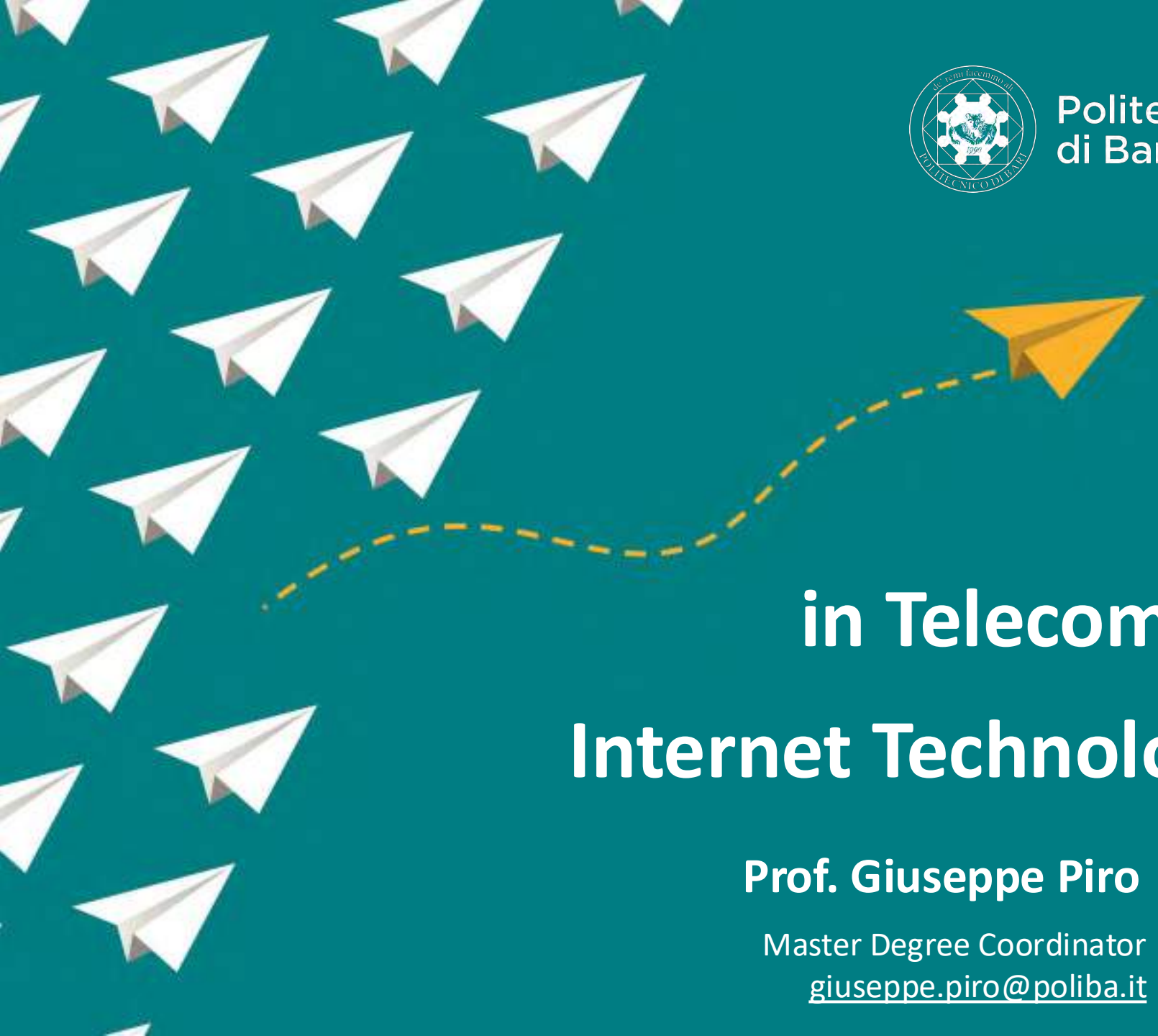


Politecnico di Bari

Department of Electrical and Information Engineering

Master Degree in Telecommunications and Internet Technologies Engineering

Prof. Giuseppe Piro

Master Degree Coordinator

giuseppe.piro@poliba.it

Prof. Giovanna Calò

Master Degree vice-Coordinator

giovanna.calo@poliba.it

Looking to your future…

Do you want **to contribute** to the **evolution** of **telecommunications** in Italy, Europe, and **worldwide** ?

