Politecnico di Torino

ACADEMIC REGULATIONS

Bachelor's degree programme
in
ELECTRONIC ENGINNERING

Department of Electronics and Telecommunications

Collegio di Ingegneria Elettronica, delle Telecomunicazioni e Fisica

Academic Year **2025/2026**

The English translation of this document is provided as a support to the student community and has no legal effects. The Italian version shall constitute the sole authentic text and will be referred to for any legal matter.

SUMMARY

Art. 1 - Specific learning objectives and career prospects

1.1 Specific Learning Objectives

The training of the Electronic Engineer emphasizes the most applied aspects of the various disciplines. In this context, excessive specialization is avoided in favour of a solid technical and foundational preparation across the different cultural areas of Electronic Engineering. This allows for rapid adaptation to diverse professional needs, reduces the risk of rapid obsolescence, and enables graduates to orient themselves toward the various possible professional profiles characteristic of the Electronic Engineer.
The profession of the Electronic Engineer requires knowledge and learning across a broad spectrum of basic scientific subjects (mathematics, physics, and chemistry), which are necessary to develop in-depth and detailed expertise in the field of information engineering (electronics, computer science, telecommunications, and automation). To adequately perform their profession, the Electronic Engineer must integrate technical-scientific knowledge with a proper understanding of economic and management subjects and be proficient in the foreign languages used in the sector.
Graduates are provided with methodologies and knowledge that allow them to operate in the fields of design, engineering, production, operation, and maintenance of electronic systems, as well as in the management and supervision of laboratories and production lines, even outside the electronic manufacturing sector. Graduates are familiar with the main characteristics of components, devices, and systems. The competencies acquired at the end of the study programme enable graduates to work not only in design and development but also in promotion, sales, and technical support activities.

1.2 Career prospects

The Bachelor's degree programme aims to train a variety of professional profiles. The career prospects and main functions and competencies associated to each profile are illustrated below.

Professional Profile	Main functions and competencies
Junior Designer	Functions: The Electronic Engineer designer has acquired broad and diversified knowledge and skills in ICT application areas. They are therefore able to carry out professional activities in various fields, such as design, production, management and organization, support of technical-commercial structures, risk analysis, and safety management in both preventive and emergency phases, whether in private practice, manufacturing or service companies, or public administrations. Competencies: Basic devices and components of electronic circuits and systems; design methodologies (including use of CAD tools); electronic technologies and applications in computer science, telecommunications, automation, and related fields; sensor and actuator technologies; methodologies and tools for electronic measurements; production and installation of an electronic system. Being a bachelor's degree, the level of competencies achieved is considered threshold. Potential employers: Companies producing goods or services in both ICT and other economic sectors, such as mechanical engineering. Design studios. Public and private organizations.

Production Engineer	Functions: In the electronics industry, the Production Engineer coordinates the post-design manufacturing phases. They handle prototype construction and verification of compliance with specifications, suggest possible design modifications for the final product, manage automation of production stages, ensure production timelines are met, and oversee final product testing. They also prepare technical documentation describing the product's functionality. Competencies: Foundational skills in electronic board manufacturing technologies, electronic measurements, industrial automation controls, and testing techniques. Knowledge of electrical characteristics of the various electronic components assembled on boards. Effective use of CAD tools across all stages—from board design to simulation and testing. Skills in preparing documentation and conducting process and product quality control. Being a bachelor's degree, the level of competencies achieved is considered threshold. Potential employers: Companies producing goods in both ICT and other economic sectors, such as mechanical engineering. Public and private organizations.
Technical-Sales Specialist	Functions: The Electronic Engineer performing technical-commercial tasks supports the client throughout all phases, from defining specifications to sales and post-sales services, concerning high-tech electronic products or products incorporating electronic systems. They can organize and conduct presentations and demonstrations of electronic systems and devices at trade fairs or directly at client sites. Competencies: Managing relationships with clients—private, corporate, or institutional—who purchase electronic devices, especially high value-added ones, requires both technical expertise and communication and sales process management skills. The Electronic Engineer involved in commercialization possesses foundational knowledge of electronic component and system technologies (particularly complex boards and devices), as well as reliability, maintenance, performance, and energy consumption aspects. Additionally, they have skills in using software for configuring programmable electronic devices and systems. Key relevant subjects include: • Electromagnetic Fields • Digital Systems Electronics Potential employers: Companies producing, marketing, or distributing electronic, IT, and biomedical products and devices.
Junior Maintenance and Support Engineer	Functions: The Electronic Engineer employed in technical maintenance and customer support uses electronic instrumentation and software, applying techniques for fault detection and testing of electronic devices or systems containing electronic components. Competencies: Skills required for maintenance and support of electronic devices include knowledge of electronic board manufacturing technologies, component characteristics (interfacing, power, timing, signal dynamics), instrumentation for electronic measurements and related software, and software/firmware for configuring programmable electronic systems. Being a bachelor's degree, the level of competencies achieved is considered threshold. Potential employers: Companies producing, marketing, or distributing electronic, IT, and biomedical products and devices.

