PhD Program in Experimental and Translational Medicine

Transversal activities (min. 24 hours)

Course	Year	Hours	Faculty	Description	
"Innovation	1 or 2	20	Fasano,	DAY 1: Knowledge valorization. IP	9 and 15 April,
Camp" for			Pisoni,	management and protection.	6 and 15 May, 9
Insubria PhD			Vezzulli,	DAY 2: Introduction to startup world:	and 27 June
students - A			Farao,	legal frameworks and the capital	
deep dive			Ronchetti,	raising process.	
into			Capelli,	DAY 3: The Lean Startup approach	
innovation			Bellucci,	with hands-on. Value proposition,	
and			Ferrari	business model canvas and customer	
execution				journey.	
				DAY 4: Communication of the idea.	
				Pitch structure. Soft skills for pitching.	
				Mentoring activities (proposed idea).	
				DAY 5: Pitch refinement session.	
				DAY 6: Final presentation of business	
				ideas.	
Safety in the	1	14	Ref. Sacchi	Legal aspects. Working with	30 April, 16
laboratory				videoterminals. Working with	June (Varese)
-				chemicals. Working with lasers and	21 May, 10 July
				radioactive sources. Biohazard.	(Como)
Artificial	Any	8	Ref. Fasano	Foundations of AI. The AI act.	September
intelligence				Applications (Biology, Surgery,	2025
_				Medicine, Economics, Humanities,	
				Astrophysics, Materials science)	
Research	Any	12	Ref. Cosentino	The course aims to promote	TBD
integrity				knowledge of the principles and	
				standards defined in the European	
				Code of Conduct for Research Integrity	
				(https://allea.org/wp-	
				content/uploads/2023/06/European-	
				Code-of-Conduct-Revised-Edition-	
				2023.pdf), providing essential tools for	
				their application in various contexts	
				where scientific research is conducted.	
				It takes into account the roles of the	
				different figures involved in various	
				capacities, their tasks and	
				responsibilities, as well as the	
				pressures each may face from time to	
				time.	
				The code applies to all scientific and	
				humanities disciplines and promotes	

collaboration in the research process. The research community has the responsibility to formulate principles, ensure the quality and integrity of research, and actively respond to situations where forms of scientific misconduct occur. The code aims to strengthen this responsibility and provide tools to prevent and – if
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provide tools to prevent and – if
provide tools to prevent and – if
necessary – recognize and manage
violations of research integrity.
AcademicAny8Ref. VezzulliBy the end of the course, students9 April 2025
writing and should be able to: craft texts in (Varese)
publishing different genres (e.g., summary,
problem statement, annotations, etc.);
produce an original academic research
paper in your field of studies; practice
analysis in written form tinough
constructive feedback to neers on
their written work, and address issues
identified by the instructor and peers
when revising one's own written work.
Personal Any 12 TLC At the end of the course, the 10 June 2025,
branding participant will be able to effectively Como
manage their presence on social
media by creating high-quality content
and will know how to communicate in
an official capacity to best promote
themselves on their personal and
professional channels.
Public Any 8 ILC The course introduces important Activated next
speaking elements of successful presentations year
including effective listening,
structure: informative and persuasive
speech: use of visual aids, research
and evidence: ethical considerations:
and techniques for building
confidence in public speaking.
Objectives: to increase confidence and
poise when speaking to audiences or
groups; to expand student's abilities
with computer mediated
communication in order to better
prepare them for future presentations
online; to enrich students' ability to
master an components that make a
timing figuring out how much practice

				is needed, ensuring deliverables are clear, and being able to meet deadlines.	
Project management	Any	8	TLC	How to start, define and organize a project; how to develop a project plan, including scoping, sequencing tasks, and determining the critical path; how to assess, prioritize and manage project risk; how to execute projects and use the earned value approach to	Activated next year
				monitor and control progress	

Free choice activities (min. 8 hours)

Ph.D. students have the right to attend educational activities free of choice in other Ph.D. courses, also in other Universities.

Curricular activities (min. 48 hours)

