

## ECTS

### (B) Course information in english

#### General course information:

<b>Course title:</b>	Design and evaluation of transportation systems	<b>Course code:</b>	CE07-T06
<b>Credits:</b>	5	<b>Work load (hours):</b>	130
<b>Course level:</b>	Undergraduate <input checked="" type="checkbox"/>	Graduate	<input type="checkbox"/>
<b>Course type:</b>	Mandatory <input checked="" type="checkbox"/>	Selective	<input type="checkbox"/>
<b>Course category:</b>	Basic <input type="checkbox"/>	Orientation	<input checked="" type="checkbox"/>
<b>Semester:</b>	7 <sup>o</sup>	<b>Hours per week:</b>	4
<b>Course objectives (capabilities pursued and learning results):</b>			
Travel demand forecasting through the usage of advanced transportation models. Evaluating transportation projects and development of business models. Decision making in transportation.			
<b>Prerequisites:</b>			
Transportation planning			

#### Instructor's data:

<b>Name:</b>	Eftihia Nathanail
<b>Level:</b>	Assistant professor
<b>Office:</b>	Civil Engineering Faculty (A12) University of Thessaly Pedion Areos, 38334 Bolos, Greece
<b>Tel. – email:</b>	+3024210 74164, <a href="mailto:enath@uth.gr">enath@uth.gr</a>
<b>Other tutors:</b>	

**Specific course information:**

Week No.	Course contents	Hours	
		Course attendance	Preparation
1	Introduction to transportation systems	4	1
2	Transportation policy in Europe	4	1
3	Travel demand forecasting framework	4	1
4	Advanced models in transportation planning	4	2
5	Learning VISUM/ VISSIM	4	1
6	Transportation systems evaluation	4	1
7	Impact analysis	4	2
8	Feasibility studies	4	1
9	Multistakeholder multicriteria evaluation	4	2
10	Data analysis methods	4	2
11	Statistical analysis using SPSS	4	1
12	Service quality	4	1
13	Business models	4	1
14	Research methodology	4	1

Additional hours for:			
Class project	Examinations	Preparation for examinations	Educational visit
40		16	

**Suggested literature:**

- "Introduction in Transportation Systems", Sussam Joseph, 2003
- "Business Logistics Management", Ronald H. Ballou, Prentice Hall, 4th edition, 1999

- "Transportation", John J. Coyle, Edward J. Bardi, Robert A. Novack, South-Western, 5th Edition, 2000
- "Intelligent Transportation Systems Architectures", Bob McQueen, Judy McQueen, Artech House, 2003
- Cascetta (2009). *Transportation System Analysis: models and applications*. 2<sup>nd</sup> edition. Springer.
- CE Delft Report (2007). *Handbook on estimation of external cost in the transport sector*. EC DG Tren.
- eIMPACT (2008). *Deliverables 2-10*. eIMPACT Consortium.
- FESTA (2008). *Handbook*. EC DG ISM.
- HEATCO (2005). *Deliverables 1-7*. EC DG TREN.
- Sinha, K.C. and Labi, S. (2007). *Transportation Decision Making. Principles of Project Evaluation and Programming*. Wiley.
- Dziekan K., and K. Kottonhoff. Dynamic At-Stop Real-Time Information Displays for Public Transport: Effects on Customers. *Transportation Research Part A*, Vol. 41, No 6, 2007, pp 489-501.
- Mishalani R., & M. McCord. Passenger Wait Time Perceptions at Bus Stops: Empirical Results and Impact on Evaluation Real-Time Bus Arrival Information. *Journal of Public Transportation*, Vol. 9, No 2, 2006, pp 89-106.
- Ajzen I. and M. Fishbein. *Understanding attitudes and predicting social behavior*, Prentice Hall, Inc. Englewood Cliffs NJ, 1980.
- NIJKAMP, P., RIETVELD, P. and VOOGD, H., (1990). *Multi-criteria Evaluation in Physical Planning*, Elsevier Science, Amsterdam.
- *Urban Transportation Planning*. Michael D.Meyer, Eric J.Miller, 2001, New York, The McGraw-Hill Companies, Inc..
- Glenaffric Ltd (2007) *Six Steps to Effective Evaluation: A handbook for programme and project managers*
- CPB and NEI (2000). *Evaluatie van infrastructuurprojecten: leidraad voor kosten-baten analyse (Evaluation of infrastructural projects: guide for cost-benefit analysis)*. CPB/NEI, The Hague/Rotterdam.
- Paolo Beria , Ila Maltese and Ilaria Mariotti. *Multicriteria versus Cost Benefit Analysis: a comparative perspective in the assessment of sustainable mobility*
- HMT (2003) *Green Book: Appraisal and Evaluation in Central Government*. London: HMSO
- HEATCO (2005) *Developing harmonised European approaches for transport costing and project assessment. Deliverable 1: current practice in project appraisal in Europe*
- *Estimating the Benefits and Costs of Public Transit Projects: A Guidebook for Practitioners*. 2002. Washington, D.C.: Transportation Research Board, National Research Council. TCRP Report 78.
- OECD, ECMT (2005) *National systems of transport infrastructures planning*. ECMT Round Table 128, Paris, 26–27 February 2004
- PIARC (2004) *Economic evaluation methods for road projects in PIARC*

