

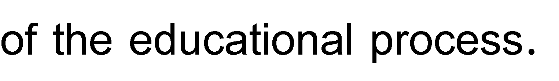
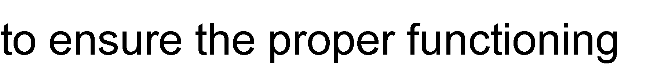
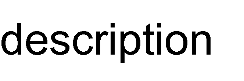
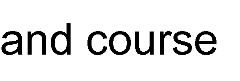
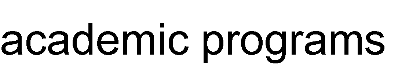
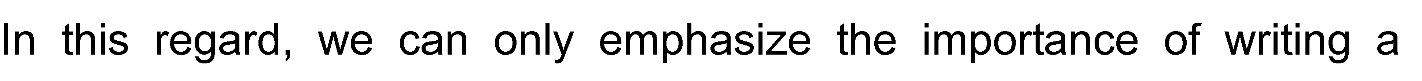
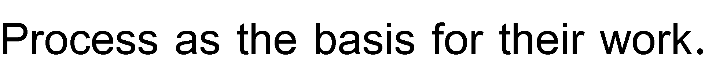
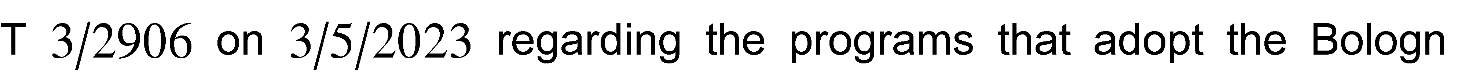
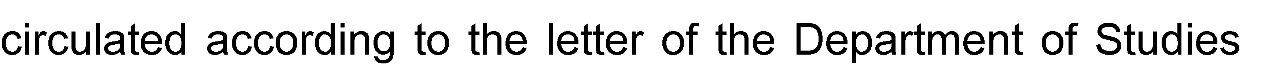
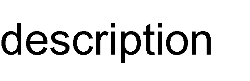
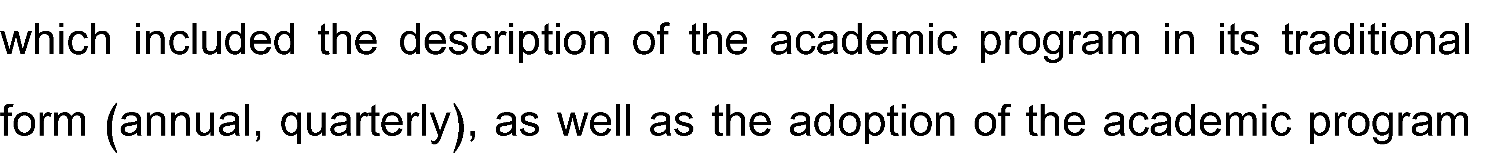
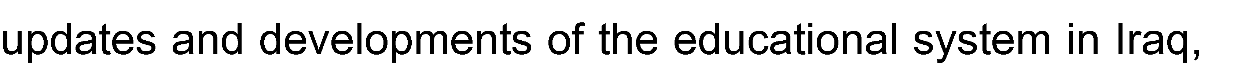
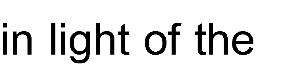
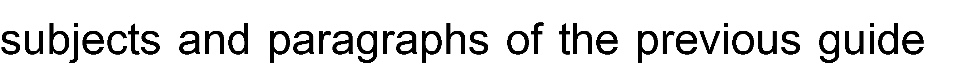
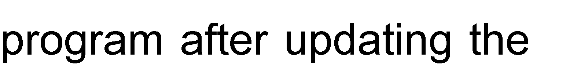
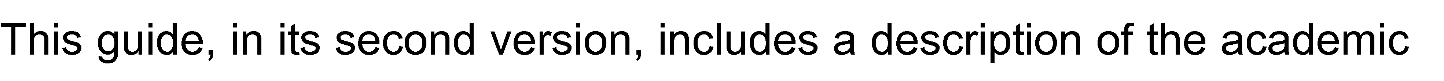
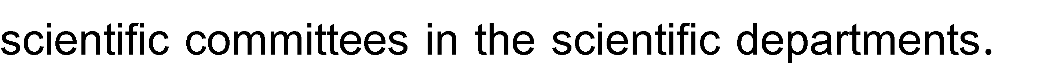
