WHAT IS EIT DIGITAL

**What is EIT Digital?**

- **Digital Industry**
  The Digital Industry Action Line covers the seamless process from production to retail and the related supporting functions such as logistics and consumer engagement.

- **Digital Cities**
  The Digital Cities Action Line leverages the digital transformation of the cities through centralised, participative and collaborative interactions between city actors: government, city service providers, industry, and citizens.

- **Digital Wellbeing**
  Slowing down the growth of healthcare expenses while maintaining the quality of life during the working life and at higher age is the focus of the Digital Wellbeing Action Line, through prevention of and coping with mental and physical conditions.

- **Digital Infrastructure**
  The Digital Infrastructure Action Line is the core enabler of the digital transformation by providing secure, robust, responsive and intelligent communications and computation facilities.

- **Digital Finance**
  EIT Digital set up the Digital Finance Action Line in 2018 to support the creation of innovative tools and services to help the finance industry adapt to the challenges it currently faces. Robust yet agile and tailored financial services are essential for our economies, citizens and enterprises.
EIT DIGITAL MASTER SCHOOL

• European mobility: 17 universities, 8 countries
• Innovation and Entrepreneurship Minor
• 7 Technical Majors
• Double degree and EIT certificate
• Kick-off, Summer School and graduation ceremony
• Industrial internship
7 TECHNICAL MAJORS

- Cloud and Network Infrastructures
- Data Science
- Embedded Systems
- Cyber Security
- Human Computer Interaction and Design
- Autonomous Systems
- Visual Computing and Communication
# TECHNICAL MAJORS AT UNITN

## As Entry point, year 1:
- Autonomous Systems (AUS) - DII
- Cloud and Network Infrastructures (CNI) - DISI
- Cyber Security (CSE) - DISI
- Visual Computing and Communication (VCC) - DISI

## As Exit point, year 2:
- Autonomous Systems (AUS) - DII
- Cyber Security (CSE) - DISI
- Cloud and Network Infrastructures (CNI) - DISI
- Visual Computing and Communication (VCC) - DISI
- Human-Computer Interaction and Design (HCID) - DISI/DIPSCO
- Embedded Systems (ES) - DISI
- Data Science (DSC)
Enry point, year 1

Technical Major (36 ECTS):
• Compulsory technical courses
• Elective technical courses

I&E Minor (24 ECTS):
• I&E basic course (6 ECTS)
• Business Development Laboratory (9 ECTS)
• ICT Innovation and Summer School (9 ECTS)

Total: 60 ECTS

Exit point, year 2

Technical Major (54 ECTS):
• Compulsory technical courses
• Elective technical courses
• Thesis and internship (30 ECTS)

I&E Minor (6 ECTS):
• I&E Study

Total: 60 ECTS

Technical Major: 90 ECTS

I&E Minor: 30 ECTS

Total: 120 ECTS
VISUAL COMPUTING AND COMMUNICATION (VCC)

BY PROF. NICOLA CONCI
VISUAL COMPUTING AND COMMUNICATION (VCC)

What is VCC?
VCC focuses on the acquisition, processing, analysis, transmission, and rendering of visual information, including aspects of learning and decision making. It is an interdisciplinary programme at the intersection of computer science and information technology where students can be active in the areas of image processing and communication, image analysis, computer vision, computer graphics, augmented reality, visualisation, visual analytics, as well as web-based and network applications. Our graduates combine technological and business aspects to create products and services for our ocular-centric world.

Who can apply?
Bachelor's degree holders in Computer Science, Electrical Engineering/Electronics or similar areas. Previous education must have included basic mathematics courses within linear algebra, Fourier methods and probability theory, as well as basic object-oriented programming.

UNITN is both Entry and Exit

Programme coordinator at UNITN: Nicola Conci nicola.conci@unitn.it
VCC MOBILITY MAP AND SPECIALIZATIONS

VCC specializations:
- Mobile Visual Computing (KTH)
- Computer Vision and Multimedia Analysis (UNITN)
- Communication Services and Applications (BME)
- Web-based Applications (AALTO)
Entry point

Mandatory technical courses

- Digital signal processing (9 ECTS)
- Multimedia data security (6 ECTS)
- Advanced network modeling and design (9 ECTS)
- Recognition systems (9 ECTS)

Selected elective technical courses

- Project course on computer graphics (3 ECTS)
- Project course on service design and engineering (3 ECTS)

