

# U COMMUNICATION ENGINEERING

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ACADEMIC YEAR 2015-2016

SECOND CYCLE DEGREE  
IN COMMUNICATION  
ENGINEERING



UNIVERSITÀ DEGLI  
STUDI DI PARMA

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# INTRODUCTION



## WELCOME

The University of Parma offers the Master of Science (MS)/Second cycle degree in Communication Engineering since the academic year 2012/13. Communication Engineering is one of the two graduate courses (or second cycle degree courses) offered in English at the University of Parma, Italy. The University is actively seeking to raise its international profile in teaching and research, and is regularly active in joint projects with several countries. Communication Engineering is a two-year graduate course tailored to students aspiring to work in an advanced engineering field at an international level.

The Master of Science (MS)/Second cycle degree in Communication Engineering offers Italian and international students a unique opportunity. First of all, it provides sound knowledge and methodology in an area which is experiencing an impressive technological innovation and is likely to continue this trend for many years to come. Furthermore, it allows international students to improve their command of the English language in a professional context. All lectures and seminars are held in English, so that students may practice the language in its technical terminology, while learning about current technology. The course offers the chance to work towards an advanced qualification and also acquire advanced language skills throughout the two-year course.

Communication Engineering has a solid tradition at the University of Parma. In the last decades the Department of Information Engineering has been active in research in all three areas of the Information and Communication Technology (ICT), namely, Electronics, Computer Engineering, Communications, and related fields. The Department coordinates both advanced research and graduate studies. The research activity is carried on by several groups often in collaboration with foreign universities and renowned international institutions. The Department also provides scientific and technical consulting to industries,





firms and public institutions in Italy and abroad. The Master of Science (MS)/Second cycle degree in Communication Engineering has been offered in Italian since the early Nineties, in parallel with international-level research in Digital, Wireless and Optical Communications. Beginning with the academic year 2012-2013, the program has been offered entirely in English.

The Master of Science (MS)/Second cycle degree in Communication Engineering may offer various opportunities. All students, both Italian and foreign, may benefit in terms of employment. Today, advanced knowledge on ICT needs to be complemented by language skills for access to many professions, and a good English language proficiency will open up opportunities for young people in Italy and abroad.

The University also looks forward to the wider benefits of hosting students from different parts of the world. Inter-cultural exchange, strong international relationships, and diversification of human capital are all outcomes of studying in different countries. The University of Parma today attracts half its students from outside its Region, but the number of foreign students may increase significantly. The Master of Science (MS)/Second cycle degree in Communication Engineering facilitates academic contacts overseas and gives all our students more opportunities in the wider world.

Parma is an ideal destination for foreign students. Famous for its art and history, the city also offers a high level of public services. It is small enough for the local people to be welcoming and friendly, but large enough to host important cultural events. The way of life is pleasant and there are many bars and cafés, parks and piazzas, as well as clubs and societies for leisurely activities.

Prof. Riccardo Raheli

*Professor and Programme Committee Chairman*



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# COURSE STRUCTURE AND CONTENT



## MASTER OF SCIENCE IN COMMUNICATION ENGINEERING


The Master of Science (MS)/Second cycle degree in Communication Engineering is a second-level degree according to the European categorization (LM 27 - Telecommunication Engineering), offered entirely in English by the Department of Information Engineering of the University of Parma. It is a two-year graduate course which enables successful students to be awarded the Second Cycle Degree Certificate “Laurea Magistrale”.

Globalization today is a great opportunity for young people, but working on the international stage and taking part in innovation all over the world requires a solid background and advanced skills in various aspects of current technology. At the same time, it requires an advanced knowledge of the English language. For this reason, this programme is taught and examined entirely in English to meet the needs for top-level language skills.

The course is designed for candidates from different academic backgrounds and aims to provide a thorough grounding in ICT. Graduates will be trained to work in companies challenging the global technology competition, in multinational corporations, European and supranational organizations and national and regional institutions operating internationally.

The first year of the course provides the sound and fundamental background tools of the Communication Engineer, but also leaves significant space to interdisciplinary learning by allowing the student to attend courses from other Engineering, Physics or Economics programmes. The second year focusses on specific advanced disciplines within Communication Engineering and a final thesis work. The final examination consists of a public defense of a written theoretical or experimental thesis, focussing on a theme consistent with the subjects of the degree course.

The main aim of the Communication Engineering course is to provide advanced insight into the current ICT, while simultaneously emphasizing a methodological approach to the analysis and design of complex systems - an essential ability in a fast moving world.



## COURSES, NUMBER OF CREDITS AND YEARS OF STUDY

Course	Credits	Year
Detection and Estimation	9	1 <sup>st</sup>
Information Theory	6	1 <sup>st</sup>
Antennas for Wireless Systems	6	1 <sup>st</sup>
Network Performance	6	1 <sup>st</sup>
Network Security	9	1 <sup>st</sup>
Elective Complementary Courses*	12	1 <sup>st</sup>
Elective Courses*	12	1 <sup>st</sup>
Digital Communications	9	2 <sup>nd</sup>
Wireless Communications	9	2 <sup>nd</sup>
Photonic Devices	9	2 <sup>nd</sup>
Optical Communications	9	2 <sup>nd</sup>
Thesis and final examination	24	2 <sup>nd</sup>
<b>Total</b>	<b>120</b>	<b>2<sup>nd</sup></b>

\* Examples of elective courses: Applied Acoustics, Machine Learning for Pattern Recognition, Advanced Photonics, Polarized Fiber Optic Transmission, Internet of Things.