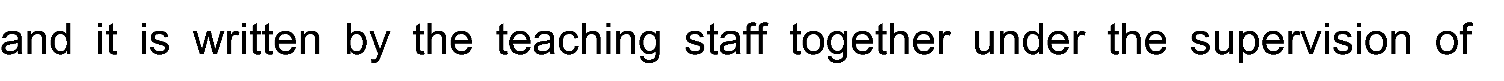
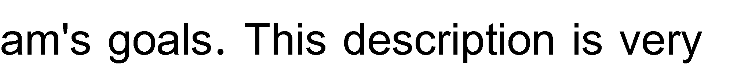
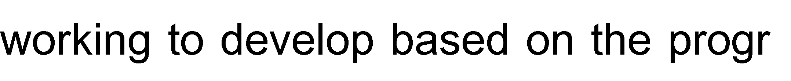
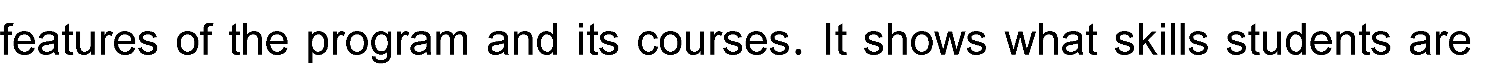
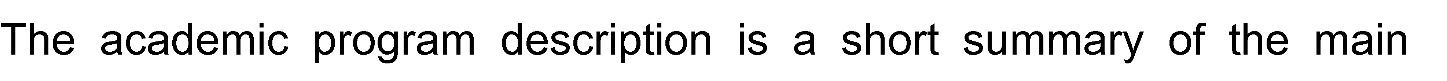
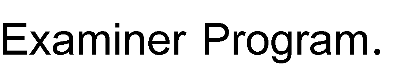
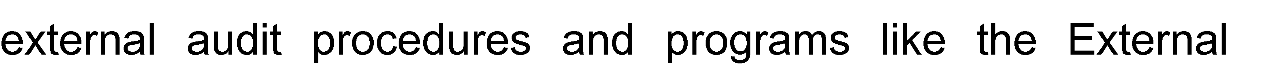
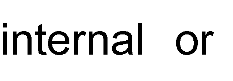
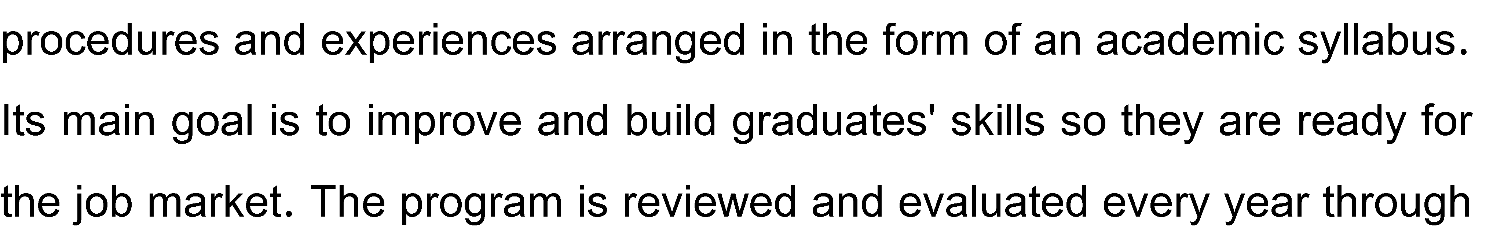
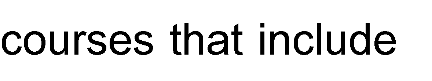
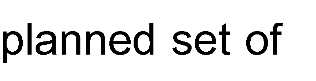
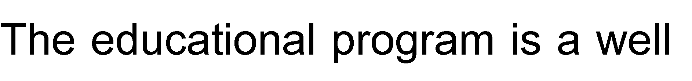
Ministry of Higher Education and Scientific Research Scientific Supervision and Scientific Evaluation Apparatus Directorate of Quality Assurance and Academic Accreditation Accreditation Department



