**TEMPLATE FOR COURSE SPECIFICATION**

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| HIGHER EDUCATION PERFORMANCE REVIEW: PROGRAMME REVIEW |

**Course Instructor: Lecturer Dr. Hussein Jabar Khadim**

**COURSE SPECIFICATION**

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| The course offers specialization in selected areas of Mechanical Engineering. The aim of the programme is to give graduates the knowledge and skills which a professional mechanical engineer will need in order to work effectively in a modern engineering environment. |

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| University of Baghdad /College of Engineering | 1. Teaching Institution |
| Environmental Engineering Department | 2. University Department/Centre |
| Static and Strength of Material EnE | 3. Course title/code |
| Annual System: They attend in electronic mode 3 hrs. a Week. | 4. Modes of Attendance offered |
| Annual | 5. Semester/Year |
| 90 hrs./ 3 hrs per week | 6. Number of hours tuition (total) |
| 2019 | 7. Date of production/revision of this specification |
| **8. Aims of the Course** | |
| The main objectives of the course are:  1. To understand Mechanical Engineering and strength of material fundamentals,  2. To understand the principles, instrumentation and applications of Static and strength of material.  3. To perform analysis and calculations with ease. | |

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| **9· Learning Outcomes, Teaching ,Learning and Assessment Method**   1. **Cognitive goals.**   **At the end of the year the students should gain:**  A1. Identification of force, types of force; systems of force resolution of a two-dimensional force into component  A2. Identification of moments of a force, the couple and torque  A3. Static equilibrium; “free body” principle applied to solids.  A4. Second moment of area; moment of inertia Strength of materials.  A5. Direct stress and strain; properties of section;;; stresses and strains in pin-jointed frames  A6.Bending and torsion simple beams and thin cylinders |
| **B. The skills goals special to the course**  **B1.** Essential analytical techniques and skills in calculation of Mechanical Engineering problems**.**  **B2.** Concentrating on scientific research and its leading role in helping to serve the society and solving its problems through conducting application researches  **Teaching and Learning Methods**  1- Lectures.  2- Homework and Assignments.  3- Tests and Exams.  4- In-Class Questions and Discussions.  5- Connection between Theory and Application.  6- In- and Out-Class oral conservations. |
| **Assessment Methods**  1. Examinations, Tests, and Quizzes.  2. Student Engagement during Lectures.  3. Responses Obtained from Students, Questionnaire about curriculum and faculty member (Instructor)***.***  4***.*** Home work related to problem solving. |
| C. Affective and value goals  C1.Applicable skills to learn calculation of problem solution.  C2. Mathematical calculation.  C3. Research and analytical techniques**.**  C4. Prepare students for successful careers in environmental engineering. |
| Teaching and Learning Methods  Intensive studies of regulations |
| Assessment methods |
| Case studies |
| D. General and rehabilitative transferred skills (other skills relevant to employability and personal development) |
| D1. Become more effective, independent and confident self-directed learners  D2. Improve their general skills for study and career management  D3. Articulate personal goals and evaluate progress towards their achievement  D4. An ability to identify, formulate, and solve engineering problems. |

