



**UNIVERSITÉ
FRANÇAISE
D'ÉGYPTÉ**



BACHELOR OF EMBEDDED SYSTEMS AND ROBOTICS ENGINEERING

Overview

The Bachelor of Embedded Systems and Robotics Engineering is a 4-year Egyptian engineering degree taught in English. Students have the opportunity to pursue a French master's degree in just one additional year through our French partner universities. The program allows students to gain international hands-on experience, with various opportunities of knowledge transfer and exposure. It provides an in-depth understanding of embedded systems and robotics development, emphasizing software-hardware integration, system design, verification, and management.

WHY STUDY EMBEDDED SYSTEMS AND ROBOTICS ENGINEERING?

- Earn an Engineering bachelor's degree in just four years.
- Only one additional year is required to earn a master's degree from one of our partner universities in France, which includes a hands-on internship with a monthly salary at a French company. UFE students enjoy the same status as French nationals.
- Qualify for PhD programs worldwide upon completing the French master's degree.
- Hands-on experience and summer internships throughout the studying years, bridging the gap between academic knowledge and real-world skills.
- Engage with visiting professors from our French partner universities, cultivating a vibrant environment for knowledge exchange.
- Benefit from 1-2 semester(s) exchange and summer internship programs with our French partner universities.



Program duration	4 years	European Credits (ECTS)	240
French Partner Universities	University of Haute Alsace, Technological University of Compiègne, Gustave Eiffel University, EFREI Panthéon-Assas University Paris II, CY Cergy Paris University, and CESI School of Engineering		
Faculty within UFE	Engineering and Architecture		

POSSIBLE CAREER PATHS:

-Robotics Engineer
-Embedded Systems Engineer
-Human Computer Interaction Engineer

-Robotic / System QA Engineer
-Embedded Software Engineer
-System Design Engineer

PROGRAM CONTENTS:

SEMESTER 1

- Mathematics 1
- Physical Mechanics
- Waves and Electromagnetism
- Introduction to Programming
- Eco design
- French Language
- English Language

SEMESTER 2

- Mathematics 2
- Chemistry
- Geometrical Optics
- Logic Design
- Professional Project (Summer Internship)
- Languages Fr & En
- Elective 1

SEMESTER 3

- Technical Drawing
- Introduction to Applied Mathematics
- Project 1 Languages Fr & En
- Elective 2
- Software Engineering
- Object-oriented Programming

SEMESTER 4

- Statistics and Probabilities
- Structure and Physical Properties of Materials
- Thermodynamics 1
- Project 2
- Elective 5
- Algorithms and Data Structures
- Database Systems

SEMESTER 5

- Advanced Statistics and Probabilities
- Operating Systems
- Embedded Systems
- Computer Automatic Control
- Languages Fr / En
- Elective 8
 - Computer Networks
 - Communication Systems
- Elective 9
 - Project Management
 - Marketing Strategies
 - Monitoring and Quality Control Systems

SEMESTER 6

- Digital Signal Processing
- Computer Architecture and Organization
- Cloud Computing & IoT
- Sensors and Instrumentation
- Professional Project (Summer Internship)
- Languages Fr / En
- Elective 10
 - Optimization Techniques
 - Computer Simulation and Modeling
 - Measurement Techniques

SEMESTER 7

- Computer Graphics
- Real-time Embedded Systems Design
- Robot Mapping and Localization
- Robot Kinematics and Dynamics
- Graduation Project 1
- Elective 11
 - Planning Techniques for Robotics
 - Mobile Robot Development
 - Intelligent Machines

SEMESTER 8

- Computer Vision
- Cognitive Robotics
- Human Robot Interaction
- Graduation Project 2
- Legislation
- Elective 12
 - Robotics Process Automation
 - Mixed and Augmented Reality
 - Decision Making under Uncertainty