(Minor changes may be introduced)



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## ADMISSION PROCEDURES


Admission to the Master of Science (MS)/Second cycle degree in Communication Engineering requires that one holds a Bachelor of Science (BS) degree in Engineering, Physics or Mathematics, or equivalent University Degree. Students who hold a BS in Electrical Engineering have the ideal background knowledge to undertake the program. Other students may do so, but preliminary self study may be required prior to the beginning of classes.

### Students holding an Italian Degree

#### **a) Admission requirements I (Requisiti curriculari):**

- Applications from candidates holding a first level Italian degree certificate (Diploma di Laurea) in the Class of Information Engineering (Class L-8) are accepted. The Student Registry Office verifies the validity of the degree certificate presented by the applicant.
- Applications from candidates holding first level degrees (Diploma di Laurea) in classes other than Information Engineering are also welcome, especially from other Engineering classes, Physics, Mathematics and Computer Science. They will be assessed by the Programme Committee. The detailed requirements are specified in the Course Regulations (Regolamento didattico).

#### **b) Admission requirements II (Requisiti di personale preparazione):**

- Applicants holding a degree certificate as specified in a) but with a mark below 88/110 or equivalent are required to attend an interview. Interviews will be held in January, March, September and November.
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## Students holding a foreign Bachelor of Science (BS)

Students holding a foreign first-level University degree, such as a BS, must first submit some documents to the Programme Committee to assess their qualification. To this purpose, a pdf copy of the following documents is required:

- Full University study record or transcript, including complete list of exams passed, their load in terms of lecture hours or credit units (with relevant definition), the grades achieved, and the final grade point average (GPA)
- Final BS Diploma or equivalent University Diploma (Students who have not received their first-level university degree at time of application, but who expect to graduate by September 2015 must specify their complete study programme and expected graduation date)
- English language proficiency certification, required unless the BS used English as a medium of instruction
- Curriculum Vitae
- Passport (page with photo and identification data)
- Other documents considered useful to establish the qualification of the applicant

All the documents must be sent to the address:

**comm.eng@unipr.it**

using the following string as the mail Subject:


**Comm Eng Docs 2015 (Student's\_first\_name Student's\_last\_name)**

Applicants will receive information on their qualification possibly within a few days.



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## Non EU citizens

After receiving positive information on their qualification, students of non-EU citizenship who are not resident in Italy must submit a pre-enrollment application to the Italian Embassy or Consulate in the country of residence. Please contact the Embassy as soon as possible to inquire about the procedure, the documents they request and the relevant deadlines (be aware of early deadlines).

The accepted applicants shall complete their enrollment procedure as explained in the document: “General practical information” (Section “Enrollment information”), which can be reached from the course web page (see below: “Information and Contact”).

Other general information on application for foreign students can be found here:

[www.unipr.it](http://www.unipr.it) (University of Parma Home Page ) > UK Flag > Studying > General registration procedures

### **IMPORTANT**

1. The course is classified as “Free access” in the web site of the University of Parma
2. No Italian language test is required for applicants to the Master of Science (MS)/Second cycle degree in Communication Engineering, since the course is taught in English.

Classes start in late September (expected date: September 28, 2015).







## Department of Information Engineering

The Department of Information Engineering is the main site of advanced research as well as and graduate and undergraduate studies in Electronics, Computer Engineering, Communications and related fields. The Department has its main focus on Information and Communication Technology (ICT) disciplines.

The research activity is carried on by several groups often in collaboration with universities of various countries and renowned international institutions.

The Department also supplies scientific and technical support to industries, firms and public bodies in Italy and abroad. According to the specific needs, this collaboration takes the form of contracts for applied research, development of specific projects and joint participation to scientific research programs supported by European or national institutions.

The Department has also the teaching responsibility for all the graduate and undergraduate courses concerning disciplines within its scientific competence.

A Ph.D. course in Information Technologies (Dottorato di ricerca) is offered in the Department.

The Department is located in the University Campus “Parco Area delle Scienze” of the University of Parma where it occupies 4,000 sq. metres distributed in four buildings out of the thirteen assigned to the Engineering Departments.



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## CONTACT

### DEPARTMENT OF INFORMATION ENGINEERING

Parco Area delle Scienze, 181/A (University Campus) - 43125 Parma - Italy

For online information see the course web page:

<http://ingegneria.unipr.it/communication-eng/>

In this web page, information can be found on tuition fees, accomodation and other benefits, general practical information.

For any kind of queries, first contact and pre-enrollment evaluation:

[comm.eng@unipr.it](mailto:comm.eng@unipr.it)

For specific academic advice, after a positive pre-enrollment assessment:

Programme Committee Chairman: Prof. Riccardo Raheli

[raheli@unipr.it](mailto:raheli@unipr.it)

For specific administrative queries, contact:

Student Registry Office, Engineering section (Segreteria Studenti)

[seging@unipr.it](mailto:seging@unipr.it)

### UNIVERSITY OF PARMA

Website in English:

[en.unipr.it](http://en.unipr.it)



[www.unipr.it](http://www.unipr.it)

TOLL FREE NUMBER

**800 904084**

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