**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 programmed specification.** |

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| **Baghdad University** | ***1. Teaching Institution*** |
| **Engineering College / Mechanical Department** | ***2. University Department/Centre*** |
| **Strength of Materials / H-MEC 304** | ***3. Course title/code& Description*** |
| **Third Stage** | ***4. Programme(s) to which it Contributes*** |
| **Annual** | ***5. Modes of Attendance offered*** |
| **First and second semesters / 2017 -2018** | ***6. Semester/Year*** |
| **Ninety hours for year.** | ***7. Number of hours tuition (total)*** |
| **15/10/2017** | ***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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| |  | | --- | | ***10· Learning Outcomes*** | | ***At the end of the class, the student will be able to:***  **a. Expansion of introductory on simple stress and strain to include a wider coverage of materials, the application of Poisson's ratio effects to two dimensional stress systems and the expansion of partially constrained bars.**  **b. Derivation of equation of shear stress distribution in flange of beams subjected to bending.**  **c. Deflection of beams with and without temperature effects.**  **d. Limitation of the simple bending theory as related to the assumptions used in its derivation.**  **e. Application of "unit-load" method for slopes or angular rotations of beams.**  **f. Alternative representations of strain distribution at a point – Cartesian and polar plots.**  **g. Limitations of failure theories; effect of stress concentrations; safety factors; modes of failure.**  **h. Applications of power transmitted by shafts; combined stress systems – bending and torsion.**  **i. Studying thin rotation rings, thin and thick cylinders.** | |
| ***11.Teaching and Learning Methods***  **a. Discussion and explain examples and problems.**  **b. Educational films video seminar concerning for the subject.** |
| ***12. Assessment Methods***   |  |  | | --- | --- | | **Comprehensive Course Exam.** | **12%** | | **Quizzes and Home works** | **18%** | | **Final Course Exam.** | **70%** | | **Total** | **100%** | |
| **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 sixteen quizzes during the academic semester. The quizzes will count 12% of the total course grade.**  **c. Exams:**  **- There will be two closed books and notes exam during the academic year,**  **will count 12% 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** | **Hours** | **Unit/Module or Topic Title** | **Week** |
| **Examinations and Home Works** | **Lectures and Seminars** | **Three** | **Simple stress and strain** | **1** |
| **Examinations and Home Works** | **Lectures and Seminars** | **Three** | **Compound bars** | **2** |
| **Examinations and Home Works** | **Lectures and Seminars** | **Three** | **Shearing force and bending moment diagrams** | **3** |
| **Examinations and Home Works** | **Lectures and Seminars** | **Three** | **Shearing force and bending moment diagrams** | **4** |
| **Examinations and Home Works** | **Lectures and Seminars** | **Three** | **Bending** | **5** |
| **Examinations and Home Works** | **Lectures and Seminars** | **Three** | **Bending** | **6** |
| **Examinations and Home Works** | **Lectures and Seminars** | **Three** | **Slope and deflection of beams** | **7** |
| **Examinations and Home Works** | **Lectures and Seminars** | **Three** | **Slope and deflection of beams** | **8** |
| **Examinations and Home Works** | **Lectures and Seminars** | **Three** | **Built-in beams** | **9** |
| **Examinations and Home Works** | **Lectures and Seminars** | **Three** | **Built-in beams** | **10** |
| **Examinations and Home Works** | **Lectures and Seminars** | **Three** | **Shear stress distribution** | **11** |
| **Examinations and Home Works** | **Lectures and Seminars** | **Three** | **Shear stress distribution** | **12** |
| **Examinations and Home Works** | **Lectures and Seminars** | **Three** | **Torsion** | **13** |
| **Examinations and Home Works** | **Lectures and Seminars** | **Three** | **Torsion** | **14** |
| **Examinations and Home Works** | **Lectures and Seminars** | **Three** | **Thin cylinders and shells** | **15** |
| **Examinations and Home Works** | **Lectures and Seminars** | **Three** | **Thin cylinders and shells** | **16** |
| **Examinations and Home Works** | **Lectures and Seminars** | **Three** | **Thick cylinders** | **17** |
| **Examinations and Home Works** | **Lectures and Seminars** | **Three** | **Thick cylinders** | **18** |
| **Examinations and Home Works** | **Lectures and Seminars** | **Three** | **Strain energy** | **19** |
| **Examinations and Home Works** | **Lectures and Seminars** | **Three** | **Strain energy** | **20** |
| **Examinations and Home Works** | **Lectures and Seminars** | **Three** | **Springs** | **21** |
| **Examinations and Home Works** | **Lectures and Seminars** | **Three** | **Springs** | **22** |
| **Examinations and Home Works** | **Lectures and Seminars** | **Three** | **Complex stresses** | **23** |
| **Examinations and Home Works** | **Lecturers and Seminars** | **Three** | **Complex stresses** | **24** |
| **Examinations and Home Works** | **Lectures and Seminars** | **Three** | **Complex strain and the elastic constants** | **25** |
| **Examinations and Home Works** | **Lectures and Seminars** | **Three** | **Complex strain and the elastic constants** | **26** |
| **Examinations and Home Works** | **Lectures and Seminars** | **Three** | **Theories of elastic failure** | **27** |
| **Examinations and Home Works** | **Lecturers and Seminars** | **Three** | **Theories of elastic failure** | **28** |
| **Examinations and Home Works** | **Lectures and Seminars** | **Three** | **Struts** | **29** |
| **Examinations and Home Works** | **Lectures and Seminars** | **Three** | **Struts** | **30** |

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| ***15. Infrastructure*** | | |
| **1- Text book: "Mechanics of Materials", by E. J. Hearn, volume 1 , 2nd Edition, 1985.**  **2-Reference 1:"Strength of Materials", by F. L. Singer and A. Pytel, 3rdEdition, 2008.**  **3- Reference 2: "Strength of Materials" by D. K. Singh , 2nd Edition , 2009.**  **4- Lecturers.** | **Required reading:**  **· CORE TEXTS**  **· COURSE MATERIALS**  **· OTHER** | |
| **Experimental and educational films video from websites.** | **Special requirements (include for example workshops, periodicals, IT software, websites)** | |
| **Guest lectures** | **Community-based facilities**  **(include for example, guest**  **lectures , internship, field studies)** | |
| ***16. Admissions*** | | |
| **Pass first stage in successful.** | | **Pre-requisites** |
| **30 students** | | **Minimum number of students** |
| **37 students** | | **Maximum number of students** |
| ***Instructor:***  **Asst. Prof. Dr. Majid Habeeb Faidh - Allah**  ***Teaching Assistant:***  **Lecturer Dr. Thaer Jabbar Ntaish** | | ***17. Course Instructors*** |