

MASTER'S DEGREE IN ICT AND INTERNET ENGINEERING

COURSE PROGRAM (ACADEMIC YEAR 2023/2024)

The Master's Degree ("Corso di Laurea Magistrale" in Italian) in "ICT and Internet Engineering" includes courses and other formative activities for a total of 120 credits ("CFU"). The Master includes 4 mandatory courses respectively in the areas of telecommunications, mobile networks, remote sensing and software engineering. There is a large number of optional courses and we have identified five reference "formative paths":

- 1 - "Cybersecurity"
- 2 - "Internet of Things and Cloud"
- 3 - "Space Integrated Systems"
- 4 - "Sensing Systems"
- 5 - "Connectivity Infrastructure"

There are four categories of courses:

- 1) mandatory courses;
- 2) optional courses suggested by the Master and listed inside the "formative paths";
- 3) optional courses that are under "free choice" of the student;
- 4) integrative courses: these courses are reserved to the students that need an integration of their background knowledge, as this knowledge has not been provided in their bachelor's.

MANDATORY COURSES	YEAR	SEMESTER	CREDITS
Digital Communications	1	1	6
Model-based Systems Engineering (^)	1	1	9
Mobile Wireless Networks	1	2	9
Radar and Localization	1	2	9
Formative Activities			3
Final thesis			18

(^) new name for Service-oriented Software Engineering

Optional courses. The student will choose 7 courses (54 credits) among the courses in one of the reference formative paths, including the first three courses.

The student can also build his/her study plan choosing from different formative paths. In this case, the personalized study plan will be subject to scrutiny by the Council of the Master to check if it is aligned with the formative goals of the Master and if it meets the constraints of the Master regulation.

Formative Paths.

“Cybersecurity”	ANNO	SEMESTRE	CREDITI
Internet Technology and Protocols	1	1	6/9
Network Security	2	1	6/9
Networks and Systems Defense	2	1	6/9
Wireless Electromagnetic Technologies	1	1	9
Sistemi operativi avanzati (^)	2	1	9
Hardware, Electromagnetic and Localization Security	2	1	6
Internet of Things: Principles and Applications	2	2	6
Analisi del malware (^)	2	2	6

“Internet of Things and Cloud”	ANNO	SEMESTRE	CREDITI
Internet Technology and Protocols	1	1	6/9
Cloud Computing and Networking	2	1	6
Internet of Things: Principles and Applications	2	2	6
Network Infrastructures	1	2	6/9
Network Security	2	1	6/9
Networks and Systems Defense	2	1	6/9
Internet via Satellite	2	1	6
Internet Services Performance	2	1	6/9
Software Networks	2	2	6
Web Mining and Retrieval (^)	2	2	6/9

“Space Integrated Systems”	ANNO	SEMESTRE	CREDITI
Satellite Earth Observation	1/2	2	6/9
Satellite Navigation and Surveillance Systems	2	1	6/9
Internet via Satellite	2	1	6
Wireless Electromagnetic Technologies	1	1	9
Internet Technology and Protocols	1	1	6/9
Radar Systems and Applications	2	1	6
Multimedia Processing and Communication	2	1	6
Information Theory and Data Science	2	1	6/9

(^) This subject is given in Italian language

"Sensing systems"	ANNO	SEMESTRE	CREDITI
Wireless Electromagnetic Technologies	1	1	9
Remote Sensing and Cartography	2	2	6
Satellite Earth Observation	1/2	2	9
Radar Systems and Applications	2	1	6
Satellite Navigation and Surveillance Systems	2	1	9
Information Theory and Data Science	2	1	9
Microwaves	2	2	6
Sistemi wearable e telemetria medica (^)	2	2	6

"Connectivity infrastructure"	ANNO	SEMESTRE	CREDITI
Internet Technology and Protocols	1	1	9
Network Infrastructures	1	2	9
Optical Communications	2	1	6
Wireless Electromagnetic Technologies	1	1	9
Internet via Satellite	2	1	6
Multimedia Processing and Communication	2	1	6
Information Theory and Data Science	2	1	9
Internet of Things: Principles and Applications	2	2	6

(^) This subject is given in Italian language

"Free choice" courses. The student can choose **12 CFU** to complete his/her study program from the ones included in any formative path, or by proposing any course offered in a Master's program in our university. Anyway, the choice of these "free choice" courses must be approved by the Council of the Master's Degree, checking the consistency of the choice with the goals of the Master's.

NOTE:

- The 9 CFU optional courses in the formative paths are also offered in a 6 CFU version. The student will follow the same course up to 2/3 of the program and will take the exam on this part. For details, ask the teachers of the courses.

Integrative courses. These courses cannot be arbitrarily chosen, but they are reserved to students who need to integrate their background skills. In most cases, these courses are assigned to the student as mandatory courses when the Council of the Master evaluates the student's background

after the initial enrollment. Note that in this case these mandatory courses are a part of the 120 CFU (there are no additional credits that are imposed on the student).

COURSE	YEAR	SEMESTER	CREDITS
Electromagnetic fields	1	1	6
Fundamentals of Telecommunications	1	2	6
Networking and Internet	1	2	6/9
Digital Signal Processing	1	2	6

PREREQUISITES

The Master's Degree in "ICT and Internet Engineering" requires the basic knowledge on Math and Physics common to the Bachelor's degree in Engineering and the basic knowledge in the area of Information Engineering (electronics, control systems, computer science, networking, signals). The integrative courses can be used to fill the knowledge gaps.

Please check on our web page for any update to this information: <http://internet.uniroma2.it/en>.

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