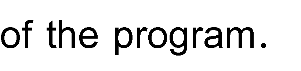
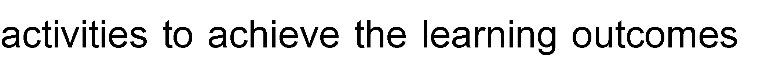
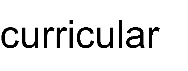
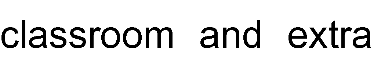
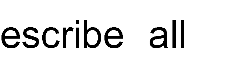
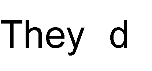
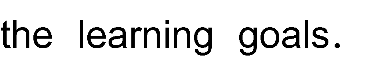
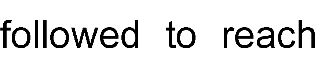
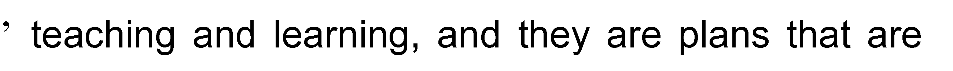
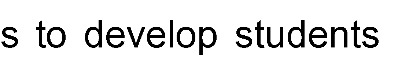
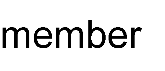
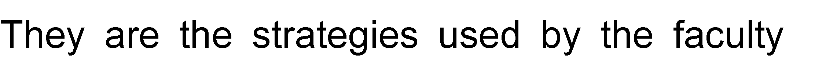
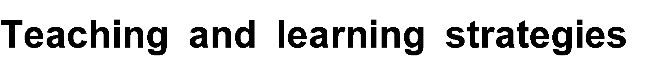
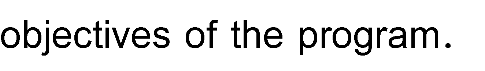
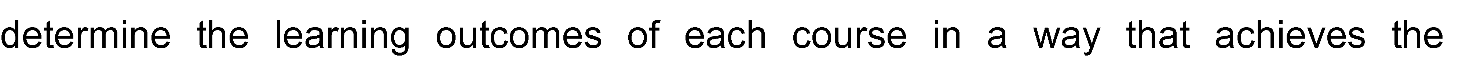
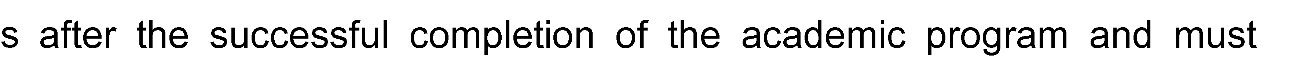
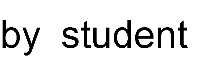
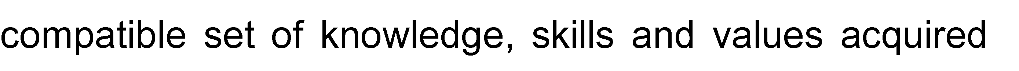
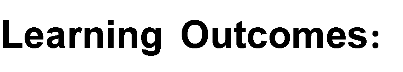
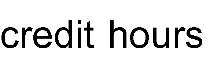
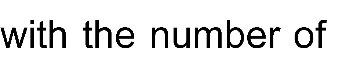
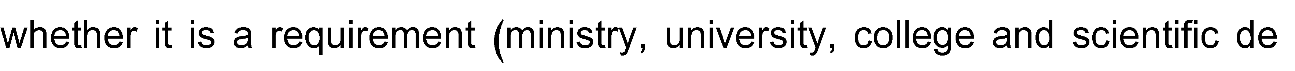
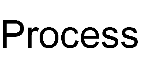
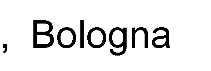
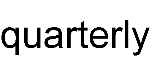
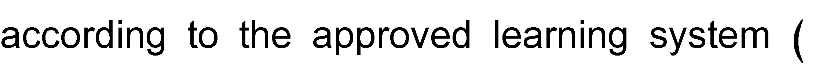
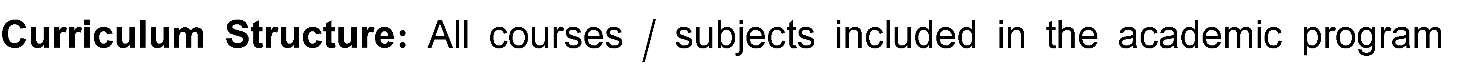
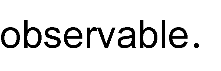
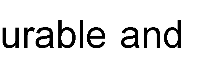
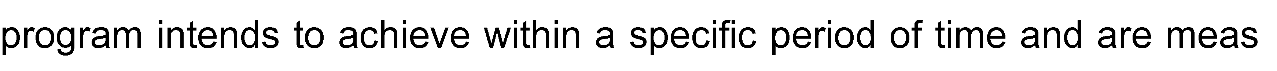
