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**Department of Civil Eng.**

**College of Engineering**

**Salahaddin University**

**Subject: Engineering Mechanics 1.**

**Course Book for 1st Year**

**Lecturer: Dr. AbdulKareem D. Mahmood**

**Academic Year: Fall Semester 2022/2023.**

**Course Book**

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| **1. Course name** | **Engineering Mechanics 1.** |
| **2. Lecturer in charge** | **Dr. Abdulkareem D. Mahmood.** |
| **3. Department/ College** | **Civil Eng. Dpt./Engineering College.** |
| **4. Contact** | **e-mail:** [**abdulkareemalqazi@gmail.com**](mailto:abdulkareemalqazi@gmail.com)  **Tel: (optional)** |
| **5. Time (in hours) per week** | **Theory: 4**  **Practical: -** |
| **6. Office hours** | **Monday – Thursday,12:00 pm-2:00 pm.** |
| **7. Course code** |  |
| **8. Teacher's academic profile** | 1991 Assistant lecturer, Eng. College, University of Tikrite.  2001 Lecturer, Eng. College, University of Salahaddin.  2007 Assistant Professor, Eng. College University of Salahaddin. |
| **9. Keywords** | **Force resolution, Forces composition, ,trusses.** |
| **10. Course overview:**  Engineering mechanics is that branch of science which deals with the behaviour of a rigid-body when the body is at rest or in motion. The engineering mechanics may be divided into Statics and Dynamics. The branch of science, which deals with the study of a body when the body is at rest, is known as Static while the branch of science which deals with the study of a body when the body is in motion is known as Dynamics.  This semester deals with force resolution, forces composition, effect of forces on rigid bodies and static analysis of rigid trusses. | |
| **11. Course objective:**  The student will get necessary information about the analysis of external forces acting on rigid bodies. Upon completion of the course, the student should be able to:   1. Resolution of a force into different components. 2. Calculating the resultants of different force systems, and   3. Analysing trusses and determining the internal forces in each member. | |
| **12. Student's obligation**  Students are expected to attend all lectures. Non-excused absence for few lectures may be dealt with in accordance with the attendance policy of the college and university.   1. Homework will be regularly assigned and must be submitted before the starting time of class on the assignment date. Late homework is not acceptable except for unusual circumstances, e.g., an excused absence. 2. Homework must be neat, readable, and must conform to acceptable Standards of Engineering Computation.   3. Quizzes will be regularly done during the class time on the completion of each chapter or subject. | |
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| **13. Forms of teaching**  The topics in the course will be presented using the projector and the traditional lecture format. Students are encouraged to attend lectures to ensure that they appreciate what material is considered to be most important. Notes will be written on the board especially design equations, head titles, definitions and summary of conclusions and any other illustration, there will be class room discussions and the lecture will give enough background to solve examples. | |
| **14. Assessment scheme**  ‌ - Two seasonal exams and one final will be given during the course.   * Regularly Quizzes will be performed for each new subject. | |
| **15. Student learning outcome:**  With the successful completion of the course, the student should be able to:   1. Analyze any type of a force. 2. Compose and find the resultant of any type of a force system. 3. Analyze and find the internal forces in a truss member. | |
| **16. References‌:**   1. R.C. Hibbeler, “***Engineering Mechanics, Statics and Dynamics***”, 14th edition in SI units, 2016. 2. J.L. Meriam, L.G. Kraige, “***Engineering Mechanics, Statics***”, 7th edition, 2012. 3. Pytel. Kiusalaas. “***Engineering Mechanics, Statics***”, 3rd edition, in SI units, 2010. | |
| **17. The Topics:**     |  |  |  | | --- | --- | --- | | Month | Week No. | Description | | September | Week 1 | General introduction, objectives, Ref. Course program  Force resolution. | | September  October | Week 2 | Concurrent coplanar Force systems. | | Week 3 | Non coplanar (three dimension) concurrent force system. | | Week 4 | Moment of a force, couples. | | Week 5 | Simplification of a force and a couple | | October  November | Week 6 | Parallel coplanar force systems | | Week 7 | Noncoplanar concurrent force systems. | | Week 8 | Non coplanar parallel force systems. | | Week 9 | Non coplanar non concurrent force systems. | | November  December | Week 10 | Equilibrium of a particle | | Week 11 | equilibrium three dimensional | | Week 12 | Equilibrium Two dimension (Truss). | | Week 13 | Truss analysis | | January | Week 14 | Section method for truss analysis | | Week 15 | Final semester exam. | | Week 16 | Final semester exam. | | |
| **19. Examinations:**  The grading for the course will be scored from the marks of the student contribution in The two periodical exams, first midterm and second midterm, class room activities (quizzes, homework) and the final exam.  The final grade will be assigned as follows:  - midterm exam 20 %  -Activities (Homework, Quizzes) 20%  -Final Exam 60 % | |
| **20. Extra notes:**  The students should keep in mind that the attendance and continuous performance of homework activities is necessary for success. | |
| **21. Peer review پێداچوونه‌وه‌ی هاوه‌ڵ**  .‌‌ | |