Faculty: Sciences

Engineer's Degree in: Artificial Intelligence

Presentation and objective of the specialty

❖ The objective of the Computer Science Engineer training aims to offer future engineers fundamental notions of computer systems and their applications in different fields. It trains engineering executives capable of leading a project in this direction. Their scope covers the design, development and operation of IT infrastructures.

❖ The training offers a broad spectrum with comprehensive teaching units offering students attracted by professionalization and research to acquire the tools allowing them to evolve in their profession, in an industrial or academic environment, and to be capable of transmitting their knowledge within businesses or in the scientific community.

Admission requirements:

- The preferences expressed by the students.
- The series of obtained results.
- The reception capacities of educational institutions.

Career Prospects/Professions:

❖ The industrial sector such as SONATRACH, SONELGAZ, Algérie Telecom, telephone operators, etc.

❖ The rapidly developing subcontracting sector.

❖ Entrepreneurship, particularly within the framework of national employment assistance programs for young graduates.

❖ Creation of innovative ICT companies (startups).

Organization of Studies and Official Duration of the Program:

Program Overview:

Semester 1:

- Algorithms and Data Structures 1
- Machine Structure
- Introduction to Operating Systems 1
- Mathematical Analysis 1
- Algebra 1
- Fundamental Electronics
- Written Expression Techniques and Office Tools

Semester 2:

- Algorithms and Data Structures 2
- Computer Architecture
- Mathematical Analysis 2
- Algebra 2
- Mathematical Logic
- Probability and Statistics 1
- Oral Expression Techniques

Semester 3:

- Algorithms and Data Structures 3
- Object-Oriented Programming 1
- Introduction to Information Systems
- Mathematical Analysis 3
- Algebra 3
- Probability and Statistics 2
- Entrepreneurship

Semester 4:

- Object-Oriented Programming 2
- Introduction to Operating Systems 2
- Introduction to Computer Networks
- Introduction to Databases
- Language Theory
- Graph Theory
- Computer Ethics

Semester 5:

- Database Architecture and Administration
- Compilation
- Linear and Dynamic Programming
- Numerical Analysis 1
- Foundations of AI
- Software Engineering
- Mobile Development
- Human-Computer Interaction
- Video Game Design

Training Canvas:

Introduction to Computer Science and Programming
Mathematics for AI (Linear Algebra, Calculus, Probability, and Statistics.
Data Structures and Algorithms
Machine Learning (ML)
Deep Learning
Natural Language Processing (NLP)
Computer Vision
Reinforcement Learning

Advanced training modules:

AI Ethics and Fairness
AI in Autonomous Systems
AI in Healthcare
AI Frameworks and Libraries
Big Data and Cloud Computing
Model Deployment and Optimization
Hands-on projects applying AI techniques to real-world problems.
Research opportunities to advance AI knowledge or solve complex problems.
Case studies and applications of AI in sectors like finance, healthcare, retail, and more.

Admission Information:

During the training period, the student will be assessed based on the following criteria:

- The current application of Articles 171 and 1023.

- Continuous assessment during tutorials, including quizzes, active participation, attendance, and presentations.
- Final exam.

Language of instruction:

French and English

Training framework:

The tables provided in the previous section "Program Overview"

Coordinator of the Program:
Dr. Nadia Zerguine

Contact: nadia.zerguine@univ-setif.dz

Semester 6:

- Advanced Networks
- Operating Systems: Synchronization and Communication
- Project Management
- Web Programming
- Numerical Analysis 2
- Introduction to Cybersecurity
- AI Ethics

Semester 7:

- Knowledge Representation and Reasoning
- High-Performance Computing
- Machine Learning
- Modeling and Simulation
- Business Intelligence
- Operations Research
- Technical Writing

Semester 8:

- Natural Language Processing
- Deep Learning
- Data Security
- Image Analysis and Processing
- Distributed Computing Technologies
- Big Data Processing
- Multidisciplinary Project

Semester 9:

- Data Visualization
- Computer Vision
- Generative AI
- Bio-Inspired Methods
- Blockchain Architectures and Technologies
- Information Retrieval
- Seminar & Workshops

Semester 10:

- Research Topic or Internship in a Company, culminating in a Thesis and Defense
- Topics must be assigned at the beginning of the year (October)

Curriculum Highlights:

The preparatory cycle aims to equip the future Engineer with:

- Solid knowledge in engineering sciences,
- Basic skills in computer science,
- Proficiency in oral and written communication,
- Understanding of the business world.

The expected career opportunities, whether at the regional, national, or even international level, are enormous. In this context, and by way of example, we can mention:

- The industrial sector, including companies such as SONATRACH, SONELGAZ, Algérie Telecom, telephone operators, etc.
- The rapidly growing subcontracting sector.
- Entrepreneurship, particularly through national programs supporting the employment of young graduates.
- The creation of innovative ICT companies (startups).