

COURSE OUTLINE

(1) GENERAL

FACULTY	POLYTECHNIC		
SECTION	CIVIL ENGINEERING		
LEVEL OF STUDY	UNDERGRADUATE		
COURSE CODE	G1501	SEMESTER OF STUDY	4th
TITLE	TRAFFIC ENGINEERING		
NAME OF INSTRUCTOR	PANTELIS KOPELIAS – ASSOCIATE PROFESSOR		
INDEPENDENT TEACHING ACTIVITIES <i>in case credits are awarded in distinct parts of the course e.g. Lectures, Laboratory Exercises etc. If the credits are awarded uniformly for the entire course, indicate the weekly teaching hours and the total credits</i>		WEEKLY TEACHING HOURS	CREDITS
		4	5
Add rows if needed. The teaching organization and teaching methods used are described in detail in (d).			
COURSE TYPE <i>general background, special background, specialization</i>	General background		
PREREQUISITE COURSES:			
LANGUAGE OF INSTRUCTION and	GREEK		
THE COURSE IS OFFERED IN ΦΟΙΤΗΤΕΣ ERASMUS			
COURSE WEBSITE (URL)	https://eclass.uth.gr/courses/CULT_U_164		

(2) LEARNING OUTCOMES

Learning Outcomes <i>The learning outcomes of the course, the specific knowledge, skills and competences are described appropriate level that students will acquire after the successful completion of the course. Consult Appendix A</i> • Description of the Level of Learning Outcomes for each cycle of study according to the Framework Qualifications of the European Higher Education Area • Descriptors of Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and Annex B • Learning Outcomes Writing Summary Guide	
Understanding and acquiring knowledge on issues of Basic Concepts of Traffic Engineering, Traffic Flow and analytical ability-acquisition of technique and methodology for solving design-analysis-evaluation problems in terms of road network operation. Methodological solution of capacity problems of different road categories and resolution of signalized junctions. Methodologies for calculating traffic parameters: Analysis of Traffic Data and Bases.	
General Competencies <i>Taking into account the general competencies that the graduate must have acquired (as listed in Diploma Supplement and listed below) which of them is the course aimed at?.</i> Search, analyze and synthesize data and information, using the necessary technologies Adapting to new situations Decision making Project planning and management Respect for diversity and multiculturalism Respect for the natural environment Demonstrate social, professional and ethical responsibility and sensitivity to gender issues	

(3) COURSE CONTENT

A/A week of instruction	Course contents	Hours	
		Lectures	Out-of-hours preparation
1	Introduction to traffic engineering. Basic Traffic Flow Figures. Basic considerations	4	4
2	The time dimension of traffic. Fluctuations. SOA. Design loads.	4	4
3	The street. Basic elements of design and operation. Street classification. Cross sections. Nodes	4	4
4	The street user. The vehicle.	4	4
5-6	The theory of traffic flow. Fundamental size relationships. Model Greenshields. Load-speed-density relationships. Queue standards and hydrodynamic model	8	8
7-8	Non-interruptible flow capacity analysis (HCM7). Multi-lane motorways/roads. 2-lane roads. Service level.	8	8
9	Introduction for level junctions. Types of control. Signalling conditions. Control rules. Basic data of times in signaling. Saturation flow	4	4
10-11	Capacitance analysis in intermittent flow. Delays and calculation of Service Level at a signalized junction. Capacity analysis of urban section	8	8
12-14	Signalling study. Import. Basic considerations. Signaling stages. Features and locations of traffic lights. Signaling groups. Times in signaling. Intermediate time. Period and times of greenery. Pedestrian	12	12
		56	56

Lectures-Study	Examination	Exam preparation	TOTAL
112	3	25	140

TEACHING AND LEARNING METHODS - ASSESSMENT

DELIVERY METHOD <i>Face-to-face, Remote education, etc.</i> USE OF TECHNOLOGIES INFORMATION AND COMMUNICATIONS <i>Use of ICT in Teaching, Laboratory Training, Communication with students</i> TEACHING ORGANIZATION <i>The method and methods of teaching are described in detail. Lectures, Seminars, Laboratory Exercise, Field Exercise, Bibliography Study & Analysis, Tutorial, Internship (Placement), Clinical Practicing, Art Workshop, Interactive Teaching, Educational visits, Project Writing, Writing a project / assignments, Artistic creation, etc.</i> <i>The student's study hours for each learning activity as well as the hours of unguided study according to ECTS principles are listed</i>	Face to Face Use of computer lab for analysis, processing of bases Data Communication with Students
STUDENT EVALUATION <i>Description of the evaluation process</i> <i>Assessment Language, Assessment Methods, Formative or Summative, Multiple Choice Test, Short Answer Questions, Essay Development Questions, Problem Solving, Written Assignment, Essay/Report, Oral Examination, Public Presentation, Laboratory Work, Clinical Examination of a Patient, Artistic Interpretation, Other/Others</i> <i>Explicitly defined evaluation criteria and whether and where they are accessible to students are mentioned.</i>	Activity Traditions (Theory and exercises) Semester Workload Exams Written: Theory 50% - Exercises 50%. It is mandatory to cover 50% of the grade in each part of the examination (theory: 2.5/5 - exercises: 2.5/5). Potentially, mandatory midterm exam in the 7th-9th week. percentage of the final grade 20%.

(4) RECOMMENDED BIBLIOGRAPHY

- o Highway Capacity Manual⁷ (2022), Transportation research Board, National Academy of Sciences, USA
- o Institute of Transportation Engineers (ITE), Traffic Engineering Handbook, 2009 και 2016
- o National Academies of Sciences, Engineering, and Medicine. 2022. *Highway Capacity Manual 7th Edition: A Guide for Multimodal Mobility Analysis*. Washington, DC: The National Academies Press. <https://doi.org/10.17226/26432>.
- o Kopelelias Pantelis (2025) topics from Traffic Engineering (Traffic Engineering) Kritiki Publications
- o Antoniou, K., Spyropoulou, I., (2015). Principles of traffic technique and simulation. [e-book] Athens: Hellenic Academic Libraries Link.
- o I.M.Frantzeskakis, I. Golias, M. Pitsiava-Latinopoulou (2009) "Traffic Technique" Papasotiriou Publications
- o OMOE. Available on the website of the Ministry of Infrastructure and Transport, <https://www.ggde.gr>
- o Road Traffic Code Law 2696/23.03.1999 Government Gazette A' 57 and amendments thereto until the publication of Law 5039/2023 (A'170), "Informal Coding up to Law 5039/23 (A' 83/03.04.23)". Available on the website of the Ministry of Infrastructure and Transport.

(6) PROGRAMMES OF STUDY IN WHICH HE/SHE HAS JOINED AS PART OF THE BASIC CYCLE STUDIES

TAUGHT: 2012-2013 SPRING, 2013-2014 SPRING, 2014-2015 SPRING, 2015-2016 SPRING, 2016-2017 SPRING, 2017-2018 SPRING, 2018-2019 SPRING, 2019-2020 SPRING 2020-2021 SPRING, 201-2022 SPRING, 2022-2023 SPRING, 2023-2024 SPRING