

Bachelor of Software Engineering (BISOFT)

BECOME THE PROFESSIONAL WHO LEADS THE DEVELOPMENT OF SECURE, INNOVATIVE, AND SUSTAINABLE TECHNOLOGICAL SOLUTIONS

The **BACHELOR OF SOFTWARE ENGINEERING** at **UCENFOTEC University** trains professionals capable of designing, developing, validating, and implementing robust, secure, and scalable software solutions, aligned with international standards and the main trends in the sector such as artificial intelligence, secure development, blockchain, and cloud computing.

PROGRAM EDUCATIONAL OBJECTIVES

The Bachelor of Software Engineering (BISOFT) at CENFOTEC University has carefully formulated its Program Educational Objectives (PEOs) to accurately reflect the expected career trajectories and professional accomplishments of our alumni within three to five years after graduation. These objectives were developed by recognizing the dynamic and rapidly evolving nature of the global software industry, and are continuously refined in close consultation with our primary constituencies—namely employers, active alumni, and faculty members. This collaborative approach ensures that our graduates are not only equipped to meet current market demands but are also prepared to lead future technological advancements.

Within 3 to 5 years of graduation, alumni of the Bachelor of Software Engineering program will:

- ◆ **PEO 1:** Develop software components using cutting-edge programming languages and robust frameworks to build innovative technological solutions in the business environment.
- ◆ **PEO 2:** Lead the elicitation and specification of software requirements and the strategic management of stakeholders in corporate projects, ensuring that the system maximizes business value.
- ◆ **PEO 3:** Design modular, robust, and scalable software architectures under international standards, integrating advanced human-computer interaction principles to address critical industry needs.

- ◆ **PEO 4:** Direct comprehensive quality assurance (QA), verification, and validation systems and audits, implementing global regulatory frameworks to elevate the operational maturity of the software life cycle.
- ◆ **PEO 5:** Coordinate multidisciplinary engineering teams under agile frameworks, effectively managing technical, budgetary, and human resources for the continuous delivery of software products.
- ◆ **PEO 6:** Oversee organizational information security through the design of secure development strategies, rigorous code evaluation, and proactive mitigation of global cybersecurity threats.
- ◆ **PEO 7:** Apply mathematical models, statistical analysis, and computer science fundamentals for algorithmic optimization and the development of technological innovation in the productive sector.
- ◆ **PEO 8:** Exercise professional practice with strict adherence to software engineering codes of ethics and sustainability, assertively communicating technical solutions and leading with responsibility in global environments.

STUDENT OUTCOMES

The BISOFT program relies on a systematic, evidence-based curricular structure where the attainment of the Student Outcomes (what students can do at graduation) serves as the indispensable foundation for graduates to achieve the Program Educational Objectives (PEOs) 3 to 5 years into their professional careers. Based on the synthesis of the operational competencies described in the professional profile, the following 7 contextualized Student Outcomes (SOs) are formulated:

A. SO 1 (Complex Problem Solving):

Ability to identify, formulate, and solve complex software engineering problems by applying engineering, computer science, and mathematical principles.

B. SO 2 (Software Engineering Design):

Ability to apply engineering design to produce software solutions that meet specific needs, incorporating principles of secure software development and considering public health, safety, and welfare, as well as global, cultural, socioeconomic, and environmental factors.

C. SO 3 (Effective and Multilingual Communication):

Ability to communicate effectively, both orally and in writing, with a variety of technical and business audiences.

D. SO 4 (Ethical and Context Judgment):

Ability to identify ethical and professional responsibilities in software engineering solutions and make informed judgments that consider their impact in environmental and socioeconomic contexts.

E. SO 5 (Teamwork and Agile Management):

Ability to integrate (perform) effectively in software development teams that work in collaborative and inclusive environments, exercising leadership and allowing defined objectives to be achieved.

F. SO 6 (Software Experimentation and Quality):

Ability to develop and conduct an experimentation process by analyzing and interpreting data and using software engineering expert judgment to draw conclusions.

G. SO 7 (Continuous and Self-Taught Learning):

Ability to build and develop new knowledge in software engineering, using autonomous, active, and experiential learning strategies.