Electronic Laboratory Manager	Functions: The Electronic engineer employed in development or production-linked electronic laboratories oversees the management and organization of the lab according to efficiency criteria. They coordinate the allocation of tasks within the technical team, select and purchase components, manage the project archive, and maintain laboratory equipment. Competencies: The laboratory manager's competencies cover all phases of design, prototyping, and small-scale production of an electronic system or device. In particular, the Electronic Engineer in this role knows electronic board design and production technologies, can select basic electronic components and subsystems based on cost-performance trade-offs, and can expertly use laboratory instrumentation and design software. They also have skills in automatic controls to set up and manage production equipment. Being a bachelor's degree, the level of competencies achieved is considered threshold. Potential employers: Research and development laboratories, testing, measurement, and characterization centres for electronic systems and devices, in public and private companies and research institutions.
Freelance Electronic Engineer	Functions: The bachelor-level Electronic Engineer working as a freelancer participates in the development of solutions for improving and launching new production processes requiring electronic devices, both as production systems and final products. They propose circuit or system solutions suitable for a given application in information technology or related fields. Competencies: The freelancer's competencies include the main phases of design, prototyping, and production of an electronic system or device. They can analyze cost-performance trade-offs and select basic electronic components for a given project. They can independently use design software and have skills in automatic controls to recommend or, if necessary, design new production equipment. Potential employers: Consultancy activities for companies, public entities, and other organizations.
Preparation for further studies	**Knowledge required for further studies**
Master's degree in Electronics or other Master's degrees in the ICT area	Graduates are expected to have a solid foundation in Electronic Engineering. They must be able to further develop the theoretical and methodological aspects of electronic engineering disciplines, and to address innovative and methodologically advanced issues, also engaging in the design of highly complex systems. They should be able to analyse and apply the methods typical of electronic engineering and show an aptitude for following innovation processes. They must be capable of enhancing their professional skills through lifelong learning, and of analysing a wide range of situations and problems by applying general ICT knowledge. They should be able to identify missing information needed to solve specific problems and know how to acquire it. Graduates are expected to work independently, manage projects, and communicate technical information—either directly or through documents and appropriate media—even to non-specialists outside the ICT field. They should also be familiar with the principles of intellectual property and quality management and possess a general understanding of economics.

1.3 Professional profiles (ISTAT codes)

With reference to the list of professional profiles classified by ISTAT (Italian National Institute of Statistics, https://www.istat.it/en/), a graduate from this Bachelor's degree programme can work as:

ISTAT code	Description
3.1.2.2.0	Tecnici esperti in applicazioni
3.1.3.3.0	Elettrotecnici
3.1.3.4.0	Tecnici elettronici

Art. 2 - Admission requirements

To be admitted to this Bachelor's degree programme, applicants must hold a high school diploma (as required by current regulations) or an equivalent qualification obtained abroad, recognized as valid. Additionally, they must have or attain an appropriate level of initial background knowledge.

The number of admissible students is determined annually by the Governing Bodies of Politecnico based on locally programmed admissions, considering the available facilities and the student-to-faculty ratio.

The number of available places and admission procedures are specified in the official Call for applications for admissions published at https://www.polito.it/en/education/applying-studying-graduating/admissions-and-enrolment/bachelor-s-degree-programmes/calls-for-application-regulations-and-ranking-lists .

In particular, for enrolment in this Bachelor's degree programme, applicants must take an admission test (TIL-I), administered in different sessions according to a specific calendar published on the recruitment web pages.

The test is conducted using the technical equipment available in the computer laboratories of the University.

