**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 program specification.  |

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| University of Baghdad | 1. Teaching Institution |
| College of Engineering / Electronics and Communications Department | 2. University Department/Centre |
| Electromagnetic Fields / | 3. Course title/code |
| Antenna and propagation , communication systems , optical communication systems ,digital communication systems | 4. Programme(s) to which it contributes |
| In class face-to-face mode | 5. Modes of Attendance offered |
| 1st-2nd  / 2015-2016 | 6. Semester/Year |
| 3 hrs per week , 90 hrs total | 7. Number of hours tuition (total) |
| 25/4/2016 | 8. Date of production / revision of this specification  |
| 9. Aims of the Course |
| **To sudy the fundamental of electromagnetic theory for static electric field and steady magnetic field and derive and prove Maxwell equations for non time varying conditions.** |
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| 10· Learning Outcomes, Teaching ,Learning and Assessment Methode  |
| 1. Knowledge and Understanding

A1Electric field intensity from charge distributionsA2.A3.A4.A5. A6 .  |
|  B. Subject-specific skillsB1.Gause LawB2.Potential and potential differenceB3.Divergence and Stokes theoremB4. CapacitanceB5.Poisson and Laplace equation solutionB6. steady magnetic fields |
|  Teaching and Learning Methods |
| 1- Lectures.2- Tutorials.3- Homework and Assignments.4- Tests and Exams.5- In-Class Questions and Discussions |
|  Assessment methods  |
| 1. Quizzes: 10%
2. 1st term exam: 10%
3. 2nd term exam: 10%
4. Final exam: 70%
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| C. Thinking Skills C1.C2.C3.C4.  |
|  Teaching and Learning Methods  |
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|  Assessment methods |
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| D. General and Transferable Skills (other skills relevant to employability and personal development) D1.D2.D3.D4.  |

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| 11. Course Structure |
| Assessment Method | TeachingMethod | Unit/Module or Topic Title | ILOs | Hours | Week |
| Quiz/Exam | Lectures | **Vector analysis** |  | 3 | 1 |
| Quiz/Exam | Lectures | **Dot and cross product** |  | 3 | 2 |
| Quiz/Exam | Lectures | **Cartesian and cylindrical coordinate system**  |  | 3 | 3 |
| Quiz/Exam | Lectures | **Spherical coordinate system** |  | 3 | 4 |
| Quiz/Exam | Lectures | **Coordinate transformation** |  | 3 | 5 |
| Quiz/Exam | Lectures | **Electrostatic field due to different charge distribution** |  | 3 | 6 |
| Quiz/Exam | Lectures | **Coulombs law and electric field intensity** |  | 3 | 7 |
| Quiz/Exam | Lectures | **Electric field duo to volume , surface and line charge distr.** |  | 3 | 8 |
| Quiz/Exam | Lectures | **Divergence theorem** |  | 3 | 9 |
| Quiz/Exam | Lectures | **Maxwell's first equation** |  | 3 | 10 |
| Quiz/Exam | Lectures | **Energy and potential** |  | 3 | 11 |
| Quiz/Exam | Lectures | **Potential for different charge distributions** |  | 3 | 12 |
| Quiz/Exam | Lectures | **Potential gradient and del operator** |  | 3 | 13 |
| Quiz/Exam | Lectures | **Conductors and dielectrics** |  | 3 | 14 |
| Quiz/Exam | Lectures | **Current and current density** |  | 3 | 15 |
| Quiz/Exam | Lectures | **Conductor-free space boundary conditions.** |  | 3 | 16 |
| Quiz/Exam | Lectures | **Dielectric-dielectric boundary conditions.** |  | 3 | 17 |
| Quiz/Exam | Lectures | **Image method** |  | 3 | 18 |
| Quiz/Exam | Lectures | **Electric field due to small dipole** |  | 3 | 19 |
| Quiz/Exam | Lectures | **Parallel plate capacitor** |  | 3 | 20 |
| Quiz/Exam | Lectures | **Coaxial and spherical capacitor.** |  | 3 | 21 |
| Quiz/Exam | Lectures | **Solution of Poisson and Laplace equation.**  |  | 3 | 22 |
| Quiz/Exam | Lectures | **Magnetostatic field due to steady current.** |  | 3 | 23 |
| Quiz/Exam | Lectures | **Biot-Savart law.** |  | 3 | 24 |
| Quiz/Exam | Lectures | **Ampere's circuital law.** |  | 3 | 25 |
| Quiz/Exam | Lectures | **Curl and stoke's theorem.** |  | 3 | 26 |
| Quiz/Exam | Lectures | **Magnetic flux and magnetic flux density** |  | 3 | 27 |
| Quiz/Exam | Lectures | **Applications of amper's law** |  | 3 | 28 |
| Quiz/Exam | Lectures | **Maxwell's equations in differential and integral form** |  | 3 | 29 |
| Quiz/Exam | Lectures | **tutorial** |  | 3 | 30 |

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| 12. Infrastructure |
| 1.Electromagnetics By : J.D. Kraus McGraw-Hill International Edition 2. Electromagnetic Fields By: R. Meenakumari New age international publishers 2008 | Required reading:· CORE TEXTS· COURSE MATERIALS· OTHER |
| None | Special requirements (include for example workshops, periodicals, IT software, websites) |
| None | Community-based facilities(include for example, guestLectures , internship , field studies) |

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| 13. Admissions |
| According to ministry requirements | Pre-requisites |
| 20 | Minimum number of students |
| 50 | Maximum number of students |