Do you want to play a **key role** in driving the technological evolution, helping **society** to become increasingly **connected**, **secure**, and **sustainable** ?

Master Degree in

Telecommunications and Internet Technologies Engineering

Prof. Giuseppe Piro

Master degree Coordinator

giuseppe.piro@poliba.it

Location
The course lessons are held at the headquarters of the Polytechnic University of Bari.

Duration
The expected time to complete this course is 2 years.

Language
The lectures, seminars, and laboratory sessions are delivered in English.

Admission
Open access subject to verification of curricular requirements.

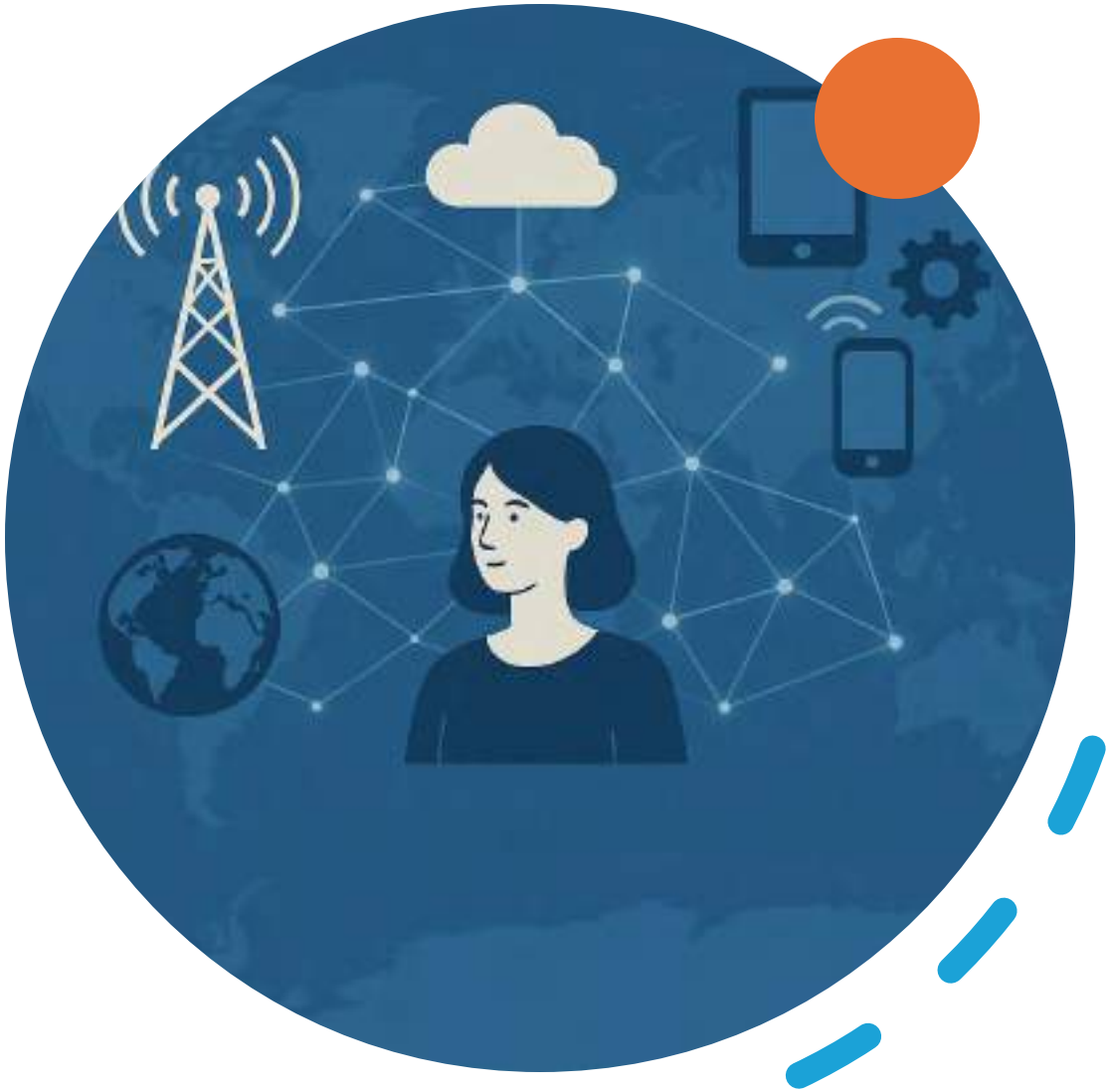
orientami.poliba.it

Course objectives 1/2

- Design, plan, develop, implement, and manage **telecommunication systems and services**
- **Solve issues** related to telecommunications from **technological, economic, reliability**, and **security perspectives**

