**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. |

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| Baghdad University | 1. Teaching Institution |
| College of Engineering/Department of Electrical Engineering | 2. University Department/Centre |
| Digital Signal Processing | 3. Course title/code |
| Electrical Engineering | 4. Programme(s) to which it contributes |
| Internal | 5. Modes of Attendance offered |
| Fourth Year Class | 6. Semester/Year |
| 60 | 7. Number of hours tuition (total) |
| 2012 | 8. Date of production/revision of this specification |
| 9. Aims of the Course | |
| Study and review the concepts of processing of digital signals theories, the most important tools and systems implementation. In addition to teaching students how to apply the transforms methods on different frequency signals and filter design using modern techniques. | |

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| 10· Learning Outcomes, Teaching ,Learning and Assessment Methode |
| |  | | --- | | 1. Knowledge and Understanding   A1. Understanding academic texts and ty to solve the problems in the end of each chapter.  A2. learns how to reflect the theoretical digital signal processing design to be practical systems  A3. Finding and understanding information about digital signal processing and the advantages and disadvantages of it. | |
| B. Subject-specific skills  B1. Reading some useful papers related to digital signal processing  B2. Explore the web pages that concerned on digital signal processing  B3. Reading an arbitrary device manual to explore the digital signal processing from practical point of view.  B4. Making an oral presentation |
| Teaching and Learning Methods |
| Lecturing and Exercises |
| Assessment methods |
| Exams |
| C. Thinking Skills  C1. Being able to form personal opinions about issues through attempting construct the digital signal processing algorithm. |
| Teaching and Learning Methods |
| Lecturing & Class discussions |
| Assessment methods |
| Exams that involve problem-solving skills and critical thinking skills |

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| D. General and Transferable Skills (other skills relevant to employability and personal development)  D1.Effective communication in the design an applicable Digital signal processing  D2. Team work |

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| 11. Course Structure | | | | | |
| Assessment Method | Teaching  Method | Unit/Module or Topic Title | ILOs | Hours | Week |
| Exam | Lecturing, Discussions & Exercises | Classification of signals, systems |  | 2 | 1 |
| Exam | Lecturing, Discussions & Exercises | sampling |  | 2 | 2 |
| Exam | Lecturing, Discussions & Exercises | Discrete time systems |  | 2 | 3 |
| Exam | Lecturing, Discussions & Exercises | Convolution |  | 2 | 4 |
| Exam | Lecturing, Discussions & Exercises | Difference equations |  | 2 | 5 |
| Exam | Lecturing, Discussions & Exercises | Time-Domain analysis |  | 2 | 6 |
|  |  | Discrete Fourier series (DFS) |  | 2 | 7 |
|  |  | Frequency Domain analysis and Discrete-Time Fourier transform(DTFT) |  | 2 | 8 |
| Exam | Lecturing, Discussions & Exercises | Discrete Fourier transform (DFT) |  | 2 | 9 |
| Exam | Lecturing, Discussions & Exercises | Properties of DFT |  | 2 | 10 |
| Exam | Lecturing, Discussions & Exercises | Fast Fourier transform FFT |  | 2 | 11 |
| Exam | Lecturing, Discussions & Exercises | Decimation in time FFT |  | 2 | 12 |
|  |  | Decimation in frequency FFT |  | 2 | 13 |
|  |  | Z-Transform |  | 2 | 14 |
| Exam | Lecturing, Discussions & Exercises | Definition of Z-transform |  | 2 | 15 |
| Exam | Lecturing, Discussions & Exercises | Properties of Z- transform and The one-sided Z-transform |  | 2 | 16 |
| Exam | Lecturing, Discussions & Exercises | **Half – year break** |  | 2 | 17 |
|  |  | Implementation of Discrete-time Systems |  | 2 | 18 |
| Exam | Lecturing, Discussions & Exercises | Digital networks |  | 2 | 19 |
| Exam | Lecturing, Discussions & Exercises | Structure of FIR systems |  | 2 | 20 |
| Exam | Lecturing, Discussions & Exercises | Structure of IIR systems |  | 2 | 21 |
| Exam | Lecturing, Discussions & Exercises | Lattice structure |  | 2 | 22 |
|  |  | Introduction to Digital Filter design |  | 2 | 23 |
| Exam | Lecturing, Discussions & Exercises | Filter specifications |  | 2 | 24 |
| Exam | Lecturing, Discussions & Exercises | FIR filter design |  | 2 | 25 |
| Exam | Lecturing, Discussions & Exercises | IIR filter design |  | 2 | 26 |
| Exam | Lecturing, Discussions & Exercises | Bilinear transformation |  | 2 | 27 |
| Exam | Lecturing, Discussions & Exercises | Butterworth and Chebyshev filters |  | 2 | 28 |
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| 12. Infrastructure | |
| **Discrete-time signal processing, 2nd ed, by Oppenheim, Prentice Hall , 2009.**  **Schaum’s Outlines of digital Signal processing, by Monson Hayes, Mc Graw Hill, 1999.**  **Digital Signal Processing: Principles, algorithms, and applications, by Proakis, Prentice Hall 2007.** | Required reading:  · CORE TEXTS  · COURSE MATERIALS  · OTHER |
| Internet links related to the topics discussed in the book and class, learn the simulators that have ability to construct digital signal processing algorithms | Special requirements (include for example workshops, periodicals, IT software, websites) |
| None | Community-based facilities  (include for example, guest  Lectures , internship , field studies) |

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| 13. Admissions | |
| ---------- | Pre-requisites |
| 25 | Minimum number of students |
| 30 | Maximum number of students |