UNIVERSITY of NICOSIA

Course Code	Course Title	ECTS Credits
MENG-250	Engineering Mechanics: Statics	6
Department	**Semester**	**Prerequisites**
Engineering	Fall, Spring	MATH-190, PHYS-150
Type of Course	**Field**	**Language of Instruction**
Required	Engineering	English
Level of Course	**Year of Study**	**Lecturer(s)**
1st Cycle	2nd	Dr Panayiotis Polycarpou
Mode of Delivery	**Work Placement**	**Co-requisites**
Face-to-face	N/A	None

Objectives of the Course:

The main objectives of the course are to:

- Provide a thorough understanding of the principles governing the forces applied on objects in equilibrium.
- Provide the necessary tools and mathematical background for the analysis of objects in equilibrium.
- Develop problem solving skills for a wide variety of practical engineering problems that involve objects at rest.
- Introduce techniques and methodologies for the effective analysis of objects and structures at rest.
- Introduce the concepts of supports and loads that are acting on a structural system under equilibrium conditions.
- Develop the ability to determine internal and external forces and bending moments of structures and machines.

Learning Outcomes:

After completion of the course students are expected to:

- Use free-body diagrams and apply vector analysis to solve equilibrium problems for particles or rigid bodies in two- and three-dimensional space.
- Use techniques to determine the forces acted on members of trusses and machines in equilibrium.
- Determine whether an object is statically indeterminate.
- Use integration and geometrical computations to calculate centroids of lines, areas, and volumes.
- Calculate internal forces and bending moment of members in equilibrium.
- Determine the moment of inertial of areas by integration and parallel-axis theorem.
- Solve problems involving non-uniform loads and friction.

Course Contents:

- Overview of vectors
- Free-body diagrams
- System of forces and moments
- Objects in equilibrium (2-D and 3-D problems)
- Structures in equilibrium including trusses, frames and machines
- Centroids and centers of mass
- Moments of inertial including parallel-axis theorem
- Distributed forces and loads including internal forces (shear force, axial force, and bending moment)
- Friction
- Virtual work and potential energy

Learning Activities and Teaching Methods:

Lectures, in-class examples and exercises.

Assessment Methods:

Homework, exams, final exam.

Required Textbooks/Reading:

Authors	Title	Publisher	Year	ISBN
A. Bedford W. Fowler	Engineering Mechanics: Statics	Prentice Hall	2008	978-9810679637

Recommended Textbooks/Reading:

Authors	Title	Publisher	Year	ISBN
R. C. Hibbeler	Engineering Mechanics: Statics	Prentice Hall	2009	978-9810681364