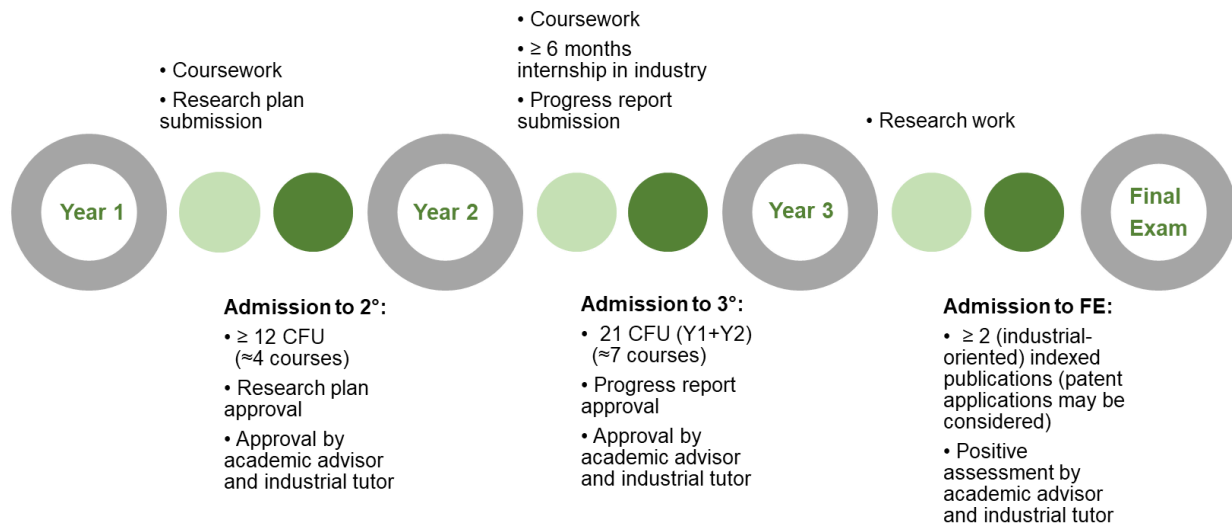


MANIFESTO OF STUDIES 2023-2024

TIMELINE OF THE PHD PROGRAMME



PhD TRAINING PROGRAMME

Doctoral students must earn **21 course credits** to complete the Doctoral programme.

Credits are assigned upon completion of courses that are of the following 3 types:

- Technological/Scientific (TS)
- Soft Skills/Innovation/Entrepreneurship//Economics/Management (SKIEEM)
- Freely chosen by the PhD Student (FC)

The list of TS and SKIEEM courses for – 2023-2024 is available in Annex A.

The freely chosen courses are any course that does not appear in Annex A.

The amount of credits that must be achieved throughout the programme is described as follows:

Year	Course credits
1	At least 12 6 out of the 12 credits must be completed by passing: <ul style="list-style-type: none"> • Research Methodology course (TS) • From research to business: a technology transfer approach (SKIEEM)
2	At least 21 The amount includes first year completed credits
3	
Total	At least 21

Each PhD student may follow one of the two plans below:

Plan A	Course credits	Plan B	Course credits
3 TS courses	9	2 TS Courses	6
2 SKIEEM courses	6	3 SKIEEM courses	9
2 FS courses	6	2 FS courses	6
Credits	21	Credits	21

At the beginning of each year, PhD Students compile a study plan choosing courses among those proposed annually. Both the academic advisor and the industrial tutor must approve the study plan.

Any subsequent change in the study plan must be communicated to the Secretariat - industrial-innovation@unitn.it with advisor and tutor in CC - for approval.

PhD students are encouraged to attend the industrial seminars which will be suggested by the Doctoral programme (no credits awarded).

ENROLMENT ON COURSES

Courses offered by	How to enrol
IECS Doctoral School – DISI	Your enrolment is automatic if the course has been inserted in DSC
Doctoral Programme in Materials, Mechatronics and Systems Engineering – DII	Contact dii.phd@unitn.it
Doctoral Programme in Civil, Environmental and Mechanical Engineering – DICAM	Contact dicamphd@unitn.it
Doctoral Programme in Physics	Contact phd.physics@unitn.it
Doctoral Programme in Biomolecular Sciences – CIBIO	Contact phd.bioscie@unitn.it
Doctoral Programme in Economics and Finance – DEM	Contact school.socialsciences@unitn.it
School of Innovation	Contact soi-info@unitn.it
Hub Innovazione Trentino (HIT)	Contact: milena.bigatto@trentinoinnovation.eu

COMPULSORY COURSES THAT DO NOT GIVE CREDITS

PhD Students must complete the following courses. These courses do not give credits.

Students must provide the Secretariat with a certificate of completion of each of the below courses:

Courses	Organized by	Course description	Due
Health and Safety in the workplace – Workers' General Training	UNITN E-Learning	Online course The course is available with the university credentials in the website of Didattica online.	January 31, 2024
Health and Safety in the workplace – Low risk Training	UNITN E-Learning	Online course The course is available with the university credentials in the website of Didattica online.	January 31, 2024
Depending on the environment (equipment/machinery) where research activities will be performed the following courses must be completed:			
Training by the Lab/ Company responsible	UNITN Company	Only for doctoral students who carry out activities based on medium-high risk equipment and / or machinery. The training has to be organized by the advisor / tutor and by the responsible of the laboratory where the activity will take place	Before the activity takes place

Foreign students are encouraged to take Italian language courses during the PhD programme. Courses of this type are organized, in UniTN, by the [CLA](#) (Centro Linguistico di Ateneo).