Course objectives 2/2

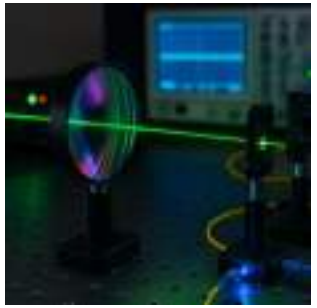
- Contribute to **scientific and technological advancements** in telecommunications
- Address **market needs**
- **Support the digital transformation** of a society where objects, people, processes, and services are pervasively interconnected



Learning areas

- Components and systems for data acquisition, processing, and transmission
- Advanced telecommunication networks and internet technologies
- Cybersecurity and advanced management of telecommunication systems
- Specific insights from academic fields and disciplines related to telecommunications

Curricula and specific skills



Tlc systems

Cyber Security

Common Path

Curricula and specific skills

Tlc systems

Cyber Security

Common Path

- **Advanced networking architectures** for the secure exchange and processing of information, based on emerging Internet technologies.
- **Internet of Things** and **mobile radio** communications.
- Integration of **terrestrial and non-terrestrial networks**.
- **Configuration of network devices** and support for the advanced design of complex telecommunication systems and services

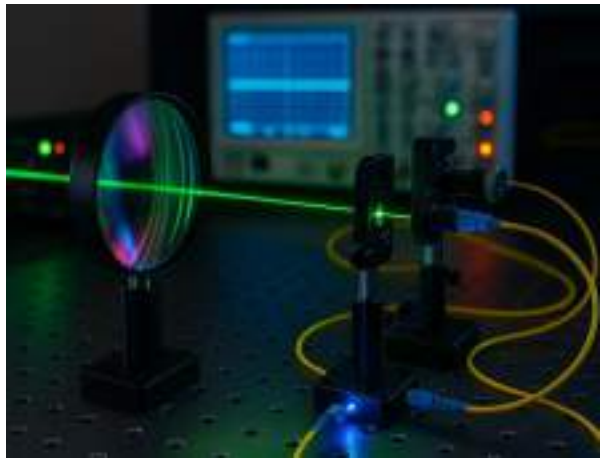
Curricula and specific skills

Tlc systems

Cyber Security

Common Path

- Advanced telecommunication components and systems: **radio links, antenna arrays and microwave technologies**.
- **Microwave and optical satellite systems** for long-distance communications.
- **Fiber optic** communication systems.
- Electronics for telecommunications, control systems for computer networks, and advanced measurement instruments in telecommunications.



Curricula and specific skills

Tlc systems

Cyber Security

Common Path

- **Cybersecurity** architectures in **wireless and mobile radio systems and networks.**
- Vulnerabilities of interconnected networks and systems through **hacking**, **network sniffing** and **exploitation**.
- **Electromagnetic emission and compatibility.**
- Cryptography, Big Data, privacy, biometrics and biosensing, corporate risk analysis and mitigation.

Teaching organization

- Detailed course catalogue, programas, and any aspects related to the teaching organization are available here:

