Build your future: discover the Department of Innovative Technologies
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Studying at the Department of Innovative Technologies

Theory and practice
Strong practical and vocational orientation, with lectures, experiments and laboratory activities.

In-company thesis
Internships, semester projects and diploma theses carried out in collaboration with and at companies and institutions.

Up to date
Constantly updated study paths for perfect alignment with market needs and specialised technology laboratories for cutting-edge teaching and research activities.

Professional contacts
Active involvement of lecturers from business and initiatives to foster continuous contact with the world of work.

Promoting excellence
Numerous support opportunities, prizes and scholarships for deserving students.

Internationality
Possibility of spending a semester studying abroad and numerous active partnerships with international universities.

Entrepreneurship
Targeted initiatives and projects to develop entrepreneurial skills.

Work-study reconciliation
Wide variety of choices and full- and part-time study paths.
The structure of our BSc

180 ECTS - Full-time (3 years)
180 ECTS - Part-time (4 years)

Bachelor of Science (BSc) degree courses:

- Data Science and Artificial Intelligence - ENG
- Electrical engineering - ITA
- Management engineering - ITA/ENG
- Computer engineering - ITA/ENG
- Mechanical engineering - ITA
Bachelor of Science in Data Science and Artificial Intelligence

Training professionals capable of collecting, analysing, processing and interpreting large amounts of data within companies and institutions.

In-depth profiles

**Autonomous Robots:** provides the skills to work in the context of next generation technologies for industrial robotics in autonomous control and production systems, supporting higher quality and efficiency. Topics: intelligent and collaborative robots; machine vision and autonomous navigation; multi-sensory data fusion; resilience and optimisation of cyber-physical systems, in terms of reliability, safety, maintainability and performance; risk assessment and fault tolerance.

**Data Science for Healthcare:** provides the skills to work in the context of the digital healthcare industry, including advanced biomedical systems for patient monitoring, prosthetics and pharmaceutical technologies. Topics: signal analysis of biomedical sensors; collection, processing and management of anatomical and physiological data; advanced diagnostics and prognostics; risk analysis and safety assessment; application of computational modelling; machine learning and statistical analysis in biomedical applications.

Career opportunities

- Data Scientist/Analyst/Manager
- Machine Learning Engineer
- Business Intelligence Developer
- Big Data Engineer/Architect
- Research Scientist

The Bachelor in Data Science and Artificial Intelligence is offered entirely in English.

«If I had to describe the course in three adjectives I would say: open, because it is new and there have been several interesting adaptations; diverse, because you learn a bit of everything; and challenging.»

Christian Pala, Bachelor student in Data Science and Artificial Intelligence and winner of the Swissengineering Ticino Foundation Award (Startup Garage category)
Bachelor of Science in Electrical Engineering

Training professionals with in-depth knowledge in the concept and development of electronic systems. Electronics engineers play a key role in the automation, measurement systems, energy and telecommunications industries.

**In-depth profiles**

**Mechatronics and Automation:** offers the opportunity to acquire skills in the design and development of intelligent machines and devices. This multidisciplinary education combines advanced knowledge in electronics, mechanics and computer science for the creation of innovative solutions. The curriculum includes topics such as industrial automation, robotics, home automation and mechatronic systems engineering, preparing future engineers to find innovative solutions for the technological challenges of the future.

**Electricity generation and distribution:** delves into innovative techniques related to energy generation and storage, integrating optimised management of the electricity grid through intelligent algorithms (optimal energy exchange between users, grid stabilisation) and sustainable energy production techniques, such as photovoltaics, hydroelectric and wind power.

**Smart Interconnected Electronic Systems:** through an interdisciplinary approach to electronics, combining the latest technologies in microelectronics, sensors and AI technologies for embedded systems, the curriculum will take you on an exciting journey that starts with the basics of electronics and then delves into the latest techniques in telecommunications, design and development of wearable and non-wearable sensors, processing of signals and images, computer vision systems and other AI-enhanced devices.

**Career opportunities**

- Designer in the automation and telecommunications industry (robotics, automotive, aerospace, mobile telephony, etc.)
- Expert in energy production, storage and distribution systems (renewable energy, smart grids, etc.)

«Ever since I was a child, I have been passionate about electricity and electronics. After graduating from SUPSI I would like to develop a project with a multinational company.»

Erik Nonis, Electrical Engineering graduate and TalenThesis award winner
Training professionals with demanding technical skills and in-depth knowledge of the components of the socio-economic system, capable of dealing flexibly with complex decision-making processes.

**In-depth profiles**

**Industrial sustainability:** develops expertise on the topic of sustainability, providing methodologies and tools for its practical implementation in manufacturing.

**Industry 4.0:** trains professionals capable of mastering and implementing the 4th industrial revolution based on new enabling technologies necessary for the digitisation process of the factory (e.g. Industrial Internet of Things, smart automation and human-robot interaction).

**Supply Chain Management and Logistics:** teaches Supply Chain Management dealing both with the optimisation of the management of logistical flows of products and information and with more strategic aspects related to the design of distribution and supply networks.

**Production systems for the pharmaceutical industry:** promotes job placement in pharmaceuticals, cosmetics, food and medical devices. The activities of these industries are developed in multidisciplinary teams with management and coordination figures with a high degree of transversality. The production processes, the choice of machinery and the overall management of the plant are also procedurally organised and framed within the company’s quality systems and a set of rules, technical standards and guidelines.

**Career opportunities**

- Production and Logistics Manager
- Responsible for the organisation and automation of production systems
- Expert in financial and industrial risk management
- Responsible for corporate sustainability aspects

«This course has left me with a great deal of personal experience and the opportunity to apply the knowledge learnt during my school years to my work.»

