4.4 CE0440 – Traffic Engineering

(1) GENERAL

SCHOOL	ENGINEERING SCHOOL		
ACADEMIC UNIT	CIVIL ENGINEERING DEPARTMENT		
LEVEL OF STUDIES	UNDERGRADUATE		
COURSE CODE	**CE0440**	**SEMESTER**	**4**
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*	Special Background Course
PREREQUISITE COURSES:	-
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	Greek
IS THE COURSE OFFERED TO ERASMUS STUDENTS	Yes, for interested students
COURSE WEBSITE (URL)	https://eclass.uniwa.gr/courses/CIV193/

(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 completion of the course, the students will be able to:

- Understand the basic principles of traffic flow
- Obtain knowledge for the implementation of traffic studies
- Collect, analyse and interpret data necessary for the traffic management and the planning of transportation infrastructures
- Use the obtained knowledge for the study of transportation systems in the course of their professional life
- Participate in user groups in order to investigate the feasibility of development or construction of transportation infrastructures
- Obtain sufficient knowledge that can be used in their further specialization in the subject matter of the course (e.g. in MSc studies)

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 aims at the following general competences:

- Search, analysis and synthesis of data and information, using the necessary technologies
- Adapting to new situations
- Decision-making
- Working independently
- Team work
- Working in an international environment
- Working in an interdisciplinary environment
- Project planning and management

(3) SYLLABUS

The course contains only theoretical part with the following objectives:

- Basic traffic flow variables (traffic volume, density, traffic composition, peak hour factor etc.)
- Fundamental traffic flow relationship and related diagrams
- Use of statistical distributions for the description of traffic parameters
- Capacity and Level of Service: definitions, factors affecting capacity, calculation of capacity and level of service in various situations (highways, interurban roads, shock waves)
- Basic definitions, concepts and characteristics of signalization; conditions for signalization
- Optimum signalization in individual intersections
- Coordinated signalization
- Calculation of signal timing
- Calculation of saturation flow, level of service and delays in signalized intersections
- Parking: definitions, characteristics and categorization
- Factors affecting parking in urban areas
- Design, construction and operation of parking areas
- Controlled parking
- Basic principles of traffic surveys and counts
- Traffic management and calming measures in urban areas

(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*	Communication with the students through email and the website of the course (Open eClass), and additional support of the learning process by providing more exercises and resolved examples uploaded on the website.
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.*	

Activity	***Semester workload***
Lectures	40
Classwork	40
Educational visit	15

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		Problem solving	25
		Course total	**120**
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 final evaluation of the students is in writing (100%) containing problems' solving and oral exam or judgement questions, if necessary. There is also the potential for written work in the middle of the semester. The evaluation criteria are presented to the students prior to the examination, the grading of all problems are shown and the final grades are available through the platform of the university. The students can review their written solving process, the grades assigned to each problems and explanations are given to them for their mistakes, if any. The evaluation language is Greek, expect for the Erasmus students, which is English.		

(5) ATTACHED BIBLIOGRAPHY

Greek Bibliography:

1. Frantzeskakis J., J. Golias & M. Pitsiava-Latinopoulos (2009). Traffic Engineering. Publications: A. Papasotiriou (in Greek).
2. Chrisoulakis J. & D. Dimitriou (2004). Traffic Engineering Systems and Highways Engineering problems. Publications: Technological Educations Institute of Athens (in Greek).
3. Frantzeskakis J. & G. Giannopoulos (2005). Transportation Planning and Traffic Engineering. Publications: Epikentro (in Greek).
4. Frantzeskakis J., M. Pitsiava-Latinopoulos & D. Tsampoulas (1997). Traffic Management. Publications: A. Papasotiriou (in Greek).
5. Pitsiava-Latinopoulos M., G., Mintsis & S. Basbas Pitsiava-Latinopoulos (2006). Organization and Operation of Traffic Systems and Parking. Thessaloniki (in Greek).
6. Frantzeskakis J., M. Pitsiava-Latinopoulos & D. Tsampoulas (2002). Parking. Publications: A. Papasotiriou (in Greek).

Foreign Bibliography:

1. Transportation Research Board (2000). Highway Capacity Manual, National Research Council, Washington D.C.
2. Roess R. P., E. S. Prassas & W. R. Mc Shane (1998). Traffic Engineering, Publications: Prentice Hall.
3. Highway Research Board (1971). Parking principles, Special Report No 125, Washington D.C.

Related academic journals:

1. Transportation Research Record
2. Journal of International Transportation
3. European Transportation Research Record
4. Journal of European Transport
5. Journal of Transportation Research Forum
6. Transportation Science
7. Transportation Research: Parts A: Policy and Practice
8. Transportation Research: Parts B: Methodological
9. Transportation Research: Parts C: Emerging Technologies
10. Transportation Research: Parts D: Transport and Environment
11. Transportation Research: Parts E: Logistics and Transportation Review
12. Transportation Research: Parts F: Traffic Psychology and Behaviour
13. International Journal of Sustainable Transportation
14. Transportation Planning and Technology
15. Transport Reviews

16. Transportation Journal