https://poliba.coursecatalogue.cineca.it/corsi/2025/10267

Teaching organization

I anno: Curriculum Telecommunications Systems			
First Semester		**Second Semester**	
Courses	**ECTS (CFU)**	**Courses**	**ECTS (CFU)**
Radio Propagation (AF: caratterizzante, AD: Ingegneria delle telecomunicazioni, SSD: (ex ING-INF/02) IINF-02/A)	6	**Smart Antennas** (AF: caratterizzante, AD: Ingegneria delle telecomunicazioni, SSD: (ex ING-INF/02) IINF-02/A)	6
Network security and Laboratory of Terrestrial and Non-Terrestrial IoT Systems - I Module – Network security (AF: caratterizzante, AD: Ingegneria delle telecomunicazioni, SSD: (ex ING-INF/03) IINF-03/A)	6	**Traffic Theory and Mobile Radio Networks - I Module – Traffic Theory** (AF: caratterizzante, AD: Ingegneria delle telecomunicazioni, SSD: (ex ING-INF/03) IINF-03/A)	6
Network security and Laboratory of Terrestrial and Non-Terrestrial IoT Systems - II Module – Laboratory of Terrestrial and Non-Terrestrial IoT Systems (AF: caratterizzante, AD: Ingegneria delle telecomunicazioni, SSD: (ex ING-INF/03) IINF-03/A)	6	**Traffic Theory and Mobile Radio Networks - II Module – Mobile Radio Networks** (AF: caratterizzante, AD: Ingegneria delle telecomunicazioni, SSD: (ex ING-INF/03) IINF-03/A)	6
Fiber Optic Propagation (AF: caratterizzante, AD: Ingegneria delle telecomunicazioni, SSD: (ex ING-INF/02) IINF-02/A)	6	**Electronics for Telecommunications** (AF: affine o integrativo, AD: Attività formative affini o integrative, SSD: (ex ING-INF/01) IINF-01/A)	6
Control of Network Systems (AF: affine o integrativo, AD: Attività formative affini o integrative, SSD: (ex ING-INF/04) IINF-04/A))	6	**Optical and Radiofrequency Measurements** (AF: affine o integrativo, AD: Attività formative affini o integrative, SSD: (ex ING-INF/07) IMIS-01/B))	6
Total Number of ECTS (CFU totali)	30	**Total Number of ECTS (CFU totali)**	30

Course fully based on laboratories activities.

Courses with laboratory and experiential activities.

Teaching organization

II anno: Curriculum Telecommunications Systems			
First Semester		**Second Semester**	
Courses	**ECTS (CFU)**	**Courses**	**ECTS (CFU)**
Advanced Networking (AF: caratterizzante, AD: Ingegneria delle telecomunicazioni, SSD: (ex ING-INF/03) IINF-03/A)	6	**Internet Laboratory** (AF: altre attività formative, AD:Abilità informatiche e telematiche, SSD: (ex ING-INF/03) IINF-03/A))	3
Optical devices and Telecommunication Optical Systems - I Module – Optical Devices (AF: caratterizzante, AD: Ingegneria delle telecomunicazioni, SSD: (ex ING-INF/02) IINF-02/A)	6	**Optical devices and Telecommunication Optical Systems - II Module – Telecommunication Optical Systems** (AF: caratterizzante, AD: Ingegneria delle telecomunicazioni, SSD: (ex ING-INF/02) IINF-02/A)	6
Internship (tirocinio)	6	**High Speed Wireless Communications** (AF: caratterizzante, AD: Ingegneria delle telecomunicazioni, SSD: (ex ING-INF/03) IINF-03/A)	6
ELECTIVE COURSE	12	**Final examination**	15
Total Number of ECTS (CFU totali)	30	**Total Number of ECTS (CFU totali)**	30

Course fully based on laboratories activities.

Courses with laboratory and experiential activities.

Teaching organization

I anno: Curriculum Cyber Security

First Semester		Second Semester	
Courses	**ECTS (CFU)**	**Courses**	**ECTS (CFU)**
Network Security and Laboratory of Terrestrial and Non-Terrestrial IoT Systems - I Module – Network Security (AF: caratterizzante, AD: Ingegneria delle telecomunicazioni, SSD: (ex ING-INF/03) IINF-03/A)	6	**Traffic Theory and Mobile Radio Networks - I Module – Traffic Theory** (AF: caratterizzante, AD: Ingegneria delle telecomunicazioni, SSD: (ex ING-INF/03) IINF-03/A)	6
Network Security and Laboratory of Terrestrial and Non-Terrestrial IoT Systems - II Module – Laboratory of Terrestrial and Non-Terrestrial IoT Systems (AF: caratterizzante, AD: Ingegneria delle telecomunicazioni, SSD: (ex ING-INF/03) IINF-03/A)	6	**Traffic Theory and Mobile Radio Networks - II Module – Mobile Radio Networks** (AF: caratterizzante, AD: Ingegneria delle telecomunicazioni, SSD: (ex ING-INF/03) IINF-03/A)	6
Big Data Analytics (AF: affine o integrativo, AD: Attività formative affini o integrative, SSD: (ex ING-INF/05) IINF-05/A)	6	**Secure Programming Laboratory** (AF: affine o integrativo, AD: Attività formative affini o integrative, SSD: (ex ING-INF/05) IINF-05/A)	6
Cryptography (AF: affine e integrativo, AD: Attività formative affini e integrative, SSD: (ex MAT/03) MATH-02/B)	6	**ELECTIVE COURSE**	12
Risk Management (AF: affine o integrativo, AD: Attività formative affini o integrative, SSD: (ex ING-IND/35) IEGE-01/A)	6		
Total Number of ECTS (CFU totali)	30	**Total Number of ECTS (CFU totali)**	30