I&E courses

- I&E basic course (6 ECTS)
- ICT innovation and summer school (9 ECTS)
- Business development laboratory (9 ECTS)

Exit point, specialization: Computer vision and multimedia analysis

Mandatory technical courses

- Computer vision (6 ECTS)
- Project course on media retrieval (6 ECTS)
- Master thesis (30 ECTS)

Selected elective technical courses

- Big data and social networks (6 ECTS)
- Knowledge and data integration (6 ECTS)
- Introduction to computer and network security (6 ECTS)
- Industrial trends in communication (6 ECTS)

I&E course

- Innovation and entrepreneurship studies in ICT (6 ECTS)
AUTONOMOUS SYSTEMS (AUS)

BY PROF. DANIELE FONTANELLI

Tomorrow’s Digital Innovators and Entrepreneurs
AUTONOMOUS SYSTEMS (AUS)

What is AUS?

AUS is a combination of Computer Science and Mechatronics Engineering. During the programme, students will gain new skills in both areas. In Computer Science, relevant fields include Internet of Things (IoT), machine learning, artificial intelligence and robot vision. In Mechatronics Engineering, relevant fields are automation, control, embedded systems and communications.

Who can apply?

Bachelor’s holders in Electrical Engineering/Electronics, Computer Engineering, Computer Science, Information Technology or Industrial Engineering. Students should have basic competence in programming, data structures, algorithms and mathematics including calculus, algebra, and mathematical statistics. Preferred additional competences are basic mechanics and systems theory.

UNITN is both Entry and Exit

Programme coordinator at UNITN: Daniele Fontanelli daniele.fontanelli@unitn.it
AUS MOBILITY MAP AND SPECIALIZATIONS

AUS specializations:

- Robotics and Artificial Intelligence (AALTO)
- Intelligent Autonomous Systems (KTH)
- Applications of Autonomous Systems (TUB)
- Autonomous Robotics Systems (UNITN)
- Computer Science for Autonomous Driving (ELTE)
- Sensing, Communicating and Processing Big Data for Autonomous Systems (EURECOM)
AUS AT UNITN

Entry point
1st semester
Technical courses
• Robotic perception and action (9 ECTS)
• Industrial robotics (6 ECTS)
• Elective course (6 ECTS)
I&E courses
• Logistics and plants management (6 ECTS)
2nd semester
Technical courses
• Modeling and simulation of mechatronic systems (9 ECTS)
• Elective course (6 ECTS)
I&E courses
• ICT innovation and summer school (9 ECTS)
Exit point, specialization: Autonomous robotics systems
1st semester
Technical courses
• Laboratory of applied robotics (6 ECTS)
• Distributed systems for measurement and automation (6 ECTS)
• Elective courses (12 ECTS)
I&E course
• Innovation and entrepreneurship studies in ICT (6 ECTS)
2nd semester
• Dynamics and control of vehicles and robots (6 ECTS)
• Thesis and internship (24 ECTS)
CLOUD AND NETWORK INFRASTRUCTURES (CNI)

BY PROF. FABRIZIO GRANELLI
CLOUD AND NETWORK INFRASTRUCTURES (CNI)

What is CNI?

CNI provides a comprehensive view on network and cloud computing. Students will learn to master network management, operation, and design on the one hand and cloud service and deployment models, implementation strategies, and application design on the other. The programme also focuses on future directions of cloud computing, for example, in the fields of edge and fog computing as well as blockchains and distributed ledger applications respectively.

Who can apply?

Bachelor's degree holders in Computer Science, Computer Engineering or Information Systems. Students should have basic competence in mathematics, theoretical foundations of computer science, algorithms and data structures, software engineering and database systems, computer architectures, computer networks and operating systems.

