COURSE OUTLINE

(1) GENERAL

SCHOOL	ENGINEERING		
ACADEMIC UNIT	MECHANICAL ENGINEERING		
LEVEL OF STUDIES	UNDERGRADUATE		
COURSE CODE	**MY0101**	**SEMESTER**	**2**
COURSE TITLE	COMPUTER AIDED MECHANICAL ENGINEERING DRAWING		

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 and Laboratories	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 knowledge, skills development
PREREQUISITE COURSES:	None
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	Greek
IS THE COURSE OFFERED TO ERASMUS STUDENTS	YES (tutoring) (notes and exercises in English)
COURSE WEBSITE (URL)	https://mie.uth.gr/?page_id=17727&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*

Mechanical Engineering Drawing is taught as a basic introductory course in the second (B) semester and aims to introduce students to the basic technical regulations and the engineering design as well as its digital means of production. This course aims to:

On one hand, to introduce the student to the field of Mechanical Engineering Drawing by providing him/her with the basic knowledge, skills and experiences that will help him/her accurately represent any mechanical part or system in a standardized form, thus acquiring the possibility of seamless communication with other engineers around the world and

On the other hand, to provide the student with the necessary technological and computing tools that will enhance his creativity and energize his imagination in a manner compatible with the needs and requirements of production.

Upon successful completion of the course the student should be able to:

- To read simple mechanical drawings and to understand the real object through the composition of its two-dimensional representations,
- Demonstrate in a standardized form and accurately, mechanical components or machine components, after the required technological information, and

- Develop integrated engineering drawings in the appropriate computing software.

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

- Search for, analysis and synthesis of data and information, with the use of the necessary technology
- Adaptation to new situations
- Decision making
- Working independently
- Teamwork
- Production of new research ideas.
- Providing inductive thinking
- Project planning and management

It provides the theory and practical application for students to develop the intellectual skills needed to communicate technical concepts used throughout the international marketplace.

(3) **SYLLABUS**

1. Introduction to Mechanical Design. Three-dimensional concept and two-dimensional illustrations
2. Introductory and general regulations. Mechanical Design Standards, Paper Size, Drawing Scales, Lettering, Title Borders.
3. Working drawings and projection theory: Working Drawings, Arrangement of Views.
4. Introduction to Dimensioning: dimensioning, reading direction, dimensioning of flat surfaces, reference dimensions, not-to-scale dimensions
5. Sectional Views, Types of Sections, Revolved and Removed Sections, Broken-Out and Partial Sections, Section at many levels
6. Threads and Fasteners, Threaded Fasteners, Threaded Assemblies, Threaded Holes
7. Introduction to Gears and Gear Trains
8. Welding Drawings, Welding Symbols,Placement of Welding Symbols
9. Surface Texture, Surface Texture Symbol, Surface Texture Ratings, Control Requirements, Machining Symbols and Revision Blocks
10. Introduction to Conventional Tolerancing, Tolerances and Allowances, Definitions, Tolerancing Methods, Metric Fits, Maximum Material Condition (MMC), Form Tolerances, Position Tolerances,
11. Bearings and Clutches, Antifriction Bearings, Retaining Rings, O-Ring Seals, Clutches, Belt Drives

12. Introduction to CAD – AutoCAD Mechanical, (during Laboratries)
    a. First contact with AutoCAD Mechanical, Command Execution, New Drawing, General Settings
    b. First Steps in Design, Cartesian Coordinates, Polar Coordinates, Basic geometry: lines, circles, rectangles, arcs, Osnap, Ortho, Grid, Save, Menu File, Menu Draw
    c. Drawing Organization: Layers, Properties, Standards
    d. Basic Drawing Techniques: Menu Modify, Offset, Copy, Trim, Extend, Fillet
    e. Dimensioning
    f. Presentation and printing of the drawing. Completion of memos for A3 and A4, Layout, Page setup, Printing

(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 (power point presentations, video) Class Supporting Software (Veyon) Use of Design Software (AUTOCAD)
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: 40 Laboratories: 40 Assignments: 50 Individual Study: 30 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.*	The language of student evaluation is Greek and student assessment is based on a set of 8 written, individual assignments (60%), and a written, final exam (40%). Both the assignment and the final exam are Mechanical Drawings in AutoCAD. Course support material is provided through the UTH e-Class platform

(5) ATTACHED BIBLIOGRAPHY

-Suggested bibliography:

1. Μηχανολογικό Σχέδιο, Αριστ. Αντωνιάδης, εκδόσεις Τζιόλα, Αθήνα 2007. (ΚΩΔΙΚΟΣ ΕΥΔΟΞΟΥ: 32999119
2. Μηχανολογικό Σχέδιο και Στοιχεία Παραστατικής Γεωμετρίας. Δρ. Στ. Μαυρομμάτης , Αθήνα

2003.
3. Μηχανολογικό Σχέδιο Βας. Παπαμητούκας, University Studio press,Θες/νίκη 2002.
4. Branoff, T.J., Interpreting engineering drawings. Eighth edition. ed. 2014, Stamford, CT: Cengage Learning. xiv, 514 pages.
5. Cogorno, G.R., Geometric dimensioning and tolerancing for mechanical design. 2nd ed. 2011, New York: McGraw-Hill. xi, 260 p.

- Related academic journals:

1. *JIDEG: Journal of Industrial Design & Engineering Graphics*