Course fully based on laboratories activities.

Courses with laboratory and experiential activities.

Teaching organization

II anno: Curriculum Cyber Security			
First Semester		**Second Semester**	
Courses	**ECTS (CFU)**	**Courses**	**ECTS (CFU)**
Advanced Networking (AF: caratterizzante, AD: Ingegneria delle telecomunicazioni, SSD: (ex ING-INF/03) IINF-03/A)	6	**Wireless Network Security and Ethical Hacking Laboratory - I Module – Wireless Network Security** (AF: caratterizzante, AD: Ingegneria delle telecomunicazioni, SSD: (ex ING-INF/03) IINF-03/A)	6
Electromagnetic Security (AF: caratterizzante, AD: Ingegneria delle telecomunicazioni, SSD: (ex ING-INF/02) IINF-02/A))	6	**Wireless Network Security and Ethical Hacking Laboratory - II Module – Ethical Hacking Laboratory** (AF: caratterizzante, AD: Ingegneria delle telecomunicazioni, SSD: (ex ING-INF/03) IINF-03/A)	6
Information Systems Security and Privacy (AF: affine o integrativo, AD: Attività formative affini o integrative, SSD: IINF-05/A)	6	**Internet Laboratory** (AF: altre attività formative, AD: Abilità informatiche e telematiche, SSD: (ex ING-INF/03) IINF-03/A)	3
Electronic Systems for Biometrics and Biosensing (AF: affine o integrativo, AD: Attività formative affini o integrative, SSD: (ex ING-INF/01) IINF-01/A)	6	**Final examination**	15
Internship (tirocinio)	6		
Total Number of ECTS (CFU totali)	30	**Total Number of ECTS (CFU totali)**	30

Course fully based on laboratories activities.

Courses with laboratory and experiential activities.

Italian Erasmus

- Includes **study periods at partner Italian Universities**
  - Facilitate new learning experiences
  - Promote **interdisciplinarity**
  - Strengthen **integration** and **complementarity** between Universities

Internationalization

- **Double Degree**
  - Agreement between the Polytechnic University of Bari and the **University of Nice:** specific university education course between Bari and Nice to achieve a **double degree**
- **Erasmus +**
  - study period (**courses, thesis, internship abroad**) in one of the countries participating in the program, at partner Universities

Additional learning experiences

Huawei

Italy Enterprise Roadshow

2023

Additional learning experiences

Study trip

to

Eindhoven University of Technology,

Netherlands

2024

Additional learning experiences

Short Master in Cybersecurity for Network Resilience 2025

Additional learning experiences

Fortinet and Allied Telesis **certification** programs

Additional learning experiences

ESA

Satellite Communication Systems

Training Course

2025

Further Education

- **Three-year Doctorate courses** provided by the Polytechnic of Bari or other Italian and international institutions

- **Second level Master's degrees** provided by any Italian and international institution that requires a Master's Degree in Telecommunications Engineering as an entry requirement (degree class LM-27 Telecommunications).

Career Opportunities

- freelance activities in the design and implementation of telecommunication systems and Internet-enabled services,
- companies involved in designing, producing, and operating equipment and systems for data acquisition, processing, and transmission,
- public and private telecommunication service companies,
- consultancy company for the design, development, and analysis of telecommunication systems and services,
- research and development laboratories,
- public administrations,
- regulatory, standardization, monitoring, and certification bodies,
- air, land, and maritime traffic control authorities,
- telecommunication operators and ICT companies,
- scientific and technological research bodies and research and development laboratories.