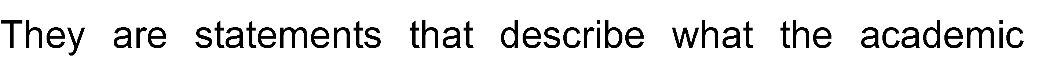
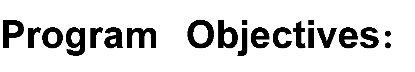
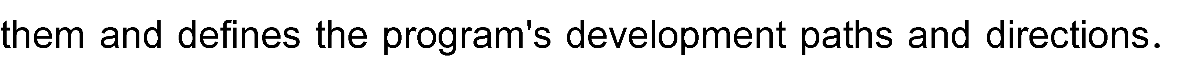
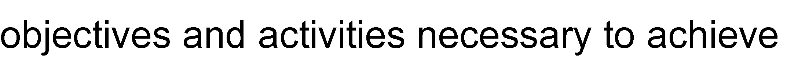
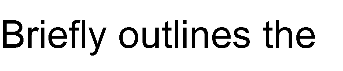
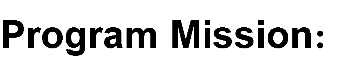
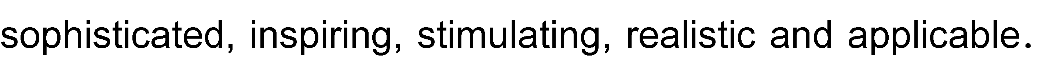
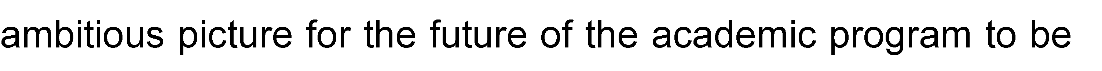
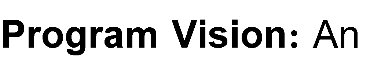
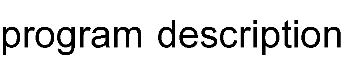
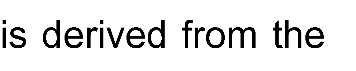
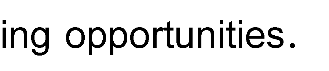
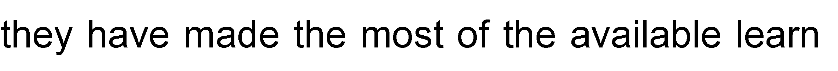
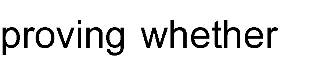
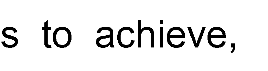
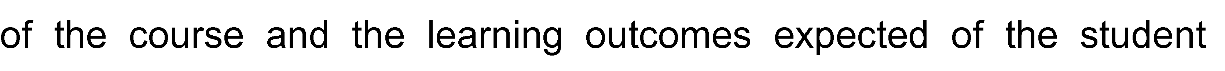
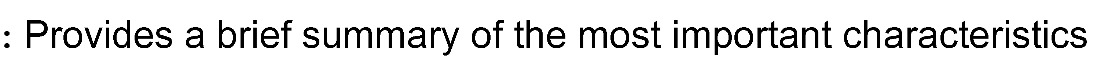
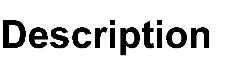
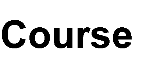
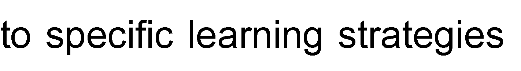
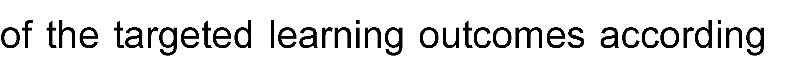
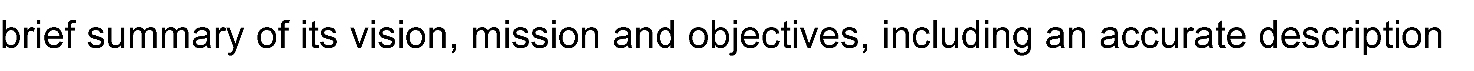
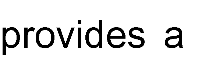
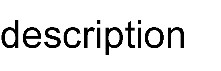
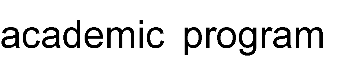
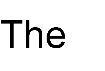
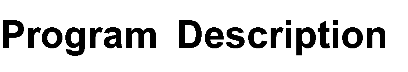
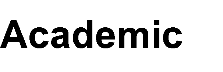
**Academic Program and Course Description Guide**



