OPEN WEEKS

Master’s degree in

COMPUTER SCIENCE
AGENDA

1. GENERAL OVERVIEW
2. ENTRY REQUIREMENTS & SUPPORT
3. PROGRAMME STRUCTURE
4. CAREER OPPORTUNITIES
5. Q&A
UNDERGRADUATE DEGREE

• **Mathematical basis**
  calculus, probability & statistics, numerical analysis, logics

• **CS basics**
  computer architecture, operating systems, data base, networking, algorithms, programming, sw engineering
MASTER DEGREE

AIM: beyond the basics!

• Deepen the foundations
• Widen the horizon to **advanced and innovative topics**, often at the border with **research**

Not only new notions but **advanced skills** for

• **Recognising and classifying** complex problems
• **Developing original solutions**
• **Contribute to strategic decisions**
Three main study tracks, with a wide-spectrum offer and a long-term educational perspective

- Artificial Intelligence [AI]
- Internet, Mobile and Security [IMS]
- Programming Languages and Systems [PLS]
Informatics-driven innovation, seen from different perspectives

- Economic and entrepreneurship aspects

- Courses on
  - Economics and Management of Innovation
  - Start-Up in ICT
Interactions with advanced technology companies, incubators and accelerators

During the studies

- Start-up lab (crash course)
- ICT challenges for startup (seminars)

Internships for developing the master project:

- Collaboration in existing projects
- Development of new products
- Start-up creation
ENTRY REQUIREMENTS & SUPPORT FOR STUDENTS
APPLICATIONS

2\textsuperscript{nd} November – 2\textsuperscript{nd} February 2021
2\textsuperscript{nd} March – 2\textsuperscript{nd} June (Sept) 2021

APPLY.UNIPD.IT

Application fee (€ 30) + Admission fee (€ 188)
BSc (or equivalent), providing a reasonable background in

- **computer science**
  computer architectures, operating systems, networking, databases, algorithms, programming
- with the corresponding **mathematical basis**
  calculus, probability, logics

**Concretely:**

- BSc in Computer science or Computer engineering
- or another BSc but with proven skills in CS

**Language requirements:**

- B2 Level
Top quality for value!

Tuition fee: 2622 € at most

Fee-waivers
• 100 full
• Many possibility for reduction (low income, same household, parents, impaired, working students)

Scholarships
• Excellence (8k € + full fee-wave)
• Department (> 5k€)
• Regional

More info: https://www.unipd.it/en/funding-and-fees
PROGRAMME STRUCTURE
Bureaucratic structure

120 credits in 2 years

• 78 credits (65%) for courses
  (typically 13 courses of 6 credits)
  • 54 credits (9 ex.) in computer science
  • 12 credits (2 ex.) in related fields
    (economics, math, bio, inf. theory)
  • 12 credits (2 ex.) in free-choice courses

• 6 credits (5%) for other activities (seminars, internships, …)

• 3 credits (2.5%) for English lang. (B2 writing/speaking)

• 33 credits (27.5%) for the master project (one semester)
Building a study plan

Opportunity to build a customised study plan choosing, with a large degree of freedom, among a wide offer of course units.
Three mandatory courses

- **Computability** (6 credits)
  Foundations of the theory of computation, what are the problems that a computer can solve?

- **Advanced algorithms** (6 credits)
  Algorithms on graphs, strings, parallel, randomized, ...

- **Economics and management of innovation** (6 credits)
  Taught by a professor of Economics, in cooperation with start-ups, incubators and company experts
7 additional CS courses have to be chosen:

Organised in

- **MAJORS**
  groups of 5 courses that deepen a thematic area

- **MINORS**
  groups of 2 courses with a specific focus
Artificial intelligence [AI]

① Artificial intelligence
② Machine learning
③ Deep learning
④ Knowledge representation and learning
⑤ Vision and cognitive systems
MAJOR

Internet, Mobile and Security [IMS]

1. Wireless networks for mobile applications
2. Mobile programming and multimedia
3. Web information management
4. Runtimes for concurrency and distribution
5. Computer and network security
Programming Languages and Systems [PLS]

① Advanced topics in programming languages
② Functional languages
③ Languages for concurrency and distribution
④ Software verification
⑤ Formal methods for cyberphysical systems
MINOR

Internet of Things and Embedded Systems [ITES]
① Mobile and IoT security
② Real-time kernels and systems

Data and process management [DM]
① Process mining
② Big data computing

Innovation and entrepreneurship in ICT [INN]
① IT service management
② Start up in ICT
One more elective course in the following group, with natural connections to Majors/Minors

- Cryptography [IMS, ITES]
- Data mining [DM]
- Type theory [PLS]
- Game theory [AI, PLS]
- Bioinformatics [DM]
- Structural bioinformatics [AI]
- Mathematical models and numerical methods for big data [DM]
- Methods and models for combinatorial optimization [AI, IMS]
MASTER PROJECT

• One semester full-time (33 credits)

• Significant work on research/innovation problems in CS (e.g. development of original research results or innovative software products)

• Possibly in an extended internship within a partner organization for
  • Cooperating in the development of innovative projects
  • Working on new products
  • Creating a start-up
CAREER OPPORTUNITIES
You'll find a job immediately after (very often before) graduating!

A wide range of opportunities:

- Software analyst and designer
- System architect and manager
- Computer networks specialist
- Web application analyst and designer
- Data and process analyst
- Cybersecurity specialist
- Entrepreneur or manager of IT companies
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