Luca Rinaldi, Bachelor’s degree in Management Engineering (PPA course – parallel to professional activity), TalenThesis award winner and Business Analyst at Hupac Intermodal SA
Bachelor of Science in Computer Engineering

Training professionals with in-depth competences in the technical and methodological fields related to the design and development of software systems and systems management in the field of information and communication technologies (ICT).

In-depth profiles

**Computer graphics**: deals with the fundamentals of real-time computer graphics and game applications based on game engines and metaverse, ranging from the design and use of GPU-accelerated rendering systems to their use in virtual environments via 3D viewers.

**Cybersecurity**: trains professionals competent in cybersecurity, providing methodologies and tools for its application in the corporate environment in the areas of cybersecurity, methodologies of security and privacy by design, with sound knowledge for an evolution towards concepts related to cybercrime, cyber threat intelligence, complex distributed and cloud-based systems.

**Intelligent Systems**: introduces knowledge, concepts and techniques related to methods, tools and technologies of data science and machine learning. In addition to the topics of classification, regression, clustering and application of deep learning, includes the opportunity to use and explore technologies and applications in the field of natural language processing.

**Web and mobile applications**: looking at the design of the server- and client-side application, it focuses on basic elements and technologies useful for understanding the operating principles of the various existing frameworks and development tools.

Career opportunities

- Developer of software solutions, web and mobile applications
- Responsible for the management, maintenance and development of complex ICT systems
- Expert in data management and information extraction
- Consultant in development methodology, systems and data management and strategic vision of computerised business processes
- Contact person for in-house IT security

«I was always very practical, I wanted to learn a trade and the tricks behind the devices we use every day. It was a normal choice to come to SUPSI and it was always clear to me that it was possible to go into these things in detail here.»

Francesco Bertacchi, Bachelor in Computer Engineering, Harvard Researcher and Startup Development Manager
Bachelor of Science in Mechanical Engineering

Training professionals capable of dealing with situations and solving problems related to the industrial world by applying the theoretical-scientific aspects of the basic engineering sciences and vocational subjects.

**In-depth profiles**

*Innovative products and processes:* provides the skills to develop innovative products using conventional and emerging production technologies.

*Industrial robotics:* covers all key areas of robotics, from the selection and programming of commercial robots to the conception and design of innovative robot solutions.

*Energy systems:* aims to develop skills in energy engineering focusing on applied thermodynamics, heat transfer, the study of energy systems, conversion plants, renewable energy and storage systems.

*Railway Engineering:* provides the skills necessary to work closely with a wide range of disciplines (e.g. civil engineering, electrification, armament, energy, signalling) to work in the design, construction and operation of railway systems.

**Career opportunities**

- Expert in the development and manufacture of innovative products
- Machine and process designer
- Consultant for evaluation, installation, operation and maintenance of mechanical systems
- Developer of automated systems and industrial robotics
- Company contact person for testing and managing energy systems and improving energy efficiency
- Consultant in the design, construction, maintenance and operation of railway systems

«After high school I enrolled in the SUPSI Bachelor programme in Mechanical Engineering because I like the fact that there is a practical emphasis. I expect to finish this course with a better practical foundation than at a polytechnic.»

*Willem Orlandini*, Bachelor student in Mechanical Engineering and sportsman (2nd place at the European University Rowing Championships)
Master of Science in Engineering

The Master of Science in Engineering is the highest degree conferred by a university of applied sciences in Switzerland in the fields of technology, information technology, construction and planning.

90 ECTS

15 specialisation profiles (11 offered by SUPSI)

Full-time or part-time course of study

Individual programme: support from a dedicated advisor during the course of study

Practical focus: students actively involved in departmental research projects

Strong ties with industry

Opportunities to spend a semester abroad

Offered in cooperation with:

Scuola universitaria professionale della Svizzera Italiana (SUPSI)

HSLU Lucerne University of Applied Sciences and Arts

zh aw

F H Bern University of Applied Sciences

OST Ostschweizer Fachhochschule

Hes·so

n w University of Applied Sciences and Arts Northwestern Switzerland

FHGR Fachhochschule Graubünden University of Applied Sciences
The EIT Manufacturing Master is a double degree course promoted by SUPSI in collaboration with a network of leading partner universities in Europe. The master integrates innovation and entrepreneurship topics with traditional engineering knowledge in a dynamic and international context.

5 specialisation profiles (4 offered by SUPSI)

Full-time course of study

Individual programme: support from a dedicated advisor during the course of study

2 qualifications: Master of Science in Engineering SUPSI (90 ECTS) and Master of Science awarded by a partner university (120 ECTS)

Opportunities to spend a year abroad

Offered in cooperation with:

Scuola universitaria professionale della Svizzera italiana
SUPSI

CENTRALE NANTES

UCD DUBLIN

UNIVERSITY OF TRENTO

POLITECNICO MILANO 1863

TU WIEN
The Department of Innovative Technologies carries out qualified applied research, recognised locally, nationally and internationally, in the scientific fields of its competence: information technology, artificial intelligence, electronics, mechanics, industrial production and medical technologies.

- **340+ Researchers and Professors**
- **6 Research institutes**
- **20+ Technology laboratories**

**East Campus Viganello and Balestra Building**

Modern education and technology research infrastructure for innovation systems and local companies

- **+35% new projects***
- **230+ Current projects**
- **170+ Active collaborations with companies**
- **150+ Publications**
- **5-10 Patents**

*compared to 2018
East Campus

In the heart of Lugano:
10min walk to all services and amenities.

How to reach us:
Our Facilities

At the East Campus:

- Bar and canteen
- BiblioAgorà
- Gymnasium and sports service
- Study spaces

SUPSI Services:

- My SUPSI card (offers and benefits)
- Language Skills Centre
- Gender & Diversity
- International Office
- Counselling and psychological support service