**Introduction:**



# Concepts and terminology:





University Name: Diyala

Faculty/Institute: Engineering

Scientific Department: Computer

Academic or Professional Program Name: BSc in Computer Engineering

Final Certificate Name: BSc in Computer Engineering

Academic System: Courses

Description Preparation Date: 24/4/2024

File Completion Date: 24/4/2024

Signature:

Head of Department Name:

Assist. prof. Dr. Ali N. Albu-Rghaif

Date: 24/4/2024

Signature:

Scientific Associate Name:

Assist. prof. Dr. Jabbar Q. Jabbar

Date:

The file is checked by: Assist. prof. Dr. Salah N Farhan

Department of Quality Assurance and University Performance

Director of the Quality Assurance and University Performance Department: Date:

Signature:

Approval of the Dean

Prof. Dr. Anees A. Khadom

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| **That the Computer Engineering Department be a "distinguished" model for producing and developing engineering and technological knowledge to prepare competent engineering cadres capable of supporting and developing society in the fields of computing, information technology, and software.** |

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| **Developing engineering cadres by providing them with modern technological knowledge in various branches of computer engineering sciences to enable them to implement various engineering projects with high efficiency and professionalism, with accuracy and mastery, according to what the labor market requires, and to continue scientific and academic progress by keeping pace with rapid global developments by continuing purposeful and sober scientific research of high quality.** |

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| **1) Developing specialized engineering programs that conform to international quality standards in the field of computers and software, through which engineering cadres capable of proving their competence in the field of work can be provided.**  **2) Developing the capabilities and skills of the teaching and functional staff to advance the educational and research reality in the department.**  **3) Serving the local and international community by developing applied and academic research to solve various problems in the industrial and engineering fields.**  **4) Providing an advanced and appropriate educational and research environment for the department’s members, including students and technical, engineering and teaching staff, to produce high-quality educational and engineering leaders.** |

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| **Does the program have software accreditation?From which side?**  **Not currently happening** |

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| **There is no** |

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| **University Requirements** | **5** | **6** | **4.24%** |  |
| **College Requirements** | **9** | **20** | **14.20%** |  |
| **Department Requirements** | **46** | **115** | **81.56%** |  |
| **Summer Training** |  |  |  | **Graduation Requirements** |
| **Other** |  |  |  |  |

