Bachelor's degree in Informatics Engineering + master's degree in Informatics Engineering. Sequential academic programme (PARS): Informatics Engineer

BARCELONA SCHOOL OF INFORMATICS (FIB)

The bachelor's degree in Informatics Engineering provides the knowledge needed to conceive, design, develop, maintain and manage computer systems, services, applications and architectures and to understand and apply relevant legislation. You will also become an expert in new methods and technologies in the field of ICTs. You can choose one of five majors:

Major in Computing
You will acquire the scientific and technical fundamentals that will enable you to design efficient solutions to computing challenges, particularly in artificial intelligence, bioinformatics and virtual reality.

Major in Computer Engineering
You will be trained in the design of computers and digital devices that integrate hardware, software and communications, such as supercomputers, mobile phones, mp3 players, medical equipment, robots and image processing systems.

Major in Software Engineering
You will learn to build reliable, efficient software systems that meet user and corporate requirements and to manage the people, resources and stages in a project, from the definition of the client's needs to the construction and deployment of a system.

Major in Information Systems
You will specialise in using information technologies to improve organisational processes in ways that enable the organisation to deploy its strategies and meet its aims, making it more efficient, innovative and competitive.

Major in Information Technologies
You will be trained in the design and installation of computer networks and the applications needed to satisfy the needs of organisations in keeping with security requirements.

MAJORS

- Computing
- Computer Engineering
- Software Engineering
- Information Systems
- Information Technologies

GENERAL DETAILS

Duration
4 academic years (bachelor's) + 1.5 academic years (master's). Students can take this specific pathway to earn a bachelor's degree and a master's degree in less time if the programme they are taking allows it.

Study load
330 ECTS credits (including the bachelor's thesis). One credit is equivalent to a study load of 25-30 hours.

Delivery
Face-to-face

Admission mark 2026-2027 academic year
11,422

Timetables

Mornings / Afternoons

Language of instruction

Check the language of instruction for each subject (and timetable) in the course sheet in the curriculum.

Information on language use in the classroom and students' language rights.

Fees and grants

Approximate fees per academic year: €1,061 (€1,800 for non-EU residents). Consult the public fees system based on income (grants and payment options).

Location

Barcelona School of Informatics (FIB)

ADMISSION

New intake places

40

Pre-enrolment code

31116

Admission mark 2026-2027 academic year

11,422. Admission mark

Weighting. University entrance examinations (PAU)

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Registration and enrolment

What are the requirements to enrol in a bachelor's degree course?

CFGS credit transfer

Consult the university studies search engine of the Universities Channel of the Generalitat de Catalunya

Legalisation of foreign documents

All documents issued in non-EU countries must be legalised and bear the corresponding apostille.

CURRICULUM

Subjects	ECTS credits	Type
FIRST SEMESTER		
Fundamentals of Mathematics	7.5	Compulsory
Introduction to Computers	7.5	Compulsory
Physics	7.5	Compulsory
Programming I	7.5	Compulsory
Education, Engineering and Technology	6	Optional
SECOND SEMESTER		
Computer Organisation	7.5	Compulsory
Mathematics I	7.5	Compulsory
Mathematics II	7.5	Compulsory
Programming II	7.5	Compulsory

THIRD SEMESTER

Subjects	ECTS credits	Type
Computer Interfacing	6	Compulsory
Data Structures and Algorithmics	6	Compulsory
Databases	6	Compulsory
Operating Systems	6	Compulsory
Probability and Statistics	6	Compulsory
FOURTH SEMESTER		
Business and Economic Environment	6	Compulsory
Computer Architecture	6	Compulsory
Computer Networks	6	Compulsory
Introduction to Software Engineering	6	Compulsory
Programming Projects	6	Compulsory
Leadership and Professional Development in Engineering	3	Optional
FIFTH SEMESTER		
Interaction and Interface Design	6	Compulsory
Parallelism	6	Compulsory
PC Architecture	6	Optional
Academic and Professional Speaking Skills in English	6	Optional
Academic Skills for Developing a Project in English	6	Optional
Advanced Programming Topics	6	Optional
Algorithmics	6	Compulsory
Applied Engineering Project	6	Optional
Architecture-Aware Programming	6	Optional
Artificial Intelligence	6	Compulsory
Computational Geometry	6	Optional
Computer Architecture II	6	Compulsory
Computer Network Technology	6	Compulsory
Computer Networks II	6	Compulsory
Computer Science Summer School I	1	Optional
Computer Science Summer School II	2	Optional
Computer Security	6	Compulsory
Computer Vision	6	Optional
Computing Summer School	6	Optional
Cryptography	6	Optional
Curve and Surface Design	6	Optional
Cybersecurity Management	6	Optional
Data Analysis and Information Use	6	Compulsory
Data and Image Compression	6	Optional
Data Mining	6	Optional

Subjects	ECTS credits	Type
Data Processing Centres	6	Optional
Data Processing Centres	6	Optional
Database Design	6	Compulsory
Design of Microcomputer-Based Systems	6	Compulsory
Digital Signal Processing	6	Optional
Distributed Applications	6	Optional
English Writing Skills for Engineering	6	Optional
Free Software and Social Development	6	Optional
Georgia Tech Seminar: "Introduction to Education Technology"	6	Optional
Graphics	6	Compulsory
Graphics Cards and Accelerators	6	Optional
Information System Concepts	6	Optional
Information System Design	6	Compulsory
Information Systems for Organisations	6	Compulsory
Information Transmission and Encoding	6	Optional
Internet Protocols	6	Compulsory
Logic in Informatics	6	Compulsory
Massive Information Search and Analysis	6	Optional
Massive Information Search and Analysis	6	Optional
Numerical Computation	6	Optional
Operating Systems for Distributed Applications	6	Optional
Operating Systems II	6	Compulsory
Operations Research	6	Optional
Operations Research	6	Optional
Physics of Memory Devices	6	Optional
Physics of Realistic Modelling and Animation	6	Optional
Privacy Technology, Policy and Law	6	Optional
Programming Languages	6	Compulsory
Quantum Computing and Cryptography	6	Optional
Requirements Engineering	6	Compulsory
Requirements Engineering	6	Compulsory
Research Methods for Human Factors and Hci	6	Optional
Robotics	6	Optional
Simulation	6	Optional
Social and Environmental Aspects of Informatics	6	Optional
Software Architecture	6	Compulsory
Software Project Management	6	Compulsory
Theory of Computation	6	Compulsory