WHAT DOES A SOFTWARE ENGINEERING PROFESSIONAL DO?



Designs, builds, tests, maintains, and improves software systems that solve real problems with quality, efficiency, and security.



Participates in all stages of the software development life cycle: requirements analysis, modeling, development, validation, deployment, and maintenance.



Leads technological innovation processes in collaborative and multidisciplinary environments.



Develops solutions aligned with the needs of the user, the company, society, and the environment

WHAT MAKES OUR PROGRAM UNIQUE?

- ◆ Engineering approach that structures the entire training process from theory to the implementation of real solutions.
- ◆ Pedagogical approach based on technical, soft, and professional competencies.
- ◆ Comprehensive training in programming fundamentals, architecture, quality, security, and user experience.
- ◆ Inclusion of emerging technologies and latest generation tools.
- ◆ Possibility of choosing strategic elective courses such as applied AI, blockchain, and test automation.
- ◆ Direct articulation with the industry through internships, business challenges, and collaborative projects.

WHY CHOOSE THIS BACHELOR'S?



Engineering approach that prepares you to master all stages of software development and adapt to any technological environment.



Accredited by SINAES and aligned with international standards.



XperienEd™ Methodology, UCENFOTEC's own: active, experiential, and practical.



Integrating projects that replace traditional exams, from the first year.



Updated curriculum with emphasis on mobile development, cloud, AI, blockchain, and quantum computing.



Faculty active in the industry with international experience.



Transversal development of soft skills (Power Skills): leadership, ethics, communication, and innovation.



University specialized in technology, connected with the national and international productive sector.

THE SKILLS THAT WILL DIFFERENTIATE YOU IN THE JOB MARKET

- ◆ Software design and development with an **engineering approach**, critical thinking, and user orientation.
- ◆ Practical mastery of programming languages and modern development environments.
- ◆ Knowledge in validation, automated testing, and quality control.
- ◆ Ability to integrate into **agile, multidisciplinary, and collaborative teams**.
- ◆ Technical leadership, professional responsibility, and effective communication.
- ◆ Adaptability to emerging technologies such as AI, blockchain, cloud, quantum computing, and secure development.
- ◆ Integral vision of the software creation process as a **technological and innovative artifact**.

WHERE CAN YOU WORK AND IN WHAT ROLES?

Our graduates work in technological, business, and innovation sectors, in roles such as:

Software developer

Director or manager of software engineering projects

Testing and quality assurance specialist (QA)

IT auditor

Security or digital forensics specialist

Technology and software consultant

Information systems designer and developer

Leader of remote or multidisciplinary teams

Video game developer

Software maintenance manager

PROGRAM INFORMATION

	Courses:	43
	Credits:	141
	Duration:	3 years (9 quarters)
	Modality:	Live Virtual

JOB OUTLOOK AND EMPLOYABILITY

JOB OUTLOOK		AVERAGE INCOME	
	Employment 97%		Average time to employment 2 MONTHS
	Unemployment 3%		
			Monthly ₺987,524
			Annual: ₺11,850,288
WORK SECTORS		JOB SATISFACTION	
	State 16.2%		Private 83.8%
			4.47 / 5

Information Source: <https://radiografia.conare.ac.cr/radiografia-laboral-iv-2022/infografias/computacion/>

Our graduates are not technology users: they create it, transform it, and lead its evolution.

WHAT WILL YOU LEARN AND DEVELOP?

Professional Development, 9 courses	21%
Mathematics and Basic Sciences, 10 courses	23%
Computer Fundamentals, 7 courses	16%
Requirements Analysis and Specification, 2 courses	5%
Software Design and Modeling, 8 courses	19%
Software Quality, Verification, and Validation, 2 courses	5%
Software Security, 2 courses	5%
Software Processes, 3 courses	7%

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CENFOTEC University is authorized as a private university by the National Council of Private Higher Education (CONESUP) in Costa Rica. Additionally, the Information Technology Training Center (CENFOTEC) coexists as a Para-university Higher Education Institution authorized by the Higher Council of Education (CSE). CENFOTEC University is also an associate member of the National Accreditation System for Higher Education of Costa Rica (SINAES).

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