UNITN is both Entry and Exit

Programme coordinator at UNITN: Fabrizio Granelli fabrizio.granelli@unitn.it
CNI MOBILITY MAP AND SPECIALIZATIONS

CNI specializations:

- Mobile Networking and Cloud Services (AALTO)
- Networked Intelligence (KTH)
- Smart City Services (UR1)
- Smart Mobility Systems (SU)
- Cloud & Distributed Computing (TUB)
- Beyond 5G (UNITN)
CNI AT UNITN

Entry point

Technical courses

- Design of networks and communications systems (6 ECTS)
- Cloud computing (6 ECTS)
- Advanced network modeling and design (9 ECTS)
- Mobile and satellite communications (9 ECTS)
- Communication systems (6 ECTS)
- Softwarization and virtualization architectures (6 ECTS)

Year 1 programme (60 ECTS) will be completed with 24 ECTS from the I&E Minor

Exit point, specialization: Beyond 5G

Mandatory technical courses

- Radar and 5G architectures and systems (9 ECTS)
- Project course on software defined networking (3 ECTS)

Elective technical courses

- Network modeling and design (6 ECTS)
- Design of networks and communication systems (6 ECTS)
- Softwarization and virtualization architectures (6 ECTS)
- Project course (6 ECTS)
- Big data and social networks (6 ECTS)
- Network security (6 ECTS)
- Communication systems (6 ECTS)
HUMAN-COMPUTER INTERACTION AND DESIGN (HCID)
BY PROF. MASSIMO ZANCANARO
HUMAN-COMPUTER INTERACTION AND DESIGN (HCID)

What is HCID?

HCID is an interdisciplinary programme where our User-Centred Design approach places the users at the centre of the design process. By combining human aspects to technological and business aspects, we create new products and services with great usability and user experience, and a solid customer demand, which often translate into commercial success. Students learn how to design and define how people interact and live with the modern ever-changing technical world.

Who can apply?

Bachelor’s degree holders in Computer Science, Information Systems, Mathematics, Statistics, Electrical Engineering/Electronics. In special cases students from industrial design, media technology, computational linguistics, and cognitive sciences with sufficient skills in mathematics, software design and programming can be considered.

UNITN is Exit

Programme coordinator at UNITN: Massimo Zancanaro massimo.zancanaro@unitn.it
HCID MOBILITY MAP AND SPECIALIZATIONS

HCID specializations:

- Computational Interaction (AALTO)
- Mobile and Ubiquitous Interaction (KTH)
- Situated Interaction (UPS)
- Intelligent Systems (UT)
- Accessible and Adaptive Interaction (UPM)
- Multi-Modal Interaction (TUB)
- Cognitive Interaction (UNITN)
HCID AT UNITN  exit point, specialization: cognitive interaction

I&E course

- Innovation and entrepreneurship in ICT (6 ECTS) - DISI

Thesis and internship (30 ECTS)

Elective technical courses (select 24 ECTS)

- Social interaction (6 ECTS) - DIPSCO
- Mind-brain interactions and cognitive constraints (6 ECTS) - DIPSCO
- Participatory design (6 ECTS) - DISI
- Multisensory interaction (6 ECTS) - DISI
- Prototyping interactive systems (6 ECTS) - DIPSCO
- Affective computing (6 ECTS) - DISI
- Research project (12 ECTS)

The HCID programme is based on the Master’s course in Human-Computer Interaction which is jointly offered by the Department of Psychology and Cognitive Science (DIPSCO) and the Department of Information Engineering and Computer Science (DISI)
CYBER SECURITY (CSE)
BY PROF. BRUNO CRISPO
CYBER SECURITY (CSE)

What is CSE?
CSE focuses on the study of the design, development and evaluation of secure computer systems, which are also capable of ensuring privacy for future ICT systems. The aim is to provide students with an understanding of the concepts and technologies for achieving confidentiality, integrity, authenticity, and privacy protection for information processed across networks.

Who can apply?
Bachelor's degree holders in Computer Science and Information Technology as well as Mathematics, Statistics or Electrical Engineering, provided they demonstrate basic knowledge of programming and information technology.

UNITN is both Entry and Exit

Programme coordinator at UNITN: Fabio Massacci fabio.massacci@unitn.it
Bruno Crispo bruno.crispo@unitn.it

UNITN
CSE MOBILITY MAP AND SPECIALIZATIONS

CSE specializations:
- Software Security (UR1)
- Applied Security (UNITN)
- Security of Networked Systems (UTU)
- High Tech, Human Touch (UT)
- Advanced Cryptography (ELTE)
- Mobile and Cloud Security (EURECOM)
CSE AT UNITN

Entry point

Mandatory technical courses

- Introduction to computer and network security (6 ECTS)
- Cryptography (6 ECTS)
- Cyber security risk assessment (6 ECTS)
- Software security testing (6 ECTS)
- Network security (6 ECTS)
- Privacy and IPR (6 ECTS)

Year 1 programme (60 ECTS) will be completed with 24 ECTS from the I&E Minor

Exit point, specialization: Applied security

Specialization technical courses

- Multimedia data security (6 ECTS)
- Offensive technologies (12 ECTS)
- Project course (6 ECTS)
- Research course (12 ECTS)
- Security testing (6 ECTS)
- Distributed systems 2 (6 ECTS)
- Privacy and intellectual property rights (6 ECTS)
- Machine learning (6 ECTS)
EMBEDDED SYSTEMS (ES)
BY PROF. LUIGI PALOPOLI
EMBEDDED SYSTEMS (ES)

What is ES?

