

People's Democratic Republic of Algeria Ministry of Higher Education and Scientific Research Sétif 1 University – Ferhat Abbas

### **Faculty: Sciences**

# Master's Degree in Networking and Distributed Systems

#### Presentation and Objectives of the Specialization: Key Strengths of the Curriculum:

The Master in Networks and Distributed Systems enables students to acquire the necessary skills for implementing and maintaining computer applications related to the operation of multiple interconnected computer networks that share data and collaborate to provide services. Furthermore, it aims to deepen their knowledge of emerging technologies in the field, such as wired networks, wireless networks, and cloud computing—a broad domain that has significantly influenced the worlds of industry, education, healthcare, and our daily lives.

This Master's program covers both theoretical and practical aspects of the subject through interactive exercises and research-oriented challenges.

#### The main objectives of the program are:

- To train highly qualified specialists in networks and distributed systems.
- To develop and manage various aspects of information transfer and applications involving network programming.
- To promote professionalism, including entrepreneurship and English proficiency.

#### Admission Requirements:

- Hold a Bachelor's degree in Computer Science.

## **Study Organization and Official Program Duration**

#### **Program Overview**

#### The Master's in Distributed Systems and

**Networks** is structured over four semesters (two academic years) and combines theoretical foundations with practical expertise to prepare students for careers in network engineering, distributed systems, and emerging technologies.

#### Semester 1:

- BDR: Distributed Databases
- RSA: Autonomous Networks and Systems
- AAC: Advanced Algorithms and Complexity
- SR: Distributed Systems
- PWA: Advanced Web Programming
- ML: Machine Learning
- ANG1: English 1
- CDT: Corruption and Work Ethics

The skills acquired through this program enable graduates to:

- Design, implement, and manage computer networks and distributed systems.
- Develop, maintain, and program distributed systems, servers, and services.
- Build and manage communication networks, services, and cloud infrastructures.
- Administer IT systems effectively.
- Monitor and manage data access securely.
- Simulate real-world computing problems.
- Secure information systems and computer networks.
- Understand and control network operations across various environments.
- Provide organizations with expert advice and solutions for network and distributed system needs.
- Pursue further academic studies and compete for admission to doctoral programs.

#### Admission Information:

In accordance with Articles 171 and 1023 of the relevant decrees:

- Competencies and knowledge are assessed every six months through continuous assessment and a final exam.
- Progression from the first to the second year is automatic upon successful completion of the first two semesters of the training program.
- Student evaluation is based, according to the training program, on lectures, practical work, tutorials, and internships.

#### **Core Modules of the Program:**

- BDR: Distributed Databases
- RSA: Autonomous Networks and Systems
- AAC: Advanced Algorithms and Complexity
- SR: Distributed Systems
- PWA: Advanced Web Programming
- ML: Machine Learning
- ANG1: English 1
- CDT: Corruption and Work Ethics
- ACS: Client/Server Administration
- AR: Distributed Algorithms
- RA: Advanced Networks
- RM: Mobile Networks
- ANG2: English 2
- EL: E-learning

Semester 2:	Advanced Modules of the Program:
<ul> <li>ACS: Client/Server Administration</li> <li>AR: Distributed Algorithms</li> <li>RA: Advanced Networks</li> <li>RM: Mobile Networks</li> <li>EPS: System Performance Evaluation</li> <li>DL: Deep Learning</li> <li>ANG2: English 2</li> <li>EL: E-learning</li> </ul>	<ul> <li>EPS: System Performance Evaluation</li> <li>DL: Deep Learning</li> <li>APR: Development of Parallel and Distributed Applications</li> <li>TOR: Network Optimization Techniques</li> <li>SRE: Network Security</li> <li>P2PB: P2P and Blockchain</li> <li>SCC: SDN and Cloud Computing</li> <li>CPD: Parallel and Distributed Computing</li> <li>PIS: Specialized Computer Programming</li> <li>MR: Research Methodology</li> </ul>
<ul> <li>APR: Development of Parallel and Distributed Applications</li> <li>TOR: Network Optimization Techniques</li> <li>SRE: Network Security</li> <li>P2PB: P2P and Blockchain</li> <li>SCC: SDN and Cloud Computing</li> <li>CPD: Parallel and Distributed Computing</li> <li>PIS: Specialized Programming</li> <li>MR: Research Methodology</li> </ul> Semester 4: <ul> <li>Final Year Project (Internship in a Company)</li> </ul>	Language of Instruction: French and English Training Framework: The tables provided in the previous section titled "Program Overview" outline the curriculum structure.

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