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| **Theoretical** | **Practical** | |
| 2nd Year-1st Semester | U 101 | Human Rights and Democracy | | 2 | - | |
| 2nd Year-1st Semester | CPE 101 | Engineering Drawing Using Computer | | - | 3 | |
| 2nd Year-1st Semester | E 103 | Physics | | 2 | - | |
| 2nd Year-1st Semester | E 106 | Workshop Skills I | | - | 3 | |
| 2nd Year-1st Semester | E 101 | Mathematics I | | 2 | - | |
| 2nd Year-1st Semester | CPE 102 | Programming and Problem Solving Using C++ I | | 2 | 2 | |
| 2nd Year-1st Semester | CPE 104 | Fundamentals of Logic Systems | | 2 | - | |
| 2nd Year-2nd Semester | CPE 106 | Electrical Circuits I | | 2 | 2 | |
| 2nd Year-2nd Semester | U 102 | Computer Science | | 1 | 2 | |
| 2nd Year-2nd Semester | U 103 | English Language | | 1 | - | |
| 2nd Year-2nd Semester | U 104 | Arabic Language | | 1 | - | |
| 2nd Year-2nd Semester | E 107 | Workshop Skills II | | - | 3 | |
| 2nd Year-2nd Semester | E 102 | Mathematics II | | 2 | - | |
| 2nd Year-2nd Semester | CPE 102 | Programming and Problem Solving Using C++ II | | 2 | 2 | |
| 3rd Year-1st Semester | CPE 105 | Digital Logic Circuits I | | 2 | 2 | |
| 3rd Year-1st Semester | CPE 107 | Electrical Circuits II | | 2 | 2 | |
| 3rd Year-1st Semester | E 201 | Applied Mathematics I | | 3 | - | |
| 3rd Year-1st Semester | CPE 201 | Computer Architecture I | | 2 | - | |
| 3rd Year-1st Semester | CPE 203 | Electronics | | 2 | 2 | |
| 3rd Year-1st Semester | CPE 205 | Digital Logic Circuits II | | 3 | 2 | |
| 3rd Year-1st Semester | CPE 207 | Data Structures and Algorithms | | 2 | 2 | |
| 3rd Year-2nd Semester | CPE 209 | Operating Systems I | | 2 | - | |
| 3rd Year-2nd Semester | CPE 211 | Fundamentals of Communications | | 3 | - | |
| 3rd Year-2nd Semester | E 202 | Applied Mathematics II | | 3 | - | |
| 3rd Year-2nd Semester | CPE 202 | Computer Architecture II | | 2 | - | |
| 3rd Year-2nd Semester | CPE 204 | VLSI Circuit and Design | | 2 | 2 | |
| 3rd Year-2nd Semester | CPE 206 | Microprocessor Programming | | 2 | 2 | |
| 3rd Year-2nd Semester | CPE 208 | Database Systems | | 2 | 3 | |
| Fourth Year-1st Semester | CPE 210 | Software Engineering | | 2 | 2 | |
| Fourth Year-1st Semester | CPE 212 | Object Oriented Programming using Java | | 2 | 2 | |
| Fourth Year-1st Semester | CPE 301 | Engineering Analysis | | 3 | - | |
| 3rd Year-1st Semester | CPE 303 | Digital Signal Processing I | | 2 | 2 | |
| 3rd Year-1st Semester | CPE 305 | Digital System Design I | | 2 | 2 | |
| 3rd Year-1st Semester | CPE 307 | Digital Communications | | 2 | 2 | |
| 3rd Year-1st Semester | CPE 309 | Control Theory | | 2 | 2 | |
| 3rd Year-1st Semester | CPE 311 | Operating Systems II | | 2 | 2 | |
| 3rd Year-1st Semester | CPE 313 | Internet Web Site Design | | 2 | 2 | |
| 3rd Year-1st Semester | CPE 302 | Numerical Analysis | | 3 | - | |
| 3rd Year-2nd Semester | CPE 304 | Digital Signal Processing II | | 2 | 2 | |
| 3rd Year-2nd Semester | CPE 306 | Digital System Design II | | 2 | 2 | |
| 3rd Year-2nd Semester | CPE 308 | Computer Networks I | | 3 | - | |
| 3rd Year-2nd Semester | CPE 310 | Computer Control | | 2 | 2 | |
| 3rd Year-2nd Semester | CPE 312 | Computer Interfacing | | 2 | 2 | |
| 3rd Year-2nd Semester | CPE 314 | Digital Image Processing | | 2 | 2 | |
| 3rd Year-2nd Semester | E 402 | Graduation Project | | - | 4 | |
| Fourth Year-1st Semester | E 401 | Engineering Economy | | 2 | - | |
| Fourth Year-1st Semester | CPE 401 | Soft Computing | | 2 | - | |
| Fourth Year-1st Semester | CPE 403 | Cryptography and Network Security II | | 3 | 2 | |
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| 1) Understand and teach the student the principles of computer operation and how to deal with computer algorithms.  2) Enabling students to obtain knowledge and understanding in working on and designing electronic computers.  3) The student’s understanding of the methods of forming computer parts and their interconnection.  4) Enabling students to obtain knowledge and understanding of designing everything related to computer microprocessors .  5) Enabling students to obtain knowledge and understanding of diagnosing faults and maintaining various computers.  6) The student’s understanding of the foundations of solving software problems, computer networks, and communications . | | |  | | |
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| • Explanation of computer principles topics by subject specialists with emphasis on using mathematics as a basis for understanding and learning .  • Provides them with the skills to solve practical problems related to various computer systems and computer programs for processing and solving technical problems in various fields of computerized work . | | |  | | |
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| • Enabling students to think and analyze topics related to the engineering framework, such as different logical circuits .  • Enabling students to think and analyze topics related to computer systems related to the engineering framework.  Enabling students to think and analyze topics related to solving practical problems . | | |  | | |