The minimum score required to be included in the ranking list is set at 30% of the total score. Applicants may take the TIL-I test up to a maximum of three times. In the event of multiple attempts, the highest score obtained by the applicant will be considered valid. The test consists of answering 42 questions in 1 hour and 30 minutes. These questions are divided into four sections covering four different subject areas: Mathematics, Reading Comprehension and Logical Reasoning, Physics, and Basic Technical Knowledge.

Applicants who score below 30% in the Mathematics section will have to fulfil some supplementary academic obligations (in Italian, Obblighi Formativi Aggiuntivi - OFA).

They will be invited to attend tutoring math classes during Year 1 and they must attend a supplementary course. This course, called C.I.A.O. - Corso Interattivo di Accompagnamento Online (Interactive Online Support Course), is normally offered in the week before the beginning of classes. It seeks to help applicants fill in the gaps in their Math knowledge through specific online tutoring sessions.

The OFA requirements will be considered fulfilled if, by the end of Year 1, at least one of the following conditions is met:

- students pass one of the two Mathematics exams of Year 1 (Mathematical Analysis I or Linear Algebra and Geometry);
- students pass the final test of the CIAO course by correctly answering at least 10 out of 15 questions. This test will be offered three times during the academic year.

Any exemptions from taking the admission test are specified in the Call for applications for admissions to the Bachelor's degree programmes of Politecnico di Torino.

Students with a non-Italian educational qualification who intend to enrol in the programme, which is delivered entirely in Italian, must hold, at the time of enrolment, a certificate of Italian language proficiency at level B2, as defined by the Common European Framework of Reference for Languages (CEFR).

For more information regarding the Call for applications, the number of admissions, the admission test registration and enrolment procedures, please visit https://www.polito.it/en/education/applying-studying-graduating/admissions-and-enrolment/bachelor-s-degree-programmes/calls-for-application-regulations-and-ranking-lists .

Art. 3 - Programme curriculum

3.1 Programme overview

In the Bachelor's degree, the first year—common to all Engineering programmes—focuses on core scientific and engineering subjects in Mathematics, Physics, Chemistry, Computer Science, and English. In addition, a discipline-specific course is offered to provide the computational tools required by an Electronic Engineer.

The second year develops topics in Mathematics and Physics related to Information Technologies and includes courses on the fundamental subjects for this field: Electrical Engineering, General Electronics, and Measurement. The third year focuses on the specific contents of Electronic Engineering, complemented by courses in Telecommunications and Automation. Strong emphasis is placed on applications, design, and in-depth study, so that graduates are prepared both to enter the job market directly with a Bachelor's degree and to continue into a Master's degree programme.

During the third year, students may carry out an internship in a company.

The final examination (3 credits) consists of in-depth study, analysis, developments, or applications of topics covered during the degree programme, or other topics consistent with its educational objectives.

To support graduates' employability in international contexts, the first year includes a course in English, while in later years students may choose some courses taught in English. For example, in the second year, *Circuiti elettronici* may be replaced by *Electronic Circuits*. In the third year, students may take the English versions of *Elettronica applicata*, *Misure*, *Campi elettromagnetici*, and *Elettronica dei sistemi digitali*.

Students may also attend part of their courses abroad and earn a double degree within the framework of agreements with foreign universities.

Graduates in Electronics may continue directly into any Master's degree programme in the ICT area.

Electronic Engineers are highly trained professionals, qualified to address technical problems immediately, with a broad and solid background that allows them to understand and apply innovation.

3.2 Organization of educational activities

The list of courses (compulsory and optional), curricula, possible organization of courses into modules, any pre-requisites and exclusions and the list of the faculty members responsible for the courses are available at: https://didattica.polito.it/pls/portal30/sviluppo.offerta_formativa_2019.vis?p_a_acc=2026&p_sdu=37&p_cds=551

The list of the Scientific Disciplinary Fields (Settori Scientifico Disciplinari) for each activity (specific subjects and complementary subjects) is available at: https://didattica.polito.it/pls/portal30/sviluppo.vis_aiq_2023.visualizza?sducds=37551&tab=0&p_a_acc=2026

Art. 4 - Student career

The Student Guide is published on the Teaching Portal every year before the beginning of the academic year. There is a specific Student Guide for each Bachelor's degree programme. The Student Guide is available on the web site of the degree programme.

