**Course description form**

|  |
| --- |
| 1. Course Name
 |
| [Engineering Mechanics II](https://uowa.edu.iq/arabic/eng/medical-eng/28/?course) |
| 1. Course code
 |
| WBM-22-03 |
| 1. Semester/year
 |
| Semester 2\ two |
| 1. The date this description was prepared
 |
| 2024-3-25 |
| 1. Available attendance forms
 |
| Weekly (theoretical) |
| 1. Number of study hours (total) / total number of units
 |
| 60 theoretical hours / 3 units |
| 1. Name of the course administrator
 |
| Name: M. M. Natiq Aziz Imran Email: nataq.az@uowa.edu.iq |
| 1. Course objectives
 |
| **Objectives of the study material:** | • The subject of Engineering Mechanics II aims for the student to acquire the following skills:1. The student learns to describe the principles of kinetic mechanics.2. The student will learn to discuss the principle of circular and rotational motion and learn the difference between them.3. The student learns to describe and analyze Newton’s second law of motion.4. The student learns to discuss and analyze the principles of work and energy for moving bodies.5. The student learns to explain and analyze the principles of momentum and energy for moving objects.6. The student will learn to explain and analyze the plane motion of solid bodies in terms of force, acceleration, work, and energy.7. The student will learn to explain and analyze the three-dimensional motion of a solid body.8. The student will learn to explore vibration equations and their various applications.9. The student should link theoretical and practical ideas.10. The student will learn to use the above techniques in designing and innovating a new biomedical project.11. Knowing most of the engineering applications of the above vocabulary and how to benefit from them and employ them correctly in the field of biomedical engineering. |
| 1. Teaching and learning strategies
 |
| Course outcomes and teaching, learning and evaluation methods.A- Cognitive objectives• The possibility of the student obtaining skills through educational experience.• Enabling students to obtain knowledge and full understanding of body movement.• Enable students to obtain knowledge and understanding of dynamics and rectilinear motion• Enable students to obtain knowledge and understanding of circular motion in terms of location, speed, and acceleration• The student realizes the importance of utilizing appropriate theoretical knowledge and technical skills to respondFor professional market requirements.• Understand and teach the student the foundations of dynamic mechanics, the laws of rotational motion, and the energy of bodies.• Enabling students to obtain knowledge and understanding in working on analyzing the work done on moving bodies, the driving force, and knowing vibrations and their laws.B- Skill objectives related to the subject• Explaining the topics of speed, acceleration, and measuring distances for moving objects to benefit from them in biomedical industries.• Providing them with the skills of designing medical equipment and devices that suit the mobility of solid objects and people.• Make the student able to understand and analyze energy, work, and angular momentum of moving objects and people.• Make the student able to plan and carry out scientific research work, evaluate the results, and draw conclusions• Display and analyze the inputs and outputs of various types of dynamic mechanical mathematical equations and study their applications in detail.Teaching and learning methods* Methodical book and lectures.
* The teacher delivers detailed theoretical lectures
* Students participate during the lecture in solving some practical problems.
* Using blended e-learning methods.
* The teaching introduces students to the most important main applications of mechanical mathematical equations in the design and manufacture of various medical devices, equipment, and supplies in theory and in practice .
 |
| 1. Course structure
 |
| the week | hours | Required learning outcomes | Name of the unit or topic | Learning method | Evaluation method |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| the first | 4 | The student learns a detailed introduction to the science of dynamics and rectilinear motion | Introduction, Rectilinear Motion of particles | Lectures presented in PDF format | Daily exams + homework + monthly exams |
| the second | 4 | The student learns circular motion in terms of position, speed, and acceleration | Curvilinear Motion: Position, Velocity & Acceleration | Lectures presented in PDF format | Daily exams+Homework assignments+Monthly exams |
| the third | 4 | The student learns the rotational motion of solid bodies | Kinematics of Rigid Bodies (Rotational Motion) | Lectures presented in PDF format | Daily exams+Homework assignments+Monthly exams |
| the fourth | 4 | The student learns Newton's second law of motion | Kinetics of a Particle: Newton's Second Law of Motion | Lectures presented in PDF format | Daily exams + homework + monthly exams |
| Fifth | 4 | The student learns the principles of work and energy for moving objects | Particles of kinetics: Principle of Work and Energy | Lectures presented in PDF format | Daily exams + homework + monthly exams |
| VI | 4 | The student learns the principles of power and efficiency of moving objects | Particles of kinetics: Power and Efficiency | Lectures presented in PDF format | Daily exams + homework + monthly exams |
| Seventh | 4 | The student learns the principles of momentum and energy for moving objects | Kinetics of Particles: Impulse and Energy | Lectures presented in PDF format | Daily exams + homework + monthly exams |
| VIII | 4 | The student learns the plane motion of solid bodies | Planar Kinematics of A Rigid Body | Lectures presented in PDF format | Daily exams + homework + monthly exams |
| Ninth | 4 | The student learns the plane motion of solid bodies: force and acceleration | Planar Kinetics of A Rigid Body: Force and Acceleration | Lectures presented in PDF format | Daily exams + homework + monthly exams |
| The tenth | 4 | The student learns the plane motion of rigid bodies: momentum and momentum | Planar Kinetics of A Rigid Body: Impulse and Momentum | Lectures presented in PDF format | Daily exams + homework + monthly exams |

|  |
| --- |
| 1. Course evaluation
 |
| * Daily exams with practical and scientific questions .
* Participation marks for difficult competition questions among students.
* Assigning grades to homework assignments and reports assigned to them.
* and monthly exams for the curriculum, in addition to end-of-semester exams .
 |
| 1. Education and teaching resources
 |
| Required prescribed books | * + - 1. Vector Mechanics for Engineers – Statics & Dynamics, Beer & Johnston; 10 editions.
			2. Engineering Mechanics Statics Vol. 1, Engineering Mechanics Dynamics Vol. 2, Meriam&Kraige; 6thedition.
			3. Engineering Mechanics Dynamics, 14 ed., R. C. Hibbeler.
 |
| Main references | * + - College library to obtain additional sources for the curriculum.
		- Check scientific websites to see recent developments in the subject
 |
| Recommended books and supporting references | Follow scientific websites to see the latest developments in the prescribed material For second year students . |