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| 1) Providing students with the basics and additional topics related to previous educational outcomes and skills for solving practical problems.  2) Solution to a set of practical examples by the academic staff .  3) During the lecture, students participate in solving some practical problems.  4) The department’s scientific laboratories are followed up by the academic staff. |

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| 1) Daily exams with practical and scientific questions .  2) Participation scores for difficult competition questions among students .  3) Setting grades for homework and reports assigned to them.  4) Quarterly exams for the curriculum, in addition to the mid-year exam and the final exam. |

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| Prof. | Electric Eng. | Electronic Eng. |  |  | 1 |  |
| Asst. Prof. | Computer Eng. | Machine Learning |  |  | 1 |  |
| Asst. Prof. | Computer Eng. | A.I. |  |  | 1 |  |
| Asst. Prof. | Computer Eng. | Comp. Architecture |  |  | 1 |  |
| Asst. Prof. | Electric & Electronic Eng. | Control |  |  | 1 |  |
| Asst. Prof. | Computer Science | Simulation |  |  | 1 |  |
| **Asst. Prof.** | Computer Science | Comp. Vision |  |  | 1 |  |
| **Asst. Prof.** | Computer Science | A.I. |  |  | 1 |  |
| **Asst. Prof.** | Computer Science | Data Compression |  |  | 1 |  |
| **Asst. Prof.** | Computer Eng. | Wireless Net. |  |  | 1 |  |
| **LECT.** | Computer Eng. | Comp. Net. |  |  | 2 |  |
| **LECT.** | Electric Eng. | Control & Comp. |  |  | 1 |  |
| **LECT.** | Computer Science | Complex modeling |  |  | 1 |  |
| **LECT.** | Computer Science | Software |  |  | 1 |  |
| **LECT.** | Computer Eng. | I.T. |  |  | 3 |  |
| **LECT.** | Computer Eng. | Information Secuirty |  |  | 1 |  |
| **LECT.** | Computer Eng. | Comp. Vision |  |  | 1 |  |
| **LECT.** | Computer Eng. | Science & Eng. Comp. |  |  | 1 |  |
| **LECT.** | Computer Eng. | Software |  |  | 1 |  |
| **LECT.** | Electric Eng. | Electrical Power |  |  | 1 |  |
| **LECT.** | Electric Eng. | Electronic & Communication |  |  | 1 |  |
| **LECT.** | Computer Science | I.T. |  |  | 2 |  |
| **LECT.** | Computer Eng. | Computer Eng. |  |  | 2 |  |
| Asst. LECT. | Computer Eng. | Nano Electronic |  |  | 1 |  |
| **Asst. LECT.** | Computer Eng. | Comp. Net. |  |  | 1 |  |
| **Asst. LECT.** | Electronic Eng. | mechatronics |  |  | 1 |  |
| **Asst. LECT.** | Electric Eng. | Electronic & Communication |  |  | 1 |  |
| **Asst. LECT.** | Arabic Language | Arabic Language |  |  | 1 |  |

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| Faculty members are directed to hold periodic meetings and reverse review by the Scientific Committee of the questionnaires obtained from students |
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| The teaching staff is developed by holding training or specialized courses, practical workshops, and discussion panels with quarterly seminars. Development is reviewed by evaluating the results of academic subjects |

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| Central acceptance from the Ministry of Higher Education and Scientific Research. |

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| * College website . * Department website and email. |



* Updating courses annually to keep pace with developments in the computer field
* Updating laboratories in accordance with academic curricula
* Open postgraduate programmers

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|  | | | | **Required program Learning outcomes** | | | | | | | | | | | |
| **Year/Level** | **Course Code** | **Course Name** |  |  | | | |  | | | |  | | | |
| **A1** | **A2** | **A3** | **A4** | **B1** | **B2** | **B3** | **B4** | **C1** | **C2** | **C3** | **C4** |
| **4th Year-1st Semester** | **CPE 407** | Computer Networks II | **Basic** | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ |
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* **Please tick the boxes corresponding to the individual program learning outcomes under evaluation.**

