunology, NY, USA.
1994-95: visiting scientist at the Kimmel Cancer Center, Jefferson University, Philadelphia, USA.

1992- 2000: Associate Professor of Human Anatomy, Faculty of Medicine, University of Brescia.
2000-present: Full Professor of Human Anatomy, Faculty of Medicine, University of Parma.

Vice-Dean, Faculty of Medicine, University of Parma.
Dean, Curriculum of Sport Sciences, University of Parma.
Director of the Center for Body >Composition (CMBC)

Referee for international journals: Blood, Journal of Immunology, Stem Cells, Journal of Biological Chemistry.

Author of 127 peer reviewed full length papers, covering the following fields: antitumor cytokines, hematopoietic progenitors, signal transduction, apoptosis, platelet activation, anthropometry, biometry.

Fabrizio Michetti
CURRENT POSITION AND TITLE
1999/present: Full Professor of Anatomy and Chairman of the Institute of Anatomy and Cell Biology, School of Medicine, Università Cattolica S. Cuore, Rome. Retired since November 1st, 2016.
1997/present: Director of PhD program in Molecular Morphology ,Università Cattolica S. Cuore, Rome
1999/present: Member of the academic board for the PhD program in Neuroscience, Università Cattolica S. Cuore, Rome
2006/present: Chairman of the Latium Musculo-Skeletal Tissue Bank
2011/present: Appointed to hold a course on Neuroanatomy, Master's degree in Bioengeneering, University Paris Descartes
EDUCATION AND TRAINING
1970: MD Degree (Università Cattolica S. Cuore, Rome).
1974: Neurologist (Università Cattolica S. Cuore, Rome).
1977: Psychiatrist (Università Cattolica S. Cuore, Rome).
POSITIONS AND EMPLOYMENT
1996/1999: Full Professor of Histology, School of Medicine, Università Cattolica S. Cuore, Rome

Dario Di Francesco
Education
Univ. Studi, Milano: Ph.D. (equiv.), 1973 (Physiol./Biophysics)
The Physiological Lab., Cambridge, UK: Postdoc (Cardiac Electrophysiology)
Univ. Lab. Physiology, Oxford, UK: Postdoc (Cardiac Electrophysiology)
Research positions and Academic appointments
9/73- 12/74: Teaching and research fellowship, Institute of General Physiology, Univ. Milano.
1/74- 12/80: Research Assistant, as above
9/76- 3/77: Postdoctoral fellow in Cambridge, The Physiological Laboratory (R.D. Keynes)
4/77- 12/78: Postdoc in Cardiac Electrophysiology in Oxford, The Lab. of Physiology (D. Noble).
1/81- 5/86: Associate Professor, Dept. of General Physiology and Biochemistry, Univ. Milano.
6/86-present: Full Professor, Dept. of General Physiology and Biochemistry, then Dept. of Biomolecular Sciences and Biotechnology, Univ. Milano

Marco Paoli
EDUCATION
2010 PhD
Bioscience – Cell Biology / Department of Biomedical Sciences, University of Padova, Italy
2006 Master Degree
Molecular Biology / University of Padova, Italy
2004 Bachelor Degree
Molecular Biology / University of Padova, Italy
CURRENT POSITION
Nov, 2016 – Research Associate
Laboratory of Insects Neurobiology / Dept of Biology, University of Konstanz, Germany
2012 – Oct, 2016 Research Associate
Laboratory of Neurophysics / CIMeC, University of Trento, Italy

Eugenio Rapisarda
Professional Experiences
Oct. 2013-
Vita-Salute San Raffaele University – Faculty of Medicine and Surgery
Adjunct Professor for "Biophysics" – International MD Program, Master's Degree in Medicine and Surgery in English

Vincenzo Zimarino
Education and Professional Experience
1978-1981 Pre-graduate student, Dept. Molecular Pathology, University of Neaples.
1981 Medical degree, summa cum laude.
1981-1983 Post-graduate student, Dept. Molecular Pathology, University of Neaples.
1984-1990 Research Associate, Laboratory of Biochemistry,
National Cancer Intitute, National Institutes of Health, Bethesda, MD, USA.
Visiting scholar (1989-1990) - Department of Biochemistry, Molecular and Cellular Biology, Northwestern University, Evanston, IL, USA
1991-1994 Seniorstipendiat, Danish Cancer Society grant, Institute of Molecular Cell Biology, København University, København DK.
1994-present Staff - San Raffaele Scientific Institute, Milan, Italy.

Giacomo Concone
Giacomo Concone graduated in Medicine at the University of Milan in July 2009; He then moved to the University of Pavia and specialized in General Surgery in May 2016 with honors.
In the last few years he has worked at the General Surgery and Transplantation Centre of Niguarda Ca' Granda Hospital in Milan, under the guidance of Professor Luciano De Carlis, M.D. F.E.B.S. with whom he has deepened his knowledge in multi-organ procurement, liver and kidney transplantation and hepatobiliary surgery. His relevant past experiences were carried out first at Ospedale San Paolo in Milan, where he dedicated to open and laparoscopic surgery in an emergency department, and subsequently at IRCCS policlinico San Matteo in Pavia, where he continued his training on general and emergency surgery under the supervision of Prof. P.Dionigi and received a focused training in laparoscopic and robotic surgery with Prof. Pietrabissa. He took part into several congresses, predominantly dedicated to liver and pancreatic surgery or minimally-invasive surgery and he was participant in several sponsor international multicenter trials conducted following the ICH-GCP requirements in continuous update. His major areas of medical interest reside in hepatobiliary and pancreatic surgery for malignancies, abdominal organ transplantation, living donor transplantation, laparoscopic liver resection and minimally invasive surgery. He is also research associate in the lab of Dr. Esposti - San Raffaele Research Institut, Department of Neuroscience - where he works on the development of new diagnostic biomarkers for liver pathophysiology.

Daniele Zacchetti
EDUCATION AND QUALIFICATIONS
Doctor of Pharmaceutical Chemistry and Technology,
grade 110/110 cum laude, University of Milano, Italy.
12 July 1989.
Thesis: "Mechanisms of alpha-latrotoxin action: role of Ca2+ in receptor binding and polyphosphoinositide hydrolysis".

Italian State Professional Examination for Pharmacist, Milano, Italy.
April 1990

Ph. D. in Cellular and Molecular Biology, University of Milano, Italy.
14 September 1993
Thesis: "Receptor activation and calcium increases: multiple mechanisms working in PC12 cells".

RESEARCH EXPERIENCE
Oct 1997 - Present.
Investigator at the Department of Biological and Technological Science (Dibit)-Scient. Inst. H. San Raffaele, Milano, Italy.

TEACHING EXPERIENCE
International School of Biophysics. Nerve-muscle function. Erice, Sicily, Italy.
20 October - 1 November 1991
Lecture: "Calcium fluxes and distribution in neurons".

Ph. D. program in Pharmacology, University of Milano, Italy. Course on "Morphological techniques in pharmacological research".
10 February 1993
Lecture: "Video-imaging".

Demonstrator at the International Course on Advanced techniques for calcium ion measurements in living cells. Milano, Italy.
20-25 September 1993.
Titles: "[Ca2+]i measurements on cell populations" and "Ca2+ fluxes measured by means of 45Ca2+"

Demonstrator at the EMBO Course "Methods in Cell Biology", EMBL, Heidelberg, Germany.
1-11 October 1995
Topic: "Biogenesis of epithelial cell polarity"

Demonstrator at the Ph.D. Program of the European Molecular Biology Laboratory, Heidelberg, Germany.
November 1995
Title: "Two-dimensional gel electrophoresis"

Riccardo Fesce
1983-1985 Research Associate al Biophysics Department, the Rockefeller University, New York, NY.
· From 1985 Researcher, Consiglio Nazionale delle Ricerche Centro di Farmacologia Cellulare e Molecolare, Milano.
· From 1995, Head of Theoretical Biology Unit at Dibit, S. Raffaele Scientific Research Institute, Milan. Affiliated to the Neuroscience Department.
· From Sept. 2001, Associate Professor of Physiology, Università dell'Insubria, Varese, Italy.

Michele Simonato
EDUCATION
- M.D., July 1983, University of Ferrara, Ferrara, Italy. Final score: 110/110, cum laude.
- Medical Toxicology Specialization, December 1986, University of Firenze, Florence, Italy. Final score: 70/70, cum laude.

PROFESSIONAL BACKGROUND
- Postdoctoral Research Fellow. Department of Pharmacology, University of Alabama at Birmingham, Birmingham, AL, USA (1986-87).
- Research Associate. Department of Medicine, Duke University, Durham, NC, USA (1988-89).
- Fulbright Scholar. Duke University Medical Center, Department of Medicine, Durham, NC, USA (1989).
- Consultant. Department of Medicine, Duke Center for the Advanced Study of Epilepsy, Duke University, Durham, NC, USA (1990-93).
- Ricercatore Universitario. Institute of Pharmacology, University of Ferrara, Ferrara (1985-2001).
- Ricercatore Universitario (Researcher and Assistant Professor). Institute of Pharmacology, University of Ferrara, Ferrara (1985-2001).

- Dirigente Medico (Medical staff). Clinical Pharmacology Unit, Sant'Anna Hospital, Ferrara (1994-present).
- Associate Professor. Department of Clinical and Experimental Medicine – Section of Pharmacology, University of Ferrara, Ferrara (2001-present).
- Director. Neuroscience Center, University of Ferrara, Ferrara (2001-04 and 2008-present).
- Vice-president. National Institute of Neuroscience (2008-present).

SCIENTIFIC ACTIVITY
- Author of 96 papers in international, peer-reviewed journals.

Andrea Vignali
Education
- Doctor of Medicine (MD), University of Milan, School of Medicine, Medical degree score 110/110 cum laude, 1989.
- Residency in Emergency Surgery, University of Milan. Medical degree score 70/70 cum laude, 1994.

International Experience
1990 Training in Emergency Surgery, Departemento de
Cirurgía de Urgentia, Hopital Arnau De Vilanova Lleida (Lefe Prof E. Vinas) Universidad de Barcelona, Spain
1994 -1996 Research Fellow, Department of Colorectal Surgery, The Cleveland Clinic Foundation Cleveland (OH)-USA
Active member of the followig international scientific societies: European Society of Coloproctology, American Society of Colorectal Surgeons and of Società Italiana di Chirurgia Colorettale.

Franz Wilhelm Baruffaldi Preis
Degree
1984 Graduated at Milan University with 110/110 honors degree.
Qualifications
Specialized in Plastic Surgery at the School of Specialization of the Milan University with the results of 70/70 honors degree.
Researcher at the Niguarda Cà Granda Hospital, Milan. Plastic Surgery Section.Achievements:
1993-1999 University tutor at the School of Specialized Plastic Surgery - University of Studies, Milan.
1997-2003 is professor by contract at the University of Studies in Milan, Medicine Faculty.
2003-to today is professor by contract at the Plastic Surgery Specialization School - Medicine Faculty, Geneve.
Today is professor by contract at the University of Studies in Milan, Plastic Surgery Specialization School.
Coordinator of the elective course of Plastic Surgery at Facolty of Medicine and Surgery, Vita Salute San Raffaele University, Milan
Head Responsible of Plastic Surgery at the Istituto Medico Santa Chiara, Gallarate (VA).

TIMETABLE

Please note that changes may always occur in the daily lesson schedule.
Please refer to the on line timetable for the latest version.

International MD Program A.Y. 2016/2017 Year 2

TIME	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
	26/09/2016	**27/09/2016**	**28/09/2016**	**29/09/2016**	**30/09/2016**
09-11					
11-13	Intro to the Course - OC1	Planes & Terminology.OC2	Structure of Vessels OC3	Respiratory System. Part 1 OC4	
14-16					
16-18					

TIME	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
	3-Oct-16	**4-Oct-16**	**5-Oct-16**	**6-Oct-16**	**7-Oct-16**
09-11		**Histology LN-1 Intro, Epithelial tissue**	**Histology AC - Intro**	Respiratory System. Part 5 OC8	Physiology, MP1
11-13	Respiratory System. Part 2 OC5	Respiratory System. Part 3 OC6		**Histology LN-2 Connective tissue I**	Physiology, MP2
14-16	Physiology Intro, (FE) ER1		Respiratory System. Part 4 OC7	Physiology, ER3	
16-18		16:00-19:00 ITALIAN	Physiology, ER2	16:00-19:00 ITALIAN	

TIME	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
	10-Oct-16	**11-Oct-16**	**12-Oct-16**	**13-Oct-16**	**14-Oct-16**
09-11	**Histology LN-3 Connective tissue II**				Alimentary System. Part 2. OC12
11-13		**NBME EXAM**	**Histology AL-1 Skin I**	Alimentary System. Part 1. OC11	
14-16	Mediastinum Topography. Part 1. OC9		Mediastinum Topography. Part 2. OC10	**Histology AL-2 Skin II**	Physiology, ER6 Progress Test
16-18	Physiology, ER4	16:00-19:00 ITALIAN	Physiology, ER5	16:00-19:00 ITALIAN	**Physiology, ER7** Progress Test

TIME	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
	17-Oct-16	**18-Oct-16**	**19-Oct-16**	**20-Oct-16**	**21-Oct-16**
09-11	**Histology DG - Adipose tisssue. Muscle dev**		Alimentary System. Part 5. OC15		Dynamics of Movement - OC17
11-13		Alimentary System. Part 4. OC14	Physiology, MP3	Alimentary System. Part 6. OC16	Physiology, MP5
14-16			Physiology, MP4		Physiology, MP6
16-18		16:00-19:00 ITALIAN		16:00-19:00 ITALIAN	

TIME	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
	24-Oct-16	**25-Oct-16**	**26-Oct-16**	**27-Oct-16**	**28-Oct-16**
09-11	Physiology, MP7	**Histology LN-4 Muscle I**	Physiology, VZ2	Physiology, VZ3	Physiology, MP9
11-13	Physiology, MP8		Alimentary System. Part 9. OC20	Alimentary System. Part 10. OC21	Dynamics of Movement - OC22
14-16	**Histology AR Advanced Microscopy**	Physiology, VZ1	**Histology AL-3 Respiratory tract**	**Histology AL-4 GI tract I**	Alimentary System. Part 7. OC18
16-18		16:00-19:00 ITALIAN		16:00-19:00 ITALIAN	Physiology, MP10

TIME	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
	31-Oct-16	**1-Nov-16**	**2-Nov-16**	**3-Nov-16**	**4-Nov-16**
09-11	Holiday	Holiday	Endocrine System. Part 1. OC23	Physiology, VZ5	
11-13			Dynamics of Movement - LM	**Histology AL-6 GI tract III**	Alimentary System. Part 3. OC13
14-16			**Histology AL-5 GI tract II**	Endocrine System. Part 2. OC24	Physiology, GC1
16-18			Physiology, VZ4	16:00-19:00 ITALIAN	Physiology, GC2

TIME	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
	7-Nov-16	**8-Nov-16**	**9-Nov-16**	**10-Nov-16**	**11-Nov-16**
09-11	**Histology (LN)-7**	**Histology LN-6 Blood I**	Urinary System. Part 1. OC27	Urinary System. Part 2. OC28	Dynamics of Movement - LM
11-13	Neuroanatomy 1. FM1	Endocrine System. Part 3. OC26	**Histology LN-7 Blood II (RO)**	**Histology LN-8 Hematopoiesis I**	Endocrine System. Part 3. OC25
14-16	Physiology, VZ6		Dynamics of Movement - LM	Physiology, VZ8	Physiology, GC3
16-18		16:00-19:00 ITALIAN	Physiology, VZ7	16:00-19:00 ITALIAN	Physiology, GC4

TIME	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
	14-Nov-16	**15-Nov-16**	**16-Nov-16**	**17-Nov-16**	**18-Nov-16**
09-11	**Histology LN-9 Hematopoiesis II**	**Histology AL-7 Urinary tract**	Male Repro. Part 1. OC30	Male Repro. Part 2. OC31	Neuroanatomy 2. FM2
11-13	Circulatory System. MV1	Urinary System. Part 3. OC29	Dynamics of Movement - LM	**Histology LN-10 Immune System I**	Neuroanatomy 3. FM3
14-16	Circulatory System. MV2		Dynamics of Movement - LM	Physiology, VZ10	Physiology, GC5
16-18	Circulatory System. MV3	16:00-19:00 ITALIAN	Physiology, VZ9	16:00-19:00 ITALIAN	Physiology, GC6 (1 hour) 16-17

TIME	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
	21-Nov-16	**22-Nov-16**	**23-Nov-16**	**24-Nov-16**	**25-Nov-16**
09-11	**Histology LN-11 Immune System II**	Male Repro. Part 3. OC32	Neuroanatomy 4. FM4		Dynamics of Movement - LM
11-13			Female Repro. Part 1. OC33	**Histology LN-12 Immune System III**	
14-16	Physiology, FE3	Physiology, VZ11	**Histology AL-8 Bone**	**Histology AL-9 Spermatogenesis**	
16-18	Physiology, FE4	16:00-19:00 ITALIAN	Physiology, VZ12	16:00-19:00 ITALIAN	

TIME	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
	28-Nov-16	**29-Nov-16**	**30-Nov-16**	**1-Dec-16**	**2-Dec-16**
09-11	**Histology LN-13 Angiogenesis**	Dynamics of Movement - LM	**Histology AG-1 Nervous tissue I**	Neuroanatomy 5. FM5	Alimentary System. Part 8. OC19
11-13	Circulatory System. MV4		**Histology LN-14 Endocrine System**	**Histology LN-15 Ovary**	**Histology AG-2 Nervous tissue II**
14-16	Circulatory System. MV5	Female Repro. Part 3. OC35	Dynamics of Movement - LM		
16-18	Circulatory System. MV6	16:00-19:00 ITALIAN	Dynamics of Movement - LM	16:00-19:00 ITALIAN	

TIME	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
	5-Dec-16	**6-Dec-16**	**7-Dec-16**	**8-Dec-16**	**9-Dec-16**
09-11	Neuroanatomy 6. FM6	**Histology AL-10 Stem Cells**	Holiday	Holiday	Holiday
11-13	Circulatory System. MV7	Micro Small class 1 group A FC			
14-16	Circulatory System. MV8	Micro Small class 1 group B FC			
16-18	Circulatory System. MV9	Micro Small class 1 group C FC			

TIME	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
	12-Dec-16	**13-Dec-16**	**14-Dec-16**	**15-Dec-16**	**16-Dec-16**
09-11	**Histology LN-16 Uterus**	**Histology AL-11 Back up**	Physiology, FE5		Micro Small class 2 group B FC
11-13			Physiology, FE6	**Histology LN-17 Gene Therapy**	Micro Small class 2 group C FC
14-16			Physiology, FE7	Female Repro. Part 2. OC34	Micro Small class 2 group A FC
16-18		16:00-19:00 ITALIAN	Physiology, FE8	16:00-19:00 ITALIAN	

TIME	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
	19-Dec-16	20-Dec-16	21-Dec-16	22-Dec-16	23-Dec-16
09-11	Histology LN-18 Back up			Holiday	Holiday
11-13					
14-16					
16-18		16:00-19:00 ITALIAN			

TIME	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
	26-Dec-16	27-Dec-16	28-Dec-16	29-Dec-16	30-Dec-16
09-11	Holiday	Holiday	Holiday	Holiday	Holiday
11-13					
14-16					
16-18					

TIME	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
	2-Jan-17	3-Jan-17	4-Jan-17	5-Jan-17	6-Jan-17
09-11	Holiday	Holiday	Holiday	Holiday	Holiday
11-13					
14-16					
16-18					

TIME	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
	9-Jan-17	10-Jan-17	11-Jan-17	12-Jan-17	13-Jan-17
09-11	Practical 1 - Plenary	Practical 2 - Plenary	Practical 3 - Plenary	Histology LN-19	
11-13	Practical 1A	Practical 2B	Practical 3C	Micro Small class 3 group C FC	
14-16	Practical 1B	Practical 2C	Practical 3A	Micro Small class 3 group A FC	
16-18	Practical 1C	Practical 2A	Practical 3B	Micro Small class 3 group B FC	

TIME	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
	16-Jan-17	17-Jan-17	18-Jan-17	19-Jan-17	20-Jan-17
09-11	Practical 4 - Plenary	Practical 5 - Plenary	Practical 6 - Plenary	Histology LN-20	
11-13	Practical 4A	Practical 5B	Practical 6C	Micro Small class 4 group A FC	
14-16	Practical 4B	Practical 5C	Practical 6A	Micro Small class 4 group C FC	
16-18	Practical 4C	Practical 5A	Practical 6B	Micro Small class 4 group B FC	

TIME	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
	23-Jan-17	24-Jan-17	25-Jan-17	26-Jan-17	27-Jan-17
09-11	Study leave				
11-13					
14-16					
16-18					

TIME	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
	30-Jan-17	31-Jan-17	1-Feb-17	2-Feb-17	3-Feb-17
09-11	Study leave				
11-13					
14-16					
16-18					

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UNIVERSITÀ VITA-SALUTE SAN RAFFAELE

STUDENT GUIDE

FACULTY OF MEDICINE AND SURGERY

MASTER'S DEGREE COURSE
INTERNATIONAL MD PROGRAM

Academic Year 2016/2017

Academic Calendar

VITA-SALUTE SAN RAFFAELE UNIVERSITY
INTERNATIONAL MD PROGRAM - 3rd YEAR

	Sept-16		Oct-16		Nov-16		Dec-16		Jan-17		Feb-17		Mar-17		Apr-17		May-17		June-17		July-17		Aug-17		Sept-17
1		1		1	ALL SAINTS	1		1	NEW YEAR'S DAY	1	Cardiovascular + Ren&T	1	Cardiovascular + Ren&T	1		1	BANK HOLIDAY	1	GI+Surgery+Semiotics	1		1	Holidays	1	EXAMS
2		2		2		2		2	Holidays	2	Cardiovascular + Ren&T	2	Cardiovascular + Ren&T	2		2	Exams	2	BANK HOLIDAY	2		2	Holidays	2	
3		3		3		3		3	Holidays	3	Cardiovascular + Ren&T	3	Cardiovascular + Ren&T	3	Clinical Rot: internal Medicine I	3	Exams	3		3	EXAMS	3	Holidays	3	
4		4		4		4		4	Holidays	4		4		4	Clinical Rot: internal Medicine I	4	Exams	4		4	EXAMS	4	Holidays	4	EXAMS
5		5		5		5		5	Holidays	5		5		5	Clinical Rot: internal Medicine I	5	Exams	5	GI+Surgery+Semiotics	5	EXAMS	5		5	EXAMS
6		6		6		6		6	EPIPHANY	6	Cardiovascular + Ren&T	6	Cardiovascular + Ren&T	6	Clinical Rot: internal Medicine I	6		6	GI+Surgery+Semiotics	6	EXAMS	6		6	EXAMS
7		7		7		7	S.AMBROGIO	7		7	Cardiovascular + Ren&T	7	Cardiovascular + Ren&T	7	Clinical Rot: internal Medicine I	7		7	GI+Surgery+Semiotics	7	EXAMS	7	Holidays	7	EXAMS
8		8		8		8	IMMACOLATA	8		8	Cardiovascular + Ren&T	8	Cardiovascular + Ren&T	8		8	Exams	8	GI+Surgery+Semiotics	8		8	Holidays	8	EXAMS
9		9		9		9	Holidays	9	EXAMS	9	Cardiovascular + Ren&T	9	Cardiovascular + Ren&T	9		9	Exams	9	GI+Surgery+Semiotics	9		9	Holidays	9	
10		10		10		10		10	EXAMS	10	Cardiovascular + Ren&T	10	Cardiovascular + Ren&T	10	Study leave	10	Exams	10		10	EXAMS	10	Holidays	10	
11		11		11		11		11	EXAMS	11		11		11	Study leave	11	Exams	11		11	EXAMS	11	Holidays	11	EXAMS
12		12		12		12		12	EXAMS	12		12		12	Study leave	12	Exams	12	GI+Surgery+Semiotics	12	EXAMS	12		12	EXAMS
13		13		13		13		13	EXAMS	13	Cardiovascular + Ren&T	13	Cardiovascular + Ren&T	13	Study leave	13		13	GI+Surgery+Semiotics	13	EXAMS	13		13	EXAMS
14		14		14		14		14		14	Cardiovascular + Ren&T	14	Cardiovascular + Ren&T	14	Easter Holiday	14		14	GI+Surgery+Semiotics	14	EXAMS	14	Holidays	14	EXAMS
15		15		15		15		15		15	Cardiovascular + Ren&T	15	Cardiovascular + Ren&T	15		15	GI+Surgery+Semiotics	15	GI+Surgery+Semiotics	15		15	ASSUMPTION	15	EXAMS
16		16		16		16		16	EXAMS	16	Cardiovascular + Ren&T	16	Cardiovascular + Ren&T	16	EASTER	16	GI+Surgery+Semiotics	16	GI+Surgery+Semiotics	16		16	Holidays	16	
17		17		17		17		17	EXAMS	17	Cardiovascular + Ren&T	17	Cardiovascular + Ren&T	17	EASTER MONDAY	17	GI+Surgery+Semiotics	17		17	EXAMS	17	Holidays	17	
18		18		18		18		18	EXAMS	18		18		18	Easter Holiday	18	GI+Surgery+Semiotics	18		18	EXAMS	18	Holidays	18	EXAMS
19		19		19		19		19	EXAMS	19		19		19	extra exam session	19	GI+Surgery+Semiotics	19	Clinical Rot: Int.l Med.&Surgery I	19	EXAMS	19		19	EXAMS
20		20		20		20		20	EXAMS	20	Cardiovascular + Ren&T	20	Cardiovascular + Ren&T	20	extra exam session	20		20	Clinical Rot: Int.l Med.&Surgery I	20	EXAMS	20		20	EXAMS
21		21		21		21		21		21	Cardiovascular + Ren&T	21	Cardiovascular + Ren&T	21	extra exam session	21		21	Clinical Rot: Int.l Med.&Surgery I	21	EXAMS	21	Holidays	21	EXAMS
22		22		22		22	Holidays	22		22	Cardiovascular + Ren&T	22	Cardiovascular + Ren&T	22		22	GI+Surgery+Semiotics	22	Clinical Rot: Int.l Med.&Surgery I	22		22	Holidays	22	EXAMS
23		23		23		23	Holidays	23	EXAMS	23	Cardiovascular + Ren&T	23	Cardiovascular + Ren&T	23		23	GI+Surgery+Semiotics	23	Clinical Rot: Int.l Med.&Surgery I	23		23	Holidays	23	
24		24		24		24		24	EXAMS	24	Cardiovascular + Ren&T	24	Cardiovascular + Ren&T	24	Holidays	24	GI+Surgery+Semiotics	24		24	EXAMS	24	Holidays	24	
25		25		25		25	CHRISTMAS	25	EXAMS	25		25		25	BANK HOLIDAY	25	GI+Surgery+Semiotics	25		25	EXAMS	25	Holidays	25	New Academic Year
26	Beginning Sem. 1	26		26		26	BOXING DAY	26	EXAMS	26		26		26	Exams	26	GI+Surgery+Semiotics	26	Clinical Rot: Int.l Med.&Surgery I	26	EXAMS	26		26	New Academic Year
27		27		27		27	Holidays	27	EXAMS	27	Cardiovascular + Ren&T	27	Clinical Rot: internal Medicine I	27	Exams	27		27	Clinical Rot: Int.l Med.&Surgery I	27	EXAMS	27		27	New Academic Year
28		28		28		28	Holidays	28		28	Cardiovascular + Ren&T	28	Clinical Rot: internal Medicine I	28	Exams	28		28	Clinical Rot: Int.l Med.&Surgery I	28	EXAMS	28	Holidays	28	New Academic Year
29		29		29		29	Holidays	29				29	Clinical Rot: internal Medicine I	29		29	GI+Surgery+Semiotics	29	Clinical Rot: Int.l Med.&Surgery I	29		29	Holidays	29	New Academic Year
30		30		30		30	Holidays	30	Cardiovascular + Ren&T			30	Clinical Rot: internal Medicine I	30		30	GI+Surgery+Semiotics	30	Clinical Rot: Int.l Med.&Surgery I	30		30	Holidays	30	
		31	Holidays			31		31	Cardiovascular + Ren&T			31	Clinical Rot: internal Medicine I			31	GI+Surgery+Semiotics			31	EXAMS	31	Holidays		

h. 9-13 Corso sicurezza
h. 9-13 Corso sicurezza

From 26/09/2016 to 16/12/2016:
Microbiology and Mech. of Infectious Diseases
Basic Pathology and Immunology
Clinical Laboratory Medicine