COURSE CREDIT RECOGNITION PROCEDURE

The number of credits assigned for course attendance depends on the number of hours according to the following table.

The minimum number of hours to get 3 credits is 18.

Hours/course	CFU (credits)
<18	0
>18 and <40	3
≥40* (approval by the Executive Committee)	Max 6* (of which 3 for freely chosen course)

*The attendance of courses longer than 40 hours must be previously approved by the Executive Committee. From the exceeding credits no more than 3 credits can be recognized and they will be recognized as freely chosen courses. The maximum number of credits that can be recognized for attending a course is 6. Summer/Winter Schools do not grant 6 credits; for Summer/Winter Schools no more than 3 credits can be recognized, regardless of their duration.

All credits are acquired upon approval by the PhD student's advisor and tutor.

Courses that have contributed to other degrees and online courses that the student has completed do not apply.

HOW TO GET THE COURSE CREDITS RECOGNIZED

In order to insert the completed credits in the student's career, PhD students should ask the Secretariat of the Doctorate program or the Institution that offers the course to send confirmation of the participation in the course as well as the outcome of the exam if foreseen to industrial-innovation@unitn.it

- **Technological/Scientific (TS) and Soft skills/Innovation/Entrepreneurship/Economics/Management (SKIEEM) courses**

Any course chosen from the list provided in Annex A will be automatically approved.

Some courses have a duration of less than 18 hours. In that case, an integration with a project activity or the combination of short courses are required.

- **Freely chosen courses**

Any course chosen from the list provided in Annex A will be automatically approved.

In case of courses that do not appear in Annex A, students must provide all related information (title, number of hours, lecturer, content, institute that provides the course) for approval by the Executive Committee, **by sending an e-mail to industrial-innovation@unitn.it with academic advisor and industrial tutor in cc.**

Summer/Winter Schools of at least 18 hours can be recognized as freely chosen courses.

- **School of Innovation (UNITN) courses**

PhD students interested in the recognition of 3 credits from the attendance of courses of the School of Innovation, must complete three courses (6 hours each course) or two courses (6 + 12 hours each course) of the School.

ADMISSION TO THE SUBSEQUENT YEARS

Admission to the subsequent year is approved by the Doctoral School Committee in October each year.

ADMISSION TO THE SECOND YEAR

By the end of the first year PhD students must fulfil the following requirements:

- positive assessment by the academic advisor and industrial tutor
- completion of at least 12 course credits
- approval of "Research Plan"

Instructions and deadlines regarding the approval of the "Research Plan" are described in Annex B.

ADMISSION TO THE THIRD YEAR

By the end of the second year PhD students must fulfil the following requirements:

- a. positive assessment by the academic advisor and industrial tutor
- b. completion of at least 21 course credits
- c. approval of "Progress Report"

Instructions and deadlines regarding the approval of the "Progress Report" are described in Annex B.

ADMISSION TO THE FINAL EXAMINATION

Admission to the Final Examination requires:

- a. positive assessment by the academic advisor and industrial tutor;
- b. completion of a period of research of at least 6 months in the company funding the scholarship;
- c. completion of at least two ISI- or SCOPUS- indexed articles of industrial-scientific interest*; patent(s) close to be approved can also be considered.
*the articles should be at least approved for publication

The **Final exam** consists of a defence of the thesis before a panel of renowned experts.

Annex A – DOCTORAL COURSES BY THE PHD IN INDUSTRIAL INNOVATION

TECHNOLOGICAL/SCIENTIFIC (TS) COURSES

Courses offered by [IECS Doctoral School](#) - DISI

Courses' description and scheduling (and changes) are available within each course's webpage at:

<https://iecs.unitn.it/education/courses>

Course title	Hours	Lecturer
Research methodology (mandatory)	20	Carlo Ghezzi
Advanced Deep Learning	20	Marco Pedersoli
Advanced Pattern Recognition	20	Ryuei Nishii
Advanced probabilistic modeling: from generative to neuro-symbolic AI	20	Antonio Vergari
AI Ethics Today	20	James Brusseu
Algorithm engineering and experimental algorithmics	20	Mihelič, Jurij
Applied Formal Methods	20	Alberto Griggio
Computing for sustainable socio-ecologies: an introduction from a sustainable interaction design perspective	20	Maurizio Teli
Computing in Communication Networks	20	Fabrizio Granelli, Frank Fitzek
Cooperative Games and Team Optimization: Basic Concepts and Case Studies	20	Marcello Sanguineti
Business Agility	20	York Rossler
Engineering Gamified Systems	20	Antonio Bucchiarone
Network intrusion detection with Deep Learning	20	Roberto Doriguzzi Corin
Quality Diversity - extending the phenotype in evolutionary optimization	20	Alexander Hagg
Spaceborne Synthetic Aperture Radar (SAR): Principles, Imaging Techniques and Future Developments	20	Alberto Moreira, Marwan Younis
Advanced topics in Deep Learning	20	Antonio Rodriguez Sanchez
Modern visual object tracking	20	Luka Čehovin Zajc
Parallel Programming	20	Didem Unat

Courses offered by [Doctoral Programme in Materials, Mechatronics and Systems Engineering](#) – DIM

IMPORTANT NOTES:

- all courses listed below with duration of <18 hours have to be integrated with a project activity to reach 18 hours. For such purpose, students have to arrange the project with the course's lecturer;
- the combination of two short courses (summing up at least 18 hours) may be considered as well in order to get 3 credits recognized.

