



**Politecnico
di Torino**

ACADEMIC REGULATIONS
Bachelor's degree programme
in
BIOMEDICAL ENGINEERING

Department of Mechanical and Aerospace Engineering
Collegio di Ingegneria Biomedica

Academic Year 2026/2027

*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.*

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Art. 1 - Specific learning objectives and career prospects

1.1 Specific Learning Objectives

The Biomedical Engineer collaborates with healthcare professionals to provide patients with increasingly effective and safe treatments and contributes to the development and management of devices for vulnerable individuals, such as the elderly and people with disabilities.

To enable the performance of these activities, the degree programme provides knowledge of the physiological systems that make up the human body and the main cellular mechanisms, allowing graduates to acquire the ability to interact with healthcare personnel. It also provides foundational competencies in both industrial engineering (mechanics, materials science, thermodynamics) and information engineering (electronics and signal analysis). The training is completed with courses specific to the field of biomedical engineering, covering: the principles of operation and regulations of the most common medical devices; the characteristics of biomaterials; the basics of tissue engineering; ergonomics; and biomechanics.

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 Biomedical Engineer in a Medical Device Design and/or Production Company	Functions: This professional is an engineer who, within a company, collaborates in the design and production of electromedical equipment intended for diagnosis, therapy, or monitoring, as well as prostheses, orthoses, or medical software. The main tasks performed include drafting the technical documentation required for certification, writing the user manual, testing the produced devices, managing suppliers (e.g., for the development of printed circuits, molds, mechanical components, etc.), and, more generally, supporting other professional figures with greater experience in the role. Competencies: • Applying methods for signal analysis, electronic circuit design techniques, and mechanical component design methods; • Collaborating in the selection of materials for device manufacturing; • Applying European regulations related to medical devices; • Using methods for designing and constructing biomechanical systems, techniques for acquiring biopotentials, and methods for designing and testing medical software. Potential employers: Companies involved in the design and/or production of electromedical devices, prostheses and orthoses, or medical software.
Biomedical Equipment Technician	Functions: This professional is an engineer who, within healthcare facilities, manages the maintenance and testing of medical technologies. The main tasks include managing the technological inventory of equipment, performing preventive maintenance and overseeing corrective maintenance, assisting in the proper use of biomedical technologies, and conducting acceptance testing at the end of the acquisition process. Competencies: • Supporting users to ensure correct device usage through knowledge of principles of operation; • Applying knowledge of the technical characteristics and operating principles of devices to manage their functionality; • Applying European regulations regarding medical devices; • Applying national (CND) and international medical device classification systems to manage the technological inventory.

	Potential employers: Public and private healthcare facilities; companies providing services in clinical engineering.
Product Specialist	Functions: This professional operates in support of the commercial sector both before the sale, by ensuring the correct definition of product specifications, and after the sale, by providing assistance and/or training to clients. In particular, they may be responsible for writing user manuals, coordinating the preparation of product documentation, and interacting with potential clients to explain technical features or train them in the use of the product. Competencies: • Applying knowledge of the operating principles and technical characteristics of the device to support clients in product selection; • Assisting users to ensure the correct use of the device. Potential employers: Companies marketing electromedical equipment, prostheses and orthoses, or medical software.

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
3.1.7.3.0	Tecnici di apparati medicali e per la diagnostica medica

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

The curriculum is made up of some foundational courses (mathematics, physics, chemistry, and computer science) carried out during the first three semesters. In the second semester of the first year, there is a course on the fundamentals of biology, anatomy, and physiology.

During the second year, courses cover the basic engineering subjects in the industrial and information sectors. These courses provide skills in:

- a) the fundamentals of electronics necessary to analyse and design simple electronic circuits, including both theoretical knowledge and practical experience building circuit boards in the laboratory;
- b) the fundamental methodological tools for the description, analysis, and modelling of signals;
- c) the mechanical knowledge needed to characterize simple engineering systems, such as beams under static and fatigue loads, to solve engineering problems related to the mechanics of rigid-body systems, and to describe the main characteristics of mechanical power transmission systems, both theoretically and through laboratory experience;
- d) knowledge of material behaviour to guide material selection.

The third year completes the foundational engineering education with a course covering the main technologies for converting heat into mechanical energy and vice versa (engines and refrigerators) and for energy transfer in the form of heat. The course provides knowledge on how heat propagates in solids, liquids, and gases, or via electromagnetic waves, and enables students to perform preliminary calculations for the correct sizing of the most common and important types of heat exchangers.

During the third year, students also take biomedical engineering core courses covering the regulations (including safety aspects) and the operating principles of major medical devices (devices for biopotential measurement, instrumentation for medical image acquisition and processing, prostheses and aids, surgical instruments, operating room equipment, and active implantable devices), the basic principles of ergonomics, and the chemical-physical principles underlying biological systems, with particular reference to the molecular design of life, energy conversion and conservation, synthesis of biomolecules, and recent applications in clinical analysis and diagnostics. These topics are supported by classroom and/or laboratory exercises.

