1.5 CE0150 – Technical Drawing

(1) GENERAL

SCHOOL	ENGINEERING SCHOOL		
ACADEMIC UNIT	CIVIL ENGINEERING DEPARTMENT		
LEVEL OF STUDIES	UNDERGRADUATE		
COURSE CODE	**CE0150**	**SEMESTER**	**1**
COURSE TITLE	**Technical 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**
	4	5
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, specialised general knowledge, skills development*	General Background Course
PREREQUISITE COURSES:	
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	Greek
IS THE COURSE OFFERED TO ERASMUS STUDENTS	
COURSE WEBSITE (URL)	https://eclass.uniwa.gr/modules/auth/opencourses.php?fc=69

(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 the course, students will be able to:

1. To know and understand the basic concepts of spatial geometry and geometric methods of representation.
2. To distinguish projection systems, interpret and clearly explain their use and the differences between them.
3. To apply the appropriate methodology for the representation of elements of the three-dimensional space in level, with emphasis on Civil Engineering applications.
4. To analyze the elements of space and to understand their volumetric structure, so that be able to combine and correlate these elements with simple geometric euclidean solids.
5. To organize in full the representations of the three-dimensional space on the level, using the design language of engineers.
6. To compose and compare the individual elements of the space from the reading of the design their representation.

7. Be able to collaborate with their classmates to create and present, both individually and as a group, a case study from its initials stages until its final evaluation.

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…*

Specifically, students will be able to perform:

- Search, analyze and synthesize data and information.
- Autonomous work.
- Teamwork.
- Promotion of free, creative and inductive thinking.

(3) SYLLABUS

Basic concepts of Spatial Geometry and the categories of solids, geometric features and properties. The concept of volumetric perception in the built environment. Representation methods. The concept of projection in Level Geometry and its Geometry Space. The method of parallel projection. The Monge System. The axonometric method projection. Methodology for designing compact and non-compact solids representations with emphasis on building applications. Application of basic geometric constructions in the representations. The use of grid and scale.

1. INTRODUCTION
-The necessity of geometric perception for the engineer,
-Solids categories in Euclidean space / properties and geometric features,
-Correlation of building form with geometric solids (volumetric perception of built environment),
-Drawing paper size categories, A4 ratio

2. SOLID REPRESENTATION METHODOLOGY
-Methodology for the representation of the outer shell of solids (plan view, underneath view, front/side/back view)
-Use of geometric constructions for the design of these projections,
-Distinction of cases with the criterion of the parallel or not of the seats to the projection levels

3. METHODOLOGY OF RESPESENTING THE SECTIONS ON SOLIDS
-Methodology for the representation intersecting surface of solids (plan view, underneath view, longitudinal/cross-sections)

4. AXONOMETRIC DESIGN METHODOLOGY
-Three dimension drawing through the axonometric presentation for the outer shell of solids, as simple building complex
-Axonometric plan / section

5. FROM SOLID TO BUILDING SHELL
- Presentation of basic elements of the structural structure of a building shell, symbolism and sequence of drawings

(4) TEACHING and LEARNING METHODS - EVALUATION

DELIVERY *Face-to-face, Distance learning, etc.*	Face-to-face

	THEORY Lecture using powepoint presentation and analysis through application example PRACTICE EXERCISES Solve drawing exercises in classroom.
USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY *Use of ICT in teaching, laboratory education, communication with students*	Teaching using ICT, Communication and Electronic Submission.
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*	
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.*	Language of evaluation: Greek Final written examination: 80% Participation in practice exercises 20%

Activity	***Semester workload***
Lectures	26
Classwork	26
Study - solution of applications at home (weekly exercises)	26
Field research and observation	20
Semester assignement	32
Course total	**130**

(5) ATTACHED BIBLIOGRAPHY

Greek Bibliography:

1. Lefkaditis G. – Exarhaxakos G. (2017), REPRESENTATION METHODS –Monge System, Axonometry, Perspective, Hypsometry, Silhouette, ENELIXI.
2. Lefkaditis G. – Malikouti Stam. (2012), Proceedings of the Scientific Symposium on GEOMETRY – FROM SCIENCE TO APPLICATION, Piraeus, 1-2 June 2012, Department of Civil Engineering – Piraeus University of Applied Sciences.
3. Malikouti Stam. (2018), TECHNICAL DRAWING – Elements of Theory and Methodology of Applications, Syhroni Ekdotiki: Athens.
4. Malikouti Stam. – Markopoulou Natasa (2017), ARCHITECTURAL DRAWING – Design methodology at the 1:50 scale, Syhroni Ekdotiki: Athens.
5. Koyrniatis N. (2018), *Representation Techniques using Geometric Methods and Modern Digital Tools*, Thessaloniki: Tziolas Publications.
6. Koyrniatis N. (2015), *Geometry and Architecture*, Thessaloniki: Tziolas Publications.
7. Koyrniati A.M., Koyrniatis N. (2012), Perspective in Architectural Representation, Thessaloniki: Tziolas Publications.

Foreign Bibliography:

1. Aubert Jean (2003), Dessin d’ Architecture: à partir de la géométrie descriptive, Paris: editions de la Villette.

2. Giesecke F. – Mitchell A. – Spencer H.C. – Hill I.L. – Loving R.O. – Dygdon J.T. – Novak J. (1998), Engineering Graphics, 6th edition, Prentice Hall: USA.

3. Hohenberg Fr. (1961), Konstruktive Geometrie in der Technik, 2te Auflage, Springer Verlag: Wien.

4. Hoischen H. (1984), Technisches Zeichnen, 20te Auflage, W. Girardet: Essen.

5. Jensen C. (1985), Engineering Drawing and Design, 3rd edition, McGraw Hill: USA.