Courses' description and scheduling are available at <https://www.unitn.it/drmse/23/teaching-activities>

All details (and changes) regarding the timetable and rooms will be published on the website at the following page:

<http://www.unitn.it/en/drmse>

Course title	Hours	Lecturer
Materials Science and Engineering		
Biodesign applied to tissue engineering*	12	Antonella Motta
Coatings for corrosion protection and electrochemical surface characterization	18 (+18 lab)	Flavio Deflorian, Stefano Rossi
Environmental sustainability of the materials	12	Andrea Dorigato
Scanning probe microscopy – Theory and Practice	12	Devid Maniglio
Optical properties of nanomaterials	12	Alberto Quaranta
Computational thermodynamics II	12	Massimo Pellizzari
Design and manufacturing of (nano) technologies for controlled release of biomacromolecules	12	Annalisa Tirella
Electron microscopy techniques – Theory	12	Stefano Gialanella
Electron microscopy techniques – Practice	12	Gloria Ischia
Elemental analysis by X-ray spectroscopy – Practice*	12	Mauro Bortolotti, Lorena Maines
Friction and Wear of Materials	18	Giovanni Straffellini
Materials science and technology	18	Massimo Calovi, Giulia Fredi
Qualification SEM and TEM*	12	Gloria Ischia, Lorena Maines, Antonella Motta
Thermal analysis	12 (+12 lab)	Luca Fambri, Massimo Pellizzari
* Courses offered on demand (contact dii.phd@unitn.it)		
Mechatronics and Mechanical Systems		
Mathematical epidemiology - modelling, parametrization and applications	18	Giordano + Proverbio
Mechanical vibrations in spacecraft design	12	Daniele Bortoluzzi
Object Detection for Automotive Applications and Space Exploration: reliability opportunities and challenges	12	Paolo Rech
Saturated control systems	18	Luca Zaccarian
Scientific computing	18 (+18 lab)	Enrico Bertolazzi
Simulating autonomous car dynamics with IPG CarMaker	18	Antonello Cherubini
Vision-language-action models for robotics and autonomous vehicles	12	Mauro Da Lio + Alice Plebe
Electronic Systems and Integrated Microelectronic Systems		
Designing and programming the Internet of Things (IoT).	18	Davide Brunelli
Image sensors	18	Lucio Pancheri
Silicon radiation detectors	18	Gian.Franco Dalla Betta
The electrification behind the green revolution	18	Elisabetta Tedeschi
Operational Research		
Basics of reliability engineering	12	Matteo Brunelli
Project management	18	Andrea Molinari
Simulation of production and logistics processes	12	Francesco Pilati

Multidisciplinary Research Tools and Languages

Multidisciplinary integrated design project	18 (+6 project)	Davide Brunelli, Devid Maniglio, Lucio Pancheri
Virtual instruments for data acquisition and signal analysis	18	David Macii

Courses offered by [Doctoral Programme in Civil, Environmental and Mechanical Engineering](#) – DICAM

IMPORTANT:

- all courses listed below with duration of <18 hours have to be integrated with a project activity to reach 18 hours. For such purpose, students have to arrange the project with the course's lecturer;
- the combination of two short courses (summing up at least 18 hours) may be considered as well in order to get 3 credits recognized.

Courses' description and scheduling (and changes) are available at: <https://www.unitn.it/dicam/913/academic-year-2023-2024>

Course title	Hours	Lecturer
An Introduction to Nonlinear Solid Mechanics	28	Anna M. Pandolfi
GEOframe Winter School GWS2024	64	Riccardo Rigon, Giuseppe Formetta
Winterschool part I - Advanced numerical methods for free surface hydrodynamics	30	Vincenzo Casulli
Winterschool part II - Advanced numerical methods for hyperbolic equations	40	Michael Dumbser, Laura Del Rio
Tipping Behavior in the Climate System	18	Henk Dijkstra
Mathematical Methods for Engineering	50	Alberto Valli, Ana Alonso Rodriguez
Multiscale nonlinear continuum mechanics of solids undergoing disarrangements	20	Luca Deseri
Environmental data management and analysis with GIS	40	Paolo Zatelli, Alfonso Vitti, Marco Ciolli
Microelectromechanical systems: from established engineering applications to research platforms	20	Maria F. Pantano
X-ray Diffraction applied to the study of polycrystalline materials: theory and practice	36	Paolo Scardi
Models and Applications for Transportation Systems Analysis	18	Andrea Pompigna (Engineer, Assistant Freelancer)
Soundscape in the built environment: theory, methods, and application to the field of building ventilation	16	Rossano Albatici, Simone Torresin
Waves in metamaterials and periodic structures	16	Oreste S. Bursi, Francesco Dal Corso, Vinicius Fonseca Dal Poggetto, Giacomo Oliveri and Andrea Massa
Life Cycle Assessment for the built environment: theory, methods, and applications	16	Gianluca Maracchini
Hydro Climatology and Paleohydrology	30	Glenn Tootle (University of Alabama), Giuseppe Formetta
Perturbation methods: theory and applications (River Morphodynamics and Structural Mechanics)	32	Marco Tubino; Francesco Dal Corso; Niccolò Ragno
Integrated river morphodynamics	32-64	Guido Zolezzi, Walter Bertoldi, David Vetsch (ETH Zurich), Annunziato Siviglia
Turbulence in environmental flows	60	Firas Dhaouadi; Luigi Fraccarollo; Lorenzo Giovannini; Sebastiano Piccolroaz; Marco Toffolon; Nadia Vendrame; Dino Zardi
Advanced geomatics and Earth observation for environment	20	Alfonso Vitti
Numerical Modelling of Weather and Climate	36	Simona Bordoni, Lorenzo Giovannini

