



Didactic Activities a.y. 2023/24				
Lecturer	Title of the Course	Brief description	Hours	Compulsory
Debora Angeloni (4 ore), Vincenzo Lionetti (4 ore), Claudio Passino (2 ore), Fabio Recchia (2 ore)	Research methodology: from bench to bedside	As part of the course, the elements for understanding the methodological fundamentals of research in biomedicine will be provided, starting from basic in vitro research to clinical research through experimental research on small to large animal models. The different approaches will be illustrated by outlining strengths and weaknesses of the various experimental models	12	si
Alberto Aimo	Writing Scientific Articles	The objective of the course is to guide the doctoral student in setting up and writing abstracts and scientific papers. The course will review the main types of papers from case reports, letters to the journal, original articles to simple and systematic reviews. Highly interactive course and culminating in the production of a paper by doctoral students	12	si
Giuseppe Vergaro	Presenting research at International conferences	The Course aims to train the doctoral student in the preparation and presentation of scientific content. It is a highly interactive mode, knowledge elements aimed at developing both the skills for proper articulation and public presentation of data at scientific conferences will be provided	15	si
TBD	Biostatistica	The Course aims to provide the theoretical basis for understanding and implementing, with critical awareness, the basic statistical and probabilistic methodologies applied to the biomedical field. Emphasis will be placed on the analysis of the most frequently used statistical tools for biomedical and clinical research using a "practical" approach.	16	si
Alberto Giannoni	Journal clubs (3 per year)	The Course aims, through reading and reviewing scientific articles on various topics, to develop the ability to critically analyze scientific literature. The course is spread over the three-year period, and in rotation all students guided by the teacher present their review of an article to the rest of the class.	24	si
Debora Angeloni	Science communication for the Third Mission of the University	Communicating science, technology and innovation for the University's Third Mission' is a seminar course that aims to provide effective tools for communicating science, technology and innovation specifically in the context of the university's Third Mission. Third Mission is the set of activities with which university enters into direct interaction with society, beyond research and education: enhancement of intellectual or industrial property, academic entrepreneurship, intermediation and technology transfer, health protection, lifelong learning, public engagement and risk communication, open science and activities related to the Sustainable Development Goals. The course provides specific education and training for communication of science and technology contents outside strictly professional circles. The course includes 20 hours of frontal lessons with several more hours of exercise (writing and multimedia activities).	25	si
Fabio Recchia	Designing, Writing and Submitting a Research Project	The Course aims to develop the Trainees' ability to submit a grant proposal starting from the design of the protocol to the preparation of the forms. The course is divided into a more theoretical part in which the methodological tools are provided and a part of writing a proposal by each student that is then collegially analysed and reviewed.	20	si

