1.1.1 Traffic Engineering

GENERAL

SCHOOL	Engineering		
ACADEMIC UNIT	CIVIL ENGINEERING		
LEVEL OF STUDIES	Undergraduate		
COURSE CODE	ΣΥΓ003	**SEMESTER**	3rd
COURSE TITLE	Traffic Engineering		

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	4
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*	Scientific Field
PREREQUISITE COURSES:	
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	Greek
IS THE COURSE OFFERED TO ERASMUS STUDENTS	No
COURSE WEBSITE (URL)	https://elearning.cm.ihu.gr/course/view.php?id=480

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 completing this course students should be able to recognize the traffic flow variables and their mathematical relations as well as concepts of traffic capacity, calculate traffic capacity and level of service of basic road elements, to calculate a signalized intersection and implement methods of traffic data collection.

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…*

…….
The course contributes to the following skills: _Search for, analysis and synthesis of data and information, with the use of the necessary technology _Adapting to new situations _Decision-making _Project planning and management _Respect for the natural environment.

SYLLABUS

Trip generation and characteristics, land transportation system, traffic flow variables, traffic volume and flow rate, speed, traffic density and occupancy, space headway and time headway, time-space diagrams, fundamental traffic flow relationship, traffic flow diagrams, patterns and statistical distributions of traffic flow, traffic capacity, level of service, interrupted and uninterrupted flow, service flow rate, performance measures and service measures, demand and volume, functional classification of road networks, cross sections, urban roads, classification of urban roads, speeds, levels of service, service volumes, calculation of traffic capacity (unsignalized intersections, two lane highways, multilane highways, basic freeway segments, freeway weaving, ramps and ramp junctions), traffic signalization, warrants, traffic signal design, traffic light coordination, traffic data collection methods.

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*	Powerpoint presentations, E-learning platform for educational material.
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	52
Individual study	52
Course total (26 hours workload per ECTS credit)	***104***

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.*	Final written exam (100%) which includes: - Open ended questions - Problem solving questions (exercises) The evaluation criteria are presented in the 1st lecture of the semester to all students. Furthermore, each student can see his graded exam/ written assignment paper and talk on the analysis of his written performance with the professor.

ATTACHED BIBLIOGRAPHY

- [In Greek] Αντωνίου, Κ., Σπυροπούλου, Ι. (2016). Αρχές Κυκλοφοριακής Τεχνικής και Προσομοίωσης. Ελληνικά Ακαδημαϊκά Ηλεκτρονικά Συγγράμματα και Βοηθήματα - Αποθετήριο "Κάλλιπος", ISBN: 978-960-603-306-3.
- [In Greek] Φραντζεσκάκης, Ι.Μ., Γκόλιας, Ι.Κ., Πιτσιάβα-Λατινοπούλου, Μ.Χ. (2009). Κυκλοφοριακή Τεχνική. Α. ΠΑΠΑΣΩΤΗΡΙΟΥ ΣΙΑ Ι.Κ.Ε., ISBN: 978-960-7182-42-5.
- [In Greek] Φραντζεσκάκης, Ι.Μ., Γιαννόπουλος, Γ.Α. (2005). Σχεδιασμός των Μεταφορών και Κυκλοφορική Τεχνική. Εκδόσεις Επίκεντρο Α.Ε., ISBN: 978-960-6647-20-8.
- [In Greek] Φραντζεσκάκης, Ι.Μ., Πιτσιάβα-Λατινοπούλου, Μ.Χ., Τσαμπούλας, Δ.Α. (2002). Διαχείριση Κυκλοφορίας. Α. ΠΑΠΑΣΩΤΗΡΙΟΥ ΣΙΑ Ι.Κ.Ε., ISBN: 978-960-7510-50-1.
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- [In Greek] Οδηγίες Μελετών Οδικών Έργων, Τεύχος 2: Διατομές (ΟΜΟΕ-Δ), ΥΠΕΧΩΔΕ, ΓΓΔΕ/ΔΜΕΟ, Έκδοση: 30/01/2001.
- ITE (2016). Traffic Engineering Handbook. HEAL-Link Wiley ebooks, ISBN: 9781119174738.
- Roess, R.P., Prassas, E.S. (2014). The Highway Capacity Manual: A Conceptual and Research History. HEAL-Link Springer ebooks, ISBN: 978-3-319-05786-6.