COURSE OUTLINE

(1) GENERAL

SCHOOL	Engineering		
ACADEMIC UNIT	Mechanical Engineering		
LEVEL OF STUDIES	Undergraduate		
COURSE CODE	MY0400	**SEMESTER**	2nd
COURSE TITLE	Mechanics - Statics		

INDEPENDENT TEACHING ACTIVITIES *if credits are awarded for separate components of the course, e.g. lectures, laboratory exercises, etc. If the credits are awarded for the whole of the course, give the weekly teaching hours and the total credits*	**WEEKLY TEACHING HOURS**	**CREDITS**
Lectures	5	6
Add rows if necessary. The organisation of teaching and the teaching methods used are described in detail at (d).		

COURSE TYPE *general background, special background, specialized general knowledge, skills development*	General background
PREREQUISITE COURSES:	N/A
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	Greek
IS THE COURSE OFFERED TO ERASMUS STUDENTS	No
COURSE WEBSITE (URL)	https://mie.uth.gr/?page_id=17729&lang=en

(2) LEARNING OUTCOMES

Learning outcomes

The course learning outcomes, specific knowledge, skills and competences of an appropriate level, which the students will acquire with the successful completion of the course are described.

Consult Appendix A

- *Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area*
- *Descriptors for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and Appendix B*
- *Guidelines for writing Learning Outcomes*

Upon successful completion of this course, the student will be able to:

- Analyze and synthesize force and moment systems
- Study equivalent systems of force and load distribution
- Develop equilibrium equations of particles and structures (beams and trusses, simple frames and composite bodies) in plane and in space
- Distinguish between statically determinate and statically indeterminate structures and mechanisms
- Understand the types of structural supports
- Identify the forces and moments in the supports of structures
- Identify internal forces on trusses
- To analyze and sketch diagrams of internal axial forces, shear forces and bending moments in beams and planar and space frames
- Determine the center of gravity of the bodies and surfaces
- To study the equilibrium and structural stability with the principle of virtual work

General Competences

Taking into consideration the general competences that the degree-holder must acquire (as these appear in the Diploma Supplement and appear below), at which of the following does the course aim?

Search for, analysis and synthesis of data and information, with the use of the necessary technology
Adapting to new situations
Decision-making
Working independently
Team work
Working in an international environment
thinking Working in an interdisciplinary environment
Production of new research ideas
Project planning and management
Respect for difference and multiculturalism
Respect for the natural environment
Showing social, professional and ethical responsibility and sensitivity to gender issues
Criticism and self-criticism
Production of free, creative and inductive
……
Others…
…….

- Search for, analysis and synthesis of data and information, with the use of necessary technologies
- Decision making
- Working independently
- Criticism and self-criticism
- Production of free, creative and inductive thinking

(3) SYLLABUS

Introduction to Mechanics – Fundamental laws – Vector Calculus. Analysis of forces and equilibrium. Statics of rigid bodies in plane and in space – Analysis of forces, moments and equilibrium. Principle of virtual work. Stability of bodies. Statically determinate trusses. Analysis of beam and frames – Internal forces and moments. Axial force, shear force and bending moment diagrams in plane and in space. Applications in mechanical engineering structures. Distributed loads, centroids and center of gravity.

(4) TEACHING and LEARNING METHODS - EVALUATION

DELIVERY ***Face-to-face, Distance learning, etc.***	Face-to-face
USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY *Use of ICT in teaching, laboratory education, communication with students*	Use of ICT in teaching, laboratory education, communication with students

TEACHING METHODS

The manner and methods of teaching are described in detail.
Lectures, seminars, laboratory practice, fieldwork, study and analysis of bibliography, tutorials, placements, clinical practice, art workshop, interactive teaching, educational visits, project, essay writing, artistic creativity, etc.

The student's study hours for each learning activity are given as well as the hours of non- directed study according to the principles of the ECTS

Activity	*Semester workload*
Lectures	70
Homework	35
Autonomous work	45
Course total	*150*

STUDENT PERFORMANCE EVALUATION ***Description of the evaluation procedure*** *Language of evaluation, methods of evaluation, summative or conclusive, multiple choice questionnaires, short-answer questions, open- ended questions, problem solving, written work, essay/report, oral examination, public presentation, laboratory work, clinical examination of patient, art interpretation, other* *Specifically-defined evaluation criteria are given, and if and where they are accessible to students.*	I. Written final exam (70%) II. Homework (30%)

(5) **ATTACHED BIBLIOGRAPHY**

-Suggested bibliography:

- Σ. Α. Καραμάνος (2004), Στατική - Εισαγωγή Στην Μηχανική των Κατασκευών, Εκδόσεις Π.Θ. Σημειώσεις Μαθήματος, Βόλος.
- Π. Α. Βουθούνης (2018), Στατική – Μηχανική απαραμόρφωτου σώματος, Εκδόσεις Ανδρομάχη Βουθούνη, Αθήνα.
- Ε. Γδούτος (2000), Στατική, Εκδόσεις Αφοι Κυριακίδη, Θεσ/νικη.
- Ι. Βαρδουλάκης και Α. Γιαννακόπουλος, Τεχνική Μηχανική Ι, Εκδ. Συμμετρία, Αθήνα 2004.
- Μ. Ματσικούδη – Ηλιοπούλου, Τεχνική Μηχανική, Αρχές Στατικής και Εισαγωγή στην Θεωρία των Παραμορφώσιμων Σωμάτων, Θεσσαλονίκη 1995.
- F. P. Beer & E. R. Johnston, Vector Mechanics for Engineers – Statics, 3rd SI Edition, McGraw Hill, 1998.
- S. Timoshenko & D. H. Young, Engineering Mechanics, McGraw-Hill, Intl. Ed., 1956.
- J. P. Den Hartog, Mechanics, Dover Publ., New York, 1948.
- I. H. Shames, Engineering Mechanics – Statics & Dynamics, Prentice-Hall, New Jersey, 1980.
- C. H. Norris, J. B. Wilbur & S. Utku, Elementary Structural Analysis, McGraw-Hill, 3rd Intl. Student Ed., 1976.