The mission of the ES programme is to give students a holistic and multidisciplinary view and skillset on embedded systems, their underlying technologies, their development, and their integration. Graduates of the ES programme become world-class specialists and innovators in the field of embedded systems, capable of developing smart embedded solutions for new challenges in domains of Cyber-Physical Systems (CPS) and the Internet-of-Things (IoT). They are also capable of taking on leading management roles in embedded systems and more general ICT companies.

Who can apply?

Bachelor's degree holders in Computer Science/Software Engineering, Computer Engineering, Information Systems, Electrical Engineering/Electronics, Communication Engineering, Mechatronics, Mathematics. The studies should include at least 60 ECTS courses in computer science, computer architecture, or programming, and mathematics including calculus, algebra and mathematical statistics.

UNITN is Exit

Programme coordinator at UNITN: Luigi Palopoli luigi.palopoli@unitn.it
ES MOBILITY MAP AND SPECIALIZATIONS

ES specializations:

• Embedded Networking (TUE)
• Embedded Platforms (KTH)
• Embedded Multicore Processing (TUB)
• Critical Embedded Systems (BME)
• Real-time Systems and Design of Cyber-Physical Systems (UNITN)
• Internet of Things for Smart Embedded Systems (UTU)
Exit point

Track 1: Real-time systems and design of cyber-physical systems

Mandatory technical courses
- Laboratory of applied robotics (6 ECTS)
- Real-time operating systems (6 ECTS)
- Laboratory of sensor networks (6 ECTS)
- Advanced computing architectures (6 ECTS)

Elective technical courses
- Distributed algorithms (6 ECTS)
- Network security (6 ECTS)
- Nomadic communication (6 ECTS)
- Formal methods (12 ECTS)
- Simulation and performance evaluation (6 ECTS)
- Research project in embedded systems (12 ECTS)

Track 2: Methodologies for cyber-physical systems design

Mandatory technical courses
- Capstone project module (18 ECTS) which includes an industry-driven multidisciplinary design project (12 ECTS) and a project-oriented course (6 ECTS) selected from: Laboratory of Applied Robotics, Digital Image Processing, HW/SW Co-Design, Laboratory of Sensor Networks

Elective technical courses
- Real-time operating systems (6 ECTS)
- Advanced computer architectures (6 ECTS)
- Simulation and performance evaluation (6 ECTS)
DATA SCIENCE (DSC)
BY PROF. IANNIS VELEGRAKIS
DATA NEVER SLEEPS 5.0

How much data is generated every minute?

With all of the data being created in the last two years—doubtless, organizations are facing more data than ever before. In this 2017 edition of Data Never Sleeps, we bring you the same facts as you know data is being created in the digital sphere—and the numbers are staggering.

The world internet population has grown from 3 billion to 4 billion in just a few short years.

With each click, swipe, share, and like, businesses are using data to make decisions about products. Today, we are managing to virtually any data within a single platform.

Learn more at domo.com
Google Trends searches for “MySpace”

Searches for “Facebook”

Two Figures from the paper

http://arxiv.org/abs/1401.4208
... and based on Princeton search trends:

“This trend suggests that Princeton will have only half its current enrollment by 2018, and by 2021 it will have no students at all,...”

https://www.facebook.com/notes/mike-develin/debunking-princeton/10151947421191849

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Big Data: 4V

- **Volume**: TB of Data
- **Velocity**: High Speed
- **Variety**: Many & Heterogeneous
- **Veracity**: Untrustful sources and processes
Data scientists, according to interviews and expert estimates, spend **50% to 80%** of their time mired in the mundane labor of collecting and preparing unruly digital data, before it can be explored for useful nuggets.

*(New York Times)*
DATA SCIENCE (DSC)

What is DSC?

