**Course description form**

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| 1. **Course Name** | | | | | | | | |
| Engineering Mechanics (Static) | | | | | | | | |
| 1. **Course Code** | | | | | | | | |
| EP105 | | | | | | | | |
| 1. **Semester/Year** | | | | | | | | |
| Fall Semester/First Year | | | | | | | | |
| 1. **The date this description was prepared** | | | | | | | | |
| 17 / 9 / 2023 | | | | | | | | |
| 1. **Available forms of attendance** | | | | | | | | |
| Face-to-Face theoretical lectures | | | | | | | | |
| 1. **Number of study hours (total) / number of units (total)** | | | | | | | | |
| 125/5 | | | | | | | | |
| 1. **Name of the course administrator** | | | | | | | | |
| Name: Assist. Lect. Ibrahim I. Ibrahim Email:[ibrahem\_a@uodiyala.edu.iq](mailto:ibrahem_a@uodiyala.edu.iq) | | | | | | | | |
| 1. **Course objectives** | | | | | | | | |
| 1. Develop problem-solving skills and understand the principles of static and dynamic mechanics and the principles of material strength and their applications.  2. Understand the basic concepts of statistics: forces, moment of forces, balance, analysis of trusses, friction, centipedes and the center of gravity, moment of inertia: theory of parallel axes, second area moment by integral, principles of material strength, tensile stress.  3. This course deals with the basic concepts of dynamics: particle kinematics, types of motion, perpendicular and tangential components of acceleration, kinematics: force, mass, and acceleration, particle kinematics, Newton's second law. | | | | **Objectives of the study subject** | | | | |
| 1. **Teaching and learning strategies** | | | | | | | | |
|  Weekly lectures included providing students with the basics and topics related to the pre-skills education outcomes to solve practical problems through presentation, lecture, or conducting experiments.   Solve a group of practical and applied examples by faculty members.   Through discussion, students participate in solving some practical problems.   Practical laboratories in the department are monitored by faculty members in the department.   Asking the student to visit the library and the international information network (the Internet) to obtain additional knowledge of the academic subjects.  Giving a seminar to the student in front of his fellow students to enhance his self-confidence. | | | **The Strategy** | | | | | |
| 1. **Course structure** | | | | | | | | |
| **Evaluation method** | **Learning method** | **Required learning outcomes** | | | | **Name of the unit or topic** | **Hours** | **Week** |
| Daily, oral, monthly, written examinations and reports | Whiteboard and Data show | Introducing the student to the force system and the unit system, the law of parallelograms, and analysis of forces and components. Moment, balance, and how to solve it using the FBD diagram as well as the force system in one plane. | | | | Force system, unit system, parallelogram law, force + components. Moment of couples, Equilibrium: free body diagram, coplanar system | 2 | 1 |
| Daily, oral, monthly, written examinations and reports | Whiteboard and Data show | Introducing the student to how to analyze the truss system. | | | | Analysis of trusses | 2 | 2 |
| Daily, oral, monthly, written examinations and reports | Whiteboard and Data show | Introducing the student to the concept of friction, the theory of friction, and the coefficient of friction. | | | | Friction nature of friction, theory of friction, coefficient of friction | 2 | 3 |
| Daily, oral, monthly, written examinations and reports | Whiteboard and Data show | Introducing the student to the center of gravity and gravity system and how to solve mathematical problems related to it. | | | | Centurions & center of gravity, centurions of area | 2 | 4 |
| Daily, oral, monthly, written examinations and reports | Whiteboard and Data show | Introducing the student to how to deal with the center of gravity system through integration as well as the moment of inertia. | | | | Centurions determined by integration, moment of inertia | 2 | 5 |
| Daily, oral, monthly, written examinations and reports | Whiteboard and Data show | Introducing the student to how to deal with a system of parallel axes and how to calculate the moment of area through integration. | | | | Parallel Axes Theorem, 2nd moment of area by integration | 2 | 6 |
| Daily, oral, monthly, written examinations and reports | Whiteboard and Data show | Introducing the student to the concept of curvilinear motion and the components resulting from it. | | | | Curvilinear motion rectangular components of curvilinear motion | 2 | 7 |
| Daily, oral, monthly, written examinations and reports | Whiteboard and Data show | Introducing the student to the concept of acceleration (acceleration) and how to deal with its natural and accidental components. | | | | Normal and tangential component of Acceleration | 2 | 8 |
| Daily, oral, monthly, written examinations and reports | Whiteboard and Data show | Introducing the student to the concept of kinetic energy and how to deal with it through force, mass, and acceleration. | | | | kinetics: force, mass and acceleration | 2 | 9 |
| Daily, oral, monthly, written examinations and reports | Whiteboard and Data show | Introducing the student to the concept of kinetic energy and how to deal with it through force, mass, and acceleration. | | | | kinetics: force, mass and acceleration | 2 | 10 |
| Daily, oral, monthly, written examinations and reports | Whiteboard and Data show | Introducing the student to the concept of kinetic energy of particles and Newton's second law. | | | | kinetics of particle Newton's 2nd law | 2 | 11 |
| Daily, oral, monthly, written examinations and reports | Whiteboard and Data show | Introducing the student to the concept of kinetic energy of particles and Newton's second law. | | | | kinetics of particle Newton's 2nd law | 2 | 12 |
| Daily, oral, monthly, written examinations and reports | Whiteboard and Data show | Introducing the student to the concept of material resistance and Hooke's law, as well as the concept of tensile and compressive stress. | | | | Strength of Materials: Hooke's law, tension, and compression stress | 2 | 13 |
| Daily, oral, monthly, written examinations and reports | Whiteboard and Data show | Introducing the student to how to deal with thin cylinders and spherical bodies. | | | | Thin – walled cylinders and spheres | 2 | 14 |
| Daily, oral, monthly, written examinations and reports | Whiteboard and Data show | Introducing the student to the basic principles of how to deal with stresses in beams. | | | | Stresses in beams (initial principal) | 2 | 15 |
| 1. **Course Evaluation** | | | | | | | | |
| Distribution of the grade out of 100 according to the tasks assigned to the student, such as daily preparation, daily, oral, monthly, written exams, reports, etc. | | | | | | | | |
| 1. **Learning and teaching resources** | | | | | | | | |
| Engineering Mechanics by Higdon | | | | | Required textbooks (methodology, if any) | | | |
| Engineering Mechanics by Meriam | | | | | Main references (sources) | | | |
|  | | | | | Recommended supporting books and references (scientific journals, reports....) | | | |
| <https://www.coursera.org/browse/mechanical_engineering> | | | | | Electronic references, Internet sites | | | |