Companies


Agenzia Spaziale Italiana
open fiber
TIM
vodafone
FASTWEB
COMAU
Leanfa
Shaping Energy Waves
WINDTRE
ERICSSON
Prysmian Group
NEC
AT&T
ELETTRIC80
Italtel
LEONARDO
TELESPAZIO
NTT
IBM
e-geos
AN ASI / TELESPAZIO COMPANY
exprivia
Hewlett Packard Enterprise
Tiesse
FiberCop S.p.A.
HUAWEI
FORTINET
CISCO
mermec group
SITAEL
esa

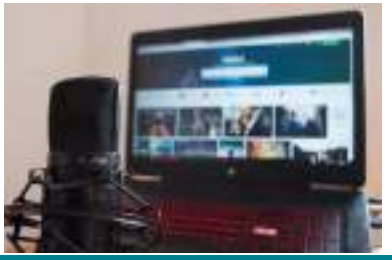
Sectors of interest

public administration

smart city

energy

media



industry

transportation and mobility

cyber security

defense and security

healthcare

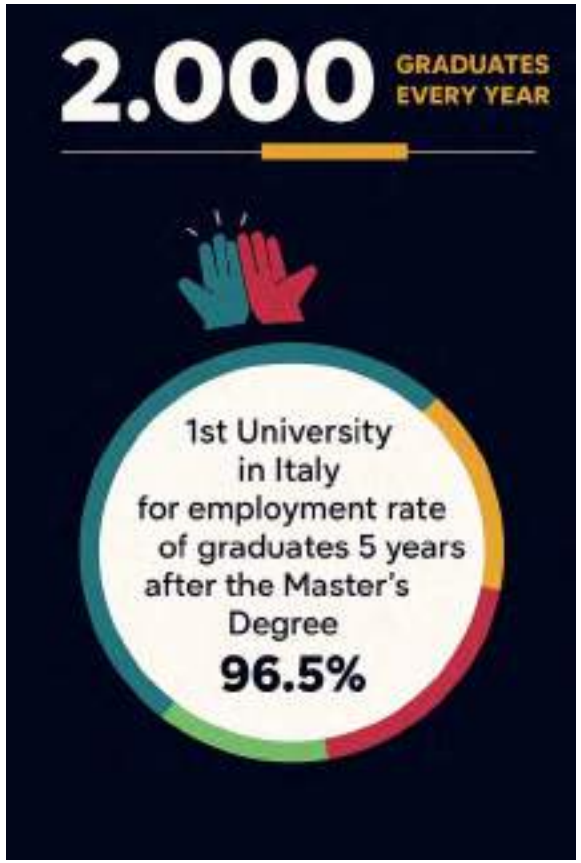
automation and robotics

agriculture

aerospace

Employment rate

University



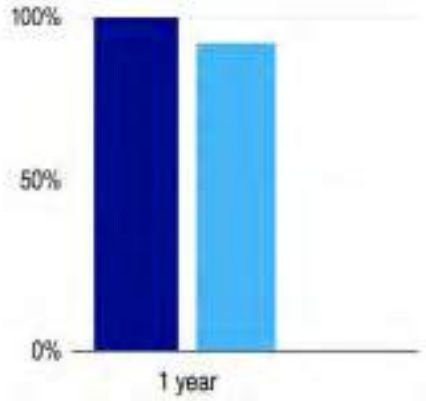
Master Degree

LM-27 Telecommunications And Internet Technologies

Engineering of the Polytechnic University of Bari

AlmaLaurea

Employment rate



	1 year
Course	100.0%
University	92.9%

Laboratories

- The scientific-theoretical training is enriched by numerous courses that include laboratory activities.
  - **iTNT-NS laboratory**
  - **Microwave & Optical Enginnering**
  - **nPEG-NanoPhotonics and Electromagnetics Group**
  - **Telematics Laboratory**
  - Control of Computing and Communication Systems Lab
  - Electrical and Electronic Measurements Educational Lab
  - Information Systems Laboratory
  - Optoelectronics Laboratory
  - Telecommunications Electronics

Master Degree

in **Telecommunications** and **Internet Technologies Engineering**

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Master degree Coordinator

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Location
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