The program concludes with an internship, carried out at a healthcare facility or a biomedical company, which constitutes the basis for the final project.

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_coorte=2027&p_sdu=32&p_cds=479

The list of the Scientific Disciplinary Fields (Settori Scientifico Disciplinari) for each activity (specific subjects and complementary subjects) is available in Annex 1 to the present Regulations.

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 a written report (Final Project) in which the graduate describes the activities carried out during the internship. The Final Project is evaluated by the Supervisor, who will subsequently determine, together with the Graduation Committee, the final grade.

At the end of the internship, the student prepares the Final Project and submits it to the Supervisor. The workload for the preparation of the Final Project is approximately 75 hours, equivalent to 3 ECTS credits.

Students must submit the request online through a dedicated procedure available on their personal page of the Teaching Portal, under the section “Degree and Final Examination” respecting the deadlines for the relevant graduation session as published in the Student Guide – Thematic Calendar Section.

By the deadlines indicated in the Student Guide for the relevant graduation session, students must have passed all the exams in their Study Plan.

The final project may optionally 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 evaluation of the written paper;
- 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.).

Starting from 2022/23 cohort (students with first enrolment at Politecnico starting from a.y. 2022/2023):

You may get a 0.5 points bonus that will be added to your final examination score (final grade) for:

- each Year 1 exam that you will pass on time (excluding the English language exam);
- for each core exam offered in the first semester of Year 2 that you will pass on time.

You will get this bonus if you pass:

- your Year 1 exams delivered in first semester: by the end of the Winter examination session of your year of first enrolment (Year 1)
- your Year 1 exams delivered in second semester: by the end of the Summer examination session of your year of first enrolment (Year 1)
- your Year 2 core exams delivered in first semester: by the end of the Winter examination session of your second year of enrolment (Year 2)

This bonus (max 4 points) can be earned exclusively by the students who enrol for the first time in the university system (i.e. students who have never studied at any university before). Please note that forfeited students, withdrawn students, credit transfer students cannot get this bonus.

Please check the Student Guide to find out about the last examination session for passing your exams and getting the bonus.

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

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.

Annex 1 – Tabella delle Attività Formative

Attività		Ambito Disciplinare	Settore	SSD corrisp	cfu	
					min	max
Attività di base	Fisica e chimica	CHEM-06/A - Fondamenti chimici delle tecnologie PHYS-01/A - Fisica sperimentale delle interazioni fondamentali e applicazioni PHYS-03/A - Fisica sperimentale della materia e applicazioni PHYS-04/A - Fisica teorica della materia, modelli, metodi matematici e applicazioni		CHIM/07 FIS/01 FIS/01 - FIS/03 FIS/03	14	34
	Matematica, informatica e statistica	IINF-05/A - Sistemi di elaborazione delle informazioni MATH-02/B - Geometria MATH-03/A - Analisi matematica MATH-05/A - Analisi numerica		ING-INF/05 MAT/03 MAT/05 MAT/08	24	44
Attività caratterizzanti	Ingegneria biomedica	IBIO-01/A - Bioingegneria		ING-IND/34 - ING-INF/06	22	38
	Ingegneria dei materiali	IMAT-01/A - Scienza e tecnologia dei materiali		ING-IND/22	6	12
	Ingegneria elettrica	IET-01/A - Elettrotecnica		ING-IND/31	8	16
	Ingegneria meccanica	IIND-02/A - Meccanica applicata alle macchine IIND-03/A - Progettazione meccanica e costruzione di macchine IIND-03/B - Disegno e metodi dell'ingegneria industriale IIND-07/A - Fisica tecnica industriale		ING-IND/13 ING-IND/14 ING-IND/15 ING-IND/10	22	38
Attività affini	Attività formative affini o integrative	BIO-06/A - Fisiologia IIND-03/B - Disegno e metodi dell'ingegneria industriale IINF-01/A - Elettronica IINF-03/A - Telecomunicazioni		BIO/09 ING-IND/15 ING-INF/01 ING-INF/03	18	28
Altre attività	A scelta dello studente	-			12	12
	Per la conoscenza di almeno una lingua straniera	-			3	3
	Per la prova finale	-			3	3
	Abilità informatiche e telematiche	-			-	-
	Altre conoscenze utili per l'inserimento nel mondo del lavoro	-			-	-
	Tirocini formativi e di orientamento	-			8	8
	Ulteriori conoscenze linguistiche	-			-	-
	Per stages e tirocini presso imprese, enti pubblici o privati, ordini professionali	-			-	-