**TEMPLATE FOR COURSE SPECIFICATION**

**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 programmed specification.** |

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| **Baghdad University** | ***1. Teaching Institution*** |
| **Engineering College / Energy Dept.** | ***2. University Department/Centre*** |
| **Strength of Materials & Materials science and engineering / 212ENSM** | ***3. Course title/code& Description*** |
| **Second Stage** | ***4. Programme(s) to which it Contributes*** |
| **Annual** | ***5. Modes of Attendance offered*** |
| **First and second semesters / 2015 -2016** | ***6. Semester/Year*** |
| **96 hours for year.** | ***7. Number of hours tuition (total)*** |
| **2018/5/23** | ***8. Date of production/revision of this specification*** |
| ***9. Aims of the Course*** |
|  **The students is studying the mechanics of materials of the behavior of solid bodies under load. The way in which they react to applied forces, the deflections resulting and the stresses and strains set up within the bodies, are all considered in an attempt to provide sufficient knowledge to enable any component to be designed such that it will not fail within its service life. The students is investigating the simple and complex stresses of different bodies in the elastic limit.**  |

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| ***11.Teaching and Learning Methods*** |
|  **Discussion ,explain , examples and educational films video seminar concerning for the subject.**  |
| ***12. Assessment Methods***

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| **Comprehensive Course Exam.**  | **10%** |
| **Quizzes and Homeworks** | **20%** |
| **Final Course Exam.** | **70%** |
| **Total** | **100%** |

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| **13. Grading Policy:****a. Homework:** **- There will be a minimum of sixteen sets of homework during the academic semester.** **- Please note that homework should be submitted at the beginning of the class before the start of the lecture.** **- The homework will count 6 % of the total course grade.** **b. Quizzes:** **- There will be a two closed books and notes about eight quizzes during the academic semester. The quizzes will count 20% of the total course grade.**  **c. Exams:** **- There will be two closed books and notes exam during the academic year,**  **will count 10% of the total course grade.** **d. Final Exam:**  **- The final exam will be comprehensive, closed books and notes,** **The final exam will count 70% of the total course grade.** |