Clinical Rot: internal Medicine I
Studente OMBRA

Clinical Rot: Int.l Med.&Surgery I
Metà classe a settimana

Notice from the University Committee of the enhancement of quality

on the questionnaires for the evaluation of courses and teaching

Vita-Salute San Raffaele University considers a continuous process of monitoring and evaluating the quality of the educational mission, also in terms of planning, as essential for achieving excellence in higher education and research.

UniSR Students can assess the correspondence between the teaching quality offered and their expectation. That is very important to improve teaching and training and develop successful strategies.

At the end of each semester, students' opinions are collected through *evaluation questionnaires*. Filling in the questionnaire is compulsory, according to the guidelines published in November 2013 by ANVUR (the National Agency for the Evaluation of the University and Research Systems). IT techniques have been implemented to speed up questionnaire collection and processing. Anonymity is fully guaranteed.

Filling in the questionnaires is the necessary condition which allows a student to register for the exams. After collection, data are firstly conveyed to the Master's degree course Coordinators and to the Deans of the Faculties and finally to the University Evaluation Commission for the analysis of data.

The data collected will be a fundamental source to spot every sort of issue, thus for future improvement.

In short, filling in the questionnaires represents a key moment of University life in which students take a role of responsibility together with academia and University organization structures in the continuous process of improvement and innovation which makes it possible for our University to rank among the top Universities in the nation and Europe.

We really appreciate all respondents' valuable time to fill up the questionnaires, especially during intense study times and we would like to raise students' awareness of the importance of their contribution by carrying out this task responsibly and sharing the same objectives together with this Institution.

The President of the University Committee
for the enhancement of quality

YEAR 3

- Basic Pathology and Immunology
- Microbiology and Mechanisms of Infectious Diseases
- Clinical Laboratory Medicine
- Cardiovascular Diseases
- Principles of Surgery
- Digestive System Diseases
- Respiratory, Ear, Nose and Throat Diseases
- Clinical Rotations

Basic Pathology and Immunology

Total Credits: 13
Total hours: 130
Scientific Discipline Sector: MED/04 - MED/08

Teaching staff

Course Coordinator: Prof. Guido Poli Email: poli.guido@hsr.it
(www.unisr.it/k-teacher/poli-guido/)
Prof. Ruggero Pardi Email: pardi.ruggero@hsr.it
(www.unisr.it/k-teacher/pardi-ruggero/)
Prof. Maurilio Ponzoni Email: ponzoni.maurilio@hsr.it
(www.unisr.it/k-teacher/ponzoni-maurilio/)
Dr. Attilio Bondanza Email: bondanza.attilio@hsr.it
(www.unisr.it/k-teacher/bondanza-attilio/)
Dr. Matteo Iannacone Email: iannacone.matteo@hsr.it
Dr. Mirela Kuka Email: kuka.mirela@hsr.it
(www.unisr.it/k-teacher/kuka-mirela/)
Dr. Federica Pedica Email: pedica.federica@hsr.it

Course Description

The BPI course will be articulated in three parts. The first part (composed of 36 frontal lessons) aims at providing the fundamental knowledge on the most relevant aspects of human pathology and immunology, including cell and tissue pathology, the mechanisms underlying acute and chronic inflammation, vessel biology, wound repair and the process of neoplastic transformation and evolution. Immunology lessons will provide state of art information on both innate and adaptive immune responses to pathogens and to transformed cells as well as on key immunologically mediated pathologies, such as immunodeficiencies, allergy and autoimmunity.

In the second part of the course, the student will be directly involved in interactive modules (IM) revolving around clinical cases. Each IM will start form the medical and histopathological description of a clinical case with the goal of identifying its etiology and of reconstructing the fundamental pathogenic steps leading to overt clinical disease. This inductive process will be enriched by elements of epidemiology, genetics and pre-clinical models (when available). Since each module will span over two lessons (i.e. 4 h), the second part of the course foresees 10 IM related to the main areas of human pathology.

In addition, there will be **3** Mini-Courses (each one composed of two lessons, i.e. four h) dedicated to specific topics and including two related scientific seminars. Finally, a Microscope Laboratory (covering the equivalent of 5 lessons/10 h) will train the students in linking their theoretical knowledge with histopathological images of actual clinical cases.

Overall, the course aims at providing a solid base on the fundamental principles underlying human pathology while training the students to exert their skills and acquired knowledge to probe the field of human diseases.

Textbooks:

Robbins Basic Pathology: with STUDENT CONSULT Online Access, 10e (Robbins Pathology) - mandatory

Cellular and Molecular Immunology: with STUDENT CONSULT Online Access, 8e (Abbas, Cellular and Molecular Immunology) – highly suggested

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Microbiology and Mechanism of Infectious Diseases

Total Credits: 7
Total hours: 70
Scientific Discipline Sector: MED/07 - VET/06 – BIO/14

Teaching staff

Course Coordinator: Prof. Nicasio Mancini Email: mancini.nicasio@hsr.it (www.unisr.it/k-teacher/mancini-nicasio/)
Receiving hour: Monday from 13:00 to 14:00

Prof. Mauro Pistello Email: mauro.pistello@med.unipi.it
Prof. Nicola Clementi Email: clementi.nicola@hsr.it
(www.unisr.it/k-teacher/clementi-nicola/)
Dr. Laura Infurnari Email: infurnari.laura@hsr.it

Course Description

Bacteriology

The purpose of this course is to give to students a thorough grounding in the comprehension of microbial structure, physiology and in the interplay between humans and microbes in different body sites and conditions. This will be achieved by studying microbial resident flora (microbiota), with particular attention to its composition, its changes during infectious diseases and to its role in the diffusion of resistance to antibiotics.
Following this perspective, students will be introduced to all of the basic structural, physiological and metabolic principles of medical bacteriology including the following points:
- Cell structure of prokaryotes
- Structure and function of endospores
- Microbial metabolism
- Microbial genetics
- Virulence and pathogenicity of bacteria
- Transmission of bacterial infection
- The immune response to bacteria
- Techniques for the diagnosis of bacterial infections
- Novel techniques for the study of resident flora (the "human microbiome project")

The detailed knowledge of the microbiota and its composition will also allow a better comprehension of the role played by specific bacterial genera and species, important in medical microbiology, that will be studied in details. Here it follows a punctual list of the bacterial genera and species that students should understand by the end of the course:

- *Staphylococcus* spp
- *Staphylococcus aureus*
- Coagulase-negative staphylococci
- *Streptococcus* spp
- *Streptococcus pyogenes*

- *Streptococcus agalactiae*
- *Streptococcus pneumoniae*
- Viridans streptococci
- *Enterococcus* spp
- *Enterococcus faecalis*
- *Enterococcus faecium*
- *Bacillus* spp
- *Bacillus anthracis*
- *Bacillus cereus*
- *Clostridium* spp
- *Clostridium difficile*
- *Clostridium perfringens*
- *Clostridium botulinum*
- *Clostridium tetani*
- *Corynebacterium* spp
- *Corynebacterium diphteriae*
- *Corynebacterium striatum*
- *Listeria monocytogenes*
- *Actinomyces* spp
- *Nocardia* spp
- *Enterobacteriaceae*
- *Escherichia coli*
- *Klebsiella pneumoniae*
- *Proteus mirabilis*
- *Enterobacter* spp
- *Serratia marcescens*
- *Salmonella* spp
- *Shigella spp*
- *Pseudomonas aeruginosa*
- *Stenotrophomonas maltophilia*
- *Burkholderia* spp
- *Acinetobacter* spp
- *Vibrio cholerae*
- *Campylobacter* spp
- *Helicobacter pylori*
- *Haemophilus* spp
- *Haemophilus influenzae*
- *Moraxella catarrhalis*
- *Bordetella pertussis*
- *Brucella* spp
- *Francisella tularensis*
- *Yersinia pestis*
- *Yersinia enterocolitica*
- *Pasteurella multocida*
- *Neisseria* spp
- *Neisseria meningitidis*
- *Neisseria gonorrhoeae*
- *Legionella pneumophila*
- *Bartonella* spp
- *Bacteroides* spp
- Mycobacteria
- *Mycobacterium tuberculosis*
- *Mycobacterium avium* complex
- Spirochetes
- *Mycoplasma* and *Ureaplasma*
- Rickettsia, *Ehrlichia, Anaplasma* and *Coxiella*

- *Chlamydia* and *Chlamydophila*

The microbiota-oriented perspective will also be followed in the study of the available prophylactic and
therapeutic anti-bacterial approaches:
- Sterilization, Disinfection and Antisepsis
- Modes of action of the main biocides used for disinfection and antisepsis
- Mechanisms of resistance to biocides
- Antibiotics: bacterial targets of available molecules and mechanisms of resistance
- Genetic bases of antibiotic resistance
- Genetic bases of the diffusion of antibiotic resistance
- Multi-drug resistant bacteria
- Passive immunoprophylaxis
- Anti-bacterial vaccines

Virology
The general purpose of this course is to give a robust introduction to basic medical virology, correlating
the molecular features of each viral agents to the associated clinical syndromes. The dramatic advances
in the comprehension of the different phases of the viral replicative cycle and pathogenesis will be
directly correlated to the practical possibility of developing novel antiviral strategies or of improving the
available diagnostic tools.

At the end of the course, the students should be familiar with the following general topics:
- Structure and chemical composition of viruses
- Phases of viral replication
- Transmission of viral infection
- Different types of viral infection
- Pathogenesis of viral diseases according to different sites of replication
- Viral carcinogenesis
- The immune response to viruses
- Techniques for the diagnosis of viral infections
- Antiviral agent and mechanisms of viral resistance
- Passive immunoprophylaxis
- Antiviral vaccines

These general concepts should be specifically correlated to the specific features of each of the following groups of viruses:

- Parvoviruses
- Adenoviruses
- Herpesviruses
- Poxviruses
- Picornaviruses
- Papillomaviruses and polyomaviruses
- Hepatitis viruses
- Rotaviruses
- Caliciviruses
- Arthropod-borne and rodent-borne viruses
- Orthomyxoviruses
- Paramyxoviruses

- Rubella virus
- Coronaviruses
- Rabies virus
- Human retroviruses
- Lentiviruses
- Non-conventional non-viral pathogens (Prions)

Mycology
At the end of the course, the students will be familiar with the following topics regarding medical mycology:
- Structure of fungal cell
- Yeasts and moulds
- Fungal genera and species present in the human microbiota
- Virulence and pathogenicity of fungi
- Immune control of fungal agents
- Causative fungal agents of superficial, cutaneous and subcutaneous mycoses
- Causative fungal agents of endemic mycoses
- Causative fungal agents of opportunistic mycoses
- Diagnostic laboratory techniques of fungal infections
- Antifungal agents: targets of available molecules and mechanisms of resistance

The students should also be familiar with the main features regarding the following fungal genera and species of medical interest:

- *Candida* spp
- *Candida albicans*
- *Candida glabrata*
- *Candida krusei*
- *Cryptococcus neoformans*
- *Aspergillus* spp
- *Aspergillus fumigatus*
- *Aspergillus terreus*
- *Fusarium* spp
- Zygomycetes
- *Pneumocystis jiroveci*
- *Histoplasma capsulatum* and other dimorphic fungi

Parasitology

By the end of the course, students should be familiar with the following protozoan and helminthic parasites of medical importance, with particular attention given to associated clinical syndromes and diagnostic laboratory techniques:

- *Giardia lamblia*
- *Cryptosporidium* spp and *Cyclospora* spp
- *Entamoeba histolytica*
- *Trichomonas vaginalis*
- *Trypanosoma* spp
- *Leishmania* spp
- Tissue amebae (i.e. *Acanthamoeba* spp)
- *Plasmodium* spp

- *Babesia microti*
- *Toxoplasma gondii*
- *Enterobius vermicularis*
- *Trichuris trichiura*
- *Ascaris lumbricoides*
- *Ancylostoma duodenale*
- *Strongyloides stercoralis*
- *Trichinella spiralis*
- *Taenia* spp
- *Diphyllobotrium latum*
- *Anisakis simplex*
- *Schistosoma* spp
- Filariae
- *Echinococcus granulosus*

Suggested textbooks

Reference:
Title: Medical Microbiology - 8th ed., Authors: Patrick R. Murray, Ken S. Rosenthal, Michael A. Pfaller,
Edition: Elsevier Saunders, 2016, ISBN 000-0323299563

Suggested Readings:
Title: Jawetz, Melnick & Adelberg's Medical Microbiology - 27th ed., Authors: Karen C. Carroll, Janet S. Butel, Stephen A. Morse, Timothy Meitzner, Edition: McGraw-Hill, 2016, ISBN 978-0071824989

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CLINICAL LABORATORY MEDICINE

Total Credits: 4
Total hours: 40
Scientific Discipline Sector: MED/05 - MED/07 – BIO/12

Course Coordinator: Prof. Giuseppe Banfi
Email: direzione.generale@fondazionesanraffaele.it (www.unisr.it/k-teacher/banfi-giuseppe/)

Prof. Maurizio Ferrari Email: ferrari.maurizio@hsr.it
(www.unisr.it/k-teacher/ferrari-maurizio/)
Dr. Chiara Di Resta Email: diresta.chiara@hsr.it
(www.unisr.it/k-teacher/diresta-chiara/)

Course Description
Clinical Biochemistry

The purpose of the course is to give to students an overview on the most relevant aspects of clinical laboratory medicine. The course will describe the pathophysiological aspects that influence the results of clinical laboratory tests, the interpretation of tests results and will give some insights on the technologies used in clinical laboratory.
Part of the course will be dedicated to the pre-analytical phase to provide the necessary information on variables that could influence and exert a confounding effect on the analytical results.

The following topics will be covered:

- Pre-analytical phase: description of the laboratory process, sources of pre-analytical variability (patient preparation, specimen collection, processing, transportation and storage)
- Statistical methods in laboratory medicine. Internal Quality control, external quality assessment.
- Laboratory report, units of measurement, reference intervals, decision limits, reference change value
- Analytical Techniques: spectrophotometry, mass spectrometry, immunoassays
- Proteins analysis and interpretation
- Lipids and lipoproteins
- Blood gas and critical care testing,
- Water and electrolyte balance
- Calcium biology and disorders
- Carbohydrate disorders
- Uric acid and iron metabolism
- Methods for DNA amplification
- Methods to detect known mutations
- Methods to detect unknown mutations
- New advanced molecular technologies
- Clinical applications of molecular tests

Suggested textbooks

- Tietz textbook of Clinical Chemistry and molecular diagnostics, fifth edition, Burtis, Ashwood, Bruns, Elsevier Saunders, ISBN:9781416061649

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CARDIOVASCULAR DISEASES

Total Credits: 9
Total hours: 86
Scientific Discipline Sector: MED/11, MED/22, MED/23, MED/36, BIO/14

Teaching staff

Course Coordinator: Prof. Paolo Camici (www.unisr.it/k-teacher/camici-paologuido/) Email: camici.paolo@hsr.it
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Prof. Franco Cecchi Email: francocecchi337@gmail.com
Prof. Yamume Tshomba (www.unisr.it/k-teacher/yamume-tshomba/) Email: tshomba.yamume@hsr.it

Course Description
The course is organised in 7 modules:

Cardiac physiology and principles of echocardiography and ECG

This module will provide the basis of cardiac and coronary pathophysiology necessary for the understanding of cardiovascular syndromes. In addition, the module will cover the principles of echo- and electro-cardiography with practical examples.

Ischaemic heart disease (IHD)

The pathophysiology and clinical acute and chronic syndromes caused by coronary artery disease will be discussed. Furthermore, this module will provide knowledge relative to the main diagnostic techniques/criteria for establishing the diagnosis of IHD. Finally, both pharmacologic and interventional treatment strategies will be discussed.

Myocardial Diseases

In this module both primary/genetic and secondary forms of cardiomyopathy will be presented along with inflammatory disease of the heart, i.e. myocarditis and pericarditis. Diagnosis and treatment of these conditions will also be discussed.

Arrhythmias

The pathophysiology, diagnosis and treatment of rhythm and conduction disturbances will be presented including illustrative clinical cases.

Valvular heart disease

Congenital, degenerative and inflammatory diseases of the cardiac valves will be presented along with diagnostic and treatment strategies.

Heart Failure

The pathophysiology and clinical features of heart failure of ischemic and non ischemic origin will be presented along with the relevant diagnostic techniques and treatment options.

Congenital heart disease, pulmonary embolism and disease of the large vessels

This module will cover the above topics in conjunction with a special lecture on cardiology in the emergency department.

A questions and answers (Q&A) session will close the course.
Students are expected to demonstrate in depth knowledge of all the topics treated in the 7 modules.
Copies of lessons' slides in addition to reference papers will be made available on the University website. The text suggested is "Harrison's-Principles of Internal Medicine" McGraw-Hill. We also advise reading the textbook "Coronary microvascular dysfunction" Crea, Lanza, Camici eds.- published by Springer. Finally, we strongly advise to download and consult the European Society of Cardiology ESC Clinical Practice Guidelines available at http://www.escardio.org/guidelines-surveys/esc-guidelines/Pages/GuidelinesList.aspx

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PRINCIPLES OF SURGERY

Total Credits: 3
Total hours: 30
Scientific Discipline Sector: MED/18

Teaching staff

Course Coordinator: Prof. Riccardo Rosati Email: rosati.riccardo@hsr.it
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Dr. Andrea Tamburini Email: tamburini.andreamarco@hsr.it

Course Description
The aim of this course is to provide the essential theoretical knowledge to deal with the surgical patient. The student will focus on the epidemiological and physiopathological aspects of the main surgical diseases, on its diagnostic and treatment algorithms. In this course, the basic diseases concerning general surgery will be systematically introduced and discussed in a multidisciplinary setting, including medical, radiological and surgical technical features.

Course Program

Perioperative management
- Preoperative assessment, analysis of risk factors.
- Intraoperative factors influencing recovery.
- Postoperative care, enhanced recovery after surgery protocols.

Transplant Surgery
- History and definitions
- Matching of donor and recipient, principles of immunosuppression.
- Organ preservation.
- Organ transplants (heart, liver, kidney, pancreas, intestine).
- Living donor.

Metabolic surgery
- **Bariatric surgery:** indications, principles of surgical technique, metabolic results, prognosis.

Abdominal wall surgery
- Abdominal wall hernias and incisional hernias.

Thyroid and Parathyroids
- **Surgical anatomy of thyroid and parathyroid**
- **Thyroid nodule and multinodular goiter:** symptoms, differential diagnosis, treatment algorithm.

- **Thyroid tumors:** epidemiology, pathology classification, symptoms, diagnosis, surgical therapy and principles of technique, treatment algorithms, prognosis.
- **Parathyroid tumors:** epidemiology, pathology classification, symptoms, diagnosis, surgical therapy and principles of technique, treatment algorithms, prognosis.

Breast
- **Surgical anatomy of the breast and axilla**
- **Benign breast disease:** epidemiology, pathology classification, symptoms, diagnosis, surgical therapy and principles of technique, treatment algorithms, prognosis.
- **Breast cancer:**epidemiology, pathology classification, symptoms, diagnosis, surgical therapy and principles of technique, treatment algorithms, prognosis.

Esophagus
- **Gastro-esophageal reflux disease and hiatal hernia:** symptoms, diagnosis, surgical therapy and principles of technique, treatment algorithm.
- **Esophageal diverticula:** definitions, epidemiology, classification, physiopathology, symptoms, diagnosis, treatment algorithm.
- **Achalasia:** surgical therapy and principles of technique, endoscopic therapy.
- **Esophageal cancer:** epidemiology, pathology classification, symptoms, diagnosis, surgical therapy and principles of technique, endoscopic palliation, treatment algorithms, prognosis.

Stomach
- **Surgical anatomy of the stomach**
- **Peptic ulcer:** symptoms, diagnosis, treatment algorithms.
- **Stomach cancer:** epidemiology, pathology classification, symptoms, diagnosis, surgical therapy and principles of technique, endoscopic palliation, treatment algorithms, prognosis.

Small intestine
- **Surgical anatomy of the small intestine**
- **Small bowel obstruction:** causes, symptoms, diagnosis, surgical therapy and principles of technique.
- **Inflammatory bowel disease (IBD)**
  - Crohn's disease: symptoms, diagnosis, complications, surgical therapy, treatment algorithm, prognosis.
  - Ulcerative colitis: symptoms, diagnosis, complications, surgical therapy, treatment algorithm, prognosis.

Colon and Rectum
- **Surgical anatomy of the colon and rectum**
- **Diverticular disease:** symptoms, diagnosis, complications, surgical therapy, treatment algorithm.
- **Colorectal cancer:** epidemiology, pathology classification, symptoms, diagnosis, surgical therapy and principles of technique, endoscopic therapy and palliation, treatment algorithms, prognosis.

Anus
- Hemorrhoids.
- Fistula in ano.
- Anal fissure.
- Rectal prolapse.

Spleen

- **Surgical anatomy of the spleen**
- **Spleen trauma:** epidemiology, symptoms, diagnosis, treatment algorithm, surgical therapy and principles of technique.
- **Spleen lesions:**epidemiology, pathology classification, symptoms, diagnosis, surgical therapy and principles of technique, treatment algorithms, prognosis.

Adrenal glands

- **Surgical anatomy of the adrenal glands**
- **Adrenal gland disease:** epidemiology, pathology classification, pathophysiology, symptoms, diagnosis, surgical therapy and principles of technique, medical therapy, prognosis.