**8**

# Course Description Form

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| Course Name: | | | | | | | | | | | | |
| Computer Networks II | | | | | | | | | | | | |
| Course Code: | | | | | | | | | | | | |
| **CPE 407** | | | | | | | | | | | | |
| Semester / Year: 1st Semester – | | | | | | | | | | | | |
| **1st Semester – 4th Year** | | | | | | | | | | | | |
| Description Preparation Date: | | | | | | | | | | | | |
| **2/5/2024** | | | | | | | | | | | | |
| 5. Available Attendance Forms: | | | | | | | | | | | | |
| **My presence (mandatory)** | | | | | | | | | | | | |
| 6. Number of Credit Hours (Total) / Number of Units (Total) | | | | | | | | | | | | |
| **30 hours** | | | | | | | | | | | | |
| 7. Course administrator's name (mention all, if more than one name) | | | | | | | | | | | | |
| **Name: *Ali N. Kareem***  **Email:*****ali.alburghaif@uodiyala.edu.iq*** | | | | | | | | | | | | |
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|  | | | | | | Objectives of the study subject: The Computer Networks I curriculum aims to introduce the student to the skills and basics of computer networks and to focus on the models used in them, their components and protocols  A- Cognitive objectives  A1- During the academic year, the student learns the basics of networking .  A2- Understanding the types of computer networks and ways to connect them .  A3- Learns how to think about how networks work and their applications.  A4- The student learns the types of models used in networks, their components and functions .  B- The skill objectives of the subject  B1 - Learn how computer networks and their applications work .  B2- Learn the types of computer networks and the advantages of each type .  B3- Familiarity with the basic concepts of network types .  B4- Familiarity with how the models and protocols used are made and installed | | | | | | |
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|  | | | The teacher prepares lectures on the subject in paper and electronic form and presents them to the students.   * The teacher delivers lectures in detail .   The teacher requests periodic reports and homework on the basic topics of the subject .  Evaluation methods   * Daily discussion to determine the extent of students’ understanding of the material and to evaluate daily contributions. * Daily exams with various short scientific questions to understand the extent of their understanding of the subject. * Giving part of the grade for each semester for homework. * Daily exams (cases) and monthly exams for the curriculum and final exam   C- Emotional and value goals  C1- Urging the student to understand the purpose of studying the subject in general .  C2- Urging the student to understand the operation of each function or code within the language .  C2- Urging the student to think about how to develop himself in the field of computers.  C4- Making the student able to deal with the calculator and how to use the programs .  D - Transferred general and qualifying skills (other skills related to employability and personal development).  D1- Enabling students to write reports on topics related to computer networks .  D2- Enabling students to use the Internet to obtain important information .  D3- Raising the student’s self-confidence by linking theoretical material to practical reality.  D4- Developing students’ skills in how to deal with computer | | | | | | | | | |
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| First-second-third- | 9 | | | The student learns an introduction to data communications, networks, and the Internet, in addition to protocol layers and service | | | | Overview of Data communications and Networking  Computer Networks and the Internet, General overview  Protocol Layers and Service Models | Lectures Notes  PDF  power point  Video | Daily exams + monthly exams | | |
| Fourth -sixth | 9 | | | The student learns the properties and functions of the application layer | | | | Application Layer | Lectures Notes  PDF  power point  Video | Daily exams + monthly exams | | |
| Seventh -ninth | 9 | | | The student learns the characteristics and functions of the transport layer | | | | Transport Layer | Lectures Notes  PDF  power point  Video | Daily exams + monthly exams | | |
| Tenth -twelveth | 9 | | | The student learns the properties and functions of the network layer | | | | Network Layer | Lectures Notes  PDF  power point  Video | Daily exams + monthly exams | | |

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| 11. Course Evaluation | |
| We have a proposal to add a practical laboratory to the subject so that the student can view the media and devices for connecting networks, in addition to preparing them to implement simulation programs | |
| 12. Learning and Teaching Resources | |
| •James F. Kurose, Keith W. Ross, Computer networking: a top-down approach, 6th ed, 2013. (Chabters 1-6) | C- Recommended books and references (scientific journals, reports,.........)All reputable scientific journals related to computer networks . |
| B- Main references (sources) • Lectures given by the subject teacher  •Books available in the college library | •Behrouz A Forouzan, Data Communications and networking, 4th ed. 2007. |
| •Andrew S. Tanenbaum, David J. Weatherall, Computer Networks, 5th ed, 2011 |  |