Subjects	ECTS credits	Type
Viability of Business Projects	6	Optional
Video Games	6	Optional
Wireless and Mobile Communications	6	Optional
SIXTH SEMESTER		
Advanced Algorithmics	6	Optional
Advanced Operating System Topics	6	Optional
Advanced Operating System Topics	6	Optional
Advanced Operating Systems	6	Compulsory
Compilers	6	Optional
Computer Engineering Project	6	Compulsory
Concepts for Specialised Databases	6	Optional
Database Administration	6	Optional
Digital Strategy for Organisations	6	Optional
Distributed Intelligent Systems	6	Optional
Distributed Network Systems	6	Optional
E-Business	6	Compulsory
Information Systems Project	6	Compulsory
Information Technology Project	6	Compulsory
Internet Marketing	6	Optional
Knowledge Engineering and Distributed Intelligent Systems	6	Optional
Machine Learning	6	Optional
Multiprocessors	6	Compulsory
Operating Systems Administration	6	Compulsory
Parallel Programming and Architectures	6	Optional
Real-Time Systems	6	Optional
Software Engineering Project	6	Compulsory
VLSI	6	Optional
Web Applications and Services	6	Compulsory
SEVENTH SEMESTER		
Computer Science Summer School	4	Optional
Design of Online Communities	6	Optional
EIGHTH SEMESTER		
Computing and Intelligent Systems	6	Compulsory
Embedded and Ubiquitous Systems	6	Compulsory
High Performance Computer Architecture	6	Compulsory
Interactive Graphics Systems	6	Compulsory
Incorporating Know-How into the Decision Process	1.5	Optional
Sustainability, Economics and Social Engagement	1.5	Optional

Subjects	ECTS credits	Type
Techniques and Tools for Bioinformatics	3	Optional
The Efqm Model and Quality Management	1.5	Optional
Bachelor's Thesis	18	Compulsory
Bachelor's Thesis	18	Compulsory
Bachelor's Thesis	18	Compulsory
Bachelor's Thesis	18	Compulsory
Bachelor's Thesis	18	Compulsory
NINTH SEMESTER		
Development and Management of Information Systems	6	Compulsory
Internet, Security and Multimedia Content Distribution	6	Compulsory
Strategic Planning and IT Governance	4.5	Compulsory
Viability of Innovative Business Projects	4.5	Compulsory
Algorithms for VLSI	6	Optional
Assistive and Healthcare Technologies	4.5	Optional
Bioinformatics and Statistical Genetics	6	Optional
Cognitive Interaction with Robots	4.5	Optional
Computer Games	3	Optional
Data Mining Techniques	3	Optional
Digital Identity	3	Optional
Financing for Innovative Business Projects	1.5	Optional
Information Retrieval and Recommender Systems	6	Optional
Internet of Things	3	Optional
Machine Learning Systems in Production (Mlops)	6	Optional
Randomised Algorithms	6	Optional
Social and Complex Networks	6	Optional
Software Development for Geographic and Spatial Information	3	Optional
TENTH SEMESTER		
Data Visualisation	6	Optional
Master's Thesis	30	Project

PROFESSIONAL OPPORTUNITIES

Professional opportunities

Major in Computing

- Design of complex/critical computer systems: flight planning for airports, security systems for vehicles and facilities, etc.
- Design of human-machine interfaces for the devices of the future.
- Optimisation of industrial processes, robotics.
- Tool design for data prediction in banking, infrastructure planning in public administration and image processing in research centres.
- Programming of games and web applications in the informatics industry.
- Research in computing.

Major in Computer Engineering

- Processor and multiprocessor system design.
- Programming of high-performance systems, leveraging specific hardware.
- Implementation of embedded systems, portable systems, robots and computer interfaces with the real world.
- Programming of real-time computer systems.
- Companies manufacturing hardware acceleration, firmware and custom solutions.
- Research in supercomputing.

Major in Software Engineering

- Software services and systems development.
- Management of computer projects.
- Software analysis, software architecture and requirements engineering.
- Database design and administration.
- Evaluation of software engineering processes and design and implementation of management and quality improvement plans in organisations.

Major in Information Systems

- Management of information systems in organisations.
- Informatics, software implementation, database systems.
- Management of e-commerce and planning and control of e-business.
- Information systems consulting and expert advice on business information systems, decision making and business intelligence. Business analysis.
- Auditing of information systems to ensure compliance with norms and standards.
- User support services and management of suppliers.

Major in Information Technologies

- Computer network administration.
- ICTs in companies and public administrations.
- Computer systems administration.
- Design, selection and implementation of computer and communications infrastructure.
- Data and access security in organisations.
- Implementation of new communications systems and protocols in the informatics sector.

ACADEMIC ORGANISATION

Academic calendar

General academic calendar for bachelor's, master's and doctoral degrees

Academic regulations

Academic regulations for bachelor's degree courses at the Universitat Politècnica de Catalunya (UPC).

Language certification and credit recognition

Queries about language courses and certification