Biliary tract

- **Surgical anatomy of the biliary tract**
- **Cholelithiasis and choledocholithiasis:** symptoms, diagnosis, complications surgical therapy and principles of technique, endoscopic and percutaneous approaches, treatment algorithms.
- **Biliary tract tumors:** epidemiology, pathology classification, symptoms, diagnosis, surgical therapy and principles of technique, endoscopic and percutaneous palliation, treatment algorithms, prognosis.

Liver

- **Surgical anatomy of the liver**
- **Benign tumors of the liver:** epidemiology, pathology classification, predisposing factors, symptoms, diagnosis, surgical therapy and principles of technique, treatment algorithms, prognosis.
- **Primary malignant liver tumors:** epidemiology, pathology classification, predisposing factors, symptoms, diagnosis, medical therapy, percutaneous approaches, surgical therapy and principles of technique, treatment algorithms, prognosis.
- **Metastatic liver disease:**clinical scenarios, diagnosis, medical therapy, surgical therapy and principles of technique, treatment algorithms, prognosis.
- **Portal Hypertension:** definitions, classification, pathophysiology, symptoms, complications, diagnosis, medical therapy, endoscopic and percutaneous treatment, surgical therapy and principles of technique, treatment algorithms, prognosis.

Pancreas

- **Surgical anatomy of the pancreas**
- **Acute pancreatitis:** definitions, epidemiology, symptoms, diagnosis, severity classification, complications, surgical therapy, treatment algorithm.
- **Exocrine and endocrine tumors of the pancreas:** epidemiology, pathology classification, symptoms, diagnosis, endoscopic and percutaneous palliation, surgical therapy and principles of technique, treatment algorithms, prognosis.

Surgical emergencies

- **Gastrointestinal bleeding:** epidemiology, symptoms, diagnosis, endoscopic, percutaneous and surgical therapy, treatment algorithms.
- **Acute abdomen:** causes, symptoms, diagnosis, surgical therapy and principles of technique, treatment algorithm.
- **Appendicitis:** classification, symptoms, diagnosis, surgical therapy and principles of technique, treatment algorithm.

Suggested textbook:

1) Sabiston Textbook of Surgey, 19th edition

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Digestive System Diseases

Total Credits: 8
Total hours: 84
Scientific Discipline Sector: MED/12 – MED/18 – MED/29 – MED/29 – MED/36 – BIO/14

Teaching staff
Course Coordinator: Prof. Pier Alberto Testoni Email: testoni.pieralberto@hsr.it
Receiving hour: by appointment (candela.tiziana@hsr.it) on Wednesday at 13:00 to 14:00.

Dr. Giulia M. Cavestro (www.unisr.it/k-teacher/cavestro-giuliamartina/)	Gastroenterology	Email: cavestro.giuliamartina@hsr.it
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Prof. Francesco De Cobelli (www.unisr.it/k-teacher/decobelli-francesco/)	Diagnostic Imaging	Email: decobelli.francesco@hsr.it
Dr. Daniele Zacchetti	Pharmacology	Email: zacchetti.daniele@hsr.it
Prof. Claudio Doglioni (www.unisr.it/k-teacher/doglioni-claudio/)	Human Pathology	Email: doglioni.claudio@hsr.it
Prof. Riccardo Rosati (http://www.unisr.it/k-teacher/rosati-riccardo/)	Surgery	Email: rosati.riccardo@hsr.it
Dr. Maria Giovanna Barboni	Odontology	Email: dott.mgbarboni@gmail.com
Dr. Paolo Capparè (www.unisr.it/k-teacher/cappare-paolo/)	Maxillofacial surgery	Email: paolocappare@gmail.com

Teaching Assistant: (Gastroenterology Unit)
Dr. Lorella Fanti
Dr. Chiara Notaristefano
Dr. Sandro Passaretti
Dr. Edi Viale

Course Description
The course has been designed as a multidisciplinary teaching module and aims to give to students a thorough grounding in the comprehension of diseases of the entire digestive system, including mouth, gastrointestinal tract, liver, biliary system, and pancreas.
The integrated course has the purpose to provide to students a general practitioner level knowledge in gastrointestinal, pancreas, and liver diseases.
This will be achieved by including in the course, beside gastroenterology, some notions of odontology and maxillofacial surgery, pharmacology, radiology, human pathology, surgery, and laboratory testing in an integrated fashion.
As regards surgery, the digestive system diseases course will run head-to- head with the course of general surgery, that will include a number of topics specifically addressed to gastroenterological surgical problems, complementary to the gastroenterology.
As regards the specific gastroenterology program, students will be introduced to basic physiology of the systems and organs, and physiopathology, clinical presentation, natural history, diagnostic work-up, and basic therapeutic notions of the diseases.
Within the course four clinical case presentation sessions will be included, allowing an interactive discussion between teachers and students in a practical approach to outpatients.

At the end of the course, the students should be familiar with the following topics:

Esophagus:
- normal motility and primary motility disorders
- gastroesophageal reflux disease (typical and atypical symptoms)

- complications of gastroesophageal reflux disease, with particular focus on Barrett's esophagus
- esophageal cancer
- surgical approach to functional disorders and cancer

Stomach and duodenum:
- gastric secretion, motility, gastric barrier
- functional dyspepsia
- chronic gastritis, with particular focus on Helicobacter pylori infection
- peptic ulcer disease
- precancerous condition and cancer
- oncological management and surgery

Small bowel:
- digestion, absorption and motility
- celiac disease and other enteropathies, including food intolerance and hypersensitivity
- motility disorders, including obstruction
- definition and classification of diarrhoea

Colon and rectum:
- chronic inflammatory bowel diseases and their complications
- diverticular disease and its complications
- irritable bowel syndrome
- precancerous conditions and cancer
- oncological management and surgery
- diseases of anus and functional disorders of pelvic floor

Liver and biliary tract:
- metabolism and laboratory testing
- bile secretion, cholestasis and jaundice
- chronic cholestatic diseases
- bile stone disease and its complications
- Vater's papilla organic and functional diseases
- non alcoholic fatty liver disease
- chronic hepatitis, with particular focus on virus-related infections
- hepatic cirrhosis and hemocromatosis
- portal hypertension and its complications
- tumors of liver and biliary system

Pancreas:
- exocrine and endocrine secretion
- acute pancreatitis
- local and systemic complications of acute pancreatitis
- chronic pancreatitis and its complications
- cystic lesions and neuroendocrine tumors
- cancer

Gastrointestinal bleeding

Suggested textbooks

1) Harrison's Principles of Internal Medicine – 18th edition
McGraw-Hill
2) Sleisenger and Fordtran's Gastrointestinal & Liver Disease – 8th edition
Saunders
3) Yamada T. Textbook of Gastroenterology – 4th edition
Lippincott Williams & Wilkins

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RESPIRATORY, EAR, NOSE AND THROAT DISEASES

Total Credits: 7
Lessons: 76 (2 hours every lesson)
SSD: MED/10, MED/36, MED/31, MED/21

Course Coordinator: Piero Zannini
Email: zannini.piero@hsr.it (www.unisr.it/k-teacher/zannini-piero/)

TEACHERS

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Matteo Trimarchi	Email: trimarchi.matteo@hsr.it

COURSE INTRODUCTION

"Respiratory, Ear, Nose and Throat Diseases" is a course that provides information on the morphology, physiology, pathophysiology, clinical aspects, diagnosis and principles of treatment of the diseases of the upper aerodigestive tract, and of the respiratory and auditive system.
During the course the morphology and physiology of the upper aerodigestive tract and of the respiratory and auditive system will be reviewed in order to introduce the students to the pathophysiology and pathogenesis of potential diseases. Clinical aspects, semeiotics and diagnostic procedures will be explored in depth and the principles of management will be presented. Students will have the opportunity to attend clinical Departments in order to gain practical experience of the diagnostic features and clinical evolution of the diseases.

SPECIFIC GOALS AND OBJECTIVES

The goals of the M.D. Course in Respiratory, Ear, Nose and Throat Diseases are to enable the students:

1) to deepen their knowledge of the macroscopic and microscopic morphology of the upper and lower respiratory system and of the ear, nose and throat.
2) to deepen their knowledge of the physiology of the upper and lower respiratory system and of the ear, nose and throat.
3) to learn about the pathophysiology of the diseases of the upper and lower respiratory system and of the ear, nose and throat.

4) to learn the techniques of collecting patients' medical history and of carrying out a physical examination of the upper and lower respiratory system and of the ear, nose and throat.
5) to gain knowledge of the most frequent diseases of the upper aerodigestive tract, the lower respiratory system, the ear, nose and throat including aetiology, pathogenesis, pathophysiology and relevant medical treatment.

DETAILED PROGRAM SECTIONS

Respiratory Medicine
Teacher: Prof. George Cremona
Respiratory Medicine is one of the systems-based courses covering all of the systems of the body. This course covers basic physiological, pharmacological and pathophysiological aspects of diseases of the respiratory system. Faculty from the Units of Respiratory Medicine, Pharmacology, Radiology and Surgery teach in the course. By the end of the course students will be able to describe the pathology and pathophysiology of infectious inflammatory and immunologic, metabolic and systemic disorders, trauma, and neoplasms affecting the respiratory system. Students will be able to recognize the differences between the normal and disease states, select diagnostic tests, and understand the pharmacological and non-pharmacological therapies. The course uses lectures to present material, case-based tutorials to reinforce key concepts, and a simulation exercise to link basic science material to clinical medicine. Assessment will consist of written multiple choice test and oral examination at the end of the course.

Radiology
Teacher: Prof. Antonio Esposito
1. Introduction to imaging of the upper and lower respiratory system:
   the first and second level techniques for the assessment of respiratory system will be presented remarking the principles at the basis of image formation and the main indication for each technique.

2. Imaging in the inflammatory disease of the respiratory system:
   the role of imaging in the diagnosis, clinical assessment and management of inflammatory disease will be discussed differentiating upper airways from lungs and pleura

3. Imaging of interstitial lung diseases/pulmonary fibrosis/Chronic Obstructive Pulmonary Disease:
   the role of HRCT (high resolution computed tomography) in the assessment of diffuse lung diseases will be explain showing the most common patterns of disease

4. Imaging of throat tumours:
   role of imaging techniques in the diagnosis and staging of pharynx and larynx tumors will be presented

5. Imaging of lung cancer:
   detection of lung cancer; differential diagnosis; screening programs; lung cancer staging

6. Imaging of pleural tumours:
   detection; differential diagnosis; staging

7. Imaging of pulmonary thromboembolism
   Imaging techniques involved and main signs of PE

8. Imaging of thoracic trauma

Role of imaging in the assessment of blunt chest trauma or penetrating thoracic lesions in emergency

Otorhinolaryngology
Teacher: Prof. Mario Bussi
Tutor: Matteo Trimarchi

1. Anatomy and physiology of the upper aerodigestive tract: nose and paranasal sinuses, oral cavity, pharynx, larynx, salivary glands, external and middle ear.
2. Pathophysiology of the nose and paranasal sinuses: classification, symptomatology, diagnosis and treatment of the sinonasal diseases (acute and chronic flogoses, benign and malignant neoplasms, traumas, epistaxis).
3. Pharynx pathophysiology: acute and chronic flogoses, tonsillitis, pharynx tumors (symptomatology, diagnoses, treatment).
4. Salivary glands pathophysiology: acute and chronic flogoses, syaloadenoses and tumors.
5. Pathophysiology of the larynx: acute and chronic laryngitis, benign lesions, benign and malignant neoplasms (symptomatology, diagnoses, treatment).
6. Main aspects and clinical features of neck pathologies.
7.Pathology of the external and middle ear: symptoms, diagnosis and treatment of otitis, otosclerosis, congenital malformations.

Thoracic Surgery
Teachers: Prof. Piero Zannini, Prof. Giampiero Negri
Tutors: Dr. Alessandro Bandiera, Dr. Angelo Carretta, Dr. Paola Ciriaco, Dr. Piergiorgio Muriana, Dr. Armando Puglisi

1. Pleura. Spontaneous pneumothorax and pleural effusion
Pleural effusion: definition, incidence, classification, pathogenesis, pathophysiology, symptoms and signs, treatment. Pleural mesothelioma: epidemiology, pathology, diagnosis and management.
Pleural Empyema: definition, incidence, classification, pathogenesis, pathophysiology, symptoms and signs, treatment.
Spontaneous pneumothorax: definition, incidence, classification, pathogenesis, pathophysiology, symptoms and signs, treatment.

2. Lung cancer.
Epidemiology, risk factors, pathology, diagnosis and staging, symptoms and signs, surgical principles and management.

3. Trachea.
Endoscopic and surgical treatment of benign and malignant diseases.
Post-intubation stenosis, idiopathic stenosis, primary and metastatic tumours, trauma: symptoms and signs, diagnosis, surgical principles and management. Tracheoesophageal fistula: definition, pathogenesis, diagnosis, surgical principles and management.

4. Trauma
Trauma to the chest wall and to the lung: incidence, diagnosis, symptoms and signs, management.

PRACTICAL SESSIONS AND LABS

I. Activities in Thoracic Endoscopy Service: diagnostic and operative fiberoptic endoscopy
II. Activities in Thoracic Surgery Department: chest drainage (indications to, positioning and management)
III. Activities in ENT department: pre-operative and post-operative patient's management

IV. Activities in ENT practice: vestibular and audiologic evaluation, diagnostic endoscopy, oncologic follow-up,
IV. Activities in ENT operating theatre

FORMATIVE ASSESSMENT AND EXAMS

Multiple choice questions and clinical cases discussion.

SUGGESTED BOOKS AND READINGS

Sabiston Textbook of Surgery Saunders Company
Pearson's Thoracic and Esophageal Surgery Churchill Livingstone Elsevier 2008
Grillo Surgery of the trachea and bronchi BC Decker
Gibbons's Surgery of the Chest, Saunders Company

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MEDICAL SEMIOTICS INTERNAL MEDICINE I - 3 Credits
INTERNAL MEDICINE AND SURGERY I - 5 credits
SSD: MED/09, MED/18

Course coordinator: Prof. Lorenzo DAGNA, MD, FACP
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(www.unisr.it/k-teacher/dagna-lorenzo/)

Collaborators:

Alvise Berti, MD	berti.alvise@hsr.it
Corrado Campochiaro, MD	campochiaro.corrado@hsr.it
Giulio Cavalli, MD	cavalli.giulio@hsr.it
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"The true mystery of the world is the visible, not the invisible".
(Oscar Wilde, 1854-1900)

"He who studies medicine without books sails an uncharted sea, but he who studies medicine without patients does not go to sea at all".
(William Osler, 1849-1919)

Aims

The practice of modern medicine is a balanced combination of science and art. The role of science in medicine is clear: science-based technology and deductive reasoning are the basis for the solution of most clinical problems. The scientific advances in the basic sciences, genetics, biochemistry, imaging, laboratory medicine and therapeutics provide the physician of the third millennium with unprecedented tools. In addition to sound scientific basis, however, there is a medical art which is a combination of medical knowledge, intuition, observation and critical judgment which is equally needed by the doctor to practice of medicine.
The most striking example of these nearly artistic skills that the doctor should have is medical semiotics, the ability of understanding and describing physical signs and symptoms. With careful observation, with appropriate and timely questions, with simple gestures, the expert physician can reach incredibly precise deductions about the disease of a patient. For centuries, doctors diagnosed diseases using only their senses, observing, palpating, percussing, listening. Modern technology has undoubtedly radically changed all this. However it is not at all unusual that complex and expensive tests or imaging studies are performed to get the same information that a well performed thorough physical examination and a proper and well conducted history taking could provide.

The course of General Semiotics aims to provide students with the theoretical and practical bases necessary to effectively collect a thorough history and perform a complete physical examination. At the end of the course there will be a short rotation in the medical wards of the hospital to put into practice what students have learned during the course. The results reached during these activities will be strengthened in the following semesters, thanks to more and more prolonged periods of rotation in clinical departments, and as a result of systematic study of different medical subspecialties/blocks.

Objectives

This practical/theoretical course is designed first to provide the student with the correct medical terms and the general signs and symptoms of disease. Then we will analyze the most typical signs and symptoms of the different organs and systems.
At the end of the course the student will be able to take a thorough history and perform a physical examination and to detect the most frequent pathological findings.

Interactive teaching activities

Since this course will be the first direct contact of the students with sick patients admitted to an hospital wards, the course will begin with a seminar to explain all the procedures that are needed in order to preserve their own health and patients' safety.
Then interactive lectures will be held in which, starting from the physiology and pathophysiology of each organ/system, the normal and more common abnormal findings will be analyzed and discussed, in order to provide students with all the skills needed to perform a complete physical examination. Time will be spent to discuss specific techniques commonly used to collect a complete and thorough medical history.
During classes a lot of time will be given for interaction and discussion. The last class of the theoretical part of the course will be devoted entirely to review what was discussed in class and clarify any doubts of the students.
In the practical part of the course (last 2 weeks), students will be attending the general medical wards of our hospital in wards, dealing with real patients, collecting their histories and practicing in physical examination under the supervision of the clinic's doctors. REMEMBER THAT, DUE TO PATIENT ETHNICITY, INTERACTION WITH PATIENTS WILL BE IN ITALIAN.

Teaching materials

Suggestions on possible textbooks will be provided at the first lesson of the course.
Slides used in classes will be uploaded in the course on-line folder after each class.

Final assessment/exam

Student MUST ATTEND the INTRODUCTORY SEMINAR and ALL THE PRACTICALS. Attendance to lectures will be checked and recorded electronically (badge scanning) and/or with roll calls. At the end of the course there will a written test (20 short open questions). Passing the written test will be necessary in order to sit for the subsequent practical test. The practical test will be done in the clinic, at the bedside of a real patient, checking for the ability to interact with patients, to collect history and to perform a complete physical examination. The combined evaluation of these tests will result in passing/failing the course.

Course Program

General principles of the history taking and physical examination

History taking

Reason for assessment
Past medical history
History of present complaint
Family history
Physiological
Work history
History taking in special situations

Evaluation of the general parameters and vital signs

Assessment of the behavior and mental status

Physical examination of skin, hair and nails

Physical examination of the head and neck (eyes, eyelids, visual acuity, ears, the auditory acuity, Weber and Rinne tests, sinuses, mouth, lips, oral mucosa, tongue, pharynx, neck, thyroid)
Chest examination (inspection, palpation, percussion, auscultation)

Physical examination of the cardiovascular system (inspection, palpation, auscultation)

Physical examination of the breast and axillae

Physical examination of the abdomen (inspection, palpation, percussion, auscultation, Giordano's, Blumberg's, Murphy's, McBurney's, Rovsing's signs)

Physical examination of the vascular peripheral (pulse features, Raynaud's phenomenon, Allen test, deep vein thrombosis and Homans' and Bauer's signs, signs of venous insufficiency, Trendelenburg's and Perthes' tests)

Physical examination of the lymphatic system and lymphnodes

Physical examination of the male genitalia and evaluation of hernias

Physical examination of the female genital

Physical examination of the perineum, rectum and prostate

Physical examination of the musculoskeletal system

Brief neurological physical examination (mental status, cranial nerves, muscle tone and strength, coordination tests, Romberg's test, examination of sensory system, skin and deep tendon reflexes, Lasegue's, Babinski's, Kernig's, Brudzinski's signs)

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INSTRUCTORS CVs

Matteo Iannacone, MD, PhD
Group Leader – Division of Immunology, Infectious Diseases and Transplantation
San Raffaele Scientific Institute - Via Olgettina, 58 – 20132 Milano, ITALY www.iannaconelab.com
EDUCATION:
2011 Ph.D. in Immunology, Vita-Salute San Raffaele University, Milan, Italy
2007 European Board Certification in Internal Medicine
2001 M.D. degree, University of Milan, Italy
POSITIONS AND TRAINING:
2015 – present Head, Dynamics of Immune Responses, San Raffaele Scientific Institute, Milan, Italy
2010 – 2015 Group Leader, Dynamics of Immune Responses, San Raffaele Scientific Institute, Milan, Italy
2007 – 2010 Postdoctoral Fellow, Laboratory of Prof. Ulrich von Andrian, Harvard Medical School, Boston, MA
2002 – 2007 Postdoctoral Fellow, Laboratory of Prof. L.G. Guidotti and Prof. F.V. Chisari, The Scripps Research Institute, La Jolla, CA.

Federica Pedica
Work Experience
June 1st 2013-ongoing Consultant histopathologist
Unit of Pathology, Department of Experimental Oncology, DIBIT 2, San Gabriele
via Oggettina 60, 20132, Milan
▪ Consultant histopathologist
▪ Teaching activities for International MD program at San Raffaele University
▪ Scientific collaborator of the Director of Pathology Professor Claudio Doglioni
Education and Training
2013-2016 Ph.D in HUMAN ONCOLOGICAL PATHOLOGY AND STEM
CELL (School of Biomedical Translational sciences) (completed
with "ottimo", April 22nd, 2016)
Policlinico G.B. Rossi, piazzale L.A. Scuro, University of Verona, Italy
▪ Title of Ph.D. thesis "Characterization of neoplastic and non neoplastic
microenvironment in liver, lung and bone marrow through the study of class III betatubulin"
may-june 2015 Honorary Clinical Fellow
Institute of Liver Studies, Liver Labs, 3rd Floor, Cheyne Wing, King's College Hospital,
Denmark Hill, London
2008-2013 Residency in Human Pathology

George Ian Cremona
In 1986 he graduated in Medicine and Surgery the Università Cattolica del Sacro Cuore of Rome nel 1986 and became qualified doctor in the same year. Nel 1990 he earned the Diploma di Specializzazione in Physiology and Respiratory Diseases at Università Cattolica del Sacro Cuore of Rome and in 1995 il Ph.D. in Physiology at Darwin College, Cambridge University, U.K.
He got many awards among others «Young Investigator Award» at 2nd Annual Meeting, European Society, in Vienna on 29th August 1992.
He has been Professor of Respiratory Diseases at the Residence School the University of Ferrara in 1997, and in 1999, at the Residency School for Thoracic Surgery at the University of Milan, where he taught Respiratoy Physiopathology. In 2000, he was coordinator of the integrated course of Pneumology for the Master's Degree in Medicine and Surgery at Vita-Salute San Raffaele University, Milan, while he taught Physiology and Respiratory Diseases for the Master's Degree course in Physiotherapy. As from November 1999, he has been Head of Unit of Pneumology and Respiratory Physiopathology at the San Raffaele Scientific Institute.

TIMETABLE

Please note that changes may always occur in the daily lesson schedule.
Please refer to the on line timetable for the latest version.