member countries. PIARC

- EVA TREN (2008) Improved decision-aid methods and tools to support evaluation of investment for transport and energy networks in Europe. Deliverable 1. Evaluating the state-of-the-art in investment for transport and energy networks. [www.eva-tren.org](http://www.eva-tren.org).
- COM – The European Commission (2007) Greenbook 2007 – Towards a new culture for urban mobility. Commission of the European Communities, Brussels
- World bank (1996) Sustainable transport: priorities for policy reform. World Bank, Washington DC
- Litman, Todd. 1999. Evaluating Public Transit Benefits and Cost. Victoria, B.C.: Victoria Transport Policy Institute. September 9.
- Hensher, D. A., Button, K. J.: Handbook of Transport Modelling, Pergamon, 2000.
- Ortuzar, J. de Dios, Willemsen, Luis G: Modelling Transport, 3rd edition, John Wiley and Sons Ltd., 2001.
- Mandelzys M. and B. Hellinga. Identifying Causes of Performance Issues in Bus Schedule Adherence with Automatic Vehicle Location and Passenger Count Data. In Transportation Research Record: Journal of the Transportation Research Board, No 2143, Transportation Research Board of the National Academies, Washington DC, 2010 pp 9-15.
- Bertini R.I. and A. El-Geneidy. Generating Transit Performance Measures with Archived Data. In Transportation Research Record: Journal of the Transportation Research Board, No 1841, Transportation Research Board of the National Academies, Washington DC, 2003 pp 109-119.
- Surprenant-Legault J. and A. El-Geneidy. Introduction of Reserved Bus Lane: Impact on Bus Running Time and On-Time Performance. In Transportation Research Record: Journal of the Transportation Research Board, No 2218, Transportation Research Board of the National Academies, Washington DC, 2011 pp 10-18.
- Lehtonen M., and R. Kulmala. Benefits of Pilot Implementation of Public Transport Signal Priorities and Real-Time Passenger Information. In Transportation Research Record: Journal of the Transportation Research Board, No 1799, Transportation Research Board of the National Academies, Washington DC, 2002 pp 18-25.

<b>Teaching method (select and describe if necessary - weight):</b>		
<b>Teaching</b> Use of visual education materials and multimedia supports (PowerPoint presentation, photos, videos). Demonstration of case studies	<input checked="" type="checkbox"/>	70%
Seminars	<input type="checkbox"/>	.....%
<b>Demonstrations</b> Demonstration of selected software for the solution of operation research problems	<input checked="" type="checkbox"/>	10 %
Laboratory	<input type="checkbox"/>	.....%
<b>Exercises</b> Drill exercises and applications in evaluation of transportation systems	<input checked="" type="checkbox"/>	20 %
Visits at facilities	<input type="checkbox"/>	.....%
Other (describe): .....	<input type="checkbox"/>	.....%
<b>Total</b>		<b>100%</b>

<b>Evaluation method (select)- weight:</b>				
	<i>written</i>	<i>%</i>	<i>Oral</i>	<i>%</i>
Homework	<input type="checkbox"/>		<input type="checkbox"/>	
Class project	<input checked="" type="checkbox"/>	30	<input type="checkbox"/>	10
Interim examination	<input type="checkbox"/>		<input type="checkbox"/>	
Final examinations	<input checked="" type="checkbox"/>	35	<input type="checkbox"/>	
Other (describe): Critical analysis, research and presentation of scientific paper	<input type="checkbox"/>	5	<input checked="" type="checkbox"/>	20