*Kurdistan Region - Iraq*
*Cihan University –Sulaymaniyah*
*Collage of Science*
*Department of Computer Science*



إقليم كوردستان – العراق
جامعة جيهان – السليمانية
كلية العلوم
قسم علوم الحاسوب

# Program Curriculum (2023-2024)

Bachelor's level -Honors Bachelor Degree in Computer Science

**Inspired by Bologna Process**

**Collage of Science**
**Department of computer science**
**Cihan University Sulaimaniya**

# Network Administration (CUE31034)

## 1. Information on the Programme

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|---|---|
| *1.1. Higher Education Institution* | *Cihan University Sulaimaniya* |
| **1.2. College** | *Science* |
| **1.3. Department** | *Computer Science* |
| **1.4. Field of Study** | ***Network Administration*** |
| **1.5. Cycle of Study[1]** | *1* |
| **1.6. Specialization/ Study Programme** | *Computer Science* |
| **1.7. Form of Education** | *Full Time* |

## 2. Information on the Discipline

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|---|---|
| *2.1. Discipline Name* | *Computer Networking administration* |
| **2.2. Code** | *CUE31034* |
| **2.3. Language:** | *English* |
| **2.4. (Theory) Lecturer**<br><br>**E-mail:**<br><br>**Tel:**<br><br>**Webpage, Google Classroom** | *Assistant Professor Dr.Lway Faisal Abdulrazak*<br><br>*lway.faisal@sulicihan.edu.krd*<br><br>*009647700616304*<br><br>*https://uni.sulicihan.edu.krd/qa/profile.php?id=64* |
| **2.5. Practical/Seminar/ Laboratory/ Project Lecturer**<br><br>**e-mail:**<br><br>**Tel:**<br><br>**Webpage, Google Classroom** | *Assistant Professor Dr.Lway Faisal Abdulrazak*<br><br>*lway.faisal@sulicihan.edu.krd*<br><br>*009647700616304*<br><br>*https://uni.sulicihan.edu.krd/qa/profile.php?id=64* |

## 3. Total estimated time (Teaching Hours per Semester)

| Total Contact Hours: | 52 |
|---|---|
| Total Self Study Hours: | 83 |
| Total No. Hours: | 135 |
| ECTS: | 5.00 |

| No. of Weeks | Contact Hours | | | | | Self-Study | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Theoretical | Practical | Lab. | Project | Visit | Quiz | Reading | Assignment | Report | Midterm Exam. | Final Exam. |
| 1st Week (Registration) | - | - | - | - | - | - | - | - | - | - | - |
| 2nd Week | 2 | 2 | | | | | 2 | | | 10 | 20 |
| 3rd Week | 2 | 2 | | | | | 2 | | 4 | | |
| 4th Week | 2 | 2 | | | | | 2 | | | | |
| 5th Week | 2 | 2 | | | | | 2 | 2 | | | |
| 6th Week | 2 | 2 | | | | | 2 | | 4 | | |
| 7th Week | 2 | 2 | | | | | 2 | | | | |
| 8th Week | 2 | 2 | | | | | 2 | | | 10 | |
| 9th Week | 2 | 2 | | | | 2 | 2 | | 4 | | |
| 10th Week | 2 | 2 | | | | | 2 | | | | |
| 11th Week | 2 | 2 | | | | | 2 | | | | |
| 12th Week | 2 | 2 | | | | | 2 | | | | |
| 13th Week | 2 | 2 | | | | | 2 | | 1 | | |
| 14th Week | 2 | 2 | | | | | 2 | | | | |
| 15th Week ( Final Exam.) | | - | - | - | - | - | - | - | - | - | - |
| 16th Week ( Final Exam.) | - | - | - | - | - | - | - | - | - | - | - |
| TOTAL | 26 | 26 | 0 | 0 | 0 | 2 | 26 | 2 | 13 | 20 | 20 |

## 4. Prerequisites (if applicable)

| *4.1 Curriculum-Related* | *Computer Networks* |
|---|---|
| **4.2 Skills-Related** | *Computer Networking  + Packet tracer lab* |

## 5. Conditions (if applicable)

| ***5.1. For the Theoretical*** | 1. *Read and comprehend the textbook material.* <br> 2. *Attend all the classes and take notes on class discussions.* <br> 3. *Actively participate in class discussions and activities.* <br> 4. *Submit all the assignments and the project on time.* <br> 5. *Pass tests and quizzes.* |
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| 5.2. For the Practical | All students are normally required to attend the Lab; take part in lectures through applying the exercises on the computer or as quizzes, and to implement projects. |
|---|---|