International MD Program A.Y. 2016/2017 Year 3

TIME	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
	26/09/2016	27/09/2016	28/09/2016	29/09/2016	30/09/2016
09-11	Clinical Lab. Medicine GB	B. Pathology & Immunology GP2	B. Pathology & Immunology GP3		NBME EXAM
11-13	B. Pathology & Immunology GP1	Microbiology NM	Microbiology NM		
14-16	Clinical Lab. Medicine GB				
16-18					

TIME	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
	3-Oct-16	4-Oct-16	5-Oct-16	6-Oct-16	7-Oct-16
09-11	Clinical Lab. Medicine GB	Clinical Lab. Medicine MF		Microbiology MP	Clinical Lab. Medicine GB
11-13			B. Pathology & Immunology GP4	B. Pathology & Immunology GP5	Clinical Lab. Medicine GB
14-16	Clinical Lab. Medicine GB	Microbiology NM	Microbiology MP	Microbiology NM	Microbiology NC
16-18	Clinical Lab. Medicine MF	16:00-19:00 ITALIAN		16:00-19:00 ITALIAN	B. Pathol. & Immunology GP6

TIME	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
	10-Oct-16	11-Oct-16	12-Oct-16	13-Oct-16	14-Oct-16
09-11	Clinical Lab. Medicine GB	B. Pathology & Immunology MI-1	B. Pathology & Immunology AB2	Microbiology MP	Clinical Lab. Medicine GB
11-13	B. Pathology & Immunology GP7	B. Pathology & Immunology AB1	B. Pathology & Immunology MP1	B. Pathology & Immunology GP8	B. Pathology & Immunol. GP9
14-16	Clinical Lab. Medicine GB		Microbiology MP	Microbiology NM	Clinical Lab. Medicine GB
16-18		16:00-19:00 ITALIAN		16:00-19:00 ITALIAN	

TIME	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
	17-Oct-16	18-Oct-16	19-Oct-16	20-Oct-16	21-Oct-16
09-11	Clinical Lab. Medicine MF	B. Pathology & Immunology MK2	B. Pathology & Immunology MK3		Clinical Lab. Medicine GB
11-13	B. Pathology & Immunology MK1	B. Pathology & Immunology GP10	B. Pathology & Immunology GP11	B. Pathology & Immunology GP12	Microbiology NC
14-16	Microbiology NM		Microbiology NM	Clinical Lab. Medicine MF	Clinical Lab. Medicine GB
16-18		16:00-19:00 ITALIAN		16:00-19:00 ITALIAN	

TIME	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
	24-Oct-16	25-Oct-16	26-Oct-16	27-Oct-16	28-Oct-16
09-11	B. Pathology & Immunology GP13		B. Pathology & Immunology AB4	Microbiology LI	B. Pathology & Immunol. MK4
11-13	B. Pathology & Immunology AB3	10-13 Constitutional Referendum	B. Pathology & Immunology MP2	B. Pathology & Immunology AB5	B. Pathology & Immunol. RP1
14-16	Microbiology NM			Microbiology NM	Clinical Lab. Medicine MF
16-18		16:00-19:00 ITALIAN		16:00-19:00 ITALIAN	Microbiology NC

TIME	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
	31-Oct-16	1-Nov-16	2-Nov-16	3-Nov-16	4-Nov-16
09-11	Holiday	Holiday		Microbiology LI	
11-13			B. Pathology & Immunology RP2	B. Pathology & Immunology RP3	B. Pathology & Immunol. RP4
14-16			Microbiology NM	Microbiology NM	Microbiology NC
16-18				16:00-19:00 ITALIAN	

TIME	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
	7-Nov-16	8-Nov-16	9-Nov-16	10-Nov-16	11-Nov-16
09-11				Microbiology LI	B. Pathology & Immunol. MP4
11-13	B. Pathology & Immunology RP5	B. Pathology & Immunology RP6	B. Pathology & Immunology RP7	B. Pathology & Immunology MP3	B. Pathology & Immunol. MP5
14-16	Microbiology NM	B. Pathology & Immunology MK5		Microbiology NM	Microbiology NC
16-18		16:00-19:00 ITALIAN		16:00-19:00 ITALIAN	

TIME	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
	14-Nov-16	15-Nov-16	16-Nov-16	17-Nov-16	18-Nov-16
09-11				Microbiology LI	B. Pathology & Immunology
11-13	B. Pathology & Immunology	B. Pathology & Immunology	B. Pathology & Immunology	B. Pathology & Immunology	B. Pathology & Immunology
14-16	Microbiology NM	B. Pathology & Immunology		Microbiology NM	
16-18		16:00-19:00 ITALIAN		16:00-19:00 ITALIAN	

TIME	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
	21-Nov-16	22-Nov-16	23-Nov-16	24-Nov-16	25-Nov-16
09-11				Microbiology LI	B. Pathology & Immunology
11-13	B. Pathology & Immunology	B. Pathology & Immunology	B. Pathology & Immunology	B. Pathology & Immunology	B. Pathology & Immunology
14-16	Microbiology NM	B. Pathology & Immunology		Microbiology NM	Microbiology NC
16-18		16:00-19:00 ITALIAN		16:00-19:00 ITALIAN	

TIME	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
	28-Nov-16	29-Nov-16	30-Nov-16	1-Dec-16	2-Dec-16
09-11	Clinical Lab. Medicine CDR			B. Pathology & Immunology	Clinical Lab. Medicine CDR
11-13	B. Pathology & Immunology	B. Pathology & Immunology	B. Pathology & Immunology	B. Pathology & Immunology	B. Pathology & Immunology
14-16	Microbiology NM	B. Pathology & Immunology		Microbiology NM	
16-18		16:00-19:00 ITALIAN		16:00-19:00 ITALIAN	

TIME	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
	5-Dec-16	6-Dec-16	7-Dec-16	8-Dec-16	9-Dec-16
09-11	B. Pathology & Immunology	B. Pathology & Immunology	Holiday	Holiday	Holiday
11-13	Clinical Lab. Medicine CDR	B. Pathology & Immunology			
14-16					
16-18					

TIME	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
	12-Dec-16	13-Dec-16	14-Dec-16	15-Dec-16	16-Dec-16
09-11		Clinical Lab. Medicine CDR			
11-13	B. Pathology & Immunology	B. Pathology & Immunology	B. Pathology & Immunology	B. Pathology & Immunology	Clinical Lab. Medicine CDR
14-16		B. Pathology & Immunology		Microbiology NM	
16-18		16:00-19:00 ITALIAN		16:00-19:00 ITALIAN	

TIME	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
	19-Dec-16	20-Dec-16	21-Dec-16	22-Dec-16	23-Dec-16
09-11				Holiday	Holiday
11-13					
14-16					
16-18		16:00-19:00 ITALIAN			

TIME	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
	26-Dec-16	**27-Dec-16**	**28-Dec-16**	**29-Dec-16**	**30-Dec-16**
09-11	**Holiday**	**Holiday**	**Holiday**	**Holiday**	**Holiday**
11-13					
14-16					
16-18					

TIME	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
	2-Jan-17	**3-Jan-17**	**4-Jan-17**	**5-Jan-17**	**6-Jan-17**
09-11	**Holiday**	**Holiday**	**Holiday**	**Holiday**	**Holiday**
11-13					
14-16					
16-18					

TIME	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
	9-Jan-17	**10-Jan-17**	**11-Jan-17**	**12-Jan-17**	**13-Jan-17**
09-11	Exams				
11-13					
14-16					
16-18					

TIME	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
	16-Jan-17	**17-Jan-17**	**18-Jan-17**	**19-Jan-17**	**20-Jan-17**
09-11	Exams				
11-13					
14-16					
16-18					

TIME	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
	23-Jan-17	**24-Jan-17**	**25-Jan-17**	**26-Jan-17**	**27-Jan-17**
09-11	Exams				
11-13					
14-16					
16-18					

TIME	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
	30-Jan-17	**31-Jan-17**	**1-Feb-17**	**2-Feb-17**	**3-Feb-17**
09-11	Safety Course	Safety Course			
11-13					
14-16					
16-18					

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UNIVERSITÀ VITA-SALUTE SAN RAFFAELE

STUDENT GUIDE

FACULTY OF MEDICINE AND SURGERY

MASTER'S DEGREE COURSE
INTERNATIONAL MD PROGRAM

Academic Year 2016/2017

Academic Calendar

VITA-SALUTE SAN RAFFAELE UNIVERSITY
INTERNATIONAL MD PROGRAM - 4th YEAR

	Sept-16		Oct-16		Nov-16		Dec-16		Jan-17		Feb-17		Mar-17		Apr-17		May-17		June-17		July-17		Aug-17		Sept-17
1		1		1	ALL SAINTS	1	Study leave	1	NEW YEAR'S DAY	1	NephUro+Musc.	1	Neuro	1		1	BANK HOLIDAY	1	Psychiatry + Inf. Diseases	1		1	Holidays	1	EXAMS
2		2		2	Endo/Ophtalmo	2	Study leave	2	Holidays	2	NephUro+Musc.	2	Neuro	2		2	Tailored Activities	2	BANK HOLIDAY	2		2	Holidays	2	
3		3	Hema/Onco +Rot	3	Endo/Ophtalmo	3		3	Holidays	3	NephUro+Musc.	3	Neuro	3	Neuro	3	Tailored Activities	3		3	Rotations	3	Holidays	3	
4		4	Hema/Onco +Rot	4	Endo/Ophtalmo	4		4	Holidays	4		4		4	Neuro	4	Tailored Activities	4		4	Rotations	4	Holidays	4	EXAMS
5		5	Hema/Onco +Rot	5		5	Exams	5	Holidays	5		5		5	Neuro	5	Tailored Activities	5	Psychiatry+ Inf. Diseases	5	Rotations	5		5	EXAMS
6		6	Hema/Onco +Rot	6		6	Exams	6	EPIPHANY	6	Study leave	6	Neuro	6	Neuro	6		6	Psychiatry+ Inf. Diseases	6	Rotations	6		6	EXAMS
7		7	Hema/Onco +Rot	7	Endo/Ophtalmo	7	S.AMBROGIO	7		7	Study leave	7	Neuro	7	Neuro	7		7	Psychiatry+ Inf. Diseases	7	Rotations	7	Holidays	7	EXAMS
8		8		8	Endo/Ophtalmo	8	IMMACOLATA	8		8	Study leave	8	Neuro	8		8	Exam	8	Psychiatry+ Inf. Diseases	8		8	Holidays	8	EXAMS
9		9		9	Endo/Ophtalmo	9	Holidays	9	Exams	9	Study leave	9	Neuro	9		9	Exam	9	Psychiatry+ Inf. Diseases	9		9	Holidays	9	
10		10	Hema/Onco +Rot	10	Endo/Ophtalmo	10		10	Exams	10	Study leave	10	Neuro	10	Neuro	10	Exam	10		10	EXAMS	10	Holidays	10	
11		11	Hema/Onco +Rot	11	Endo/Ophtalmo	11		11	Exams	11		11		11	Neuro	11	Exam	11		11	EXAMS	11	Holidays	11	EXAMS
12		12	Hema/Onco +Rot	12		12	Exams	12	Exams	12		12		12	Neuro	12	Exam	12	Psychiatry+ Inf. Diseases	12	EXAMS	12		12	EXAMS
13		13	Hema/Onco +Rot	13		13	Exams	13	Exams	13	Exams	13	Neuro	13	Neuro	13		13	Psychiatry+ Inf. Diseases	13	EXAMS	13		13	EXAMS
14		14	Hema/Onco +Rot	14	Endo/Ophtalmo	14	Exams	14		14	Exams	14	Neuro	14	Easter Holiday	14		14	Psychiatry+ Inf. Diseases	14	EXAMS	14	Holidays	14	EXAMS
15		15		15	Endo/Ophtalmo	15	Exams	15		15	Exams	15	Neuro	15		15	Psychiatry + Inf. Diseases	15	Psychiatry+ Inf. Diseases	15		15	ASSUMPTION	15	EXAMS
16		16		16	Endo/Ophtalmo	16	Exams	16	NephUro+Musc.	16	Exams	16	Neuro	16	EASTER	16	Psychiatry + Inf. Diseases	16	Psychiatry+ Inf. Diseases	16		16	Holidays	16	
17		17	Hema/Onco +Rot	17	Endo/Ophtalmo	17		17	NephUro+Musc.	17	Exams	17	Neuro	17	EASTER MONDAY	17	Psychiatry + Inf. Diseases	17		17	EXAMS	17	Holidays	17	
18		18	Hema/Onco +Rot	18	Endo/Ophtalmo	18		18	NephUro+Musc.	18		18		18	Tailored Activities	18	Psychiatry + Inf. Diseases	18		18	EXAMS	18	Holidays	18	EXAMS
19		19	Hema/Onco +Rot	19		19	Exams	19	NephUro+Musc.	19		19		19	Tailored Activities	19	Psychiatry + Inf. Diseases	19	Psychiatry + Inf. Diseases + Rot	19	EXAMS	19		19	EXAMS
20		20	Hema/Onco +Rot	20		20	Exams	20	NephUro+Musc.	20	Exams	20	Neuro	20	Tailored Activities	20		20	Psychiatry + Inf. Diseases + Rot	20	EXAMS	20		20	EXAMS
21		21	Hema/Onco +Rot	21	Endo/Ophtalmo	21	Exams	21		21	Exams	21	Neuro	21	Tailored Activities	21		21	Psychiatry + Inf. Diseases + Rot	21	EXAMS	21	Holidays	21	EXAMS
22		22		22	Endo/Ophtalmo	22	Holidays	22		22	Exams	22	Neuro	22		22	Psychiatry + Inf. Diseases	22	Psychiatry + Inf. Diseases + Rot	22		22	Holidays	22	EXAMS
23		23		23	Endo/Ophtalmo	23	Holidays	23	NephUro+Musc.	23	Exams	23	Neuro	23		23	Psychiatry + Inf. Diseases	23	Psychiatry + Inf. Diseases + Rot	23		23	Holidays	23	
24		24	Hema/Onco	24	Endo/Ophtalmo	24	Holidays	24	NephUro+Musc.	24	Exams	24	Neuro	24	Tailored Activities	24	Psychiatry + Inf. Diseases	24		24	EXAMS	24	Holidays	24	
25		25	Hema/Onco	25	Endo/Ophtalmo	25	CHRISTMAS	25	NephUro+Musc.	25		25		25	Tailored Activities	25	Psychiatry + Inf. Diseases	25		25	EXAMS	25	Holidays	25	New Academic Year
26	Hema/Onco	26	Endo/Ophtalmo	26		26	BOXING DAY	26	NephUro+Musc.	26		26		26	Tailored Activities	26	Psychiatry + Inf. Diseases	26	Rotations	26	EXAMS	26		26	New Academic Year
27	Hema/Onco	27	Endo/Ophtalmo	27		27		27	NephUro+Musc.	27	Neuro	27	Neuro	27	Tailored Activities	27		27	Rotations	27	EXAMS	27		27	New Academic Year
28	Hema/Onco	28	Endo/Ophtalmo	28	Study leave	28	Holidays	28		28	Neuro	28	Neuro	28	Tailored Activities	28		28	Rotations	28	EXAMS	28	Holidays	28	New Academic Year
29	Hema/Onco	29		29	Study leave	29	Holidays	29				29	Neuro	29		29	Psychiatry + Inf. Diseases	29	Rotations	29		29	Holidays	29	New Academic Year
30	Hema/Onco	30		30	Study leave	30	Holidays	30	NephUro+Musc.			30	Neuro	30		30	Psychiatry + Inf. Diseases	30	Rotations	30		30	Holidays	30	
		31	Holiday			31		31	NephUro+Musc.			31	Neuro			31	Psychiatry + Inf. Diseases			31	EXAMS	31	Holidays		

Notice from the University Committee of the enhancement of quality

on the questionnaires for the evaluation of courses and teaching

Vita-Salute San Raffaele University considers a continuous process of monitoring and evaluating the quality of the educational mission, also in terms of planning, as essential for achieving excellence in higher education and research.

UniSR Students can assess the correspondence between the teaching quality offered and their expectation. That is very important to improve teaching and training and develop successful strategies.

At the end of each semester, students' opinions are collected through *evaluation questionnaires*. Filling in the questionnaire is compulsory, according to the guidelines published in November 2013 by ANVUR (the National Agency for the Evaluation of the University and Research Systems). IT techniques have been implemented to speed up questionnaire collection and processing. Anonymity is fully guaranteed.

Filling in the questionnaires is the necessary condition which allows a student to register for the exams. After collection, data are firstly conveyed to the Master's degree course Coordinators and to the Deans of the Faculties and finally to the University Evaluation Commission for the analysis of data.

The data collected will be a fundamental source to spot every sort of issue, thus for future improvement.

In short, filling in the questionnaires represents a key moment of University life in which students take a role of responsibility together with academia and University organization structures in the continuous process of improvement and innovation which makes it possible for our University to rank among the top Universities in the nation and Europe.

We really appreciate all respondents' valuable time to fill up the questionnaires, especially during intense study times and we would like to raise students' awareness of the importance of their contribution by carrying out this task responsibly and sharing the same objectives together with this Institution.

The President of the University Committee
for the enhancement of quality

YEAR 4

Academic Year 2016/2017

- **Endocrine and Metabolic Diseases**
- **Nephrology and Urology**
- **Oncology**
- **Hematology**
- **Musculoskeletal Diseases**
- **Neurological Sciences**
- **Psychiatry and Clinical Psychology**
- **Ophthalmology**
- **Infectious Diseases**
- **Clinical Rotations: Internal Medicine & Surgery II**

Endocrine and Metabolic Diseases

Total Credits: 6

Lessons: 66 h
Practicals:12 h

Scientific Discipline Sector: SSD Med/13, Bio/14

Teaching staff

Course Coordinator: Emanuele Bosi (http://www.unisr.it/k-teacher/bosi-emanuele/)	Email: bosi.emanuele@hsr.it
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Goals

The overall objective of this course is to provide the student with the theoretical and practical skills for selecting the appropriate diagnostic procedures and implementing recommended treatment for endocrine and metabolic diseases. The specific aims of this course are those included in the Unità Didattiche Elementari (UDE) of the Endocrine and Metabolism chapter within the Core Curriculum of the Magistral Doctorate in Medicine (Medicina e Chirurgia 18: 629-693, 2002 UDE 936-965; http://www.gruppoeidos.it/unimed/). Thematic content (knowing, knowing to do, knowing to be), level of knowledge (theoretical and mnemonic, general and in depth), expertise (mnemonic, interpretational, decisional) and skills (manual, practical, professional, decision making and problem solving) will be treated and pursued as indicated in this document (see also Course Description).

Evaluation

Written exam based on multiple choice questions, with the students' choice of an additional oral exam.

Course Description

The different topics are treated in a systematic way, i.e., by individual endocrine gland or group of endocrine tissues, using an integrated approach encompassing morphology, pathophysiology, clinical medicine, pharmacology and therapy. Specific focus is devoted to the molecular bases of hormone action and pathogenetic mechanisms, prerequisites to a in-depth understanding of the clinical aspects of endocrine and metabolic diseases and appropriate diagnostic and therapeutic procedures. The course also aims at introducing the theme of Endocrinology and Metabolic Diseases as a discipline of Internal Medicine, with emphasis on the general underlying clinical context with the multiple pathophysiological endocrine and non-endocrine interactions typical of these diseases. The course aims at providing the understanding of the general management of the most prevalent endocrine problems that impact on any discipline of medicine.

The course includes frontal lectures on: hypothalamus and pituitary (synthesis, secretion and mechanism of action of hypothalamic and pituitary hormones, panhypopituitarism, hyperprolactinemia, acromegaly, diabetes insipidus); thyroid (secretion and mechanism of action of thyroid hormones, hypo and hyperthyroidism, thyroiditis, thyroid nodules and malignancies, ultrasound diagnostics); parathyroids (calcium homeostasis, hypo and hyperparathyroidism, osteoporosis); glucose metabolism and diabetes mellitus (insulin secretion and mechanism of action, classification, epidemiology, type 1 diabetes, type 2

diabetes, acute and chronic diabetic complications, hypoglycemia); obesity and metabolic syndrome; dyslipidemia; adrenal (secretion and mechanism of action of steroid hormones and catecholamines; hypo and hypercortisolism, hypo and hyperaldosterosims, pheochromocytoma); gonads (male and female hypogonadism, hyperandrogenisms, adrenogenital syndromes).
Seminars with a practical approach will be delivered on therapy adjustments, insulin administration principles, self blood glucose monitoring and principles of nutrition.
Attendance to diabetes clinics, endocrinology clinics, thyroid US scan, Day Hospital, ophthalmology clinics and research facilities are integral part of the learning module. Moreover, there is the opportunity for students to attend the inpatient wards and the laboratories of the Diabetes Research Institute. The participation to daily clinical rounds and periodic research seminars is also welcome.

Textbook

Harrison's Principles of Internal Medicine, part on Endocrinology and Metabolism. McGraw-Hill

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Nephrology and Urology

Total Credits: 7
Total hours: 70
Scientific Discipline Sector: Med/14, Med/24, Bio/14

Teaching staff

Course Coordinators: Francesco Montorsi Email: montorsi.francesco@hsr.it
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Course Description

UROLOGY
The course is dedicated to the urological topics of greatest epidemiological and clinical-surgery impact.
In this context, IMDP students will have the opportunity of attending the clinical and surgical activities throughout the morning timetable. Therefore, students will take part to the daily operating theatre activities looking at open, endoscopic and robotically assisted procedures for benign and oncologic urological disorders. Likewise, students will closely follow the outpatient clinical activities (i.e. ultrasounds assessments, cystoscopy, multichannel urodynamic evaluation, etc) and the inpatient unit activities during the preop- and the postoperative periods. Similarly, students will have the opportunity to closely follow the on duty/on call urologist during the daily activities.

Moreover, during the afternoon timetable on a daily basis IMDP students will attend a formal lesson dedicated to the major functional and uro-oncological themes, thus including

1. Benign Prostate Hyperplasia/Lower Urinary Tract Symptoms
2. Prostatitis and urinary tract infections
3. Male and female urinary incontinence
4. Paediatric urology
5. Urolithiasis
6. Male sexual dysfunction; Couple's infertility
7. Prostate cancer
8. Kidney cancer
9. Bladder and upper urinary tract urothelial cancer
10. Penis and testis cancer

NEPHROLOGY

Educational Goals and Objectives

This course is designed to provide the student with a complete understanding of the optimal management of chronic kidney diseases. The focus of this course will be to discuss the pathophysiologic and clinical advances in the major areas of Nephrology including glomerular disease, fluid and electrolyte disorders, hypertension, dialysis, and renal transplantation. Well recognized medical complications and recommendations for optimal care will be discussed.

The material will be presented in several formats including frontal lectures and case based workshops.

In particular: students must understand the epidemiology, pathophysiology and management of common renal disorders and electrolyte and acid base disturbances including: Sodium and water imbalance, Potassium imbalance, Simple and mixed acid-base disturbances, Hypertension, Renal tubular acidosis, Glomerulonephritis, Renal vasculitis, Nephritic & Nephrotic Syndrome, Calcium & phosphorus metabolism, Pre-renal causes of renal failure, Obstructive Uropathy, Nephrolithiasis, Renal failure in a patient with liver failure, Acute tubular necrosis, Interstitial nephritis, Chronic kidney disease, Diabetic nephropathy and main principles of dialysis and extra corporal procedures.

As renal diseases are often complex pathologies with different interindividual outcomes the course will also give students the tools and the basic notions of genetic involvement in kidney morbidities.

Educational resources

- Harrison's Principles of Internal Medicine (ed: Mc Graw Hill)
- Goodman & Gilman's The Pharmacological Basis of Therapeutics

Suggested Reading

- Textbook of Nephrology SG Massry, RJ Glassock 2001
- EAU Guidelines, Edition 2016 - https://uroweb.org/guidelines/

Evaluation methods

Multiple choice question test (60 multiple choices closed questions) at the end of the course.
Oral examination can be performed for students who have not sustained written test or have reached a bad evaluation.
Examinations data will be communicated by official secretary of school of Nephrology.

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Oncology

Total Credits: 5
Total hours: 50
Scientific Discipline Sector: MED/06, BIO/14, MED/36

Teaching staff

Course Coordinator

Andrés J. M. Ferreri E-mail: ferreri.andres@hsr.it
Receiving Hour: Tuesday from 15:00 and 17:00, Block B, -2 Floor (to be confirmed by e-mail).

Teaching Assistants

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(www.unisr.it/k-teacher/esposito-antonio/)
Daniele Zacchetti E-mail: zacchetti.daniele@hsr.it
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(www.unisr.it/k-teacher/doglioni-claudio/)

Course Description

The course of Oncology consists of practical and academic activities regarding all the clinical, therapeutic, molecular, biological, radiological and pharmacological aspects of cancers. Attendants will discuss notions of the epidemiology of cancer as well as molecular mechanisms involved in the biological processes that led to cancer development, growth control and dissemination. The course covers classical concepts related to suspicion, diagnosis and staging of the most relevant solid tumours and lymphomas. An important part of course regards molecular knowledge of conventional and innovative therapeutic targets as well as the related pharmacological and radiological therapies used in current practice and experimental trials. A detailed discussion of anticancer drugs, their pharmacodynamic and pharmacokinetics as well as other knowledge with relevant therapeutic implications is included. This section includes also supportive care, therapeutic side effects and diagnosis and management of the most common complications as well as late effects in cancer survivors. An important part of the course regards cancer investigation, with a detailed analysis of the different phases of clinical research.

Objectives

The aim of this course is to provide the essential theoretical and practical knowledge to deal with the diagnostic and therapeutic management of cancer patients. The student will focus on the epidemiological and physiopathological aspects of the main solid tumours and lymphomas and, at the end of the course, will be able to develop a systematic and multidisciplinary approach to the studied malignancies, including modern laboratory, radiological and therapeutic tools currently used in oncology. Students will analyze methods and strategies of basic and clinical cancer research as well as understand the cancer as public health problem and global phenomenon. In practice, at the end of the course, the student will be able to take a thorough history and perform a physical examination, to understand lab and radiological exams, to indicate and construe staging procedures, hypothesize therapeutic alternatives, and interpret trial results.

Final assessment/exam

Attendance to lectures will be checked and recorded electronically. At the end of the course there will be an oral test focused on the course contents and clinical cases discussion.

SUGGESTED BOOKS AND READINGS

1) DeVita, Hellman, and Rosenberg's Cancer: Principles and Practice of Oncology – Lippincott, Williams and Wilson – 9th edition - ISBN-13: 978-1451105452
2) Longo D., Fauci A., kasper D.: Harrison's Principles of Internal Medicine - McGraw-Hill – 18th Edition - ISBN 9780071748896
3) Abeloff M, Armitage J, Niederhuber J, Kastan M, McKenna W: Abeloff's Clinical Oncology - Churchill Livingstone – 4th edition - ISBN: 9780443066948

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Hematology

Total Credits:4
Total hours: 40
Scientific Discipline Sector: Med/15

Teaching staff

Course Coordinator: Claudio Bordignon E-mail: bordignon.claudio@hsr.it
(www.unisr.it/k-teacher/bordignon-claudio/)

Teaching Assistants
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Luca Vago E-mail: vago.luca@hsr.it

Goals:

The goal of this course is to initiate the student to the fundamental principles of hematology and to provide the student with the theoretical and practical skills for selecting the appropriate diagnostic procedures and implementing recommended treatment for hematological diseases. To this aim we will couple academic lessons to case report discussion.
Special emphasis will be provided to the pathogenesis of haematological diseases and to the growing role of molecular biology in the clinical management of patients with haematological diseases. Based on the pivotal role of hematopathology in hematology, we include practical lessons "at the microscope", to be held in small groups. An important part of course will be held in collaboration with the course of Oncology, with the purpose, for the student, of getting acquainted with the basis of preclinical and clinical investigation in hemato-oncology.