Collaborative approaches for the digital documentation, representation and design of territories and landscapes	16	Sara Favargiotti; Camilla Pezzica (Cardiff University, UK); Giovanna A. Massari; Chiara Chioni
Molecular Dynamics: a primer with elements of statistical mechanics	16	Paolo Scardi
Artificial intelligence and Machine Learning Methods for Environmental Applications	60	Marco Salucci; Paolo Rocca
Ground Penetrating Radar for Civil and Environmental Inspections	32	tbd
Machine Learning & AI Methods - Theory, techniques, and Advanced Engineering Applications	32	tbd
Quantum Electromagnetics	32	tbd
Surface Electromagnetics for Wireless Communications and Sensing	32	tbd
On water. Designing climate-responsive landscape and infrastructure	32	S. Favargiotti, G. Formetta, L. Giovannini, A. Marzadri

Courses offered by [Doctoral Programme in Physics](#)

IMPORTANT: for all courses listed below with duration longer than 40 hours, please refer to the course credit recognition rules.

Courses' description and scheduling are available at: <https://www.unitn.it/drphys/en/129/training-programme>

Course title	Hours	Lecturer
Advanced techniques in experimental physics	24	G. Baldi
Multiscale modeling: from the atom to the cell	24	M. Calandra, F. Pederiva
Data Analysis methods for Physics	24	G.A. Prodi
Advanced interferometry	24	A. Perreca
Advanced statistical mechanics: Relaxation to equilibrium and transport phenomena	24	R. Menichetti - G. Marini (IIT)
Electron-Atom Collisions and Spin-Polarization Phenomena	24	M. Dapor (ECT*)
Entanglement in Many-Body Systems: from Concepts to Algorithms	24	M. Rizzi
Optical and spectroscopic diagnostic of materials for photonics	24	A. Chiasera (CNR- IFN)
Quantum sensing	24	A. Quaranta, M. Lobino
Radiation Chemistry	24	E. Scifoni (TIFPA – INFN)
Space-based observation techniques and methods	48	R. Battiston, L. Bruzzone, R. Dolesi, W.J. Weber
Quantum field theory on curved space	24	M. Rinaldi
Many-body physics with ultracold atoms and light	24	I. Carusotto e A. Recati
Advanced topics in quantum information theory	24	A. Legramandi and S. Singha Roy
Quantum phases of matter: From Landau theory to topological order	24	S. Bandyopadhyay and R. Costa de Almeida
Molecular Modeling, Design and Graphics	24	A. Bartocci
Engineered quantum nanosystems: theoretical methods and experiments	24	G. Rastelli e A. Vinante
Physical methods in polymer science	24	C. Gioia
TALENT (Training in Advanced Low-Energy Nuclear Physics) _to be confirmed	tbd	ECT* (European Centre for theoretical Studies in Nuclear Physics and related Areas)

ECT* Doctoral Training Programme - to be confirmed	tbd	ECT* (European Centre for theoretical Studies in Nuclear Physics and related Areas)
Scientific Writing, Speaking and Storytelling	24	S. Oss/ R. Potestio

Courses offered by [Doctoral Programme in Biomolecular Sciences](#) - CIBIO

IMPORTANT:

- all courses listed below with duration of <18 hours have to be integrated with a project activity to reach 18 hours. For such purpose, students have to arrange the project with the course's lecturer;
- the combination of two short courses (summing up at least 18 hours) may be considered as well in order to get 3 credits recognized.

Courses' description and scheduling are available at: <https://www.unitn.it/drbs/36/teaching-activities>

Course title	Hours	Lecturer
Laboratory safety course	12	Alessandro Provenzani, Ines Mancini
Introduction to data protection, security, and privacy	12	Lucia Busatta Paolo Guarda Silvio Ranise
Scientific Publishing & Communication	20	Ralph Dahm (IMB Mainz)
The rules of research: introduction to biolaw and research integrity	6	Dr. Lucia Busatta
Decoding your science	12	Michela A. Denti Marta Biagioli
Introduction to the CIBIO Core Facilities	6	Facility Manager
Make scientific figures better and faster	6	Facility Advanced Imaging Manager

Biomolecular Sciences Curriculum

RNA Molecular Biology and Biotechnology	12	Michela A. Denti
Chemical modifications and organic synthesis of biomolecules	12	Ines Mancini
Origins of Life	12	Sheref S. Mansy
From FLIES, FISH, FROGS, and MICE, how to perform cutting-edge science to study human diseases.	12	Marie-Laure Baudet Paola Bellosta Matthias Carl Lucia Poggi Giovanni Provenzano
Advanced imaging approaches in Biomedicine	12	Alessio Zippo
Neural Stem cell	12	Luciano Conti
Epigenetics mechanisms and their role during Cell Differentiation and transformation, Metabolism, Neuronal diseases	12+6	Marta Biagioli Fulvio Chiacchiera
Regenerative medicine and Artificial Intelligence applications to biomedicine	12	Paola Bellosta, Martin Hanczyc, Alessandro Romanel, Luciano Conti, Flavia Ravelli (CIBIO) Antonella Motta (DII)
Statistical methods for experiment design and data analysis	24	Alessio Perinelli