DSC offers a unique two-year academic programme, whereby students study data science, innovation and entrepreneurship at two different leading European universities. Students acquire in-depth technical skills in scalable data collection techniques and data analysis methods. They learn how to use and develop a suite of tools and technologies that address data capture, processing, storage, transfer, analysis, visualisation, and related concepts (e.g., data access, data pricing, and data privacy).

Who can apply?

Bachelor's degree holders in Computer Science, Information Systems, Mathematics, Statistics, Electrical Engineering/Electronics. The studies should include at least 60 ECTS courses in computer science, computer architecture, or programming, and mathematics including calculus, algebra and mathematical statistics.

UNITN is Exit

Programme coordinator at UNITN: Yannis Velegrakis velgias@unitn.it
DSC specializations:

- Business Process Intelligence (TUE)
- Distributed Systems & Data Mining for Big Data (KTH)
- Infrastructures for Large Scale Data Management and Analysis (UPM)
- Multimedia and Web Science for Big Data (UCA)
- Design, Implementation, and Usage of Data Science Instruments (TUB)
- Natural Language Processing (PSUD)
- Machine Learning, Big Data Management, and Business Analytics (AALTO)
- Real-time Data Analytics (ELTE)
- Variety and Veracity for Big Data (UNITN)
Exit point, specialization: Variety and veracity for big data

1st semester

4 technical courses from the following list:

- Machine learning (6 ECTS)
- Data mining (6 ECTS)
- Knowledge and data integration (6 ECTS)
- Web architectures (6 ECTS)
- Statistical Models (6 ECTS)
- Affective Computing (6 ECTS)
- Advanced Computing Architectures (6 ECTS)
- Privacy and Intellectual Property Rights (6 ECTS)

I&E course

- I&E studies (6 ECTS)

2nd semester

Thesis and internship (30 ECTS)
APPLICATION PERIODS, TUITION FEES AND SCHOLARSHIPS, REQUIRED DOCUMENTS
APPLICATION PERIODS

Academic year 2019/2020:
• **Period one:** 19 December 2018 - 1 February 2019 (open to EU/EEA/CH/NON-EU citizens)
• **Period two:** 15 February 2019 - 15 April 2019 (open to EU/EEA/CH citizens)
• **Local recruitment:** May/October 2019

Applicant must have completed a Bachelor’s degree encompassing a minimum of 180 credits or be in their final year of undergraduate education.

**Recommended degrees:** Electrical Engineering/Electronics, Computer Engineering, Computer Science, Information Technology, Industrial Engineering, Mathematics, Statistics
TUITION FEES AND SCHOLARSHIPS

Citizens of an EU/EEA or Switzerland country
Tuition fees: 1.500 € / year
Scholarship categories:
• 50% tuition fee waiver and a monthly allowance of 850 €
• 50% tuition fee waiver and a monthly allowance of 500 €
• 50% tuition fee waiver and a travel grant of 1.500 € per academic year

Citizens of a NON-EU/EEA country
Tuition fees: 12.000 € / year
Scholarship categories:
• 50% tuition fee waiver and a monthly allowance of 850 €
• 50% tuition fee waiver and a monthly allowance of 500 €

EIT Digital Master School covers the costs related to events integrated in the curriculum, eg. Kick-off and Summer Schools.

Scholarships are merit based. Application for the EIT Digital scholarship is done at the same time as the application for the programme.
REQUIRED DOCUMENTS*

• Degree Certificate/Diploma in original language and translated into English. In case of ongoing studies, a statement certifying that you are in the final year of your studies
• Official and stamped transcript of records in original language and translated into English
• Curriculum Vitae and an official color ID
• Letter of motivation in which you prove your innovative potential
• Proof of English proficiency*

* Specific additional requirements might apply depending on the country of your Bachelor’s degree

** General proof of English proficiency:
  • TOEFL ≥ 92
  • IELTS ≥ 6.5

Specific additional requirements might apply depending on your choice of university
ICT DAYS @ EIT DIGITAL TRENTO NODE

March 7 2019, Trento CLC:

• Presentation of the EIT Digital Master and Doctoral Schools

• Innovation Talk by Julia Wache, EIT Digital Alumnus, CEO and co-founder of feelSpace start-up

CONTACTS AND REFERENCES

EIT Master School portal: https://masterschool.eitdigital.eu/

Master School Office: masterschool@eitdigital.eu

Master School administration at UNITN: eitmaster@unitn.it
THANK YOU