Evaluation/Final assessment/exam
Attendance to lectures will be checked and recorded electronically. At the end of the course there will be an oral test focused on the course contents and clinical cases discussion.

Course Description:
Lessons held in collaboration with the Course of Oncology are in bold.

- **Stem cell biology and Hematopoiesis**
- **Clonal dynamics and Leukemic stem cells**
- **Epidemiology, carcinogenesis, molecular bases of cancer, tumor microenvironment, metastasis**
- **Principles of cytotoxic and targeted therapy. Alkylating agents.**
- **Staging, Clinical trials, quality of life, performance status, prognostic scores**
- **Diagnostic technologies in Hematology & Oncology: blood counts, flow cytometry & tumor biopsies**
- **Antimetabolites and analogs. Vinca alkaloids and taxans.**
- Anemia definition, classification, Approach to Anemia in the adult and child
- Hemostasis, Thrombosis, Hemophilia
- Hemorragic syndromes. Hereditary and acquired disorders of platelets and coagulation.
- **Topoisomerases inhibitors. Kinase inhibitors. Proteasome inhibitors**
- Disorders of iron metabolism: Iron deficiency and Iron Overload. Megaloblastic anemias
- **Imaging in oncology**
- Hemoglobinopathies
- Basis of Transfusion Medicine
- **Lymphoproliferative disorders, Non Hodgkin Lymphoma, Hodgkin Lymphoma, Chronic lymphocytic leukemia**
- **Multiple Myeloma, Amyloidosis**
- Myelodysplasia
- Supportive care
- Acute Leukemias
- Myeloproliferative syndromes
- **Hematopoietic stem cell transplantation, cancer immunotherapy, gene theraopy**
- At the microscope (small groups)

Textbooks:

Essential Haematology
A.V. Hoffbrand / P.A.H. Mosso Wiley-Blackwell
6th Edition 2011.

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Musculoskeletal Diseases

Total Credits: 2
Total hours: 20
Scientific Discipline Sector: Med/33, Med/34

Teaching staff
Course Coordinator: Laura Mangiavini E-mail: mangiavini.laura@hsr.it

Goals: The goal of this course is to provide the students with an overview on the fundamental principles and practices of Orthopaedic and Trauma Surgery. The course will be focused on the most relevant musculoskeletal disorders with hints on the newest advances on Adult Reconstruction Surgery, Arthroscopy, Sport Trauma and Regenerative Medicine. At the end of the course, the students will be able to deal with the spectrum of orthopaedic and trauma conditions and will be confident with the modern Orthopaedic and Trauma practice.

Prerequisites: None

Evaluation: The exam will consist of a combined written and oral examination. Exam will be focused on topics covered during the classes and clinical cases discussion.

Course Description
This course is conceived to instruct the students in the pathophysiology, clinical examination, investigation and modern management of the most common musculoskeletal conditions. Typical clinical scenarios will be illustrated and discussed. The lectures will cover the following topics:

- INTRODUCTION: Brief History of Orthopaedics; Clinical Evaluation
- TRAUMA: generalities on trauma, most common trauma and related treatments. Emergencies and Complications.
- METABOLIC DISORDERS & OSTEOPOROTIC FRACTURES
- OSTEOARTHRITIS: Primary and secondary OA; related disorders; principles of Total Joint Replacement.
- PEDIATRIC ORTHOPAEDICS: Developmental Dysplasia of the Hip, Club foot, Scoliosis, and other common pediatric conditions.
- FOOT&ANKLE: Hallux valgus, flat foot, diabetic foot and other common foot&ankle conditions.
- SPORT TRAUMA: Shoulder & Elbow; Hip impingement, Articular Cartilage, Knee & Ankle.
- NEURO ORTHOPAEDICS: Adult Spine & Peripheral Nerve
- TUMORS: Benign and Malignant Tumors of Bone and Soft Tissues, Metastatic Bone Disease.
- INFECTIONS: Chronic and Haematogenous Osteomyelitis, Arthritis, Post-Traumatic and Post-Operative Infections
- REGENERATIVE MEDICINE: Cartilage, Bone and Tendon regeneration, Joint Homeostasis, Orthobiologic treatments.

Textbooks:
Louis Solomon, David J. Warwick, Selvadurai Nayagam. Apley's Concise System of Orthopaedics and Fractures, Fourth Edition. Hodder Arnold Publication.

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Neurological Sciences

Total Credits: 14
Lessons: 104 h
Practicals: 44 h
Scientific Discipline Sector: Med/26, Med/27, Med/37, Med/08, Med/32, Bio/14

Teaching staff

Course Coordinator: Giancarlo Comi Email: comi.giancarlo@hsr.it
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Collaborators
Andrea Falini, Simonetta Gerevini, Paolo Vezzulli, Francesco Scomazzoni, Antonella Castellano, Claudia Godi, Bruno Colombo, Raffaella Fazio, Marina Scarlato, Giuseppe Magnani, Filippo Martinelli Boneschi, Lucia Moiola, Marco Bacigaluppi, Federica Esposito, Silvia Mammi, Luisa Roveri, Maria Antonietta Volonté, Mariaemma Rodegher, Raffaella Chieffo, Marta Radaelli, Federica Cerri, Nilo Riva, Arturo Nuara, Francesca Sangalli, Donatella De Feo, Giacomo Giacalone, Giulio Truci, Giovanna Fanelli, Roberta Guerriero, Letizia Leocani, Fabio Minicucci, Ubaldo Del Carro, Marco Cursi, Stefania Acerno, Raffaella Barzaghi, Alberto Franzin, Carlo Mandelli
(Email: surname.name@hsr.it)

Goals: The aim of this course is to help students acquire an understanding of the fundamental principles of clinical neurology.. Students should be able to obtain a careful history of the disease, through a neurological examination and to understand the main neurological signs and symptoms Students should be able to obtain a careful history of the disease, through a neurological examination and to understand the main neurological signs and symptoms Students should demonstrate their ability to organize and integrate clinical data in order to produce a correct diagnosis, to learn about the diagnostic tests and understand their values and limitations. They should acquire *a* knowledge of nervous system development, functions and pathogenesis of neurological diseases, focusing on acute illness with an increased risk of death such as cerebral haemorrhage, intracranial hypertension, stroke, acute paralysis that requires urgent diagnosis and treatment. At the end of the course students should be able to provide an accurate diagnostic evaluation and treatment.

Prerequisites: None

Evaluation: The Commission is usually composed of three teachers of the course. The exam will consists of a multiple-choice test with 50 questions and an oral examination. The result of the multiple-choice test will condition access to the oral test and the final mark.

Course Description: This course will allow students to learn about the main neurological diseases related to the central and peripheral nervous systems. In the initial phase of the course some key aspects of the neuroanatomy and neurophysiology will be refreshed in order to provide students the necessary knowledge to understand the pathophysiology and clinical manifestations of neurological diseases. A modern view of all the major disorders affecting the central and peripheral nervous system will be addressed. Particular emphasis will be dedicated to the role of neuroimaging,, advanced laboratory tests and neurophysiologcal techniques to the diagnostic processes. Lessons will start focusing on teaching the anatomy and physiology of the nervous system through imaging and neurophysiological techniques, which is of fundamental relevance to produce a specific diagnosis. Other lessons will consider neuromuscular diseases, epilepsy, cerebrovascular diseases, movement disorders, multiple sclerosis, and brain tumours: students will learn how to provide diagnostic evaluation and treatment. Some seminars with other specialists (neurosurgeons, neuroradiologists, oncologists, pathologists and pharmacologists) will be organized to investigate the pathogenesis of the diseases. Frontal lessons will be complemented by a large body of practicalities. Students will spend some hours in neuroradiology and clinical neurophysiology labs, becoming confident with the more common investigations. Large time will be dedicated in neurological department to see patients with acute and chronic neurological diseases, to learn how to perform neurological examination and to become confident with the more common neurological signs.

Textbooks:

Greenberg DA, Aminoff MJ, Simon RP
Clinical Neurology - McGraw-Hill

Allan H. Ropper, Martin A. Samuels
Adams & Victor's Principles of Neurology, 9e - McGraw-Hill

L Pinessi, S Gentile, I Rainero: Neurology book– Edi-Ermes

CG Goetz: Textbook of Clinical Neurology, Saunders, III edition

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Psychiatry and Clinical Psychology

Total Credits: 7
Total hours: 70
Scientific Discipline Sector: Med/25, Med/39, Bio/14, M-Psi/05, M-Psi/08

Teaching staff

Course Coordinator: Cristina Colombo Email: colombo.cristina@hsr.it
(www.unisr.it/k-teacher/colombo-cristinaanna/)
Receiving Hour: (an e-mail of request must be addressed to Prof. Colombo who will e-mail back as a confirmation) Tuesday at 4.pm, at San Raffaele Ville Turro, Block G.

Flavia Valtorta Email: valtorta.flavia@hsr.it
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Barbara Barbini Email: barbini.barbara@hsr.it

Goals: This course will provide an introduction to the clinical features and scientific understanding of the major mental health disorders that characterize medical practice.

Prerequisites: none

Evaluation: Classroom performance, written final exams (multiple choice test).

Course Description: Lectures and group discussions will focus on the psychiatric interview, the mental status examination, and major psychiatric disorders including Mood Disorders, Schizophrenia, Anxiety Disorders, Trauma and Personality Disorders. Students will learn to assess the clinical aspects of a range of psychiatric disorders, with the aid of didactic presentations of case material in lectures, review of patient write-ups, and live or videotaped patient interviews with members of the faculty and senior residents as preceptors.
Clinical clerkship goals can be summarized as making psychiatry real, through practical care-centered teaching and clinical exposure to fundamental issues in psychiatry.

Textbooks: Textbook of psychiatry. Kaplan and Saddock IX edition.

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Ophthalmology

Total Credits: 3
Total hours: 30
Scientific Discipline Sector: Med/30

Teaching staff
Course Coordinator:
Francesco Bandello Email: bandello.francesco@hsr.it
(www.unisr.it/k-teacher/bandello-francesco-maria/)
Receiving Hours on Wednesday 9.30-10:30 to be confirmed by email

Teaching Assistant
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Luisa Pierro Email: pierro.luisa@hsr.it
Giuseppe Querques Email: querques.giuseppe@hsr.it
(www.unisr.it/k-teacher/querques-giuseppe/)

Course Description:
The purpose of the course is to give to students an overview on the most relevant diseases in Ophthalmology
The student should achieve a comprehensive understanding of the basic concepts of ocular normal and pathological anatomy
Following this perspective the course will describe the pathophysiological and clinical aspects of the main ocular diseases in order to provide a comprehensive knowledge regarding the pathophysiology, semiotics, clinics and treatment of all the ocular diseases
Students will learn to recognize the signs and symptoms of ocular pathologies to report directly to the specialist ophthalmologist
Furthermore, this module will provide knowledge relative to the main diagnostic techniques/criteria for establishing the diagnosis of ocular diseases
Finally, both pharmacologic and interventional treatment strategies will be discussed.

Suggested textbooks:
Clinical Ophthalmology
Kanski J.J., Bowling B.
7th edition – Saunders
2011ISBN 9780702040931

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Infectious Diseases

Total Credits: 6
Total hours: 60
Scientific Discipline Sector: Med/17

Course Coordinator: Paola Cinque Email: cinque.paola@hsr.it

Teaching staff:
Antonella Castagna Email: castagna.antonella1@hsr.it
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Giuseppe Tambussi Email: tambussi.giuseppe@hsr.it

Goals:

a. To provide information on epidemiological, pathogenetic and clinical aspects of the most relevant infectious diseases
b. To provide tools for optimal management of infectious diseases, including prevention, diagnosis and treatment

Prerequisites:

University level knowledge in microbiology, pathology and immunology

Evaluation:

Oral examination

Course Description:

The course will be articulated to include both frontal lessons (approximately 75% of total hours) and interactive discussions of clinical cases (approx 25%).

Frontal lessons aim to provide fundamental knowledge on the most relevant infectious diseases, including epidemiology, pathogenesis, clinical aspects, diagnosis and treatments. In most of the cases - wherever feasible - the diseases will be presented in the context of clinical syndromes.

Interactive discussions of clinical cases aim to start and guide students from clinical symptoms - through diagnostic pathways - towards achievement of diagnosis and establishment of treatment plans.

List of content:

Principles of epidemiology of infectious diseases

Prevention of infectious diseases

Emerging and re-emerging infectious diseases

Respiratory infections

Central nervous system infections

Gastrointestinal infections and viral hepatitis

Skin and soft tissues infections

Sexually transmitted infections

Endocarditis and septic shock

Tuberculosis and other mycobacterial diseases

HIV infection

Infections in the immunocompromised host other than HIV

Health-care associated infections and antibiotic resistance

Tropical infections

Text books:

D. Kasper, A. Fauci, Hauser S, Longo D, J Loscalzo, J. Jameson. Harrison's Principles of Internal Medicine, 18th Edition. McGraw Hill.

G.L. Mandell, J.E. Bennett, R. Dolin . Mandell, Douglas, and Bennett's Principles and Practice of Infectious Diseases, 7th edition, Churchill Livingstone (for consult only)

The lessons (slides kits and additional material) will be made available online.

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Clinical Rotations: Internal Medicine & Surgery II APRO

Total Credits: 4
Total hours: 100 (practicals)
Scientific Discipline Sector: Med/09, Med/18

Activity Coordinator: Prof. Lorenzo Dagna Email: dagna.lorenzo@unisr.it
(www.unisr.it/k-teacher/dagna-lorenzo/)

Goals: The primary focus of these clinical rotations is to increase the capacity of students to act as a caring, increasing independent but always supervised physician on an interdisciplinary inpatient internal medicine and surgical team.

These clinical rotations have been designed for further developing the students' fundamental skills of physical exam and history taking that they have approached last year. Time will be given to improve the ability to listening to and communicating with patients, to increase their practical knowledge of medicine through the daily work with residents and faculty as well as self-directed study and research.

Prerequisites: none

Evaluation: pass/fail, based on attendance and on tutor's evaluation

Course Description: students will be working under a tutor's supervision in a general internal medicine and surgical ward and will be involved in all the daily activities of the department.

Textbooks (reference):

- Harrisons Principles of Internal Medicine, 18th Edition (Eds. Dan Longo, Anthony Fauci, Dennis Kasper and Stephen Hause), McGrawHill 2012
- Sabiston Textbook Of Surgery – The Biological Basis Of Modern Surgical Practice, 19th Edition (Eds. Courtney M. Townsend, Jr., R. Daniel Beauchamp, B. Mark Evers, Kenneth L. Mattox); Saunders 2013

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INSTRUCTORS CVs

Elena Contrino
1989, Graduation and Qualification in Medicine and Surgery at University of Milan
1989–1994, activity at the Medical Clinic Unit of the Department for Rehabilitative Medicine DIMER of the San Raffaele Scientific Institute. Research activity in the field of glucose and lipid metabolism in diabetic and obese patients in relation to the pituitary GH secretion / PRL in physiology and pathology.
1994, Residency in Endocrinology and Metabolic Diseases.
1994-1999, counselling as diabetes, endocrinology and diet specialist at the Department of Medicine and Surgery of the Clinic San Carlo, Milan
1995-2005, Head of General Endocrine, Metabolic Diseases and Dietetics Unit at the H.S. Raffaele Resnati polyspecialist healthcare facilities.
Member of European Thyroid Association
Present, General and interventional sonographer consultant at Radiology Unit, San Raffaele Hospital, Milan.

Daniele Zacchetti
EDUCATION AND QUALIFICATIONS
Doctor of Pharmaceutical Chemistry and Technology,
grade 110/110 cum laude, University of Milano, Italy.
12 July 1989.
Thesis: "Mechanisms of alpha-latrotoxin action: role of Ca2+ in receptor binding and polyphosphoinositide hydrolysis".

Italian State Professional Examination for Pharmacist, Milano, Italy.
April 1990

Ph. D. in Cellular and Molecular Biology, University of Milano, Italy.
14 September 1993
Thesis: "Receptor activation and calcium increases: multiple mechanisms working in PC12 cells".

RESEARCH EXPERIENCE
Oct 1997 - Present.
Investigator at the Department of Biological and Technological Science (Dibit)-Scient. Inst. H. San Raffaele, Milano, Italy.

TEACHING EXPERIENCE
International School of Biophysics. Nerve-muscle function. Erice, Sicily, Italy.
20 October - 1 November 1991
Lecture: "Calcium fluxes and distribution in neurons".

Ph. D. program in Pharmacology, University of Milano, Italy. Course on "Morphological techniques in pharmacological research".
10 February 1993
Lecture: "Video-imaging".

Demonstrator at the International Course on Advanced techniques for calcium ion measurements in living cells. Milano, Italy.
20-25 September 1993.
Titles: "[Ca2+]i measurements on cell populations" and "Ca2+ fluxes measured by means of 45Ca2+"

Demonstrator at the EMBO Course "Methods in Cell Biology", EMBL, Heidelberg, Germany.

1-11 October 1995
Topic: "Biogenesis of epithelial cell polarity"

Demonstrator at the Ph.D. Program of the European Molecular Biology Laboratory, Heidelberg, Germany.
November 1995
Title: "Two-dimensional gel electrophoresis".

Andrés José María Ferreri
Education
2005 Resident in Clinical Oncology, University of Milan
1989 Resident in Clinical Oncology, Cátedra de Oncología Clínica y Quimioterapia Antineoplasica, Hospital Militar, Buenos Aires, Argentina
1992 Graduation in Medicine, Medicine and Surgery Faculty, Università degli Studi di Parma, Italy
1985 Graduation in Medicine, Facultad de Medicina de la Universidad de Buenos Aires, Argentina
Work Experience
2006-2007 Coordinator of the Disease Unit "Tumori Linfoidi", Division of Radiochemotherapy, San Raffaele Scientific Institute, Milan, Italy
2004-2007 Unit Coordinator, Medical Oncology, San Raffaele Scientific Institute, Milan, Italy.

Paola Cinque
WORK EXPERIENCE
July 1987–July 1991 Fellow Clinic of Infectious Diseases, Luigi Sacco Hospital, University of Milan, (Italy)
October 1987–July 1991 Consultant Blood Transfusion Unit, Sesto San Giovanni Hospital, Italy, (Italy)
August 1991–October 1993 Visiting Scientist, Karolinska Institute, Stockholm (Sweden)
October 1993–Present Faculty Member, San Raffaele Hospital/Scientific Institute, Department of Infectious Diseases, Milano, (Italy)
January 1999–Present Head of Clinical Research Group, San Raffaele Hospital/Scientific Institute, Milano, (Italy)
March 1999–Present Contract Professor, San Raffaele University, (Italy)
June 2009–May 2013 Program Director, San Raffaele Hospital/Scientific Institute, Research Division of Immunology, Transplantation and Infectious Diseases, San Raffaele Scientific Institute, Milan, (Italy)
EDUCATION AND TRAINING
September 1981–October 1987 M.D., University of Milan, (Italy)
November 1987–July 1991 Specialist in Infectious Diseases, University of Milano, (Italy)
August 1991–October 1993 Ph.D., Karolinska Institute, Stockholm (Sweden).

Nicoletta Dozio
Education
1986, graduation in Medicine and Surgery, University of Milan
1986, specialist in Diabetology and metabolic diseases, University of Milan, Italy
1965, PhD in Clinical Pathophysiology, University of Milan, Italy
2008, specialist in Internal Medicine
Other experiences Clinical attachments at Guy's Hospital London, Diabetes antenatal clinic Prof. C. Lowy, and St. Bartholomew Hospital, Diabetes clinic, Prof D. Leslie (2001)
Overseas doctors induction course, Oxford Deanery PGMDE NHS (2001)
New consultant and NHS managers development program del NHS Modernization Agency & Leadership Centre (2005)
Teaching the teachers to teach East of England Trainer Development Programme (2008)

Most recent Work Experience
2013–currently, Specialist consultant for diabetology, San Raffaele Hospital – Vita-Salute San Raffaele University, San Raffaele Scientific Institute, Milan, Italy
Activity of clinical research, training and diabetes specialist care.

Marina Scavini, M.D., Ph.D.
Education
1983, Medical Degree, Università degli Studi di Milano, Medical School, Milan
1986, Board Certification in Diabetes and Metabolic Diseases
1994, Ph.D., Clinical Pathophysiology
2005, Board Certification in Nephrology

1987, ECFMG Certification (404-306-3), indefinite validity
Employment
1988-1999, San Raffaele Scientific Institute, Milan (Italy)
2000-2004, DCI, Inc. and Division of Endocrinology, University of New Mexico, Albuquerque, NM
2005-2008, San Raffaele Scientific Institute, Milan (Italy)
2009-present, Diabetes Research Institute, IRCCS Ospedale San Raffaele, Milan (Italy)
Teaching Activity
2005-present Endocrinology Fellowship Program, Università Vita-Salute San Raffaele, Medical School, Milan (Italy),
2006 Urology Fellowship Program
2000-2004 University of New Mexico Health Sciences Center, Albuquerque, NM (USA)
2013-present International MD Program

Federico Furlan
Education
1995 Degree in Medicine, Università di Verona, Italy
2000 Specialist in Internal Medicine, Università di Verona, Italy
1995-1999 Resident doctor at the Internal Medicine Clinic D of the Department of Biomedical and Surgical Sciences of the Università di Verona
1999-2002 Research assistant at the division "Bone and Mineral Diseases" of the Policlinico G.B. Rossi of Verona, Italy
2002-2007 Research assistant at the Unit of Molecular Genetics at Vita-Salute University, DIBIT, San Raffaele hospital, Milan
Most recent work experience
2003-present first level medical director at the Emergency Department (Emergency Medicine) at San Raffaele hospital, Milan. Responsible for the training activity "Updating in Emergency Medicine and Surgery"
2006-present Teacher within the course of Endocrinology and Metabolic Diseases, International MD Program, Vita-Salute University, Milan

TIMETABLE

Please note that changes may always occur in the daily lesson schedule.
Please refer to the online timetable for the latest version.