	No-mandatory courses			
Danilo Neglia	Imaging techniques in biomedical research: from cells to humans	The present Course has the ambition to connect scientists and their techniques, ranging from cellular imaging at a molecular level, via small animal imaging, to human imaging, to clinicians or students interested in getting the knowledge required for understanding and choosing imaging and non-imaging tools in cardiovascular research and clinical practice.	12	no
Vincenzo Lionetti	Fundamentals in Edible Epigenetics	In the fundamentals in edible epigenetics, the PhD student will learn the basic principles of nutrigenomics applied to nutraceuticals and ristoceutics. The present course will provide a solid foundation in critical thinking, evidence-based knowledge and multidisciplinary competence skills as prerequisites for providing extensive personalized sustainable nutrition in all settings of primary, secondary and tertiary prevention. At the end of the course, the student will be asked to set up a new functional meal considering associations between functional foods and cooking techniques.	10	no
Vincenzo Lionetti	Medical Management of the Surgical Patient	The Course will provide to PhD student evidence-based knowledge and case -based reasoning on the preoperative, perioperative, and post-operative medical care of surgical patients. Each lesson will highlight a particular area of clinical concern, with concise presentations of pathophysiology, assessment and management options, the latest drug treatment information, and essential information on risk stratification and quality improvement. The main goal is providing the key elements for the best management of surgical patients with co-existing medical problems that may be affected by surgery, as well as how to approach medical complications that may occur during or following surgical procedures.	20	no
Vincenzo Lionetti	Advances in Repair and Tissue Engineering	Repair and tissue engineering techniques have evolved in the lates years: the PhD student will learn on the research strategies to repair, replace, regenerate and ultimately rejuvenate various tissues and organs to solve major clinical problems. The student will gain a comprehensive insight into up-to-date issues such as stem cells (including niche and exosomes), design and characterization of biomaterials and nanomaterials, biofabrication (including 3D bioprinting), cell and gene therapies, animal models, commercialization and clinical translation of regenerative therapies. The course will prepare for a career in pharmaceutical, biotechnology and regenerative medicine sectors	16	no
Debora Angeloni	Space biology for human health	The course offers an overview of specific topics of experimental biology and biomedicine in support of human exploration of space, considering their direct and indirect relevance for ground applications. With the dawn of commercial access and exploitation of space, the major space agencies including the Italian Space Agency and the European Space Agency are planning, with industrial support and investments, outposts for human crews to live and work in space. This course represents a unique opportunity to learn about how space exploration has provided experimental biology a new and unprecedented way to study life, and also highlights the most compelling issues for permitting safe and productive inhabiting of space. The course is organized in frontal lectures and includes multidisciplinary seminars offered by Academia, space agency and industry lecturers. Topics include gravitational biology, with reference to molecular and cell biology for microgravity and hyper gravity; physiology and chronobiology in extreme environments; ground simulations of microgravity; hibernation for long duration missions; a broad overview of life support systems	20	no

Vincenzo Lionetti	Anesthesia methods and monitoring of experimental models	The goal of the course is to impart the knowledge required to understand the experimental approaches used in basic and translational research based on the use of small and large animal models. Theoretical and practical aspects of laboratory animals will be tasked. The Course will highlight how to handle and anesthetize laboratory animals and which criteria are typically followed in the monitoring of organ function. The Course will provide a practical approach to pharmacology with the goal of learning how to design and validate experimental protocol and to comparative physiology with the goal of choosing the more appropriate naturally occurring or induced animal model of human disease.	20	no
Prof.ssa Nuti, Prof.ssa Vainieri	Health care management	The course aims at providing PhD students with the fundamental components of health care management. In particular, the course will introduce students with the main features of the health care systems (the mission, the actors and their relationships), then it will introduce the main issues related to the barriers and facilitators of the innovation in health care. The course is arranged mixing lectures with project works and case studies. Lectures will include theoretical issues in health service research.	20	no
Prof. Bellè	Principles of behavioral science in healthcare management	The course "Principles of behavioral science in healthcare management" aims at providing students with a comprehensive overview of behavioral and experimental research in healthcare management, broadly defined. More precisely, we will explore the micro-level perspective of individual behavior and attitudes by drawing on insights from across the behavioral sciences – including management, economics, public policy, and psychology. The course provides basic elements to understand the principles of behavioural science applied to the healthcare context. Case study and evidence from the field will be discussed in class.	10	no
Prof.ssa Sganga	Open Science	The course provides basic knowledge on the characteristics and use of R statistical package. R is an open-source program used for statistical analysis and graphic restitution of experimental data. More specifically, this course is meant to be an introduction to the use of the R. The course arguments will be: 1) R and R-Studio installation procedure; 2) basic commands and explanation to make "scripts" of commands; 3) objects in R (vectors, dataframes) and basic operations; 4) data from external files (txt, xlsx, csv); 5) functions for the creation of graphics	10	no
	Seminars and other activities			
Invited speakers	Disciplinary seminars		10	
Invited speakers	Inter- Trans-disciplinary seminars		10	
Invited speakers	Workshop		8	