## 6. Cumulated Specific Competences

| Professional Competencies | • The professional competencies for network administration include configuring and managing network devices, ensuring network security, troubleshooting network issues, designing network architectures, documenting network configurations, staying updated on emerging technologies, communicating effectively, and embracing continuous learning. |
|---|---|
| Transversal competences | • The transversal competencies for network administration include critical thinking, problem-solving, adaptability, collaboration, and effective communication across diverse stakeholders. |

## 7. Discipline Objectives (Based on the cumulated specific Competences)

| 7.1. General Objective | • The general objective of networking administration is to equip students with the knowledge, skills, and competencies needed to effectively design, configure, manage, and secure computer networks in organizations. The subject aims to develop professionals who can ensure network reliability, performance, and security, while also troubleshooting network issues and adapting to emerging technologies and industry trends. |
|---|---|

## 8. Content

| Week | 8.1. Theoretical-Number of Hours | Teaching methods | Observation |
|---|---|---|---|
| 1 | Registration | | |
| 2 | Understanding the role of network administration in organizations<br><br>Overview of network infrastructure components and protocols<br><br>Introduction to network administration tools and software | lecture | *1 lecture = 2 hours* |
| 3 | Network design principles and best practices<br><br>Planning and implementing network topology<br><br>Network scalability and performance considerations | lecture, | *1 lecture = 2 hours* |
| 4 | Configuring network devices (routers, switches, firewalls)<br><br>Network monitoring and management tools<br><br>Troubleshooting network connectivity issues | lecture | *1 lecture = 2 hours* |

| 5 | Understanding network security threats and vulnerabilities

Implementing network security measures (firewalls, access control, encryption)

Network security auditing and risk assessment | lecture | *1 lecture = 2 hours* |
|---|---|---|---|
| 6 | TCP/IP protocols and addressing

DNS (Domain Name System) and DHCP (Dynamic Host Configuration Protocol)

Configuring network services (HTTP, FTP, SMTP) | lecture | *1 lecture = 2 hours* |
| 7 | Introduction to network virtualization technologies

Implementing virtual networks using software-defined networking (SDN)

Cloud networking and integration with virtualized environments | lecture | *1 lecture = 2 hours* |
| 8 | Wireless networking standards and protocols

Configuring and securing wireless networks

Mobile device management and integration with the network | lecture | *1 lecture = 2 hours* |
| 9 | Implementing network backup strategies and solutions

Planning and testing network disaster recovery procedures

Ensuring business continuity in network administration | lecture | *1 lecture = 2 hours* |
| 10 | Network troubleshooting methodologies and tools

Analyzing network performance issues

Implementing Quality of Service (QoS) for network optimization | Lecture, | *1 lecture = 2 hours* |
| 11 | Conducting network audits and security assessments

Compliance standards and regulations (e.g., GDPR, HIPAA)

Network monitoring for compliance and threat detection | | |
| 12 | Automating network tasks using scripts and tools

Introduction to SDN concepts and architectures

Implementing network automation and SDN technologies | lecture | *1 lecture = 2 hours* |
| 13 | Documenting network configurations, policies, and procedures

Creating network diagrams and documentation templates | lecture | *1 lecture = 2 hours* |

| | | | |
|---|---|---|---|
| | Reporting on network performance and security incidents | | |
| 14 | Exploring emerging technologies in networking (e.g., IoT, 5G)  Understanding the impact of AI and machine learning in network administration  Future trends and challenges in network administration | lecture | *1 lecture = 2 hours* |

## 9. Assessment

| Type of Activity | 9.1. Assessment Criteria[2] | 9.2. Assessment Type | 9.3. Percentage of the final Grade |
|---|---|---|---|
| **9.4. Theoretical** | Mid-term (30%) | Exam | *%30* |
| **9.5. Practical/ Seminar/Laboratory** | Final-Exam (40%) | Exam | *%40* |
| **9.6. Activity during Semester** | Quizzes (15%) + Assignment (15%) | Exam | *%30* |
| | | | *Minimum performance Standards:* |

| *Theoretical Lecturer* | *Dr.Lway Faisal* |
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| **Practice Lecturer** | *Dr.Lway Faisal* |

| | *Approved by the Curriculum development Committee:* |
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| 1 | *Asst. Prof. Dr. Lway Faisal Abdulrazak* |
| 2 | *Asst. Prof. Dr. Kusay  Faisal Abdulrazak.* |
| 3 | *Asst. Lec. Sadeer Dheyaa Abdulameer* |
| **Head of the Department/ Dean** | *Asst. Prof. Dr. Lway Faisal Abdulrazak* |