Hematology-Oncology Timetable Year 4 - IMDP A.Y 2016/2017			
Hematology			
Oncology			

Date	Time	Teacher	Title
26/09/2016	09:00-11:00	**Ferreri**	Introduction to modern oncology. Epidemiology. Carcinogenesis.
26/09/2016	11:00-13:00	Bordignon; Ponzoni	Stem Cell Biology and Hemopoiesis. Bone marrow biopsy and Node biopsy.
26/09/2016	16:00-18:00	Bonini; Doglioni; Milani	Diagnostic technologies in Hematology & Oncology: blood counts, flow cytometry & tumor bio Anemia: definition, classification, management. psies.
27/09/2016	09:00-11:00	Ciceri; Marktel	Anemias, Disorders of iron metabolism: Iron deficiency & Iron Overload. Megaloblastic anaemia
27/09/2016	11:00-13:00	D'Angelo	Hemostasis and Thrombosis. Trombophilia
27/09/2016	14:00-16:00	Lupo-Stanghellini	Teaching case, Anemia of chronic diseases. Hypersplenism. Hemorragic, hemolytic and aplastic anemia.
27/09/2016	16:00-18:00	**Esposito**	Imaging in oncology (part I).
28/09/2016	**9:00-18.00**		**NBME EXAM**
29/09/2016	09:00-11:00	**Gregorc**	Staging, quality of life, performance status, and prognostic factors. Clinical trials
29/09/2016	11:00-13:00	Bonini; Vago	Clonal dynamics: an emerging paradigm in hemato-oncology
29/09/2016	14:00-16:00	Ciceri; Marktel	Teaching case, Hemoglobinopathies
29/09/2016	16:00-18:00	**Gregorc, Dell'Oca**	Principles of Radiotherapy. Multimodality treatments; head & neck cancer.
30/09/2016	09:00-11:00	**Ferreri, Doglioni**	Colo-rectal cancer
30/09/2016	11:00-13:00	**Esposito**	Imaging in oncology (part II)
30/09/2016	14:00-16:00	**Esposito, Pepe**	Imaging in oncology (part III). PET in staging and response assessment
30/09/2016	16:00-18:00	D'Angelo	Hemorrhagic syndromes. Hereditary and acquired disorders of platelets and coagulation
03/10/2016	14:00-16:00	Ponzoni	At the microscope Group A
03/10/2016	16:00-18:00	Bordignon; Vago	Teaching case, Acute leukemias
04/10/2016	14:00-16:00	Vago; Ponzoni	Myelodisplasia, Bone Marrow Biopsy
04/10/2016	16:00-18:00	Ciceri; Giglio	Teaching case, CML and myeloproliferative syndromes.
05/10/2016	14:00-16:00	**Esposito**	Response assessment: morphological and functional parameters
05/10/2016	16:00-18:00	**Zacchetti**	Principles of cytotoxic and targeted therapy. Alkylating agents
06/10/2016	14:00-16:00	**Gregorc, Tonon**	Molecular bases of cancer, tumor microenvironment, metastasis. Carcinoma of Unknown Primary Site

06/10/2016	16:00-18:00	Ponzoni	At the microscope Group B
07/10/2016	14:00-16:00	**Zacchetti**	Antimetabolites and analogs. Vinca alkaloids and taxans.
10/10/2016	14:00-16:00	**Gregorc**, **Doglioni**	Lung Cancer
10/10/2016	16:00-18:00	Bonini; Malato	Teaching case, MGUS, MM, Amyloidosis
11/10/2016	14:00-16:00	**Zacchetti**	Topoisomerases inhibitors. Kinase inhibitors. Proteasome inhibitors.
11/10/2016	16:00-18:00	Ciceri	Transfusion Medicine
12/10/2016	14:00-16:00	Bondanza	Hematological manifestations of systemic diseases
12/10/2016	16:00-18:00	Ponzoni	At the microscope Group C
13/10/2016	14:00-16:00	**Ferreri**, **Doglioni**	Esophageal cancer, gastric cancer
13/10/2016	16:00-18:00	**Zacchetti**	Immunomodulators. Hormonal therapy.
14/10/2016	14:00-16:00	**Ferreri**, **Doglioni**	Pancreatic and liver cancer
14/10/2016	16:00-18:00	Ponzoni, **Ferreri**	Introduction to lymphomas. Chronic lymphocytic leukaemia
17/10/2016	14:00-16:00	**Gregorc**, **Cozzarini**, **Doglioni**	Urologic cancers
18/10/2016	14:00-16:00	Ponzoni	At the microscope Group D
18/10/2016	16:00-18:00	Ponzoni	At the microscope Group E
19/10/2016	14:00-16:00	**Esposito**	Interventional radiology
19/10/2016	16:00-18:00	**Ferreri**	Indolent lymphomas
20/10/2016	14:00-16:00	Ponzoni	At the microscope Group F
20/10/2016	16:00-18:00	**Gianni**	Breast Cancer
21/10/2016	14:00-16:00	Ponzoni	At the microscope Group G
21/10/2016	16:00-18:00	**Zacchetti**	Monoclonal antibodies.
24/10/2016	09:00-11:00	**Ferreri, Doglioni**	Tumours of the central nervous system
24/10/2016	11:00-13:00	**Gregorc**	Sarcoma, mesothelioma
24/10/2016	14:00-16:00	Bordignon; Ciceri; Bonini	Hematopoietic stem cell transplantation, Cancer immunotherapy, Gene therapy
24/10/2016	16:00-18:00	**Russo**	Melanoma
25/10/2016	14:00-16:00	**Ferreri**	Aggressive lymphomas. Hodgkin's lymphoma.
25/10/2016	16:00-18:00	Ciceri	Supportive care

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UNIVERSITÀ VITA-SALUTE SAN RAFFAELE

STUDENT GUIDE

FACULTY OF MEDICINE AND SURGERY

MASTER'S DEGREE COURSE
INTERNATIONAL MD PROGRAM

Academic Year 2016/2017

Academic Calendar

VITA-SALUTE SAN RAFFAELE UNIVERSITY
INTERNATIONAL MD PROGRAM - 5th YEAR

	Sept-16		Oct-16		Nov-16		Dec-16		Jan-17		Feb-17		Mar-17		Apr-17		May-17		June-17		July-17		Aug-17		Sept-17
1		1		1	ALL SAINTS	1	Tailored Activities	1	NEW YEAR'S DAY	1	Pedia+gyne Lessons +Apro	1	exams	1		1	BANK HOLIDAY	1		1		1	Holidays	1	EXAMS
2		2		2	Immun.\Path	2	Tailored Activities	2	Holidays	2	Pedia+gyne Lessons +Apro	2	exams	2		2		2	BANK HOLIDAY	2		2	Holidays	2	
3		3	Immun.\Path	3	Immun.\Path	3		3	Holidays	3	Pedia+gyne Lessons +Apro	3	exams	3		3	lessons + Community Med.	3		3	EXAMS	3	Holidays	3	
4		4	Immun.\Path	4	Immun.\Path	4		4	Holidays	4		4		4		4		4		4	EXAMS	4	Holidays	4	EXAMS
5		5	Immun.\Path	5		5	Tailored Activities	5	Holidays	5		5		5	Lessons + Int.med. Rot	5		5	Tailored Activities	5	EXAMS	5		5	EXAMS
6		6	Immun.\Path	6		6	Tailored Activities	6	EPIPHANY	6	Pedia+gyne Lessons +Apro	6	IFOM	6		6		6	Tailored Activities	6	EXAMS	6		6	EXAMS
7		7	Immun.\Path	7	Study Leave	7	Tailored Activities	7		7	Pedia+gyne Lessons +Apro	7	Lessons + Int.med. Rot	7		7		7	Tailored Activities	7	EXAMS	7	Holidays	7	EXAMS
8		8		8	Study Leave	8	Tailored Activities	8		8	Pedia+gyne Lessons +Apro	8		8		8	lessons + Community Med.	8	Tailored Activities	8		8	Holidays	8	EXAMS
9		9		9	Study Leave	9	Tailored Activities	9	Pedia+gyne Lessons +Apro	9	Pedia+gyne Lessons +Apro	9		9		9		9	Tailored Activities	9		9	Holidays	9	
10		10	Immun.\Path	10	Study Leave	10		10	Pedia+gyne Lessons +Apro	10	Pedia+gyne Lessons +Apro	10		10	extra exam session	10		10		10	EXAMS	10	Holidays	10	
11		11	Immun.\Path	11	Study Leave	11		11	Pedia+gyne Lessons +Apro	11		11		11	extra exam session	11		11		11	EXAMS	11	Holidays	11	EXAMS
12		12	Immun.\Path	12		12	Pedia+gyne Lessons	12	Pedia+gyne Lessons +Apro	12		12		12	extra exam session	12		12	Tailored Activities	12	EXAMS	12		12	EXAMS
13		13	Immun.\Path	13		13	Pedia+gyne Lessons	13	Pedia+gyne Lessons +Apro	13	Pedia+gyne Lessons +Apro	13		13	extra exam session	13		13	Tailored Activities	13	EXAMS	13		13	EXAMS
14		14	Immun.\Path	14	EXAMS	14	Pedia+gyne Lessons	14		14	Pedia+gyne Lessons +Apro	14		14	Easter Holiday	14		14	Tailored Activities	14	EXAMS	14	Holidays	14	EXAMS
15		15		15	EXAMS	15	Pedia+gyne Lessons	15		15	Pedia+gyne Lessons +Apro	15	Lessons + Int.med. Rot	15		15		15	Tailored Activities	15		15	ASSUMPTION	15	EXAMS
16		16		16	EXAMS	16	Pedia+gyne Lessons	16	Pedia+gyne Lessons +Apro	16	Pedia+gyne Lessons +Apro	16		16	EASTER	16	lessons + Community Med.	16	Tailored Activities	16		16	Holidays	16	
17		17	Immun.\Path	17	EXAMS	17		17	Pedia+gyne Lessons +Apro	17	Pedia+gyne Lessons +Apro	17		17	EASTER MONDAY	17		17		17	EXAMS	17	Holidays	17	
18		18	Immun.\Path	18	EXAMS	18		18	Pedia+gyne Lessons +Apro	18		18		18	Easter Holiday	18		18		18	EXAMS	18	Holidays	18	EXAMS
19		19	Immun.\Path	19		19	extra exam session	19	Pedia+gyne Lessons +Apro	19		19		19	extra exam session	19		19	Tailored Activities	19	EXAMS	19		19	EXAMS
20		20	Immun.\Path	20		20	extra exam session	20	Pedia+gyne Lessons +Apro	20	Study Leave	20		20	extra exam session	20		20	Tailored Activities	20	EXAMS	20		20	EXAMS
21		21	Immun.\Path	21	Tailored Activities	21	extra exam session	21		21	Study Leave	21		21	extra exam session	21		21	Tailored Activities	21	EXAMS	21	Holidays	21	EXAMS
22		22		22	Tailored Activities	22	Holidays	22		22	Study Leave	22	Lessons + Int.med. Rot	22		22		22	Tailored Activities	22		22	Holidays	22	EXAMS
23		23		23	Tailored Activities	23	Holidays	23	Pedia+gyne Lessons +Apro	23	Study Leave	23		23		23	lessons + Community Med.	23	Tailored Activities	23		23	Holidays	23	
24		24	Immun.\Path	24	Tailored Activities	24	Holidays	24	Pedia+gyne Lessons +Apro	24	Study Leave	24		24	Holidays	24		24		24	EXAMS	24	Holidays	24	
25		25	Immun.\Path	25	Tailored Activities	25	CHRISTMAS	25	Pedia+gyne Lessons +Apro	25		25		25	BANK HOLIDAY	25		25		25	EXAMS	25	Holidays	25	New Academic Year
26	Immun.\Path	26	Immun.\Path	26		26	BOXING DAY	26	Pedia+gyne Lessons +Apro	26		26		26		26		26	IFOM	26	EXAMS	26		26	New Academic Year
27	Immun.\Path	27	Immun.\Path	27		27		27	Pedia+gyne Lessons +Apro	27	exams	27		27		27		27	Study Leave	27	EXAMS	27		27	New Academic Year
28	Immun.\Path	28	Immun.\Path	28	Tailored Activities	28	Holidays	28		28	exams	28		28		28		28	Study Leave	28	EXAMS	28	Holidays	28	New Academic Year
29	Immun.\Path	29		29	Tailored Activities	29	Holidays	29				29	Lessons + Int.med. Rot	29		29	lessons + Community Med.	29	Study Leave	29		29	Holidays	29	New Academic Year
30	Immun.\Path	30		30	Tailored Activities	30	Holidays	30	Pedia+gyne Lessons +Apro			30		30		30		30	Study Leave	30		30	Holidays	30	
		31	Holidays			31		31	Pedia+gyne Lessons +Apro			31				31	Rescheduling			31	EXAMS	31	Holidays		

Notice from the University Committee of the enhancement of quality

on the questionnaires for the evaluation of courses and teaching

Vita-Salute San Raffaele University considers a continuous process of monitoring and evaluating the quality of the educational mission, also in terms of planning, as essential for achieving excellence in higher education and research.

UniSR Students can assess the correspondence between the teaching quality offered and their expectation. That is very important to improve teaching and training and develop successful strategies.

At the end of each semester, students' opinions are collected through *evaluation questionnaires*. Filling in the questionnaire is compulsory, according to the guidelines published in November 2013 by ANVUR (the National Agency for the Evaluation of the University and Research Systems). IT techniques have been implemented to speed up questionnaire collection and processing. Anonymity is fully guaranteed.

Filling in the questionnaires is the necessary condition which allows a student to register for the exams. After collection, data are firstly conveyed to the Master's degree course Coordinators and to the Deans of the Faculties and finally to the University Evaluation Commission for the analysis of data.

The data collected will be a fundamental source to spot every sort of issue, thus for future improvement.

In short, filling in the questionnaires represents a key moment of University life in which students take a role of responsibility together with academia and University organization structures in the continuous process of improvement and innovation which makes it possible for our University to rank among the top Universities in the nation and Europe.

We really appreciate all respondents' valuable time to fill up the questionnaires, especially during intense study times and we would like to raise students' awareness of the importance of their contribution by carrying out this task responsibly and sharing the same objectives together with this Institution.

The President of the University Committee
for the enhancement of quality

YEAR 5

- **Clinical Immunology, Rheumatology and Dermatology**
- **Systematic Pathology**
- **Obstetrics and Gynecology**
- **Pediatrics**
- **Clinical Rotations: Ob/Gyn & Pediatrics**
- **Internal Medicine**
- **Clinical Surgery**
- **Imaging**
- **Clinical Rotations: Community Medicine**

Clinical Immunology, Rheumatology and Dermatology

Total Credits: 5
Total hours: 50
Scientific Discipline Sector: SSD MED/09 MED/35

Teaching staff

Course Coordinator: Patrizia Rovere Querini (www.unisr.it/k-teacher/roverequerini-patrizia/) Email: rovere.patrizia@hsr.it
Lorenzo Dagna (www.unisr.it/k-teacher/dagna-lorenzo/) Email: dagna.lorenzo@hsr.it
Angelo A. Manfredi (www.unisr.it/k-teacher/manfredi-angeloandreamaria/) Email: manfredi.angelo@hsr.it
Flavia Valtorta (www.unisr.it/k-teacher/valtorta-flavia/) Email: valtorta.flavia@hsr.it

Collaborators
Mona Rita Yacoub Email: yacoub.monarita@hsr.it

Goals

The mission of this course is to instruct medical students for diseases of the immune system and the skin, providing them with the necessary tools to deal with the patients, both clinically and by laboratory procedures, and to identify appropriate management strategies and treatment options. The student, in particular, should acquire medical knowledge in immunology and autoimmune diseases, and in the clinical care of the basis of the most common diseases of the skin and of the immune system and the core knowledge required to adequately collect the history of the patients, to identify relevant clinical features by medical examination, and to the appropriate use of laboratory tests. The student will develop the ability to cope with the exponential growth of scientific information in the field by identifying the link between clinical events and major molecular events that drive the pathogenesis of diseases of the immune system and skin. We particularly focus on the recent development in our understanding of dermatological, rheumatic and allergic diseases that has fundamentally changed in recent years after the introduction into clinical practice of new therapeutic strategies specifically targeting selected molecules.
An introduction to immunomodulatory therapies will also be provided.

Evaluation

Attendance to lectures will be checked and recorded electronically. At the end of the course there will be an oral test focused on the course contents and clinical cases discussion.

Course Description

- Introduction to the Immune System and to the present course
- Primary Immune Deficiency Diseases,
- Allergies, Anaphylaxis, and Systemic Mastocytosis
- Autoimmunity and Autoimmune Diseases:
  - Systemic Lupus Erythematosus & Antiphospholipid Antibody Syndrome
  - Sjogren's Syndrome
  - Inflammatory myopathies
  - Systemic Sclerosis (Scleroderma) and overlap Syndromes
  - Rheumatoid Arthritis, Palindromic Rheumatism & adult onset Still’s Disease
  - Acute Rheumatic Fever
  - The Spondyloarthritides
  - The Vasculitis Syndromes
  - Behcet's Syndrome

Erytherma Nodosum & Sarcoidosis
Relapsing Polychondritis & Fascitis w or w/o eosinophilia
Familial Mediterranean Fever and Other Hereditary Recurrent Fevers

Disorders of the joints

- Osteoarthritis & osteoporosis
  Gout and Other Crystal-Associated Arthropathies
  Septic Arthritis & Arthritis Associated With Systemic Disease

- Skin Disorders (16 hours)
  Eczema, Psoriasis, Cutaneous Infections, Acne
  Skin Manifestations of Internal Disease
  Immunologically Mediated Skin Diseases
  Cutaneous Drug Reactions
  Photosensitivity and Other Reactions to Light

Textbook

Longo D., Fauci A., kasper D.: Harrison's Principles of Internal Medicine - McGraw-Hill – 18th Edition - ISBN 9780071748896

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Systematic Pathology

Total Credits: 6
Total hours: 70
Scientific Discipline Sector: SSD MED/08

Teaching staff

Course Coordinator: Maurilio Ponzoni — Email: ponzoni.maurilio@hsr.it
(www.unisr.it/k-teacher/ponzoni-maurilio/)
Receiving Hour: by appointment

Claudio Doglioni — Email: doglioni.claudio@hsr.it
(www.unisr.it/k-teacher/doglioni-claudio/)
Massimo Loda — Email: massimo_loda@dfci.harvard.edu
Federica Pedica — Email: pedica.federica@hsr.it

Goals

To give students a systematic pathology framework of the most frequent and relevant human diseases: understanding and classifying diseases for a rationale clinical practice. Pathology is a bridging discipline involving both basic science and clinical practice. Students will learn the morphologic alterations of diseased tissues and organs at the gross and microscopic level, as well as how these alterations correlate with the clinical manifestations of the disease and which are the most informative procedures for establishing a pathologic diagnosis.

Evaluation

Written multiple choice test and oral exam at the end of the course

Course Description

Lectures will cover the most frequent and relevant topics of human pathology: students will be asked to expose with a brief introduction, the most important and frequent symptoms that characterize diseases of the specific organs. Students will also visit, at the beginning of the course, the pathology lab, in order to familiarize with the procedures and techniques utilized for pathology diagnosis.

Textbook

Robbins & Cotran Pathologic basis of Disease, 9th Edition
By Vinay Kumar, Abul K. Abbas, and Jon Aster
Elsevier/Saunders

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Obstetrics and Gynecology

Total Credits: 4
Total hours: 40
Scientific Discipline Sector: MED 40

Teaching staff
Course Coordinator: Massimo Candiani Email: candiani.massimo@hsr.it
(www.unisr.it/k-teacher/candiani-massimo/)
Massimo Origoni Email: origoni.massimo@hsr.it
(www.unisr.it/k-teacher/origoni-massimo/)
Stefano Salvatore Email: salvatore.stefano@hsr.it
(www.unisr.it/k-teacher/salvatore-stefano/)

Goals: This course aims to provide knowledge of the fundamental principles of obstetrics and gynaecology to medical students, including anatomy and physiology of the genital tract. This course aims also to offer notions on classification, epidemiology, patho-physiology, diagnostic work-up and management of different obstetrical and gynaecological conditions. Students should therefore acquire skills in taking history and assessing patients, in choosing the most appropriate diagnostic work-up and treatment.

Evaluation : Multiple choice question test at the end of the course. Oral examination will be performed for students who have reached a bad evaluation.

Course Description: The course will include the attendance of the IMDP students to the daily activity of the Dept of Obstetrics and Gynaecology, including ward-rounds, labour ward, outpatient clinics and operating theatre. Moreover the following formal lessons will be organized:

- Topographic and functional anatomy of female pelvis and reproductive system
- Spontaneous and recurrent miscarriage
- Reproductive system endocrinology: hypotalamus-hypophysis-ovary-uterus axis.
- Physiology of pregnancy
- Reproductive medicine
- Obstetrics ultrasound
- Ectopic pregnancy
- Third trimester bleeding
- Diabetes and hypertension in pregnancy
- The vaginal delivery
- The operative and caesarean delivery
- The post-partum and breast feeding
- Chronic pelvic pain and endometriosis
- Uterine fibroids and ovarian cysts
- Screening and diagnosis of female genital tract preneoplastic lesions
- Vulvar, vaginal and cervix cancer
- Sexual transmitted diseases
- Urogynaecology

- Endometrial and ovarian cancer
- Gestational trophoblastic disease
- Abdominal surgery in gynaegology: laparotomy and laparoscopy
- Contraceptive methods
- Vaginal surgery in gynaecology
- Presentation and discussion of obstetrics and gynaecology clinical cases

Textbooks

1. Lange: Current Diagnosis & Treatment Obstetrics & Gynecology, Alan DeCherney, Lauren Nathan, T. Murphy Goodwin, Neri Laufer, 11th Edition
2. Danforth's Obstetrics and Gynecology, Ronald S. Gibbs, Lippincott Williams & Wilkins, 2008
3. Williams Obstetrics, Cunningham, Leveno, Bloom, Sponge, Dashe, 24th Edition, ISBN: 0071798935

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Pediatrics

Total Credits: 4
Total hours: 40
Scientific Discipline Sector: SSD MED/38

Teaching staff

Course Coordinator: Prof. Alessandro Aiuti Email: aiuti.alessandro@hsr.it
(www.unisr.it/k-teacher/aiuti-alessandro/)
Receiving Hour: on Fridays, 3:00pm

Teaching assistant

Dr. Maria Ester Bernardo Email: bernardo.mariaester@hsr.it

Collaborators

Dr. Graziano Barera Email: barera.graziano@hsr.it
Dr. Federica Barzaghi Email: barzaghi.federica@hsr.it
Dr. Valeria Calbi Email: calbi1.valeria@hsr.it
Dr. Maria Pia Cicalese Email: cicalese.mariapia@hsr.it
Dr. Francesca Ferrua Email: ferrua.francesca@hsr.it
Dr. Chiara Lanzani Email: lanzani.chiara@hsr.it
Dr. Maddalena Migliavacca Email: migliavacca.maddalena@hsr.it
Dr. Maria Grazia Natali Sora Email: natali.mariagrazia@hsr.it
Dr. Maria Grazia Patricelli Email: patricelli.mariagrazia@hsr.it
Dr. Paolo Silvani Email: silvani.paolo@hsr.it
Prof. Giovanna Weber Email: weber.giovanna@hsr.it
(www.unisr.it/k-teacher/weber-giovanna/)

Goals

The overall objective of this course is to provide the essential theoretical and practical knowledge to deal with the healthy and sick child of different ages (from neonates to adolescents) from the preventive, diagnostic and rehabilitation point of view. The student should be able to plan the essential medical interventions with regards to the main health problems in terms of frequency and risk inherent to the paediatric pathologies of different ages and identify the conditions that need the intervention of the professional specialist paediatrician.

Evaluation: Classroom attendance. Oral Examination focused on the course content, including clinical cases discussion.

Course Description

The students will learn the methodology for a correct approach to the clinical problems of pediatric age, including the evaluation of medical records, semeiotics, instrumental and laboratory tests. Through an integrated approach based on lessons, seminars and practical exercises the course will illustrate the epidemiological, etiopathogenic, and clinical aspects of the diseases of the pediatric age providing useful information on their prevention, diagnosis, and treatment.
Topics of particular interest will be dealt in depth with the active participation of students in order to stimulate the maximum interest. Students will attend in small groups the Pediatrics, Neonatology, and Pediatric Immunohematology Units, the Pediatric day hospital and clinics

(immunology, hematology, endocrinology, neonatology, neurology). These activities will be complemented by interactive lessons with clinical cases and seminars.

Topics:

Introduction

Epidemiology of pediatric diseases. Normal growth and development. The communication in paediatrics. The immigrant child. Ethical aspects. Medicines for children.

Tutorial activities: Pediatric physical examination. *Blood pressure in children of different ages. Clinical trials in paediatrics.*

The newborn

The healthy newborn: perinatal adaptation. Major diseases of the term newborn: birth asphyxia, physiological jaundice, neonatal sepsis and infection from mother to child transmission, most common metabolic disorders (hypoglycemia, hypocalcemia), most common neurological frameworks (intracranial hemorrhage, hydrocephalus, seizures), preterm infant and dysmature newborn: characteristics, perinatal adaptation, major diseases (hyaline membrane disease, bronchodysplasia, retinopathy of prematurity, necrotizing enterocolitis, ...)

Tutorial Activities: The healthy newborn: evaluation to neonatal area, hints of childcare, nutrition. Physiological and pathological fetal growth. Neonatal screening. Principles of neonatal resuscitation

Genetics

Approach to the main Genetic and Chromosomal Disorders; patterns of Inheritance, clinical signs and natural history. *Tutorial Activities: Observation of some characteristic syndromes / dysmorphic (Down, Turner, Klinefelter, DEL22, Prader-Willi)***.**

Gastroenterology

Vomiting: differential diagnostics; acute diarrhea, chronic or recurrent. Constipation: differential diagnostics. Malabsorption syndrome: celiac disease in pediatric. Food intolerances

Tutorial Activities: Principles of nutrition: breastfeeding and its benefits; recommended integrations (vitamin D, fluoride, iron); deficiency of vitamin D; weaning (how, when, and why). Importance of nutrition in the prevention of chronic degenerative diseases of the adult (obesity, hypercholesterolemia, hypertension). Recurrent abdominal pain: definition and differential diagnosis, diagnostic process. Learning to detect the nutritional status of a child and the main signs of dehydration

Child Neuropsychiatry

Simple and complex febrile seizures**.** More frequent forms of epilepsy**.** Cerebral palsy, main neuromuscular diseases in the pediatric age

Tutorial Activities: Pediatric neurological examination. Neuropsychological development of the healthy child. Febrile seizures.

Haematology

Main changes of haematological values in relation to the age**.** Leukemia (incidence, clinical suspicion, diagnostic procedure, therapy)**.** Anemia: pediatric aspects**.** Thrombocytopenia and neutropenia**.** Pediatric aspects of bone marrow transplant.

Tutorial activities: Interpretation of blood count. Transfusion of blood components.

Oncology

Incidence, symptoms, signs of suspicion of the most common pediatric solid tumors: lymphoma, neuroblastoma, Wilms' tumor. The main brain tumors in children: incidence, signs and symptoms.

Endocrinology and metabolic disorders. Hyposomia: diagnostic approach and therapy. Diabetes mellitus type I: clinical onset, laboratory parameters and therapeutic approach and complications from a distance. Thyroid: congenital hypothyroidism. Essential obesity and differential diagnosis with secondary forms. Physiological puberty, early, late. Congenital Adrenal Hyperplasia. Lysosomal storage diseases and other (neuro)metabolic disorders: diagnostic approach, differential diagnosis and therapy.

Tutorial activities: learning to detect the most important auxological parameters and to evaluate the development of pubertal stage; observation of some characteristic disease variants.

Allergy and Immunology

Main allergic diseases of the child (rhino-conjunctivitis, atopic dermatitis, bronchial asthma, food allergies): principles of therapy.

Juvenile Rheumatoid Arthritis. Schoenlein-Henoch purpura. Rheumatic Disease

Primary and secondary immune deficiencies in children

Tutorial activities: Immunological tests and their interpretation.

