**TEMPLATE FOR COURSE SPECIFICATION**

|  |
| --- |
| HIGHER EDUCATION PERFORMANCE REVIEW: PROGRAMME REVIEW |

**COURSE SPECIFICATION**

|  |  |
| --- | --- |
| This Course Specification provides a concise summary of the main features of the course and the learning outcomes that a typical student might reasonably be expected to achieve and demonstrate if he/she takes full advantage of the learning opportunities that are provided. It should be cross-referenced with the programme specification. | |
| Al-Maarif University College | **1. Teaching Institution** |
| Computer Engineering Techniques | **2. University Department/Centre** |
| Control Engineering Fundamentals | **3. Course title/code** |
| Bachelor in Computer Engineering Techniques | **4. Programme(s) to which it Contributes** |
| Face-to-face and online presence | **5. Modes of Attendance offered** |
| Year | **6. Semester/Year** |
| 120 | **7. Number of hours tuition (total)** |
| 22.06.2021 | **8. Date of production/revision of this specification** |
| **9. Aims of the Course** | |
| * Providing the student with the basic concepts of linear control theory, design and analysis of control systems | |

|  |
| --- |
| **10· Learning Outcomes, Teaching ,Learning and Assessment Method** |
| **A. Knowledge and Understanding**  A1. Learn about linear control systems  A2. Linear control system analysis  A3. Types of controllers  A4. Linear control system design |
| **B. Subject-specific skills**  B1. Read and understand the topic in a way that achieves the required scientific benefit  B2. Developing the student's mental ability in the field of scientific and academic specialization |
| **Teaching and Learning Methods** |
| * The direct method is through lectures * Practical application in the laboratory * The subjective method by preparing research papers and discussing them collectively |
| **Assessment methods** |
| * Feedback from students * Daily and quarterly exams * Preparing scientific reports and assignments |
| **C. Thinking Skills**  C1. Adoption of control theories and their relationship to various engineering systems  C2. Providing the student with the skill and ability to analyze control systems to achieve the scientific purpose |
| **Teaching and Learning Methods** |
| * Knowledge of questions and inquiries distinctive depth and accuracy. * Simulate the student towards understanding the cause and cause. * Increase digital sense of expression. * Brainstorming. |
| **Assessment methods** |
| * Individualizing part of the exam questions that require depth of thinking, explanation and accuracy of observation. * Student participation in the classroom. * extra-curricular duties |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **11. Course Structure** | | | | | |
| **Assessment Method** | **Teaching Method** | **Unit/Module or Topic Title** | **ILOs** | **Hours** | **Week** |
|  |  | Introduction To Control Systems |  | 4 | 1 |
|  |  | Open And Closed Loop System |  | 4 | 2 |
|  |  | Mathematical modeling of physical systems |  | 4 | 3 |
|  |  | Transfer Functions |  | 4 | 4 |
|  |  | Mathematical Modeling of D.C. Servo Motor |  | 4 | 5 |
|  |  |  | 4 | 6 |
|  |  | Block diagrams. |  | 4 | 7 |
|  |  | Block diagrams reduction |  | 4 | 8 |
|  |  | Time-domain analysis of closed loop control systems |  | 4 | 9 |
|  |  | error analysis |  | 4 | 10 |
|  |  | P, PI, PD and PID Modes of Feedback Control |  | 4 | 11 |
|  |  | Realization of PID Controller Using Active and Passive Elements. |  | 4 | 12 |
|  |  | Stability analysis |  | 4 | 13 |
|  |  | Rouths stability Criterion |  | 4 | 14 |
|  |  | Root Locus Technique |  | 4 | 15 |
|  |  |  | 4 | 16 |
|  |  |  | 4 | 17 |
|  |  | Analysis of control system in frequency domain |  | 4 | 18 |
|  |  | Bode Diagrams |  | 4 | 19 |
|  |  |  | 4 | 20 |
|  |  | Design of control systems and Compensation concepts. |  | 4 | 21 |
|  |  | Control system design using root locus method. |  | 4 | 22 |
|  |  |  | 4 | 23 |
|  |  |  | 4 | 24 |
|  |  |  | 4 | 25 |
|  |  | Control system design using Bode Diagrams. |  | 4 | 26 |
|  |  |  | 4 | 27 |
|  |  |  | 4 | 28 |
|  |  |  | 4 | 29 |
|  |  | Definitions of Non Linear Systems. |  | 4 | 30 |

|  |
| --- |
| **D. General and Transferable Skills (other skills relevant to employability and personal development)**  D1. Improve debating skills  D2. Raising research perceptions and transferring students from the stage of education to learning |

|  |  |
| --- | --- |
| **12. Infrastructure** | |
| * K. Ogata “Modern Control Engineering " Prentice-Hall Pub. * Joseph J., Allen R. and Ivan J. “Schaum’s Outline of Theory and Problems Feedback and Control Systems” 2nd Edition 1995 | Required reading:  · CORE TEXTS  · COURSE MATERIALS  · OTHER |
| * E-Learning / The official page of the College of Knowledge | Special requirements (include for example workshops, periodicals, IT software, websites) |
| * Guest Lectures * Internship | Community-based facilities  (include for example, guest  Lectures , internship , field studies) |

|  |  |
| --- | --- |
| 13. Admissions | |
| None | Pre-requisites |
| 8 | Minimum number of students |
| 100 | Maximum number of students |