Bio - Industry Curriculum

Entrepreneurial Basic Skills for Biotech Module 1: From innovation to a business model	12	Alberto Nucciarelli
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Entrepreneurial Basic Skills for Biotech Module 2: Working on a business plan	12	Stefano Milani (Milani & Partners, Milano)
Preclinical research and clinical development programs of drugs	12	Borlak Jürgen (Medical School of Hannover)
Inside Pharmas: Exploring R&D Organizations, Teams, Roles and Drug Portfolio	12	Enrico Domenici
Liquid biopsy: principles, technologies and diagnostic perspectives	12	Salvatore Pernagallo (Destina Genomics)
Understanding and modeling drug dose - response relationships for drug development	12	Luca Gerosa (Genentech)
Bioanalytical assay development: from lab innovations to industry transition	8	Simone Detassis (OPTOI)

Quantitative Biology Curriculum

Introduction to metagenomics	12	Nicola Segata
Getting started with R and RStudio: a hands-on introduction	12	Pietro Franceschi (Edmund Mach Foundation)
Data Exploration	12	Pietro Franceschi (Edmund Mach Foundation)
Applied Statistics for High-Throughput Biology with Application to Single-cell Sequencing	12	Levi Waldron (City University of New York School Graduate of Public Health and Health Policy)

SOFT SKILLS/INNOVATION/ENTREPRENEURSHIP/ECONOMICS/MANAGEMENT (SKIEEM) COURSES

Courses offered by UNITN

Course title	Hours	Description
Academic Writing for the Sciences and Engineering (CLA)	24	Course n. 4383: 09/01 – 15/02 Tue 11.00 – 12.30 Thurs 11.00 – 12.30 Enrolment: 11/12-15/12 Course n. 4384: 08/01 - 14/02 Mon 09.30 – 11.00 Wed 09.30 – 11.00 Enrolment: 11/12-15/12 Next editions will be communicated by the secretariat
Research support seminars	-	https://www.unitn.it/ricerca/109722/formazione-alla-ricerca

Courses offered by [HIT – Hub Innovazione Trentino](#)

Course title	Hours	Period
From research to business: a technology transfer approach (mandatory)		
Available on 3 tracks:		
1. Smart Industry	25	1. January 29 to February 2, 2024
2. ICT and Digital Transformation		2. February 26 to March 1, 2024
3. Sustainability, Health, Food and Lifestyle		3. May 13 to 17, 2024
For further information and to enroll: https://www.trentinoinnovation.eu/en/join-us/doctoral-training/		

Courses offered by [Doctoral Programme in Economics and Finance](#) – DEM

Courses' information at <https://www.unitn.it/drss/ecofin/1095/curriculum>

Courses' scheduling (and changes) is available at: <https://www.unitn.it/drss/ecofin/1110/schedule-and-course-materials>

IMPORTANT NOTE:

- all courses listed below with duration of <18 hours have to be integrated with a project activity to reach 18 hours. For such purpose, students have to arrange the project with the course's lecturer;
- for all courses listed below with duration longer than 40 hours, please refer to the course credit recognition rules.

Course title	Hours	Lecturer
Economics and Finance (in cooperation with the Free University of Bolzano – UNIBZ)		
Statistics	24	F. Santi and E. Taufer
Econometric Methods	24	S. Stillman
Advanced Quantitative Methods	30	A. Hamel, D. Ferrari and F. Ravazzolo
Microeconomics	24	F. Boffa and P. Roberti

Macroeconomics and Finance	24	Gaffeo, L. Gobbi and R. Tamborini
Game Theory	12	L. Andreozzi
Behavioral and Experimental Economics	24	L. Mittone and M. Ploner
Program evaluation	24	A. Moradi, S. Stillman and M. Tonin
Corporate Finance Theory	24	C. Curi, F. Kiesel and M. Murgia
Empirical Finance	24	S. Longo, M. Menicacci and PL. Siming
Mathematical Finance	24	O- Bogachev, S. Bressan and S. Paterlini

Courses offered by [School of Innovation](http://www.soi.unitn.it/school-of-innovation-courses-program/)

For the recognition of 3 credits, three courses (6 hours each course) or two courses (6 + 12 hours each course) must be completed. Courses' description and scheduling are available within each course's webpage from: <http://www.soi.unitn.it/school-of-innovation-courses-program/>

Course title	Hours	Lecturer
SEMESTER 1		
Basics of Management	12	Erica Santini
That's my life	9	Alessandro Rossi
The Challenge Action Plan	12	Roberto Napoli
Basics of Data Science	6	Sandro Luigi Fiore
Fundamentals of Operations and Supply Chain Management	6	tbd
Data Governance	12	Sandro Luigi Fiore
Fintech: disrupting the financial sector	6	Pablo Soler Bach
Business Growth	12	Alessandro Rossi & Pablo Soler Bach
Entrepreneurship for Social and Environmental Innovation	12	Various instructors
Innovation processes and the new production of users	6	Attila Bruni
Emotional Intelligence	12	Oksana Tokarchuk
Organizing for novelty, creativity and innovation	6	Maria Laura Frigotto
Business models – Value Proposition Canvas VPC & Business Model Canvas BMC	12	Andrea Bolner
Innovation Ecosystems	12	Erica Santini
Teams and Team Working in Organizations	6	Stefano Cirella
Venture Capital Funding	6	Pablo Soler Back
Negotiation Skills	6	Andrea Caputo
Innovating Supply Chains	6	Marco Formentini
Foundations of Product Management	12	Oksana Tokarchuk; Daria Vorobeve
Pitch yourself	6	Clelia Calabrò

