

Bachelor's degree in Informatics Engineering

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 years

Study load

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

Delivery

Face-to-face

Timetables

Mornings / Afternoons

Language of instruction

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

Information on [language use in the classroom and students' language rights](#).

Fees and grants

Approximate fees per academic year: €1,107 (€2,553 for non-EU residents). [Consult the public fees system based on income \(grants and payment options\)](#).

Location

[Barcelona School of Informatics \(FIB\)](#)

Official degree

[Recorded in the Ministry of Education's degree register](#)

ADMISSION

Places

360

Registration and enrolment

[What are the requirements to enrol in a bachelor's degree course?](#)

Legalisation of foreign documents

All documents issued in non-EU countries must be [legalised and bear the corresponding apostille](#).

DOUBLE-DEGREE AGREEMENTS

Within the framework of the courses offered by the Interdisciplinary Higher Education Centre (CFIS)

You can also take an interdisciplinary double degree coordinated by the CFIS at two UPC schools.

Further information on the [web del CFIS](#)

PROFESSIONAL OPPORTUNITIES

Professional opportunities

- Management, innovation and supervision of informatics in all kinds of organisations.
- Software development, advice, consulting and technological support in ICT companies and others.
- Teaching and research.
- Management posts such as information systems manager, development manager, production and commercialisation manager, and head of informatics.
- Technical or middle management posts such as project supervisor; functional analyst; head of department; consultant; database architect; quality, methodology or organisational officer; and systems architect.
- Technical posts such as database administrator, network and systems officer, and information systems security officer.

ORGANISATION: ACADEMIC CALENDAR AND REGULATIONS

Academic calendar

[General academic calendar for bachelor's, master's and doctoral degrees courses](#)

Academic regulations

[Academic regulations for bachelor's degree courses at the UPC](#)

Language certification and credit recognition

Queries about [language courses and certification](#)

Barcelona School of Informatics (FIB)

This bachelor's degree is also taught at

CURRICULUM

Subjects	ECTS credits	Type
FIRST SEMESTER		
Algebraic Geometry	6	Optional
Fundamentals of Mathematics	7.5	Compulsory
Introduction to Computers	7.5	Compulsory
Physics	7.5	Compulsory
Programming I	7.5	Compulsory
SECOND SEMESTER		
Computer Organization	7.5	Compulsory
Mathematics I	7.5	Compulsory
Mathematics II	7.5	Compulsory
Programming II	7.5	Compulsory
THIRD SEMESTER		
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
Education, Engineering and Technology	6	Optional
Introduction to Software Engineering	6	Compulsory
Leadership and Professional Development in Engineering	3	Optional
Programming Projects	6	Compulsory
FIFTH SEMESTER		
PC Architecture	6	Optional
Academic and Professional Speaking Skills	6	Optional
Academic Skills for Developing a Project	6	Optional
Advanced Programming Concepts	6	Optional
Algorithmics	6	Compulsory
Applied Engineering Project	6	Optional
Architecture-Aware Programming	6	Optional
Artificial Intelligence	6	Compulsory

Subjects	ECTS credits	Type
Computational Geometry	6	Optional
Computer Architecture II	6	Compulsory
Computer Network Technology	6	Compulsory
Computer Networks II	6	Compulsory
Computer Science Summer School 1	1	Optional
Computer Science Summer School 2	2	Optional
Computer Security	6	Compulsory
Computer Vision	6	Optional
Cryptography	6	Optional
Curve and Surface Design	6	Optional
Cybersecurity Management	6	Optional
Data Analysis and Information Exploitation	6	Compulsory
Data and Image Compression	6	Optional
Data Mining	6	Optional
Data Processing Centers	6	Optional
Data Processing Centers	6	Optional
Database Design	6	Compulsory
Design of Microcomputer-Based Systems	6	Compulsory
Digital Signal Processing	6	Optional
Distributed Applications	6	Optional
Free Software and Social Development	6	Optional
Graphic Cards and Accelerators	6	Optional
Graphics	6	Compulsory
Information Systems Concepts	6	Optional
Information Systems Design	6	Compulsory
Information Systems for Organisations	6	Compulsory
Information Transmission and Encoding	6	Optional
Interaction and Interface Design	6	Compulsory
Internet Protocols	6	Compulsory
Logics in Information Technology	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
Parallelism	6	Compulsory

Subjects	ECTS credits	Type
Physics of Memory Devices	6	Optional
Physics of Realistic Modelling and Animation	6	Optional
Programming Languages	6	Compulsory
Quantum Computing and Cryptography	6	Optional
Requirements Engineering	6	Compulsory
Requirements Engineering	6	Compulsory
Robotics	6	Optional
Simulation	6	Optional
Social and Environmental Issues of Information Technologies	6	Optional
Software Architecture	6	Compulsory
Software Project Management	6	Compulsory
Theory of Computation	6	Compulsory
Viability of Business Projects	6	Optional
Videogames	6	Optional
Wireless and Mobile Communications	6	Optional
Writing Skills for Engineering	6	Optional
SIXTH SEMESTER		
Advanced Algorithmics	6	Optional
Advanced Concepts on Operating Systems	6	Optional
Advanced Concepts on Operating Systems	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
Knowledge Engineering and Distributed Intelligent Systems	6	Optional
Machine Learning	6	Optional
Marketing on Internet	6	Optional
Multiprocessors	6	Compulsory
Operating Systems Administration	6	Compulsory
Parallel Programming and Architectures	6	Optional
Real-Time Systems	6	Optional

Subjects	ECTS credits	Type
Software Engineering Project	6	Compulsory
VLSI	6	Optional
Web Applications and Services	6	Compulsory
SEVENTH SEMESTER		
Computing Summer School	4	Optional
Design of Online Communities	6	Optional
Ethics in Science and Engineering	6	Optional
EIGHTH SEMESTER		
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