**Theory of Structures II**

**Course Description Form**

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| 1. Course Name: | | | | | | | | |
| Theory of Structures II | | | | | | | | |
| 1. Course Code: | | | | | | | | |
| CE3103 | | | | | | | | |
| 1. Semester / Year: | | | | | | | | |
| Second semester / Third year | | | | | | | | |
| 1. Description Preparation Date: | | | | | | | | |
| 1/10/2023 | | | | | | | | |
| 1. Available Attendance Forms: | | | | | | | | |
| In class | | | | | | | | |
| 1. Number of Credit Hours (Total) / Number of Units (Total) | | | | | | | | |
| The. 2 hr Pract. 2 hr Tut.1 hr / 3 Units | | | | | | | | |
| 1. Course administrator's name (mention all, if more than one name) | | | | | | | | |
| Name: Dr. Maloof mahmood  Email: maloof.mahmood@muc.edu.iq | | | | | | | | |
| 1. Course Objectives | | | | | | | | |
| **Course Objectives** | | | 1. An ability to identify, formulate, and solve complex engineering  problems by applying principles of engineering, science, and  mathematics.  2. An ability to communicate effectively with a range of audiences.  3. An ability to function effectively on a team whose members together  provide leadership, create a collaborative and inclusive environment,  establish goals, plan tasks, and meet objectives. | | | | | |
| 1. Teaching and Learning Strategies | | | | | | | | |
| **Strategy** | | 1. Using the whiteboard to explain the theoretical material and solve the examples and applications gradually and in logical sequential steps that are concluded and discussed by the students, leaving a period for listening to the students’ questions and answering them.  2. Using data show and display screen to explain and clarify some graphics and videos related to the subject during the lectures.  3. Using critical thinking and brainstorming to reach the main ideas related to the subject.  4. Recording some important lectures electronically to benefit from them and reviewing the material when needed by students. | | | | | | |
| 1. Course Structure | | | | | | | | |
| **Week** | **Hours** | | | **Required Learning Outcomes** | **Unit or subject name** | | **Learning method** | **Evaluation method** |
|  | 4 | | | Understand the behavior of indeterminate structures and their analysis techniques. | Indeterminate Structures | | Theoretical | Several Assignments) |
|  | 4 | | | Analyze beams using the Consistent Deformation Method, including applications of unit load and conjugate beam methods. | Analysis of beams by Consistent Deformation Method. | | Several Ways + Assignments |
|  | 4 | | | Several Examples on Consistent Deformation Method | | Several Ways (Exams + Assignments) |
|  | 4 | | | Consistent Deformation for beams by Unit Load and Conjugate beam method. | | Several Assignments) |
|  | 4 | | | Apply the Least Work Method to solve indeterminate beams, including those with varying sections and fixed ends | Analysis of Indet. beams by Least Work | | Several (Assignments) |
|  | 4 | | | Least Work method for several beams | | Several (Assignments) |
|  | 4 | | | Least work method for two span beam with different sections. | | Several Ways (Exams + Assignments) |
|  | 4 | | | Least Work method for beams with both ends fixed | | Monthly Exam |
|  | 4 | | | Use the Slope Deflection Method to analyze indeterminate beams and frames, with and without joint translation | Analysis of Structure by Slope Deflection Method | | Several Examples Assignments) |
|  | 4 | | |  | Slope Deflection method for beams | | Several Ways (Assignments) |
|  | 4 | | |  | Slope Deflection method for frames without Joint Translation | | Several Ways (Assignments) |
|  | 4 | | |  | Slope Deflection Method for frames with Joint translation | | Several Ways (Exams + Assignments) |
|  | 4 | | | Perform structural analysis of indeterminate beams and frames using the Moment Distribution Method, including cases with and without joint translation. | Analysis of Beams by Moment Distribution | | Several Ways (Assignments) |
|  | 4 | | | Solve complex structural problems by integrating multiple analytical methods. | Analysis of frames without joint translation by moment distribution | | Several examples (Assignments) |
|  | 4 | | | Develop critical thinking skills to select and apply appropriate methods for specific structural analysis challenges. | Analysis of frames with joint translation by moment distributioin | | Monthly Exam |
| 1. Course Evaluation | | | | | | | | |
| 1. Final Exam: 60% 2. Monthly Exams: 15% 3. Reports and Assignments: 10% 4. Attendance and Daily Participation: 10% 5. Oral Evaluation: 5% | | | | | | | | |
| 1. Learning and Teaching Resources | | | | | | | | |
| Required textbooks (curricular books, if any) | | | | | | Hibbeler, Russell Charles, and Kiang-Hwee Tan. 2006. Structural Analysis. Pearson Prentice Hall Upper Saddle River. | | |
| Main references (sources) | | | | | |  | | |
| Recommended books and references (scientific journals, reports...) | | | | | | Nielson, Bryant G. 2022. Structural Analysis: Understanding Behavior. John Wiley & Sons. | | |
| Electronic References, Websites | | | | | |  | | |