Diseases of the respiratory system

Pediatric aspects of upper and lower respiratory tract infections (etiology, epidemiology, clinic, diagnosis, therapy: bronchiolitis, otitis, epiglottitis, pneumonia). Cystic fibrosis. Tubercolosis.

Cardiology

The heart murmur (differential diagnostics)
The main congenital heart disease (tetralogy of Fallot, VSD, ASD, persistent ductus).

Nephrology

Urinary tract infections**.** Glomerulonephritis**.** Nephritic and nephrotic syndrome

Tutorial activities: Examination of urine: methods of collection in the first childhoods and evaluation of results. Hematuria: differential diagnosis

Infectious Diseases

Main exanthematous diseases (measles, rubella, chicken pox, scarlet fever). Main infectious diseases (infectious mononucleosis, CMV, mumps and whooping cough)**.** Vaccinations (calendar and directions).

Orthopedics

Screening of congenital dislocation of the hip.

Emergencies

Detect the presence of conditions that require immediate medical intervention. Meningoencephalitis (etiology, clinical features, CSF test interpretation, complications, mortality and sequelae of meningitis, principles of therapy). Surgical emergencies**:** Acute abdomen, Acute Scrotum, Hypertrophic pyloric stenosis**.** *Tutorial activities: ABC of pediatric resuscitation. Basics of head trauma*

Textbook

Reference: Nelson Essentials of Pediatrics, Marcdante and Kliegman, 7th edition, Saunders, ISBN 9781455759804

For students who are interested in internship in pediatrics, "The Harriet Lane Handbook" is a comprehensive practical handbook for diagnosis and treatment.
Authors: Johns Hopkins Hospital, Kristin Arcara and Megan Tschudy. Mosby ISBN 978-0-323-07942-6

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Clinical Rotations: Ob/Gyn & Pediatrics

Total Credits: 7
Total hours: 175
Scientific Discipline Sector: SSD Med/38, Med/40, Med/45

Activity Coordinators:
Alessandro Aiuti Email: aiuti.alessandro@hsr.it
(www.unisr.it/k-teacher/aiuti-alessandro/)
Massimo Candiani Email: candiani.massimo@hsr.it
(www.unisr.it/k-teacher/candiani-massimo/)

Goals The main objective of these clinical rotations is to increase the capacity of students to act as caring, increasing independent, but supervised physician on pediatric ad ob/gyn patients. Students will improve their listening and communication skills with patients (and families), and increase their practical knowledge on prevention, diagnosis, and treatment of disease of the mother and the child.

Evaluation: pass/fail, based on attendance and tutor's evaluation

Course Description: students will be attending ward, day hospitals, clinics and emergency department and will be involved in all the daily activities with residents and faculties of the obstetrics and gynecology department and pediatrics department.

Textbook: see Pediatrics and Ob/Gyn courses

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Internal Medicine

Total Credits: 10
Total hours: 100
Scientific Discipline Sector: SSD MED/09

Teaching staff

Course Coordinator: Paolo Prospero Ghia Email: ghia.paolo@hsr.it
(www.unisr.it/k-teacher/ghia-paoloprospero/)
Lorenzo Dagna Email: dagna.lorenzo@hsr.it
(www.unisr.it/k-teacher/dagna-lorenzo/)
Angelo Manfredi Email: manfredi.angelo@hsr.it
(www.unisr.it/k-teacher/manfredi-angeloandreamaria/)
Patrizia Rovere-Querini Email: rovere.patrizia@hsr.it
(www.unisr.it/k-teacher/roverequerini-patrizia/)

Goals

The goal of this course is to provide the student with the theoretical and clinical skills for the correct decision-making process and optimal management of common medical disorders. Signs and symptoms reported by patients will be placed into the context of more general clinical problems that will be analytically discussed according to an evidence-based medicine approach. During the course the student will learn how to apply the essential concepts of disease pathophysiology to the evaluation and treatment of clinical problems. At the end of the course, the student will be able to integrate the existing body of medical knowledge with the advances in molecular medicine in order to identify the appropriate diagnostic procedures and implement recommended therapeutic guidelines in clinical practice for the benefit of the patients.

Evaluation

Attendance to lectures will be checked and recorded electronically. At the end of the course there will be a written and oral test focused on the course contents and clinical cases discussion.

Course Description

The course will be characterized by a mixture of academic lessons, guideline presentation and case report discussions revolving around the following topics:

- Decision-making in clinical medicine
- Pinciples of molecular medicine
- Approach to the patient with common diseases
- Approach to the patient with cancer
- Principle of cancer treatment
- Hypertensive vascular disease
- Chest discomfort and palpitations
- Abdominal pain
- Fever
- Fever of unknown origin

- Dyspnea
- Edema
- Jaundice
- Anemia
- Iron overload disorders
- Bleeding and thrombosis
- Bone pain
- Arthritis and arthralgia
- Enlargement of lymph nodes and spleen
- Transfusion therapy: indications and complications
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Textbooks:

1) Longo D., Fauci A., Kasper D.: Harrison's Principles of Internal Medicine - McGraw-Hill – 18th Edition - ISBN 9780071748896
2) Lee Goldman, MD and Andrew I. Schafer, MD.: Goldman's Cecil Medicine - Elsevier - 24th Edition - ISBN 978-1-4377-2788-3

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Clinical Surgery

Total Credits:5
Total hours:50
Scientific Discipline Sector: SSD MED/18, MED/20

Teaching staff

Course Coordinator: Massimo Falconi — Email: falconi.massimo@hsr.it
(www.unisr.it/k-teacher/falconi-massimo/)
Riccardo Rosati — Email: rosati.riccardo@hsr.it
(www.unisr.it/k-teacher/rosati-riccardo/)
Stefano Crippa — Email: crippa1.stefano@hsr.it
Andrea Kahlberg — Email: kahlberg.andrea@hsr.it
(www.unisr.it/k-teacher/kahlberg-andrealuitz/)

Goals

The goal of this course is to provide the student with the theoretical and clinical skills for the correct decision-making process and optimal management of common surgical disorders. Signs and symptoms reported by patients will be placed into the context of more general surgical problems that will be discussed according to an evidence-based medicine approach. During the course the student will learn how to apply the essential concepts of disease pathophysiology to the diagnosis and treatment of clinical problems. The course will treat the most common surgical diseases of the adult patients with a focus on vascular surgery. Common surgical disorders of the infancy and childhood are discussed as well.

Evaluation

Classroom attendance. Oral Examination focused on the course content, including clinical cases discussion.

Course Description

General Surgery

Abdominal pain

- Clinical presentation, physical examination and diagnostic work up
- Understand the broad differential diagnosis of abdominal pain including the evaluation, differential diagnosis and treatment

Gastrointestinal bleeding

- Give the differential diagnosis for upper and lower GI tract bleeding
- Rank management priorities with an acutely bleeding patient
- Differentiate and describe the basic management of an upper and lower GI bleed

Jaundice

- Create a differential diagnosis for the onset of jaundice associated with abdominal pain
- Create a differential diagnosis for the onset of painless jaundice
- Determinate the appropriate laboratory and radiologic work-up for evaluating patients with jaundice
- Summarize the management strategies associated with treating patients with jaundice

Hernias

- Appreciate the different types of hernias and how they can cause clinically-relevant problems

- Name the difference between reducible, incarcerated and strangulated hernias
- Describe the clinical presentation and diagnostic work-up for incarcerated and strangulated hernias
- Surgical indications for the management of hernias

Breast
- Summarize the important personal history and physical exam features in a patient with breast lump
- Be able to generate a diagnostic work-up and differential diagnosis for women with breast lump and/or calcifications identified on screening mammography
- List the different breast imaging modalities available and indications for each
- Discuss the surgical options for management of both invasive and non-invasive breast cancer

Bowel obstruction
- Clinical presentation, physical examination and diagnostic work up
- Understand the broad differential diagnosis of small- and large-bowel obstruction
- Describe the management and initial treatment for a patient with bowel obstruction
- List the indications for operation on a patient with bowel obstruction and describe the complications of delaying the operation

Transplantation
- Definitions and classifications of solid organ and tissue transplantation
- Solid organ transplantations in clinical practice
- Future perspectives in transplantation

Esophagus
- Jatal hernia and esophageal reflux disease: clinical presentation, diagnostic work-up and treatment
- Achalasia: clinical presentation, diagnostic work-up and treatment
- Esophageal cancer: classification, clinical presentation, diagnosis and treatment
- Indications for neoadjuvant treatment in esophageal carcinoma
- Palliation of advanced esophageal carcinoma

Stomach
- Gastric cancer: clinical presentation, diagnostic work-up and treatment
- Surgical complications of peptic disease: classification, clinical presentation, diagnosis and treatment

Pancreas
- Pancreatic tumors: clinical presentation, diagnostic work-up and treatment
- Indications for neoadjuvant treatment in pancreatic carcinoma
- Determinate the appropriate laboratory and radiologic work-up for evaluating patients with incidentally-discovered pancreatic solid or cystic lesions
- Acute pancreatitis: clinical presentation, diagnostic work-up and treatment
- Chronic pancreatitis: clinical presentation, diagnostic work-up and treatment

Liver and biliary tree
- Liver tumors: clinical presentation, diagnostic work-up and treatment
- Understand the broad differential diagnosis of hepatic focal lesion
- Determinate the appropriate laboratory and radiologic work-up for evaluating a hepatic focal lesion in patients with and without chronic hepatitis
- Indication for surgical resection of primary and metastatic liver tumors
- Clinical presentation, diagnostic work-up and treatment of patients with biliary tree tumors

Thyroid and parathyroid

- Thyroid and parathyroid tumors: clinical presentation, diagnostic work-up and treatment
- Understand the broad differential diagnosis of thyroid nodule
- Determinate the appropriate laboratory and radiologic work-up for evaluating a patient with thyroid nodule

Adrenal gland

- Adrenal gland tumors: clinical presentation, diagnostic work-up and treatment
- Understand the broad differential diagnosis of adrenal gland incidentalomas (functioning versus non-functioning tumors)
- Determinate the appropriate laboratory and radiologic work-up for evaluating a patient with incidentally discovered adrenal gland lesion

Small bowel, colon and rectum

- Clinical presentation, diagnostic work-up, differential diagnosis of inflammatory bowel diseases
- Surgical indications for patients with inflammatory bowel diseases
- Clinical presentation, diagnostic work-up, and management of patients with colo-rectal cancer
- Indications for neoadjuvant treatment in rectal carcinoma
- Indications for limited resection in rectal carcinoma
- Management and palliation of locally-advanced or metastatic colorectal cancer

Hereditary cancer syndromes

- General overview
- MEN 1, MEN 2A/2B
- Familial medullary carcinoma of the thyroid
- Hereditary colorectal cancer syndromes: hereditary nonpolyposis colorectal cancer (Lynch syndrome), familial adenomatous polyposis, Peutz-Jeghers syndrome
- Definition of neurofibromatosis, Von-Hippel Lindau syndrome, Li Fraumeni syndrome

Vascular Surgery

- Clinical presentation, diagnostic work-up and management of patients with thoracic, abdominal and thoracoabdominal aortic aneurysms
- Indications for surgical versus endovascular treatment in aortic aneurysm
- Aortoiliac and femoropopliteal arterial occlusive diasease: clinical presentation, diagnostic work-up and management
- Cerebrovascular occlusive disease: clinical presentation, diagnostic work-up and management

Pediatric Surgery

- Clinical presentation, diagnostic work-up and treatment of the most common congenital abnormalities in neonatal surgery (from prenatal diagnosis to surgical treatment):
    - Congenital diaphragmatic hernia
    - Esophageal atresia
    - Duodenal obstruction
    - Hypertrophic pyloric stenosis
    - Small bowel atresia
    - Anorectal malformations
    - Abdominal wall defects
    - Sacro-coccygeal teratoma
- Clinical presentation, diagnostic work-up and treatment of:
    - Thoracic malformations

    - Necrotizing enterocolitis
    - Idiopathic intestinal perforations
    - Meconium ileus
    - Midgut volvulus
    - Gastro-esophageal reflux disease
    - Hirschsprung's disease
    - Intussusception
    - Appendicitis in early childhood
- The role of bronchoscopy in pediatric patients
- Clinical presentation, diagnostic work-up and treatment of:
    - Pneumothorax
    - Pleural effusions

Textbooks
"Sabiston Textbook of Surgery", 19th Edition, Elsevier
"Greenfield's Surgery: Scientific Principles & Practice", 5th Edition, Lippincott

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Imaging

Total Credits:3
Total hours:30
Scientific Discipline Sector: SSD MED/36, MED/37

Teaching staff

Course Coordinator: Francesco De Cobelli Email: decobelli.francesco@hsr.it
(www.unisr.it/k-teacher/decobelli-francesco/)

Andrea Falini Email: falini.andrea@hsr.it
(www.unisr.it/k-teacher/falini-andrea/)

Collaborators
Maria Picchio Email: picchio.maria@hsr.it
Antonella Castellano Email: castellano.antonella@hsr.it

Goals

The mission of this course is to instruct medical students to imaging. Most of diagnosis are based on imaging findings and this course will provide to the students the necessary tools to deal with the imaging procedures, and to identify appropriate management of the imaging information and options with different imaging techniques. The student, in particular, should acquire knowledge of different imaging techniques learning how to choose the best techniques for each clinical need. In the previous 4 academic years the Student had already experienced the knowledge of imaging in Physics and in Human Morphology and in different applications fields such as in neck, respiratory and lung diseases, in oncology and in digestive and abdominal diseases. Therefore, the aim of this course is to cover the remaining fields such as orthopedics, cardiovascular and urological, and the applications of imaging in emergency. Part of the lessons will be dedicated to Neuroradiology in order to discuss main topics such as brain tumors, degenerative and inflammatory diseases, and traumas that have not treated during the Neuroscience Course.
All the imaging techniques will be presented: XRay, Ultrasound, Computed Tomography, Digital Angiography, Magnetic Resonance and Nuclear Medicine as well such as Nuclear Scintigraphy and PET. We will also focus on the recent development of Interventional Radiology.
Students will be familiar with the main normal findings and alterations of diseased organs and apparatus with the different imaging modalities, as well as how the alterations and sings correlate with the clinical manifestations of the disease and which are the most informative procedures for establishing the correct diagnosis.

Evaluation

Multiple choice questions at the end of the course

Course Description

- Introduction to Imaging and to the present course
- Diagnostic Imaging in Ortopedics
- Cardiovascular Imaging
- Uroradiology
- Interventional Radiology
- Emergency Radiology
- Nuclear Medicine

Neuro

- Inflamatory diseases
- Degenerative diseases
- Neuro-oncology
- Traumas

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Clinical Rotations: Community Medicine

Total Credits:3
Total hours:75
Scientific Discipline Sector: SSD MED/09

Course Coordinator: Antonio Secchi Email: antonio.secchi@hsr.it
(www.unisr.it/k-teacher/secchi-antonio/)

Clinical skills:

To attend the out-patient clinic of the General Practitioner (GP) and follow diagnostic and therapeutic activities of the doctors in patients attending their offices.
To familiarize with prescriptions, certifications etc., used by the GP
To assist activities in the socio-sanitary district
To familiarize with the database and electronic clinical files used by the GP
To familiarize with pharmaceutical research and bibliography research through the most common data base and websites for biomedical activities

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INSTRUCTORS CVs

Mona-Rita Yacoub

Education and Training

2012, July, PhD Degree in Molecular Medicine

Work Experience

Actual affiliation: Consultant at San Raffaele Scientific Institute, Milan, Italy

2014/10 in course,	Educational activity at the "Università Vita-Salute San Raffaele" for the international MD course, in the field of Allergy
2009/10 in course,	Allergist consutant in Day Hospital Unit for allergic patients
2009/06, 2014/04	Contract for the surveillance of adverse drug reactions (Farmamonitor, Lombardy Region)
04/2007, in course	Allergist consultant for internal patients at San Raffaele hospital (hospitalized, pre-chirurgical and employees)
06/2008, in course	Educational activity at the "Università Vita-Salute San Raffaele" for the MD course, in the field of Allergy
04/2007, in course	Role of subinvestigator in clinical trials in the field of allergic diseases. Last GCP certificate: January 2015 (Module 1 to 5) and May 2015 (Module 6 to 8).

Maria Ester Bernardo

WORK EXPERIENCE

- Since November 17, 2014 to present: Permanent Staff Paediatrician, Pediatric Immunohematology and Bone Marrow Transplantation Unit, San Raffaele Scientific Institute, Milan.
- Since November 17, 2014 to present: Project Leader, San Raffaele Telethon Institute for Gene Therapy (SR-TIGET), San Raffaele Scientific Institute, Milan.
- May 2010 – November 2014: Permanent Staff Paediatrician, Department of Hematology and Oncology, IRCCS Ospedale Pediatrico Bambino Gesù, Roma.
- May 2010 – November 2014: Head of the Research Unit "Cellular Therapy" of the Laboratories of the Department of Hematology and Oncology, IRCCS Ospedale Pediatrico Bambino Gesù, Roma.
- April 2007-May 2010: Permanent Staff Paediatrician, Department of Paediatric Oncohematology, Fondazione IRCCS Policlinico San Matteo, Pavia
- November 2005 - March 2007: Fellowship - Department of Paediatric Oncohematology, Fondazione IRCCS Policlinico San Matteo, Pavia.

EDUCATION AND TRAINING

- Since 2015: "Professore a Contratto" in Paediatrics, MD Program, Università Vita-Salute San Raffaele, Milano.
- February 2014: certification as Associate Professor (Abilitazione Scientifica Nazionale) in Paediatrics.
- March 2010: PhD dissertation, University of Leiden, The Netherlands, Thesis: "Human mesenchymal stem cells: biological characterization and clinical application" under the supervision of Prof. W.E. Fibbe.

Massimo Loda M.D.

Education

1974-76 Pre-clinical University of the Witwatersrand, Johannesburg, South Africa

1980 M.D., cum laude Medicine & Surgery University of Milan, Milan, Italy

Postdoctoral Training

07/80-06/85 Resident Emergency Surgery Ospedale Policlinico, University of Milan, Italy

07/85-06/86 Resident General Surgery Deaconess Hospital, Harvard Medical School, Boston, MA

07/86-06/88 Resident Anatomic Pathology Deaconess Hospital, Harvard Medical School

07/88-06/89 Fellow Anatomic and Molecular Pathology
New England Medical Center, Tuft University, Boston, MA
Licensure and Certification
1980 State licensure examination, Italy
1981- ECFMG examination
1985- FMGEMS examination
1985 Boards in Emergency Surgery, Italy
1986 FLEX Examination
1988 Massachusetts Medical License
1989 American Board of Anatomic Pathology (re-certification 2014)

Faculty Academic Appointments
1984-1985 Assistant Research Professor Surgery Boston University, Boston, MA
1988-1989 Instructor Pathology Tufts University, Boston MA
1997-1998 Lecturer Pathology Residency Training Programs in Anatomic Pathology and Medical Oncology, University of Bologna, Bologna, Italy
1992-1994 Instructor Pathology Harvard Medical School, Boston, MA
1994-1999 Assistant Professor Pathology Harvard Medical School
1999-2006 Associate Professor Pathology Harvard Medical School
2006 Professor Pathology Harvard Medical School
2007 Associate Member Broad Institute of Harvard and MIT, Cambridge, MA
2011-2014 Visiting Professor and Professorial Chair in Molecular Oncology
Visiting Professor, Division of Cancer Studies, King's College London School of Medicine, London, UK
2014- Visiting Professor, Universita' Vita-Salute, Milan, Italy

Federica Pedica
Work Experience
June 1st 2013-ongoing Consultant histopathologist
Unit of Pathology, Department of Experimental Oncology, DIBIT 2, San Gabriele
via Oggettina 60, 20132, Milan
▪ Consultant histopathologist
▪ Teaching activities for International MD program at San Raffaele University
▪ Scientific collaborator of the Director of Pathology Professor Claudio Doglioni
Education and Training
2013-2016 Ph.D in HUMAN ONCOLOGICAL PATHOLOGY AND STEM
CELL (School of Biomedical Translational sciences) (completed
with "ottimo", April 22nd, 2016)
Policlinico G.B. Rossi, piazzale L.A. Scuro, University of Verona, Italy
▪ Title of Ph.D. thesis "Characterization of neoplastic and non neoplastic
microenvironment in liver, lung and bone marrow through the study of class III betatubulin"
may-june 2015 Honorary Clinical Fellow
Institute of Liver Studies, Liver Labs, 3rd Floor, Cheyne Wing, King's College Hospital,
Denmark Hill, London
2008-2013 Residency in Human Pathology

Antonella Castellano
Education
2015, PhD in Molecular Medicine - Experimental Neurology, San Raffaele Research Institute, Milan
2007, Residency in Radiodiagnostics, Vita-Salute University, Milan, Italy
2006, Degree in Medicine and Surgery, Vita-Salute University, Milan, Italy
Work Experience
2012- Present, Researcher in the neuro-oncological field at the Functional Neuroradiology Unit, Dept. of Neuroscience, Vita-Salute San Raffaele University, Milan, Italy

2014-2105, Visiting Research Associate, Research activity in neuro-oncology, University of California, San Francisco - San Francisco, CA, US
Department of Neurology - Department of Radiology & Biomedical Imaging

TIMETABLE

Please note that changes may always occur in the daily lesson schedule.
Please refer to the online timetable for the latest version.