It contains information and deadlines on:

- academic calendar;
- supplementary academic obligations (Obblighi Formativi Aggiuntivi - OFA);
- Personal Study Plan and Annual Personal Study Plan;
- free choice credits;
- internships;
- tuition fees;
- dual career;
- classes and exams;
- class delivery;
- foreign language learning;
- studying abroad/mobility programmes;
- exam rules;
- transfers in/out and internal transfers;
- interruption, suspension, withdrawal, forfeiture;
- credit transfer.

Art. 5 – Final Examination

The final examination consists of an independently written report (Final Project).
It is worth 3 credits and involves in-depth study, analysis, development, or applications of topics covered in the degree programme, or of other subjects consistent with its educational objectives. The aim of the final examination is to assess students' ability to integrate the knowledge acquired in different courses by carrying out interdisciplinary laboratory work and producing a technical report.

The final examination requires students to prepare a technical report on the design of a simple electronic system, starting from the specifications provided within the course associated with the final examination.
Students must submit an online application through the dedicated procedure available in their personal page on the Teaching Portal, under the section "Graduation and Final Examination", in compliance with the deadlines published in the Student Guide – Thematic Calendar section.

Students normally have three weeks to complete the assigned task: they are expected to design the required circuit using a hardware description language, simulate it, and validate it with appropriate test vectors. At the end of the three weeks, they must submit their Final Project on the Teaching Portal, in the course's dedicated pages, where they justify their design choices, describe the validation tests, and provide the project code.
The workload for preparing the Final Project is about 75 hours. No public defence is required. The Final Project may be written in English.

The final grade is determined by the Graduation Examining Committee, which evaluates the overall average grade of the exams on a scale of 110 after having subtracted the 16 worst credits. This number is proportionally reduced if some of the exams have been validated without a grade (pass-or-fail exams) or in the event of credit transfer, since only the exams taken at Politecnico are taken into consideration for this calculation.

To this average, the committee may normally add up to 5 additional points, based on:

- the number of years it took the student to complete his/her studies;
- the evaluation of the educational path partially or totally in English;
- other information about the student's course of study (for instance, the number of exams passed with honours, experience abroad, extracurricular activities etc.).

Students enrolled at Politecnico for the first time starting from a.y. 2022/2023 (and following aa.yy.) who pass their first-year courses and the core courses offered in Year 2 (Mathematical Analysis 2 and Physics 2) by the end of the examination session which immediately follows the semester of first course attendance will get a bonus (0.5 points for each exam) that will be added to the final grade, up to a maximum of 4 points.

Honours (*cum laude)* may be awarded upon achieving a score of 110,51, at the discretion of the committee and with a qualified majority, i.e., at least 2/3 of the committee members.

The Committees must express their evaluations by considering the student's entire academic records, assessing their cultural maturity and ability to develop independent intellectual work.

More Information and Deadlines:

- Student Regulations
- Student Guide

Diploma Supplement:
In compliance with article 11, paragraph 8, of Ministerial Decrees No. 509/1999 and 270/2004. Politecnico di Torino issues the Diploma Supplement, a document that can be attached to a higher education qualification. It is designed to improve the transparency of international qualifications, as it provides the description of the curriculum successfully completed by the student. This certificate follows the European model developed by the European Commission, the Council of Europe and UNESCO – CEPES: it is issued in two languages (Italian-English) and it is composed of approximately 10 pages.

More information at: https://www.polito.it/en/education/applying-studying-graduating/academic-experience/certificates-and-other-documents

Art. 6 - References

6.1 Student Regulations

The Student Regulations define the rights and responsibilities of students and set out the administrative and disciplinary rules that all students enrolled in a degree programme or in a single learning activity at Politecnico must abide by.

6.2 Other Regulations

Particular aspects of students' academic progress are governed by specific Regulations or Calls for Applications published on its website.
In particular:

- The Tuition Fee Regulations specify the annual tuition fees that students must pay. The procedure for requesting a tuition fee reduction is explained in a dedicated guide.
- The University Regulations on Funds for Student Mobility Abroad outline the principles and rules for awarding and disbursing mobility grants. Standard procedures apply to all types of mobility programmes with unified Calls for Applications published twice a year at https://www.polito.it/en/education/applying-studying-graduating/studying-abroad
- The Code of Ethical Conduct also applies to students.