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| ***14. Course Structure*** |
| **Assessment Method** | **Teaching****Method** | **3hour** | **Unit/Module or Topic Title** | **Week** |
|  | **Lectures and Seminars** | **2 hour** | **Introduction & Definition** **for strength of materials**  | **1** |
|  |  | **1hour** | **&materials engineering** |  |
| **Home Works** | **Lectures and Seminars** | **2hour** | **Simple stress and strain** | **2** |
| **1hour** | **Types of reactor fuel**  |
| **Home Works** | **Lectures and Seminars** | **2hour** | **Hook’s law** | **3** |
| **1hour** | **Classification of materials** |
| **Examinations**  | **Lectures and Seminars** | **2hour** | **Thermal stresses** | **4** |
| **1hour** | **Cladding materials** |
| **Home Works** | **Lectures and Seminars** | **2hour** | **Thermal stresses** | **5** |
| **1hour** | **Smart materials** |
| **Home Works** | **Lectures and Seminars** | **2hour****1hour** | **Bending stress****Atomic structure in solid** | **6** |
| **Home Works** | **Lectures and Seminars** | **2hour** | **Types of beams** | **7** |
| **1hour** | **Structure of crystalline solids** |
| **Examinations**  | **Lectures and Seminars** | **2hour** | **Shear stress** | **8** |
| **1hour** | **Structure of crystalline solids** |
| **2hour** | **Built-in beams** | **9** |
|  **1hour** | **Solidification and defects** |
| **Home Works** | **Lectures and Seminars** | **2hour****1hour** | **Built-in beams****Solidification and defects** | **10** |
| **Home Works** | **Lectures and Seminars** | **2hour** | **Shear stress distribution** | **11** |
| **1hour** | **Alloys and phase diagrams** |
| **Home Works** | **Lectures and Seminars** | **2hour****1hour** | **Shear stress distribution****Alloys and phase diagrams** | **12** |
| **Examinations**  | **Lectures and Seminars** | **2huor****1hour** | **Torsion stress****Alloys and phase diagrams** | **13** |
| **Home Works** | **Lectures and Seminars** | **2hour****1hour** | **Torsion stress****Mechanical properties of metals and alloys** | **14** |
| **Home Works** | **Lectures and Seminars** | **2hour****1hour** | **Thin cylinders** **Mechanical properties of metals and alloys** | **15** |
| **Examinations**  | **Lectures and Seminars** | **2hour****1hour** | **Thin cylinders****Semiconductors**  | **16** |
| **Examinations and Home Works** |  | **Three** | **Examination** | **17** |
|  | **Lectures and Seminars** | **2hour****1hour** | **Thick cylinders****Organics** | **18** |
| **Home Works** | **Lectures and Seminars** | **2hour****1hour** | **Flange coupling****Organics** | **19** |
| **Home Works** | **Lectures and Seminars** | **2hour****1hour** | **Flange coupling****Polymers** | **20** |
| **Examinations**  | **Lectures and Seminars** | **2hour****1hour** | **Springs****Polymers** | **21** |
| **Home Works** | **Lectures and Seminars** | **2hour** | **Springs****Glass and fiber optics** | **22** |
| **Home Works** | **Lectures and Seminars** | **2hour** | **Bending moment** | **23** |
| **1hour** | **composites** |
| **Examinations**  | **Lecturers and Seminars** | **2hour** | **Bending moment** | **24** |
| **1hour** | **composites** |
| **Home Works** | **Lectures and Seminars** | **2hour** | **Shear force & bending moment diagrams** | **25** |
| **1hour** | **Composites** |
| **Home Works** | **Lectures and Seminars** | **2hour** | **Shear force & bending moment diagrams** | **26** |
| **1hour** | **Composites** |
| **Examinations**  | **Lectures and Seminars** | **2hour** | **Shear force & bending moment diagrams** | **27** |
| **1hour** | **Biomaterials** |
| **Home Works** | **Lecturers and Seminars** | **2hour** | **Shear force & bending moment diagrams** | **28** |
| **1hour** | **Magnetic materials** |
| **Home Works** | **Lectures and Seminars** | **2hour** | **Deflection of beams** | **29** |
| **1hour** | **Corrosion and erosion** |
| **Home Works** | **Lectures and Seminars** | **2hour** | **Slop of beams** | **30** |
| **1hour** | **Corrosion and erosion** |
| **Examination** |  | **2hour** | **Deflection of beams** | **31** |
| **1hour** | **Corrosion and erosion** |
| **Home Works** |  | **2hour****1hour** | **Deflection of beams****Corrosion and erosion** | **32** |

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| ***15. Infrastructure*** |
| **1- Text book: :"Strength of Materials", by F. L. Singer and A. Pytel, 3rdEdition, 2008.** **2-Reference 1. "Mechanics of Materials", by E. J. Hearn, volume 1 , 2nd Edition, 1985****3- Reference 2: "Strength of Materials" by D. K. Singh , 2nd Edition , 2009.****4- Lecturers.****5-Text book :Callister’sMaterials science and engineering by William D.Callister** | **Required reading:****· CORE TEXTS****· COURSE MATERIALS****· OTHER** |
| **Experimental and educational films video from websites.** | **Special requirements (include for example workshops, periodicals,IT software, websites)** |
|  | **Community-based facilities****(include for example, guest****Lectures , internship,field studies)** |
| ***16. Admissions*** |
| **Pass first stage in successful.** | **Pre-requisites** |
| **8students** | **Minimum number of students** |
| **10students** | **Maximum number of students** |
| **Asst. Lecturer Adawiya Ali Hamzah** | ***17. Course Instructors*** |

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