**TEMPLATE FOR COURSE SPECIFICATION**

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| HIGHER EDUCATION PERFORMANCE REVIEW: PROGRAMME REVIEW |

**COURSE SPECIFICATION**

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| 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** |
| Mathematics (1) | **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** |
| 90 | **7. Number of hours tuition (total)** |
| 22.06.2021 | **8. Date of production/revision of this specification** |
| **9. Aims of the Course** | |
| * Learn about mathematical equations and laws * Understand and know mathematical applications for the purpose of solving simple and complex electrical circuits * Understand and know the selection of appropriate mathematical equations for digital programming * Understand and know the applications of matrices | |

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| **10· Learning Outcomes, Teaching ,Learning and Assessment Method** |
| **A. Knowledge and Understanding**  A1. Recognize equations and mathematical laws to solve simple and complex electrical circuits  A2. Learn about arrays and how to use them in programming  A3. Learn about differential equations and how to solve them |
| **B. Subject-specific skills**  B1. Choosing the necessary mathematical equations to solve electrical circuits  B2. Preparing arrays, calculating their values, and using them in programming  B3. Calculation of volumes and areas |
| **Teaching and Learning Methods** |
| * Academic lectures that contribute to laying a strong and solid foundation to support student knowledge hunting |
| **Assessment methods** |
| * Interactive assessment that takes place directly between the student and the teacher. * Regular written exams |
| **C. Thinking Skills**  C1. Knowledge  C2. Understanding  C3. Analysis |
| **Teaching and Learning Methods** |
| * Lecturing * Reading methodological and source books and accessing some websites (self-learning) * Discussion in the classroom |
| **Assessment methods** |
| * Making part of the exam questions that require depth of thinking, explanation and accuracy of observation * Student participation in the classroom |

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| **11. Course Structure** | | | | | |
| **Assessment Method** | **Teaching Method** | **Unit/Module or Topic Title** | **ILOs** | **Hours** | **Week** |
|  |  | Matrix |  | 3 | 1 |
|  |  | Determinants |  | 3 | 2 |
|  |  | Cramer s rule |  | 3 | 3 |
|  |  | Invers of matrix |  | 3 | 4 |
|  |  | Function and their graphs |  | 3 | 5 |
|  |  | Slopes and equation of lines |  | 3 | 6 |
|  |  | Type of functions |  | 3 | 7 |
|  |  | Absolute value of magnitude |  | 3 | 8 |
|  |  | Limits and continuity |  | 3 | 9 |
|  |  | Scalars, vectors, component of vector algebra, dot product |  | 3 | 10 |
|  |  | Orthogonal vectors, component of vector algebra, vector calculus |  | 3 | 11 |
|  |  | Limit theory of derivative, chain rule |  | 3 | 12 |
|  |  | Derivative and inverse of trigonometric , hyperbolic and inverse of hyperbolic |  | 3 | 13 |
|  |  | Derivative of logarithmic, exponential |  | 3 | 14 |
|  |  | Curve sketching by y2 , y3 |  | 3 | 15 |
|  |  | Application of differentiation |  | 3 | 16 |
|  |  | Theory of integration (area problem ) |  | 3 | 17 |
|  |  | Definite and indefinite integral, integral of trigonometric, integral of inverse trigonometric, integral of exponential , logarithmic |  | 3 | 18 |
|  |  |  | 3 | 19 |
|  |  | Integration by parts |  | 3 | 20 |
|  |  |  | 3 | 21 |
|  |  | Application of definite integrals |  | 3 | 22 |
|  |  | Volumes |  | 3 | 23 |
|  |  |  | 3 | 24 |
|  |  | Length of plan curve |  | 3 | 25 |
|  |  | Approximation ( trapezoidal rule ) & Simpson rule |  | 3 | 26 |
|  |  | Application of approximation |  | 3 | 27 |
|  |  |  | 3 | 28 |
|  |  |  | 3 | 29 |
|  |  |  | 3 | 30 |

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| **D. General and Transferable Skills (other skills relevant to employability and personal development)**  D1. Choose the equations needed to solve electrical circuits  D2. Create arrays for use in programming |

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| **12. Infrastructure** | |
| Calculus Finney / Thomas ( part 1 )  Thomas Calculus 11th Edition | Required reading:  · CORE TEXTS  · COURSE MATERIALS  · OTHER |
| Calculus with Analytic Geometry | Special requirements (include for example workshops, periodicals, IT software, websites) |
|  | Community-based facilities  (include for example, guest  Lectures , internship , field studies) |

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