**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** |
| Digital Electronics | **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** | |
| * Introduce the student to the logical electronic circuits used in the basic logical circuits and in the electronic computer. | |

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| **10· Learning Outcomes, Teaching ,Learning and Assessment Method** |
| **A. Knowledge and Understanding**  A1. Understanding the basics of electronic logic. |
| **B. Subject-specific skills**  B1. Gaining experience and how to connect and design logical and electronic circuits  B2. Understand and understand the counting systems used in computers  B3. How to perform arithmetic and logical operations |
| **Teaching and Learning Methods** |
| * The direct method is through lectures * The subjective method by preparing research papers and discussing them collectively |
| **Assessment methods** |
| * Feedback from students * Daily and quarterly exams * Preparing scientific reports |
| **C. Thinking Skills**  C1. To familiarize the student with the importance of programming and its role in scientific development and civilized progress.  C2. To appreciate the aesthetic aspects of programming, especially with regard to a taste for syllogism and respect for the power of thinking, analysis and reasoning.  C3. That the student knows the great importance of programming for companies and in the labor market. |
| **Teaching and Learning Methods** |
| * Direct lecture style * Discussion method * Self-learning (research and seminars) |
| **Assessment methods** |
| * Daily exams, monthly exams * Conduct experiments |

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| **11. Course Structure** | | | | | |
| **Assessment Method** | **Teaching Method** | **Unit/Module or Topic Title** | **ILOs** | **Hours** | **Week** |
|  |  | Number systems (decimal, binary, octal,he xadecimal,BCD,excess-3,gray code, conversions , operations, complement's) |  | 4 | 1 |
|  |  |  | 4 | 2 |
|  |  |  | 4 | 3 |
|  |  | Logic gates (AND,OR,NOT,NAND,NOR,XOR,XNOR ,logic simplification(Boolean, Demorgan' s theorem)) |  | 4 | 4 |
|  |  |  | 4 | 5 |
|  |  | Karnaugh maps( 2-variables,3-variables,4-variables,5-variables, SOP,POS,don't care) |  | 4 | 6 |
|  |  |  | 4 | 7 |
|  |  |  | 4 | 8 |
|  |  |  | 4 | 9 |
|  |  | Arithmetic operations(adder , parallel binary adder, subtractor, decoder, encoder, multiplexer, demultiplexer ,comparator, code conversion) |  | 4 | 10 |
|  |  |  | 4 | 11 |
|  |  |  | 4 | 12 |
|  |  |  | 4 | 13 |
|  |  |  | 4 | 14 |
|  |  |  | 4 | 15 |
|  |  | Flip-flops(SR latch, D latch,T-latch,J-K F.F, edge triggered, conversion from one type to another) |  | 4 | 16 |
|  |  |  | 4 | 17 |
|  |  |  | 4 | 18 |
|  |  |  | 4 | 19 |
|  |  | Counters (asynchronous, synchronous, decade, up/down, cascade, counter decoding) |  | 4 | 20 |
|  |  |  | 4 | 21 |
|  |  |  | 4 | 22 |
|  |  | Shift-registers (serial in/serial out, serial in/parallel out, parallel in/serial out, parallel in/parallel out, shift register counter (Johnson counter, Ring counter))  Multi vibrators (definition, as table, bitable, constable, 555 timer) |  | 4 | 23 |
|  |  |  | 4 | 24 |
|  |  |  | 4 | 25 |
|  |  |  | 4 | 26 |
|  |  |  | 4 | 27 |
|  |  | AID and D/A convertors (R/2R DAC, R/2nR DAC, flash ADC, tacking  ADC, slope ADC ,successive approximation ADC, digital ramp ADC, delta sigma ADC) |  | 4 | 28 |
|  |  |  | 4 | 29 |
|  |  |  | 4 | 30 |

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| **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 |

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| **12. Infrastructure** | |
| * Introduction to digital technology (Louis Nashelsky) * Computer system architecture (M.Morris Mano) | 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) |

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