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| **10. Course Structure** | | | | | |
| Assessment Method | Teaching  Method | Unit/Module or Topic Title | ILOs | Hours | Week |
| Questions during the lectures ,quiz, exam, present in the class | Electronic | Principles of statics | 1&2 | 3 (Theo.) | 1 |
| Questions during the lectures ,quiz, exam, present in the class | Electronic | Resultants of force systems | 1 &2 | 3 (Theo.) | 2 |
| Questions during the lectures ,quiz, exam, present in the class | Electronic | Resultants of force systems | 1 &2 | 3 (Theo.) | 3 |
| Questions during the lectures ,quiz, exam, present in the class | Electronic | Equilibrium of force systems | 1 &2 | 3 (Theo.) | 4 |
| Questions during the lectures ,quiz, exam, present in the class | Electronic | Equilibrium of force systems | 1 &2 | 3 (Theo.) | 5 |
| Questions during the lectures ,quiz, exam, present in the class | Electronic | Friction | 1,2,&3 | 3 (Theo.) | 6 |
| Questions during the lectures ,quiz, exam, present in the class | Electronic | Friction | 1,2,&3 | 3 (Theo.) | 7 |
| Questions during the lectures ,quiz, exam, present in the class | Electronic | Analysis of trusses | 2,3 &4 | 3 (Theo.) | 8 |
| Questions during the lectures ,quiz, exam, present in the class | Electronic | Analysis of trusses | 2,3 &4 | 3 (Theo.) | 9 |
| ------------- | Electronic | Forces in space | -------- | 3 (Theo.) | 10 |
| Questions during the lectures ,quiz, exam, present in the class | Electronic | Centroids and moment of inertia | 2,3 &4 | 3 (Theo.) | 11 |
| Questions during the lectures ,quiz, exam, present in the class | Electronic | Centroids and moment of inertia | 2,3 &4 | 3 (Theo.) | 12 |
| Questions during the lectures ,quiz, exam, present in the class | Electronic | Centroids and moment of inertia | 2,3 &4 | 3 (Theo.) | 13 |
| --------------------- | Electronic | Review | 2,3 &4 | 3 (Theo.) | 14 |
| Questions during the lectures ,quiz, exam, present in the class | Electronic | Stresses | 2,3 &4 | 3 (Theo.) | 15 |
| Questions during the lectures ,quiz, exam, present in the class | Electronic | Stresses | 2,3 &4 | 3 (Theo.) | 16 |
| Questions during the lectures ,quiz, exam, present in the class | Electronic | Stresses | 2,3 &4 | 3 (Theo.) | 17 |
| Questions during the lectures ,quiz, exam, present in the class | Electronic | Strains | 2,3 &4 | 3 (Theo.) | 18 |
| Questions during the lectures ,quiz, exam, present in the class | Electronic | Strains | 2,3 &4 | 3 (Theo.) | 19 |
| Questions during the lectures ,quiz, exam, present in the class | Electronic | Strains | 2,3 &4 | 3 (Theo.) | 20 |
| ------------------ | Electronic | Examination | ------- | 3 (Theo.) | 21 |
| Questions during the lectures ,quiz, exam, present in the class | Electronic | Torsion of Circular shafts | 5 | 3 (Theo.) | 22 |
| Questions during the lectures ,quiz, exam, present in the class | Electronic | Torsion of Circular shafts | 5 | 3 (Theo.) | 23 |
| Questions during the lectures ,quiz, exam, present in the class | Electronic | Shear force & bending moment Daigrams | 5 | 3 (Theo.) | 24 |
| Questions during the lectures ,quiz, exam, present in the class | Electronic | Shear force & bending moment Daigrams | 5 | 3 (Theo.) | 25 |
| ---------------------- | Electronic | Shear force & bending moment Daigrams | --------- | 3 (Theo.) | 26 |
| Questions during the lectures ,quiz, exam, present in the class | Electronic | Flexural stresses in beams |  | 3 (Theo.) | 27 |
| Questions during the lectures ,quiz, exam, present in the class | Electronic | Flexural stresses in beams |  | 3 (Theo.) | 28 |
| Questions during the lectures ,quiz, exam, present in the class | Electronic | Flexural stresses in beams | 1,2,3,4&5 | 3 (Theo.) | 29 |
| ---------------- | Electronic | Examination |  | 3 (Theo.) | 30 |

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| 11. Infrastructure | |
| 1. Engineering Mechanics Static 5-6edition by Meriam and Keaige 2. Engineering Mechanics Static 10-12-13edition by Hibbeler | 1. Books required reading: |
| 1. Engineering Mechanics Static 8edition by Singer 2. Strength of Material by Pytel and Singer | 1. Main references (sources) |
| Elementary Mechanical Engineering | A- Recommended books and references (scientific journals, reports…). |
| 1. <https://www.youtube> 2. <https://www.sciencedirect.com/book/9780125551601/Static> 3. https://www.nature.com/articles/062292b0 | B-Electronic references, Internet  sites |

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| 12. The development of the curriculum plan  Not to relay on traditional examinations but the creation of reports following the reading of textbooks. These reports are validated and transformed into academic credits for graduation purposes. |