International Business Innovation and Expansion	12	Pablo Soler Bach
Technology and Innovation in Business Sustainability	6	Pablo Soler Bach
SEMESTER 2		
Intellectual Property Rights	6	Paolo Guarda
Personal Branding	6	Andrea Bolner
Business Plan	6	Pablo Soler Bach
Spreadsheets for I&E	6	Alessandro Ligabò
How to be a better speaker: Golden rules for presenting your work with style	6	Cristina Rigutto
That's my life	9	Alessandro Rossi
Industrial innovation in communications, radars and sensing systems	6	Paolo Rocca
AI Strategy for business	12	Alberto Todeschini
Business Analytics	12	Sandro Luigi Fiore
Data Science in Action	12	Sandro Luigi Fiore
AI in Everyday Life (online)	12	Fausto Giunchiglia
Sustainability of Digital Education and its Infrastructure (online)	12	Lorenzo Angeli
Fundamentals of Quality Engineering	6	Dario Petri
Understanding Megatrends	6	Roberto Poli
Principles of Marketing	12	Oksana Tokarchuk
Go to market	6	Andrea Bolner
Ethics and Law of Artificial Intelligence	6	Carlo Casonato
Learning processes and technological innovation	12	Erica Santini
Creativity and Collective Creativity in Organizations (online)	12	Stefano Cirella
Internationalization of SMEs	6	Paola Baldracchi
Social Impact Investing	6	Pablo Soler Bach
Tourism product co-creation in community destinations	6	Federica Buffa and Chiara Massacesi
Master Mind	12	Oksana Tokarchuk
Supply Chain Management Game	6	Giuseppe Maneschi
Entrepreneurship for Social and Environmental Innovation	16	Various Instructors
Circular Economy	6	Micol Chiesa
Communicating Innovation (online)	6	Alessandro Rossi
Supply Chain Management for Humanitarian Emergencies	6	Giuseppe Maneschi
Soft Skills Beyond Research	12	Matthias Carl
Novel Food	12	Various Instructors
Ethical, Legal and Social Implications in Research Infrastructures and Core Facilities	12	Valentina Adami, Agnese Colasanti

Annex B – RESEARCH PLAN AND PROGRESS REPORT

RESEARCH PLAN

By the end of June, PhD students submit a **research plan** (maximum 5 pages) which outlines the research activities they will carry out during the 3-year PhD programme and which must be approved by both the academic advisor and the industrial tutor.

By the end of July, the plan must be approved by an evaluation committee.

In case of:

- **positive assessment by the academic advisor and the industrial tutor, and negative assessment by the evaluation committee:** a revised version of the research plan must be submitted by the PhD student to the committee in 30 days (and no later than the end of August).
The committee makes a new assessment by mid - September.
If the assessment is positive, the research plan is approved.
If the assessment is negative, the Executive Committee decides whether to approve or not the plan. In the latter case, the PhD student is excluded from the PhD programme;
- **negative assessment by the academic advisor and the industrial tutor, and positive assessment by the evaluation committee:** the Executive Committee decides whether to approve or not the plan.
If the Executive Committee does not approve the plan the PhD student is excluded from the PhD programme;
- **negative assessment by the academic advisor, the industrial tutor and the evaluation committee:** the PhD student is excluded from the PhD programme.

PROGRESS REPORT

By the end of June, PhD students submit a **progress report** (approximately 10-pages) which should include the state of progress of the research, the plan of the remaining research activities, the list of publications or the plan to achieve them. The report must be approved by both the academic advisor and the industrial tutor.

By the end of July, the report must be approved by an evaluation committee of three professors*.

In case of:

- **positive assessment by the academic advisor and the industrial tutor, and negative assessment by the evaluation committee:** a revised version of the progress report must be submitted by the PhD student to the committee in 30 days (and no later than the end of August).
The committee makes a new assessment by mid - September.
If the assessment is positive, the progress report is approved.
If the assessment is negative, the Executive Committee decides whether to approve or not the report. In the latter case, the PhD student is excluded from the PhD programme;
- **negative assessment by the academic advisor and the industrial tutor, and positive assessment by the evaluation committee:** the Executive Committee decides whether to approve or not the report.
If the Executive Committee does not approve the report, the PhD student is excluded from the PhD programme;
- **negative assessment by the academic advisor, the industrial tutor and the evaluation committee:** the PhD student is excluded from the PhD programme.

Annex C – DEADLINES AND INSTRUCTIONS REGARDING FINAL EXAMINATION FOR PHD STUDENTS AND ADVISORS

PhD Students have to request the admission to the thesis review procedure.

PhD students who have been admitted to the procedure by the Doctoral School Committee shall submit their thesis for evaluation to two external referees.

Both referees will propose either admission to the final examination/PhD defence or Postponement for a period of no longer than six months in the case of major revision.

In the case of major revision, the student must submit a new version of the thesis together with a rebuttal letter before the deadline. The referees will then submit a new evaluation according to the changes made to the thesis by the student. In any case the student is admitted to the final examination.