Course	Year	Hours	Faculty	Description	Date
Sperimentazione	1	16	Giaroni	Formazione e aggiornamento in accordo con	26-27 June,
animale e modelli				il D.Lgs, 26/2014 e successivi decreti	29-30
alternativi:				attuativi. Sperimentazione animale: ruolo	September
aspetti legislativi,				dell'Organismo Preposto al Benessere degli	2025
sperimentali e				Animali secondo il D.Lgs. 26/2014 e	(Varese)
bioetici				successivi decreti attuativi. RRI (Responsible	
				Research and Innovation) e Open Science	
				nella sperimentazione animale. Introduzione	
				nello stabilimento locale: ruolo delle diverse	
				figure professionali che possono accedervi	
				secondo D.Lgs. 26/2014 e successivi decreti	
				attuativi. La sanguisuga, Hirudo medicinalis,	
				come modello animale complementare per	
				gli studi biomedici e dell'ambiente. Lo	
				Xenopus laevis nella Ricerca. Metodologie e	
				modelli sperimentali per la valutazione del	
				comportamento sociale e delle funzioni	
				cognitive: focus su Rattus norvegicus. Il suino	
				utilizzato a fini scientifici. Applicazioni del	
				Principio 3R: Metodi Alternativi e	
				Sperimentazione Animale. Possibili approcci	
				e applicazioni della tecnologia Bioprinting.	
				Colture cellulari in scaffold 3D per la	
				sperimentazione in vitro. Alternative in silico	
				alla sperimentazione animale come supporto	
				alla valutazione del rischio chimico e	
				all'utilizzo sostenibile delle sostanze	
				chimiche. Anatomia e fisiologia del Mus	
				musculus. Il Mus musculus come modello	
				per lo studio delle malattie oncologiche.	
				Malattie dell'apparato digerente: valore	
				traslazionale del Mus musculus.	
The NGS	2	14	Bonapace,	This minicouse will be organized in four	25-30
technique:			Furlan	lessons on the following arguments: a) the	September,
theory,				NGS technique and the relative possible	2025
applications, and				applications; b) third and fourth generation	(Varese
future				sequencing; c) functional aspects of gene	and Busto
perspectives				expression and regulation; d) NGD Data	Arsizio)
				analysis workflow and functional	
				enrichment.	
Introduction to	1 or	12	Fasano	The course is a primer to work with large	3, 10 & 17
Systems Biology	2			datasets (big data or wide data) that suffer	June, 2025

				from dimensionality and sparsity. After	(Varese)
				describing common strategies for feature	
				selection and extraction, students will learn	
				how to obtain functional information from	
				extracted features. Moreover, foundations of	
				graph theory and network science will be	
				described and discussed.	
Techniques in	Any	12	Bossi,	Two electrode Voltage clamp- Application	November
electrophysiology			Roseti	and Techniques (From ion channel to	27, 2024;
				membrane transporters). Patch-Clamp-	February
				Application and Techniques (from single	21, 2025;
				channel to whole cell to extracellular field-	May 9,
				potential recording- Amperometry). Other	2025; June
				electrophysiological devices (high-	13.2025
				performance electrophysiology, next-	(Varese)
				generation multiwell high-density	
				microelectrode array).	
Advanced	Any	12	Alberio	This course is designed for PhD students to	9, 12 & 19
mitochondrial	,			provide a comprehensive understanding of	May, 2025
biology				mitochondrial function, dynamics, and their	(Busto
				pivotal role in cellular physiology and	Arsizio)
				pathology. A methodological part will	
				present techniques for mitochondrial	
				isolation, imaging, and functional assays.	
Experimental	3	12	Venturini	The seminary is focused on the usefulness of	3-10-17
imaging in				experimental imaging for preclinical and	July (2 to 6
translational				clinical researchers in translational medicine.	PM)
research.					(Varese)
Cancer stem cells:	3	6	Bonapace	Lesson 1: From Stem cells to Cancer Stem	October
understanding			e esterni	Cells.	2025 (tbd)
tumor hierarchy				Lesson 2: Cancer Stem Cell's niche. The	()
and				relation with the microenvironment.	
heterogeneity for				Lesson 3: Targeting Cancer Stem Cells.	
cancer treatment.				Innovative approaches for targeting CSCs.	
Advances in	2 or	6	Forlani	This course will focus on the latest	14. 19 & 25
cancer	3	•		advancements in cancer	March.
immunotherapy	0			immunotherapy. Key topics include:	2025
initiatioencrupy				Checkpoint Inhibitors: Explore the	(Varese)
				benefits challenges and applications of	(varese)
				checkpoint inhibitors in cancer therapy	
				• CAP T Coll Thorapy: Examine the	
				CAR-1 Cell Hierapy. Examine the application of CAP. T cell therapy in	
				application of CAR-1 cell therapy in	
				treating solid tumors.	
				Immuno/Virotherapy: Understand the	
				emerging landscape of	

				 immuno/virotherapy and its potential impact on cancer treatment. Tumor Vaccination: Investigate novel strategies in tumor vaccination aimed at enhancing immune response against cancer. PhD students will spur to delve into these cutting-edge developments and their implications for the future of cancer treatment. 	
Diagnostic techniques applied to research in Pathology	2 or 3	6	La Rosa	Histological, immunohistochemical, ultrastructural and molecular biology techniques are currently and routinely used in diagnostic pathology activity. However, they can be successfully applied to research activity. The aim of the course if to give an overview of these techniques describing specific technical aspects and underlining their valuable role and pitfalls in research activity.	19-20 lune, 2025 (2 to 5 PM) (Varese)
Seminars					
Electrophysiologic properties of the heart (Seminar)	3	3	De Ponti	Electrical activity of myocardial cells, genesis of the action potential, and genesis of the surface electrocardiogram; principles of cardiac arrhythmogenesis; recording of intracavitary electrical potentials; invasive electrophysiological evaluation; cardiac arrhythmias and their impact on cardiac function.	15 may, 2025 (Varese)
Endometrial carcinomas 2024: tumorigenic mechanisms, clinico- pathological and molecular classification (Seminar)	3	3	Furlan		29-30 September 2025 (with NGS techniques)
1	1				1