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| **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 program specification. |      |  |  | | --- | --- | | Collage of Engineering  University of Baghdad | ***1. Teaching Institution*** | | Solid State Electronics  (SSE) | ***2. University Department/Centre*** | | Solid State Electronics  /EE108  The course is designed for university students and to get more knowledge about physics of semiconductors that have special cases and more practical situations. The course has 30 lessons. Each lesson is prepared to learn, develop and analyze new forms of electronic circuits such as diode circuits.  To learn the students the basic components in electrical engineering, electronic devices, understanding the physical behind the semiconductor structure and the analysis of the electronic circuits.  3 theories and 1 tutorial. | ***3. Course title/code & Description*** | | Electrical Engineering (EE) | ***4. Program(s) to which it Contributes*** | | Annual system; there is only one mode of delivery, which is a "Day Program". The students are full time students, and on campus. They attend full day program in face-to-face mode. The academic year is composed of 30- week regular subjects. | ***5. Modes of Attendance offered*** | | 1st & 2st / Academic Year 2016-2017 | ***6. Semester/Year*** | | 120 hrs. / 4 hrs. per week | ***7. Number of hours tuition (total)*** | | October -8 /2017 | ***8. Date of production/revision of this specification*** | | ***9. Aims of the Course*** | | | The course is designed for university students and to get more knowledge about semiconductor materials that have special cases and more practical situations. This course aims to:   1. How to relate the skills and concepts learned from physics behind the electron reaction to understand electronic structure behavior. 2. How to use the learned skills to understand, analyzed, and design electronic circuits. 3. Representation of an Introduction to electronic circuits. | |  |  | | --- | | ***10·*** ***Learning Outcomes*** | | Upon Completion of this course the students will acquire the following skills:  1. An ability to read and comprehend electron motion in Electric field and magnetic field.  2. An ability both to follow and correctly to analyze the circuits of appropriate degrees of complexity.  3. An understanding of physical behavior of electron in the matter, and an ability to understand it correctly. | | ***11.*** ***Teaching and Learning Methods*** | | 1. Lectures.  2. Tutorials.  3. Homework.  4. Tests and Exams.  5. In – Class Questions and Discussions.  6. Connection between Theory and Application.  7. Extracurricular Activities.  8. Seminars.  9. In-and Out-Class oral conservations.  10. Reports, Presentations, and Posters. | | ***12. Assessment Methods***  1. Examinations and Tests (or Quizzes).  2. Extracurricular Activities.  3. Students Engagement during Lectures.  4. Responses Obtained from Students Questionnaire about Curriculum and Faculty Member (Instructor). | | ***13. Grading Policy***  1. Quizzes:  - There will be at least Ten closed books and notes quizzes during the academic year.  -The quizzes will count 20% of the total course grade.  2. Activities and oral assessment: 10% of the total course.  - The students are encouraged to participate their ideas to solve the problems during the lecture.  - Seminar.  3. Final Exam:  - The final exam will be comprehensive, closed books and notes, and will take three hours from 9:00 – 12:00 AM.  - The final exam will count 70% of the total course grade.  **Grading Units**   |  |  | | --- | --- | | Quizzes (1st and 2nd Semester) | 30% | | Final Exam | 70% | | Total | 100% | |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | | ***14. Course Structure*** | | | | | | | Assessment Method | Teaching Method | Unit/Module or  Topic Title | Los  (Article 10) | Hours | Week | | 1-4 of article (12) | 1-10 of article (11) | Introducing the SI units. And particle charges | a,1,m,n,o.p,q,r | 4  3 the.  1 tut. | 1 | | 1-4 of article (12) | 1-10 of article (11) | Motion of electron in parallel with electric field | a,1,m,n,o.p,q,r | 4  3 the.  1 tut | 2 | | 1-4 of article (12) | 1-10 of article (11) | Motion of electron in angle with electric field and CRT | b,1,m,n,o.p,q,r | 4  3 the.  1 tut | 3 | | 1-4 of article (12) | 1-10 of article (11) | Motion of electron in magnetic field | b,1,m,n,o.p,q,r | 4  3 the.  1 tut | 4 | | 1-4 of article (12) | 1-10 of article (11) | Motion of electron in electric and magnetic field | b,1,m,n,o.p,q,r | 4  3 the.  1 tut | 5 | | 1-4 of article (12) | 1-10 of article (11) | Motion of electron in electric and magnetic field with angle | b,1,m,n,o.p,q,r | 4  3 the.  1 tut | 6 | | 1-4 of article (12) | 1-10 of article (11) | Atomic structure and photon | b,1,m,n,o.p,q,r | 4  3 the.  1 tut | 7 | | 1-4 of article (12) | 1-10 of article (11) | Rutherford theory | b,1,m,n,o.p,q,r | 4  3 the.  1 tut. | 8 | | 1-4 of article (12) | 1-10 of article (11) | Objection of Rutherford theory | b,1,m,n,o.p,q,r | 4  3 the.  1 tut. | 9 | | 1-4 of article (12) | 1-10 of article (11) | Bohr Theory | b,1,m,n,o.p,q,r | 4  3 the.  1 tut. | 10 | | 1-4 of article (12) | 1-10 of article (11) | Potential and Kinetic Energy | c,1,m,n,o.p,q,r | 4  3 the.  1 tut. | 11 | | 1-4 of article (12) | 1-10 of article (11) | Energy Band Structure | c,1,m,n,o.p,q,r | 4  3 the.  1 tut. | 12 | | 1-4 of article (12) | 1-10 of article (11) | Electronic structures of elements | c,1,m,n,o.p,q,r | 4  3 the.  1 tut. | 13 | | 1-4 of article (12) | 1-10 of article (11) | Four quantum numbers and Pauli exclusion principle | c,1,m,n,o.p,q,r | 4  3 the.  1 tut. | 14 | | 1-4 of article (12) | 1-10 of article (11) | Magnetic properties of materials | c,1,m,n,o.p,q,r | 4  3 the.  1 tut. | 15 | | 1-4 of article (12) | 1-10 of article (11) | Biot-Savart law and Ampere’s Law | d,1,m,n,o.p,q,r | 4  3 the.  1 tut. | 16 | | 1-4 of article (12) | 1-10 of article (11) | Magnetization and B,H, and M relationships | d,1,m,n,o.p,q,r | 4  3 the.  1 tut. | 17 | | 1-4 of article (12) | 1-10 of article (11) | Magnetic Materials | d,1,m,n,o.p,q,r | 4  3 the.  1 tut. | 18 | | 1-4 of article (12) | 1-10 of article (11) | Physics of Semiconductor | e,1,m,n,o.p,q,r | 4  3 the.  1 tut. | 19 | | 1-4 of article (12) | 1-10 of article (11) | Intrinsic and extrinsic semiconductors and Fermi-Dirac function | e,1,m,n,o.p,q,r | 4  3 the.  1 tut. | 20 | | 1-4 of article (12) | 1-10 of article (11) | Intrinsic and extrinsic conductivity, concentration, and current density | f,g,1,m,n,o.p,q,r | 4  3 the.  1 tut. | 21 | | 1-4 of article (12) | 1-10 of article (11) | P-N Junction | h,i,1,m,n,o.p,q,r | 4  3 the.  1 tut. | 22 | | 1-4 of article (12) | 1-10 of article (11) | Drift and diffusion currents | H,I,1,m,n,o.p,q,r | 4  3 the.  1 tut. | 23 | | 1-4 of article (12) | 1-10 of article (11) | Diode currents | H,i,1,m,n,o.p,q,r | 4  3 the.  1 tut. | 24 | | 1-4 of article (12) | 1-10 of article (11) | Diode circuits: Rectifier circuit | j,1,m,n,o.p,q,r | 4  3 the.  1 tut. | 25 | | 1-4 of article (12) | 1-10 of article (11) | Voltage regulator circuits: Zener diode | j,1,m,n,o.p,q,r | 4  3 the.  1 tut. | 26 | | 1-4 of article (12) | 1-10 of article (11) | clipper and clamping circuits. | j,1,m,n,o.p,q,r | 4  3 the.  1 tut. | 27 | | 1-4 of article (12) | 1-10 of article (11) | Diode Logic circuit | k,1,m,n,o.p,q,r | 4  3 the.  1 tut. | 28 | | 1-4 of article (12) | 1-10 of article (11) | Transistor structure | k,1,m,n,o.p,q,r | 4  3 the.  1 tut. | 29 | | 1-4 of article (12) | 1-10 of article (11) | Transistor circuit | k,1,m,n,o.p,q,r | 4  3 the.  1 tut. | 30 |  |  |  |  | | --- | --- | --- | | ***15. Infrastructure*** | | | | **Textbook**  *Electronic devices and circuits* by Millman;  **References**  Electrical Engineering Materials by Dekker;  Electronic engineering materials and devices by Alison;  Integrated electronics by Millman  in addition to internet links related to the topics discussed in the book and class. | Required reading:  · CORE TEXTS  · COURSE MATERIALS  · OTHER | | | * Available websites related to the subject. * Extracurricular activities. | Special requirements (include for example workshops, periodicals, IT software, websites) | | | * Field and scientific visits. * Extra lectures by foreign guest lecturers. | Community-based facilities  (include for example, guest  Lectures , internship , field studies) | | | ***16. Admissions*** | | | | EE108 Course | | Pre-requisites | | / | | Minimum number of students | | 100 | | Maximum number of students | | **1 INSTRUCTOR**  Assist. teach. (MSc): Raed F. Abbas  Electrical Engineering Department  Collage of Engineering  University of Baghdad  Tel: 00964-7903837538  E-mail: raedis@yahoo.com | | ***17. Course Instructors*** |   . |