For PhD Students whose doctoral career has been extended due the Covid-19 emergency, all the deadlines (beneath) of the PhD programme are postponed for the same period (up to 3 months)
For PhD Students whose doctoral career has been suspended, all the deadlines (beneath) of the PhD programme are postponed for the same period.

DEADLINES FOR PHD STUDENTS		
Step	Activity	Deadline
1	Request for admission to thesis review procedure (final examination) or for an extension	By the end of September 2023
2	Submission of a report on the PhD activities	By the end of September 2023
3	Submission of the thesis	By 12:00, January 20, 2024
4	Delivery of the final version of the thesis to the final examination committee and to the referees	No later than 10 days before the date of the final examination
5	Upload of the final version of thesis and of the Deposit Disclaimer	No later than 10 days before the date of the final examination
6	Delivery of the abstract of the final version of the thesis	No later than 10 days before the date of the final examination
7	Delivery of the university computer/hardware (if applicable)	By the day of the final examination
8	Final examination	a. By April 30, 2024 (Minor revision) b. By July 31, 2024 (Major revision - 3 months); By October 31, 2024 (Major revision - 6 months)

Step 1 - Thesis review procedure (Final examination) or Extension request

By the End of September 2023

● **Request for admission to the thesis review procedure (Final examination)**

Before applying, the student must discuss the state of the thesis with his/her academic advisor and industrial tutor.

Mandatory for admission to the final examination is completion of a period of research of at least 6 months in a company and publication of at least two ISI- or SCOPUS-indexed publications.

The request for admission to the final examination must be submitted online by means of the **Esse3** system <http://www.esse3.unitn.it/Start.do>

The request implies the payment of a contribution ("final examination contribution") of € 72,00 (which includes two duty stamps of € 16,00). PhD students must have regularly paid all the three-year PhD course fees when they submit the online final examination form.

Information about the online application is available at <https://www.unitn.it/en/ateneo/1932/final-examination>

PhD students are asked to fill in the AlmaLaurea questionnaire together with the request for admission to the final examination, in order to gather their opinions about the services provided by our university.

● **Award of the label "Doctor Europaeus"**

The additional label of "Doctor Europaeus" may be awarded to those PhD students who fulfil the prerequisites proposed by the European University Association as follows:

- 1) positive judgement on the thesis by two referees from two higher education institutions of two European countries, other than the one where the doctoral thesis will be defended;
- 2) at least one member of the final examination committee comes from a higher education institution in a European country other than the one where the doctoral thesis will be defended;
- 3) period abroad of at least 3 months spent in another European country;
- 4) the doctoral thesis must have been partly prepared as a result of a period of research of at least one trimester spent in another European country.

PhD students interested in obtaining the title of "Doctor Europaeus" should indicate their interest in the AlmaLaurea questionnaire (see previous point)

Information is available at <http://www.unitn.it/en/ateneo/50322/doctor-europaeus>

● **Request for Postponement**

Just for important reasons that do not allow to submit the thesis on schedule, the student can request a postponement period. **All the deadlines are postponed for the same period requested.**

Step 2 - Submission of a report on the PhD activities

By the End of September 2023

PhD students have to send to industrial-innovation@unitn.it and their academic advisor/industrial tutor in cc a report on the PhD activities carried out during the programme (file extension .pdf).

The report should contain:

- list of publications
- periods spent abroad for study/research reasons
- Summer/winter schools, Conferences
- participation in research projects
- other

Step 3 - Submission of the thesis

By January 20, 2024

PhD students have to send to the referees and industrial-innovation@unitn.it in cc the thesis (file extension .pdf); Referees will have to submit their evaluation for the thesis within 30 days from the thesis submission.

As an **overall evaluation of the student's thesis**, referees may propose one of the following results:

- MINOR Revision: admission of the student to the final examination/PhD defence

- MAJOR Revision: the student must resubmit a new version of the thesis with a rebuttal letter within 3 months (Final Exam to be discussed by July 31, 2024)
- MAJOR Revision: the student must resubmit a new version of the thesis with a rebuttal letter within 6 months (Final Exam to be discussed by October 31, 2024)

Each PhD student will receive the reviews via email as soon as both referees have submitted their evaluations.

Step 4 - Delivery of the final version of the thesis to the final examination committee and to the referees

No later than 10 days before the date of the final examination

PhD students send the final version of the thesis (.pdf) to each member of the final examination committee and to both the referees via e-mail.

No hard copy must be submitted.

Step 5 - Upload of the final version of the thesis and of the Deposit Disclaimer

No later than 10 days before the date of the final examination

PhD students must upload the **final version of the thesis** (.pdf) and the **Deposit Disclaimer** to the **online open-access archive IRIS** <https://iris.unitn.it/>

PhD students may decide to let the thesis be made public or to restrict its access. 'Embargo' is a period during which the thesis is kept secret. Only bibliographic metadata are made visible. PhD students can request a period of embargo (up to 24 months).

NB: PhD students have to consult the industrial tutor and academic advisor to determine whether any imposing secrecy restriction is foreseen.

Once the thesis has been submitted to the online University archive, it can no longer be replaced with another version.

Those PhD students who do not self-archive both their thesis and Deposit Disclaimer in the online University archive, will not receive the PhD diploma on the date of the final examination.

The Guidelines for uploading Doctoral theses is available in the *Phd Thesis* section on the web page [IRIS](#).

