**Ministry of Higher Education and Scientific Research**

**Supervision and Scientific Evaluation Body**

**Quality Assurance and Academic Accreditation Office**

**Course Description Sample**

**Subject: Real- time systems design**

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| This course description provides a concise summary of the main features of the course and the learning outcomes expected of the student, demonstrating whether the student has made the most of the learning opportunities available. It must be linked to the programme description |

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| 1. Educational Institution | Shatt al-Arab University |
| 2. Department / Center | Computer Engineering Technology |
| 3. Course Title /Code | Real- time systems design |
| 4. Lecturer Name |  Dina Ayad Abdul Jabbar Dhahi |
| 5. Type of Teaching | weekly |
| 6. Academic Year /Term | Two semesters / fourth academic year |
| 7. Total No. of Teaching Hours | 120 hours / 2 theoretical + 2 practical |
| 8. Date f Preparing this Course Description | 10/10/2024 |

9. **Course Objectives**

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| Course Objectives Identify the principles used in designing an advanced system based on the calculator Electronic to deal with it in real time and give the student information about the basic concepts of real-time systems, their most important components and how to build them |

10. **Course Output, Methodology and Evaluation**

 (A) **Cognitive Objectives**

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| If the student successfully completes this course, he will be able to:A1- Explains the basic concepts of real-time systems, how they work and their realistic applications. A2- Distinguish the components of the real-time system |

 (B) **Skill Objectives Related to the Program**:

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| If the student successfully completes this course, he will be able to:B1-Real-time system analysis. B2 -Combines components to build a computer-controlled real-time system. B3 -Reconstructs real-time systems for computer technologies.B4 -Write a topic about the construction and installation of a real-time system |

**Methods of Teaching and Learning**

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| 1. Theoretical presentation of the curriculum vocabulary by using some general engineering principles that pour into the understanding of Analysis and classification of components of real-time systems. (Obtain A1 and A2 of paragraph 9)
2. Group discussions of the principles of real-time systems. (Get A1 and A2 from paragraph 9)
3. Laboratory application of algorithms for most components of real-time systems using computational means such as Program and connect the parts to the computer through the parallel port. (Get B1 to B4)
4. Dividing students into groups of 3 to 4 students and assigning them to accomplish a real time system using the controller Accurate and presentation of the system as a seminar and writing a report on the system and how to implement it. (Get B2 to B4)
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**Methods of Evaluation**

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| 1. Written tests (quarterly and surprised)
2. Direct oral questions through discussions that take place during the lecture.
3. Practical tests (quarterly and abrupt) in the laboratory
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 (C) **Sentimental and Value Objectives**

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| the student successfully completes this course, he or she will be able to: 1 - Recognizes the requirements of the engineering profession and ethical responsibility in addition to the need for lifelong learning To develop self-capabilities in scientific and practical terms. 2 - Links life problems with appropriate software solutions for each problem |

**Methods of Teaching and Learning**

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| The student is assigned to address a practical applied problem in his field of specialization and during the period of his study he analyzes the problem Then he develops the appropriate design to solve the problem, and finally implements the solution and implements it programmatically according to the standards Economic and practical real. |

**Methods of Evaluation**

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| The results are presented in class to be discussed and the rest of the learners participate in the discussion. |

D) **General and Qualitative Skills (other skills related to the ability of employment and personal development)**

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| 1 - Building ideas and communicating them effectively orally and in writing. 2 - Time management and work within the deadlines. 3 - Participate constructively in groups. 4 - Search for information and use of information technology |

11. **Course Structure**

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| **Week** | **No of Hours** | **Required Learning Output** | **Title of Subject** | **Teaching Method** | **Evaluation** |
| 1st, 2nd, | 2theory/2lab | The concept of time systems Real. | Definitions, Components, Comparison with Systems Other | Lecture, Laboratory | Oral questions, daily exam |
| 3rd | 2theory/2lab | Signals | Types, Categories, Information Contains | Lecture, Laboratory | Oral questions, daily exam |
| 4th | 2theory/2lab | Sensors & Sensors | The difference between a sensor and a sensor and their respective circuits | Lecture, Laboratory | Oral questions, daily exam |
| 5th, 6th, 7th, 8th, | 2theory/2lab | Transfer Circuits 1 | Conversion from Signal Continuing to signal Digitization of Concepts Circuits & Methods Design | Lecture, Laboratory | Oral questions, daily exam |
| 9th, 10th, 11th, 12th | 2theory/2lab | Transfer Circuits 2 | Conversion from Signal Digital to Signal Ongoing Concepts Circuits & Methods Design | Lecture, Laboratory | Oral questions, daily exam |
| 13th, 14th, 15th, 16th | 2theory/2lab | Expansion Circles | Triple insulator Signal insulator Kharga Design | Lecture, Laboratory | Oral questions, daily exam |
| 17th, 18th | 2theory/2lab | Peripheral Controls | The Philosophy of Design General Design | Lecture, Laboratory | Oral questions, daily exam |
| 19th, 20th | 2theory/2lab | 8155 | Internal Composition Design Programming | Lecture, Laboratory | Oral questions, daily exam |
| 21st, 22nd, 23rd | 2theory/2lab | Timers, timers Programmed | Design MechanismsCapacitySuccessive Stages | Lecture, Laboratory | Oral questions, daily exam |
| 24th, 25th | 2theory/2lab | Boycott signals | Types How to deal with it Design | Lecture, Laboratory | Oral questions, daily exam |
| 26th , 27th | 2theory/2lab | Direct Entry For memory | Design CirclesDesign Methods | Lecture, Laboratory | Oral questions, daily exam |
| 28th, 29th, 30th | 2theory/2lab | Serial port | The concept of sequencing Protocol Design Circle | Lecture, Laboratory | Oral questions, daily exam |

12.**Infrastructure**

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| a. Textbooks |  |
| b. References | TIME SYSTEMSBY: John A. Stankovic, 2002 |
| c. Recommended books and periodicals (journals, reports, etc.) | Practical Introduction to RTS for undergraduate engineers.BY: Douglas W. Harder. 2014. |
| d. Electronic references, internet websites, etc | https://[www.ces.tech/](http://www.ces.tech/) |

13. **The Plan of Improving the Course**

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| Introduce the systems integrated into the curriculum and allocate 5 to 6 weeks for the purpose of dealing with them. |