International MD Program A.Y. 2016/2017 - YEAR 5
Clinical Immunology, Rheumatology and Dermatology
Systematic Pathology

TIME	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
	26/09/2016	27/09/2016	28/09/2016	29/09/2016	30/09/2016
09-11	INTRODUCTION (PRQ1)	Systematic Pathology Introduction and overview MP	Systematic Pathology Sydenly mph nodes Pathology of Lymphoid tissue MP	Systematic Pathology ESS GR 2 FP - in the Pathology ward	Systematic Pathology ESS GR 4 - FP in the Pathology ward
11-13	SLE (PRQ2)	RA (AAM1)	Systematic Pathology ESS GR 1 -FP in the Pathology ward	Systematic Pathology Emphysis Pulmonary Pathology 1 CD	Systematic Pathology Acute chest pain Pathology of vessel and heart FS
14-15			OA & GOUT (AAM2)	Systematic Pathology ESS GR 3 - FP in the Pathology ward	SS/PAPS (PRQ3)
15-18					

TIME	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
	3-Oct-16	4-Oct-16	5-Oct-16	6-Oct-16	7-Oct-16
09-11	Systematic Pathology Splenomegaly Pathology of the spleen MP	Systematic Pathology Bone Marrow PathologyMP	Large/Medium vessel Vasculitides (LD2)	Systematic Pathology Pathology of the mediastinum MP	
11-13	Scleroderma (PRQ4)	Spondyloarthropaties (AAM3)	ALLERGY Molecular bases (MY1)	Systematic Pathology autoimmune Pathology MP	
14-15	Small vessel Vasculitides (LD1)	Systematic Pathology Liver Pathology FP	Systematic Pathology Pulmon Pathology 2 CD	Acute Allergy (MY2)	
15-18					

TIME	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
	10-Oct-16	11-Oct-16	12-Oct-16	13-Oct-16	14-Oct-16
09-11	Clinical Cases (MY3) Enrico	Pathology of the Testis Prof. M. Lodi	Translational studies in urological pathology Prof. M. Lodi		
11-13	Primary Immunodeficiencies & Immno mediated cytopenias (PRQ5)	Pathology of the Prostate Prof. M. Lodi	Medical Career in the USA Prof. Lodi 11:00-12:00		
14-15	Pathology of the Kidney and Urinary Bladder Prof. M. Lodi	Chronic Allergy (MY4)	AutoInflammatory disorders & FMF (LD3)	Dermatitis (MY5)	
15-18			IIM/ MCTD/UCTD (PRQ6)		

TIME	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
	17-Oct-16	18-Oct-16	19-Oct-16	20-Oct-16	21-Oct-16
09-11	Introduction to dermatology (PRQ7)	Systematic Pathology Endocrine Pathology 1 CD	Systematic Pathology endocrine Pathology 2 CD	Behcet, Policondritis & Sarcoidosis (LD4)	
11-13	Systematic Pathology Melena Pathology of the lower GI tract CD	Systematic Pathology Obstructive Jaundice Pathology of pancreas and biliary tract FP	Systematic Pathology Infectious Pathology MP	ARF & septic (AAM4)	
14-15	Systematic Pathology Vaginal Bleeding MP		Clinical Cases (PRQ8) Enrico	A lump in the breast CD	
15-18					

TIME	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
	24-Oct-16	25-Oct-16	26-Oct-16	27-Oct-16	28-Oct-16
09-11	Psoriasis (PRQ9)	10-13 Constitutional Referendum	Systematic Pathology Lymphomas and infectious agents MP	Systematic Pathology Skin Pathology CD	
11-13			Acne vulgaris / Bollous diseases (PRQ10)	Molecular diagnostic in oncology MGC and LP	
14-18	Systematic Pathology A lump in soft tissues Soft Tissue tumors CD		Systematic Pathology Pathology small bowel CD		
16-18					

TIME	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
	31-Oct-16	1-Nov-16	2-Nov-16	3-Nov-16	4-Nov-16
09-11		Holiday	Systematic Pathology A pelvic mass Pathology of the ovaries MP	Pharmacology (PV2)	
11-13	Systematic Pathology Head and Neck MP		Systematic Pathology Dysphagia and dyspepsia Pathology of the upper GI tract CD		
14-18	Systematic Pathology Seizures Pathology of CNS CD		Pharmacology (PV1)		
16-18					

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UNIVERSITÀ VITA-SALUTE SAN RAFFAELE

STUDENT GUIDE

FACULTY OF MEDICINE AND SURGERY

MASTER'S DEGREE COURSE
INTERNATIONAL MD PROGRAM

Academic Year 2016/2017

VITA-SALUTE SAN RAFFAELE UNIVERSITY
INTERNATIONAL MD PROGRAM - 6th YEAR

	Sept-16		Oct-16		Nov-16		Dec-16		Jan-17		Feb-17		Mar-17		Apr-17		May-17		June-17		July-17		Aug-17		Sept-17
1		1		1	ALL SAINTS	1	Study leave	1	NEW YEAR'S DAY	1		1		1		1	BANK HOLIDAY	1		1		1	Holidays	1	EXAMS
2		2		2	Lessons	2	Study leave	2	Holidays	2	THESIS INTERNSHIP	2	THESIS INTERNSHIP	2		2		2	BANK HOLIDAY	2		2	Holidays	2	
3		3	Lessons	3	Lessons	3		3	Holidays	3		3		3		3	THESIS INTERNSHIP	3		3	EXAMS	3	Holidays	3	
4		4	Lessons	4	Lessons	4		4	Holidays	4		4		4		4		4		4	EXAMS	4	Holidays	4	EXAMS
5		5	Lessons	5		5	Study leave	5	Holidays	5		5		5	THESIS INTERNSHIP	5		5		5	EXAMS	5		5	EXAMS
6		6	IFOM	6		6	Study leave	6	EPIPHANY	6		6		6		6		6		6	EXAMS	6		6	EXAMS
7		7	Lessons	7	Lessons	7	S.AMBROGIO	7		7		7		7		7		7	THESIS INTERNSHIP	7	EXAMS	7	Holidays	7	EXAMS
8		8		8	Lessons	8	IMMACOLATA	8		8	THESIS INTERNSHIP	8	THESIS INTERNSHIP	8		8		8		8		8	Holidays	8	EXAMS
9		9		9	Lessons	9	Study leave	9	Exams	9		9		9		9		9		9		9	Holidays	9	
10		10	Lessons	10	Lessons	10		10	Exams	10		10		10	extra exam session	10	THESIS INTERNSHIP	10		10	EXAMS/Graduation	10	Holidays	10	
11		11	Lessons	11	Lessons	11		11	Exams	11		11		11	extra exam session	11		11		11	EXAMS/Graduation	11	Holidays	11	EXAMS/Graduation
12		12	Lessons	12		12	Study leave	12	Exams	12		12		12	extra exam session	12		12		12	EXAMS/Graduation	12		12	EXAMS/Graduation
13		13	Lessons	13		13	Study leave	13	Exams	13		13		13	extra exam session	13		13		13	EXAMS/Graduation	13		13	EXAMS/Graduation
14		14	Lessons	14	Lessons	14	Exams	14		14		14		14	Easter Holiday	14		14	THESIS INTERNSHIP	14	EXAMS/Graduation	14	Holidays	14	EXAMS/Graduation
15		15		15	Lessons	15	Exams	15		15	THESIS INTERNSHIP	15	THESIS INTERNSHIP	15		15		15		15		15	ASSUMPTION	15	EXAMS/Graduation
16		16		16	Lessons	16	Exams	16	Exams	16		16		16	EASTER	16		16		16		16	Holidays	16	
17		17	Lessons	17	Lessons	17		17	Exams	17		17		17	EASTER MONDAY	17	THESIS INTERNSHIP	17		17	EXAMS/Graduation	17	Holidays	17	
18		18	Lessons	18	Lessons	18		18	Exams	18		18		18	Easter Holiday	18		18		18	EXAMS/Graduation	18	Holidays	18	EXAMS/Graduation
19		19	Lessons	19		19	Exams	19	Exams	19		19		19	extra exam session	19		19		19	EXAMS/Graduation	19		19	EXAMS/Graduation
20		20	Lessons	20		20	Exams	20	Exams	20		20		20	extra exam session	20		20		20	EXAMS/Graduation	20		20	EXAMS/Graduation
21		21	Lessons	21	Study leave	21	Exams	21		21		21		21	extra exam session	21		21	THESIS INTERNSHIP	21	EXAMS/Graduation	21	Holidays	21	EXAMS/Graduation
22		22		22	Study leave	22	Exams	22		22	THESIS INTERNSHIP	22	THESIS INTERNSHIP	22		22		22		22		22	Holidays	22	EXAMS/Graduation
23		23		23	Study leave	23	Holidays	23		23		23		23		23		23		23		23	Holidays	23	
24		24	Lessons	24	Study leave	24	Holidays	24		24		24		24		24	THESIS INTERNSHIP	24		24	EXAMS	24	Holidays	24	
25		25	Lessons	25	Study leave	25	CHRISTMAS	25	THESIS INTERNSHIP	25		25		25	BANK HOLIDAY	25		25		25	EXAMS	25	Holidays	25	New Academic Year
26	Lessons	26	Lessons	26		26	BOXING DAY	26		26		26		26		26		26		26	EXAMS	26		26	New Academic Year
27	Lessons	27	Lessons	27		27		27		27	THESIS INTERNSHIP	27		27	THESIS INTERNSHIP	27		27		27	EXAMS	27		27	New Academic Year
28	Lessons	28	Lessons	28	Study leave	28	Holidays	28		28		28		28		28		28	THESIS INTERNSHIP	28	EXAMS	28	Holidays	28	New Academic Year
29	Lessons	29		29	Study leave	29	Holidays	29				29	THESIS INTERNSHIP	29		29		29		29		29	Holidays	29	New Academic Year
30	Lessons	30		30	Study leave	30	Holidays	30				30		30		30	THESIS INTERNSHIP	30		30		30	Holidays	30	
		31	Lessons			31		31				31				31				31	EXAMS	31	Holidays		

Block A: Emergency Medicine+Public Health and Legal Medicine lectures
Sessioni di laurea A.A. 2015/2016: dal 17 al 28 ottobre 2016; dal 20 febbraio al 3 marzo 2017
Sessioni di laurea A.A. 2016/2017: dal 10 al 21 luglio 2017; dall'11 al 22 settembre 2017

Notice from the University Committee of the enhancement of quality

on the questionnaires for the evaluation of courses and teaching

Vita-Salute San Raffaele University considers a continuous process of monitoring and evaluating the quality of the educational mission, also in terms of planning, as essential for achieving excellence in higher education and research.

UniSR Students can assess the correspondence between the teaching quality offered and their expectation. That is very important to improve teaching and training and develop successful strategies.

At the end of each semester, students' opinions are collected through *evaluation questionnaires*. Filling in the questionnaire is compulsory, according to the guidelines published in November 2013 by ANVUR (the National Agency for the Evaluation of the University and Research Systems). IT techniques have been implemented to speed up questionnaire collection and processing. Anonymity is fully guaranteed.

Filling in the questionnaires is the necessary condition which allows a student to register for the exams. After collection, data are firstly conveyed to the Master's degree course Coordinators and to the Deans of the Faculties and finally to the University Evaluation Commission for the analysis of data.

The data collected will be a fundamental source to spot every sort of issue, thus for future improvement.

In short, filling in the questionnaires represents a key moment of University life in which students take a role of responsibility together with academia and University organization structures in the continuous process of improvement and innovation which makes it possible for our University to rank among the top Universities in the nation and Europe.

We really appreciate all respondents' valuable time to fill up the questionnaires, especially during intense study times and we would like to raise students' awareness of the importance of their contribution by carrying out this task responsibly and sharing the same objectives together with this Institution.

The President of the University Committee
for the enhancement of quality

YEAR 6

- **Emergency Medicine**
- **Public Health and Legal Medicine**

Emergency Medicine

Total Credits: 6
Total hours: 60
Scientific Discipline Sector: SSD MED/09, MED/18, MED/26, MED/33, MED/41

Teaching staff
Course Coordinator: Antonio Secchi (www.unisr.it/k-teacher/secchi-antonio/)
Email: secchi.antonio@hsr.it
Receiving hour: appointment by e-mail

Teachers:
Giovanni Landoni, Riccardo Rosati, Giancarlo Comi, Gianfranco Fraschini, Luca Cabrini, Maria Rosa Calvi, Michele Carlucci, Antonella Citterio, Roberto Faccincani, Massimiliano Greco, Giulio Melisurgo, Fabrizio Monaco, Giacomo Monti, Federico Pappalardo, Luisa Roveri, Giovanni Sesana, Marzia Spessot.

Goals

The target of the course is to offer to the students the chance to address the major clinical problems related to the Emergency, through a theoretical and a practical approach. The methodology to efficiently address emergency situations will be offered to the students.
Pathophysiological bases, identification of priorities and synthetic approach will be the base of the learning and its practical application.

Exam Modalities

The final exam will be based on multiple choice evaluation. 30 questions with 4-5 answer options, only one answer correct.
- Right answer: 1 point
- Blank: no points
- Wrong answer: penalization of ¼ point

Further oral evaluation will be allowed to increase (by a maximum of 3 points) or decrease the vote of the written test.
Certification of all practical activities (see below) is compulsory to attend the final exam.

Course Description

The following topics will be addressed:
Methodology in the clinical approach to the Emergency
Sepsis
Cardiac arrest
Acid-base balance
Shock
Pulmonary embolism
Acute Cardiovascular failure
Acute respiratory failure
Stroke
Headache
Intoxication and poisoning
Acute infectious diseases
Acute renal failure
Endocrinological emergencies
ATLS

Syncope
Chest pain
Surgical emergencies
Burns
Polytrauma
Maxi-emergencies

Practical Activities

Students will spend 7 days in the department of Emergency, from 9 am to 9 pm, as follows: 3 days in the room of Emergency Medicine, 3 days in the room of Emergency Surgery, 1 day in the room of Traumatology.

Students will spend 1 day the operating theatre (from 7.30 to 9.30, Q2 "floor-1" cardiac surgery theatre). They'll follow the anesthesiologist and will have the opportunity to see

- Mechanical circulatory devices: intraortic balloon pump (IABP), IMPELLA, extracorporeal membrane oxygenation (ECMO V-A), ventricular assist devices, artificial hearts
- orotracheal intubation, mechanical ventilation, manual ventilation
- central venous line cannulation, pulmonary artery pressure and central venous pressure measurements
- arterial and venous cannulation
- standard and advanced monitoring
- transesophageal echocardiography

Students will spend 1 day in Intensive Care Unit.

Textbook

Tintinalli's Emergency Medicine: Just the Facts, Third Edition

Rosen's Emergency Medicine - Concepts and Clinical Practice

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PUBLIC HEALTH & LEGAL MEDICINE

COURSE INFORMATION

9 credits | 90 hours | Scientific Discipline Sector: SSD MED/42, MED/43, MED/44, SECS-P/10, L-LIN/12

INSTRUCTORS

The course will be held by:

Carlo Signorelli, MD MSc PhD (co-ordinator) **Email: signorelli.carlo@hsr.it**

Guido Travaini **Email: guido.travaini@unimi.it**
Michelangelo Casali **Email: casalimichelangelo@gmail.com**
Dario Consonni **Email: dario.consonni@unimi.it**
Nicola Bedin **Email: fallabrino.tanja@hsr.it**
Michael John **Email: john.michael@hsr.it**

TEXTBOOK & COURSE MATERIALS

> Public Health

Oxford Handbook of Public Health Practice (edited by Guest C, Ricciardi W, Kawachi I, Lan I) 3rd ed. Oxford University Press, 2013

Targeted readings and relevant background references will be distributed by the instructors during the course

> Occupational medicine

Oxford Handbook of Occupational Health (edited by Smedely J, Dick F, Sadhra S), Second edition. Oxford University Press, 2013

Targeted readings and relevant background references will be distributed by the instructors during the course

> Legal and Forensic medicine

W.G. Eckert Introduction to Forensic Science, II edition

> Health Economics

tbd

> Medical English

Topics for group exercises will be communicated during the presentation of the course.

OBJECTIVES

A solid background in public health and legal medicine is of fundamental importance for every physician and transversal to any medical specialty. In fact, understanding determinants of population health, implementing prevention strategies, reporting disease outbreaks, ensuring infection control - among other public health aspects - are much needed skills for tomorrow's physicians. This course introduces the general principles of health and disease, health determinants, health policy and management, health systems and health economics, legal and forensic medicine, occupational medicine and prevention in workplaces. The topics of the course refer to the relationship between the MD and the society at the population level, besides the usual relationship MD-patient at the individual level.

Aim of the course is to offer an overview of key global and public health topics, methodological and clinical epidemiology, determinants of health, health policy and management, health economics, occupational medicine, occupational health, legal and forensic medicine as well as to stimulate students' critical thinking and to equip them with content and skills they can further develop and apply in their careers.

CONTENTS

The course will cover the following topics:

PUBLIC HEALTH

- **General concepts of Public Health and preventive medicine**
- **Health indicators and health assessment**
- **Global health and health promotion. The role of int'l organizations**
- **Health policy and management. The Italian National Health Service (INHS)**
- **Epidemiological methods & Clinical epidemiology**
- **Epidemiology and prevention of vaccine preventable diseases (VPD)**
- **Determinants of health and environmental health risks**

OCCUPATIONAL MEDICINE

- **Knowledge on the relationship between health and job**
- **Knowledge on risk factors related to job**
- **Knowledge on pathogenetic mechanisms, diagnosis and prevention of the principal occupational diseases**
- **Overview on laws and rules of hygiene and safety on occupational medicine**
- **Occupational epidemiology**

LEGAL & FORENSIC MEDICINE

- **Knowledge of the responsibility of MD (e.g. consensus, emergency…)**
- **Forensic pathology, including forensic genetics, forensic psychopathology and toxicology (drugs of abuse, doping, alcohol abuse)**
- **Sexual harassment and sexual offence, rules of occupational medicine and of assurances against disease and injuries**
- **Obligations of MD, professional responsibility, evaluated and illustrated through practical and real cases**

HEALTH ECONOMICS

- **Knowledge of importance of economics on healthcare.**
- **Basic concepts of Health Economics.**
- **Illustration of some econometric system commonly used for hospitals and healthcare systems.**

ENGLISH MEDICINE

Examination of five healthcare systems: Australia, Spain, Germany, France, Canada
The class will be divided into 5 groups, and each group will hold a lesson (ppt. presentation with questions from the audience) on the allocated topic. Each group will receive a mark (0-10) for the presentation. The exercise is mandatory, and will be calculated as part of the final result (see). Any student who does not participate is, first of all, letting down the rest of the group, and will be given 0 (ZERO) for this section.

ASSESMENT
The following components will contribute to the final grade:

A. Presentation (VPD carousel)	10%
B. Presentation (paper interpretation)	10%
C. Presentation (M John presentation)	10%
D. FINAL EXAM (35 MCQs)	70%

Please note:

- Oral presentations grades are assigned on an individual (or group) basis and take into account both quality and content of slides (PowerPoint or Prezi), presenting skills and clarity of speech

STUDENT RESPONSIBILITY POLICY
Students are responsible to confirm all assignments are received by their instructor. This includes assignments submitted electronically or left on the web space.

ACADEMIC INTEGRITY
Plagiarism, cheating, submitting work of another person or work previously used and other forms of academic dishonesty will lead to lowered course grades, failure of the course or more severe measures, depending on judgments of the gravity of the individual case
.

CLASS ATTENDANCE / BEHAVIOUR
Attendance is mandatory. Students are expected to attend class regularly and to participate in all class activities and activate the individual badge as required by University Regulations.

Cell phones, I-pad and computers must be turned off for the duration of each class, unless otherwise noted by the instructor. No eating or drinking in class. Break time must be respected (no longer than 10 minutes or as advised by the teacher); no recording or filming of lessons without written permission from all present.

Any cheating or plagiarism will result in immediate failure on assignment and possible removal from and failure of course.

Please be respectful of all classmates, professors, guests, peers. Any discipline or academic problems will be discussed with the program director and student's home university, if necessary. Auditing students must attend all lessons, complete all classwork, group work and presentations.

INSTRUCTORS BIO

Carlo Signorelli, MD, MSc, PhD is Full Professor of Hygiene and Public Health at the University of Parma, Italy where is also Director of the Post-Graduate School in Hygiene and Preventive Medicine and at the University Vita-Salute San Raffaele. He is currently the President of the Italian Society of Hygiene, Preventive medicine and Public Health (SItI). He qualified in Medicine at the University of Milan in 1986, he holds an MSc in Epidemiology and a PhD (1994) from the London School of Hygiene & Tropical Medicine. He is member of the International Scientific Committee of the European Public health Association (EUPHA). His research work focuses on public health, epidemiology, environmental health, health organisation and immunization policies. He is author or co-author of over 15 teaching books in the fields of epidemiology, environmental health and public health and of over 500 scientific papers.

Michelangelo Casali MD, PhD is a forensic pathologist at the Institute of Legal Medicine UNIMI and at the "Luigi Mangiagalli" gynecological hospital in Milan. He is a PhD in Occupational Medicine and

Industrial Hygiene. He is also a professional mediator focusing mainly on medical malpractice disputes. He is a member of the MedMal Lab UNIMI. Current research fields: forensic pathology of blunt force trauma, clinical forensic pathology, medical malpractice and clinical risk management, forensic asbestology.

Guido Travaini, ML – Degree in Law at Milan University, Qualification in Clinical Criminology at the Specialization School in Criminology at the Medicine and Surgery Faculty of Milan University.Qualification as a Doctor in Criminology (Ph.D) at the Legal Science Faculty of Bari and Trento Universities. Since the academic year 2005 he has been acting as Professor in charge at the Specialization School in Legal Medicine of Milan University. Since the academic year 2007 he has been teaching Criminology at the University "Vita e Salute"-San Raffaele Hospital - Medicine and Surgery Faculty – Master in Forensic Psychopathology and Criminology. He works at Institute of Legal Medicine University of Milan.

Dario Consonni, MD, PhD works in the Epidemiology Unit, Fondazione IRCCS Ca' Granda Ospedale Maggiore Policlinico in Milan. His activities include study design and statistical analysis of occupational, environmental, and clinical epidemiology studies. He graduated at the University of Milan in 1987 and got the Diploma in Occupational Health in 1991. He was visiting scientist at the International Agency for Research on Cancer, Lyon in 1993. In 1995 he got a PhD at the University of Bari with a thesis on statistical models in occupational epidemiology. He followed residential courses in epidemiology in Florence (1989), Boston (1990), and Finland (1992). Since 1997 he has been teaching epidemiology in the Master in Epidemiology of the Italian Epidemiology Association, University of Turin and since 2000 at the School of Occupational Medicine, University of Milan. He authored or co-authored over 200 papers.

Nicola Bedin, MBA – Economist graduated of Bocconi University and experiences at the University of California at Berkeley (US) and at the University of Texas at Austin (US). Since 2005 CEO of IRCCS Policlinico San Donato, Company Leader of San Donato Hospital Group. Since May 2012 CEO of IRCCS Ospedale San Raffaele and since May 2015 CEO of University Vita-Salute San Raffaele. He is Lecturer of Health Economics at University of Pavia and the University Vita-Salute San Raffaele.

Michael John, BA PGCE has been teaching English Communication Skills and Medical Humanities at the Vita-Salute University since 1998. He teaches on various courses in the Faculty of Medicine: Medicine and Surgery (traditional course), International MD Program, Biotechnology; Odontoiatrics. He has also taught on the Nursing Course and the Dental Hygiene Course. He is responsible for Communication Skills and Medical Humanities in all of the Postgraduate Specialty Schools of the University. He teaches in-house PhD students, and has taught various PhD and professional courses throughout Italy and abroad. He is the author of numerous indexed papers on the topic of communication skills in medicine. In 2006 he published *English for the Medical Profession* (Masson/Elsevier). He graduated from Exeter University in 1978 and received his post-graduate qualification at Sheffield University in 1980.

COLLABORATORS BIO

Anna Odone, MD MSc MPH is a Research Fellow at the University of Parma, Italy. MD, she was further trained in epidemiology and public health at the London School of Hygiene and Tropical Medicine and at the Harvard School of Public Health, where she was awarded a 2-year Fulbright scholarship. She has research and work experience in several universities and international organizations and she is author and co-author of 51 indexed papers with an expertise in vaccine preventable diseases and tuberculosis control.

TIMETABLE

Please note that changes may always occur in the daily lesson schedule.
Please refer to the online timetable for the latest version.

International MD Program A.Y. 2016/2017 YEAR 6

Course: Emergency Medicine	PROF. SECCHI, MONTI, ROSATI, COMI, LANDONI, FRASCHINI			
Course: Public Health & Legal Medicine	Public Health CS1	SIGNORELLI	30	
	PH & L.M. (Legal medicine)	TRAVAINI+CASALI	15+15	
	Health economics (Bedin, 1)	BEDIN	10	
	Occupational health	CONSONNI	10	
	English	JOHN	10	

TIME	MONDAY 26/09/2016	TUESDAY 27/09/2016	WEDNESDAY 28/09/2016	THURSDAY 29/09/2016	FRIDAY 30/09/2016
09-11		Public Health CS1			Public Health CS3
11-13		PH & L.M. (Legal medicine)			PH & L.M. (Legal medicine)
14-16	emergency medicine 1		emergency medicine 2		emergency medicine 3
16-18	Public Health & LM, OPENING		Public Health CS2 (AO)		

TIME	MONDAY 3-Oct-16	TUESDAY 4-Oct-16	WEDNESDAY 5-Oct-16	THURSDAY 6-Oct-16	FRIDAY 7-Oct-16
09-11		Public Health CS4		IFOM	
11-13					
14-16	emergency medicine 4		emergency medicine 5		
16-18	PH & L.M. (Legal medicine)		Public Health CS5 (AO)		

TIME	MONDAY 10-Oct-16	TUESDAY 11-Oct-16	WEDNESDAY 12-Oct-16	THURSDAY 13-Oct-16	FRIDAY 14-Oct-16
09-11		Public Health CS6			Public Health CS8
11-13		Health economics (Bedin, 1)			PH & L.M. (Legal medicine)
14-16	emergency medicine 6		emergency medicine 7		emergency medicine 8
16-18	PH & L.M. Occupational med.		Public Health CS7		

TIME	MONDAY 17-Oct-16	TUESDAY 18-Oct-16	WEDNESDAY 19-Oct-16	THURSDAY 20-Oct-16	FRIDAY 21-Oct-16
09-11		Public Health CS9			Public Health CS11
11-13					PH & L.M. (Legal medicine)
14-16	emergency medicine 9		emergency medicine 10		emergency medicine 11
16-18	PH & L.M. Occupational med.		Public Health CS10		

TIME	MONDAY 24-Oct-16	TUESDAY 25-Oct-16	WEDNESDAY 26-Oct-16	THURSDAY 27-Oct-16	FRIDAY 28-Oct-16
09-11					Public Health CS13 (AO)
11-13		10-13 Constitutional Referendum			Health economics (Bedin, 2)
14-16	emergency medicine 12		emergency medicine 13		emergency medicine 14
16-18	PH & L.M. Occupational med.		Public Health CS12 (AO)		

TIME	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
	31-Oct-16	**1-Nov-16**	**2-Nov-16**	**3-Nov-16**	**4-Nov-16**
09-11	**Holiday**	**Holiday**		Public Health MJ (1)	**Health economics (Bedin, 3)**
11-13				PH & L.M. (Legal medicine)	PH & L.M. (Legal medicine)
14-16			emergency medicine 15		emergency medicine 16
16-18			Public Health CS14		

TIME	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
	7-Nov-16	**8-Nov-16**	**9-Nov-16**	**10-Nov-16**	**11-Nov-16**
09-11	Public Health MJ (2)	PH & L.M. Occupational med.	PH & L.M. (Legal medicine)	Public Health MJ (3)	PH & L.M. (Legal medicine)
11-13	Public Health (seminar)	PH & L.M. Occupational med.	PH & L.M. (Legal medicine)	**Health economics (Bedin, 4)**	PH & L.M. (Legal medicine)
14-16	emergency medicine 17	PH & L.M. (Legal medicine)	emergency medicine 18		emergency medicine 19
16-18	Public Health CS15				

TIME	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
	14-Nov-16	**15-Nov-16**	**16-Nov-16**	**17-Nov-16**	**18-Nov-16**
09-11		Public Health MJ (4)		Public Health MJ (5)	
11-13	PH & L.M. (Legal medicine)	**Health economics (Bedin, 5)**	PH & L.M. (Legal medicine)		
14-16	emergency medicine 20		emergency medicine (rescue)		emergency medicine (rescue)
16-18	PH & L.M. (Legal medicine)				

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