Intellectual property rights: <https://www.unitn.it/en/ricerca/1767/protection-and-valorization-of-intellectual-property>

All materials regarding the upload of the required documents to the online University archive and the copyright issues are available from the box "Download" at the following link <https://www.unitn.it/en/ateneo/1932/final-examination>

Step 6 - Delivery of the abstract of the final version of the thesis

No later than 10 days before the date of the final examination

PhD students should send title and abstract of the thesis to the Secretariat.

The PhD defence will be advertised via the program's website and social channels.

Step 7 - Delivery of the university computer/hardware (if applicable)

By the day of the final examination

PhD students who got a computer and/or other hardware using research budget funds, must return it to the Doctorate Program in Industrial innovation Secretariat on the day of the final examination.

The computer must be formatted before being returned.

Step 8 - Final examination

By April 30, 2024 (Minor revision)
By July 31, 2024 (Major revision - 3 months);
By October 31, 2024 (Major revision - 6 months)

In the case the referees require minor amendments to the thesis, the final examination must be held by no later than April 30, 2024.

If referees ask for relevant integrations or changes that must be completed within:

- 3 months: the final examination must be held by July 31, 2024;
- 6 months: the final examination must be held by October 31, 2024.

The Final examination will take place before the examination committee and will consist of a public discussion of the thesis.

The PhD School organizes a proclamation ceremony for each PhD student who concludes the doctoral programme.

The advisor should introduce the candidate as well as the committee members. The candidate will then present his/her thesis (around 45 minutes), which will be followed by questions from the committee (around 20-30 minutes). The defence is open to the public.

In the case of negative judgement by the final examination committee, the PhD student is excluded from the Doctoral Programme.

DEADLINES FOR ACADEMIC ADVISORS AND INDUSTRIAL TUTORS

Step	Activity	Deadline
1	Approval of the request for admission to the thesis review or for postponement of the thesis evaluation	By 12:00, October 15, 2023
2	Suggestion of two referees	By 12:00, January 15, 2024
3	Communication of the final examination committee and date of the final examination	No later than 30 days before the date of the final examination
4	Final examination	a. By April 30, 2024 (Minor revision) b. By July 31, 2024 (with a 3 months Major revision); By October 31, 2024 (with a 6 months Major revision)

Step 1 - Approval of the request for admission to the thesis review or for postponement of the thesis evaluation

By 12:00, October 15, 2023

Academic advisors, in agreement with industrial tutors, should approve their PhD students' admission to the thesis review procedure (final examination) or its postponement.

In case of request for admission to the thesis evaluation (final examination), advisors should submit an evaluation on the research carried on by the candidate during her/his PhD leading to the thesis proposal to the Doctorate Student Career <https://iid-dsc.disi.unitn.it/>

Step 2 – Suggestion of two referees

By 12:00, January 15, 2024

Advisors should send all the details below concerning the two referees who will review their PhD students' thesis to industrial-innovation@unitn.it:

- surname, name;
- affiliation;
- academic/work position;
- email contact
- if either of the referees will be part of the final examination committee as well. In this case they may be reimbursed (only travel expenses); otherwise it is not possible.

Advisors should suggest referees who have already confirmed their availability.

Referees eligibility criteria:

- experts selected among highly qualified tenured academic staff or tenured lecturers belonging to other institutions (**NO UniTrento**)
- at least one referee must be academic staff (professor or researcher)
- researchers who work for companies that deal with research
- no previous collaborations with the student (e.g. thesis co-tutorship, internship, research collaboration)
- adjunct lecturers/instructors are not eligible
- possessors of titles such as Emeritus Professor, Emeritus Reader, Senior Fellow are not eligible unless they have a teaching contract or are in service at a foreign research institute or university.

Referees submit their evaluation for the thesis within 30 days from when the thesis is available.

The two referees may be part of the final examination committee as well. In this case they may be reimbursed (only travel expenses).

Step 3 - Proposal of the final examination committee and date of the final examination	No later than 30 days before the date of the final examination
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Once the student has been admitted to the final examination by the two referees, the advisor should send to industrial-innovation@unitn.it:

- composition of the final examination committee;
- date of the final examination.

The final examination committee should be composed of:

- a) from three to five members selected among tenured academic (university) staff and/or researchers at Italian and/or foreign institutions, specialized in the topics of the dissertation;
- b) "two-thirds" of the commission must be external to UniTrento and "two-thirds" must be academic staff
- c) up to two external experts may be added. They can be lecturers/researchers or experts selected from universities and public and private research centres.

NB:

- Advisors should suggest a committee whose members have already confirmed their availability.
- The advisor cannot be part of the committee.
- Referees can be part of the committee (they can be any of the 3 - 5 + additional 2 members, see above two points).
- Researchers who work for companies that deal with research may be part of the committee (they can be any of the 3 - 5 + additional 2 members, see above two points).
- Possessors of titles such as Emeritus Professor, Emeritus Reader, Senior Fellow are not eligible unless they have a teaching contract or are in service at a foreign research institute or university.

Step 4 - Final examination	<ol style="list-style-type: none"> a. By April 30, 2024 (Minor revision) b. By July 31, 2024 (Major revision - 3 months); By October 31, 2024 (Major revision - 6 months)
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The advisor should support the committee during the entire proclamation ceremony of the candidate.

The Doctorate program in Industrial innovation Secretariat will send advisors all details on the ceremony and in particular on the advisor's duties.