

COURSE OUTLINE

(1) General information

FACULTY/SCHOOL	INDUSTRIAL AND MARITIME STUDIES		
DEPARTMENT	MARITIME STUDIES		
LEVEL OF STUDY	Undergraduate		
COURSE UNIT CODE	NA204	SEMESTER	2nd
COURSE TITLE	Transportation Systems		
INDEPENDENT TEACHING ACTIVITIES <i>in case credits are awarded for separate components/parts of the course, e.g. in lectures, laboratory exercises, etc. If credits are awarded for the entire course, give the weekly teaching hours and the total credits</i>		WEEKLY TEACHING HOURS	CREDITS
Lectures		4	6
<i>Add rows if necessary. The organization of teaching and the teaching methods used are described in detail under section 4</i>			
COURSE TYPE <i>Background knowledge, Scientific expertise, General Knowledge, Skills Development</i>	General Knowledge		
PREREQUISITE COURSES:	None		
LANGUAGE OF INSTRUCTION:	Greek		
LANGUAGE OF EXAMINATION/ASSESSMENT:			
THE COURSE IS OFFERED TO ERASMUS STUDENTS	No		
COURSE WEBSITE (URL)	https://eclass.unipi.gr/modules/auth/opencourses.php?fc=38		

(2) LEARNING OUTCOMES

Learning Outcomes

The course learning outcomes, specific knowledge, skills and competences of an appropriate (certain) level, which students will acquire upon successful completion of the course, are described in detail.

It is necessary to consult:

APPENDIX A

- *Description of the level of learning outcomes for each level of study, in accordance with the European Higher Education Qualifications' Framework.*
- *Descriptive indicators for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and*

APPENDIX B

• Guidelines for writing Learning Outcomes

The main objective of the course "Introduction to Transport Systems" is to provide general information on the different aspects of transport systems, by clarifying, analyzing, and modeling the various components of transport systems. The course introduces students to the analytical methods of transport systems, highlighting both modelling and economic aspects. The course covers the basic principles governing the design of transport systems, investment, operations, and maintenance of a transport system. In addition, the course analyzes microeconomic concepts, economic theories of business and consumer dynamics, as well as market and demand models, discrete choice analysis models, cost models and production operations, and pricing theory. At the same time, transport system applications are analyzed from the point of view of pricing, congestion, technological change, resource allocation, market structure and regulation, revenue forecasting, including public and private funding of transport, and the environment. Students, at the end of the course, will be able to understand the fundamental parameters involved in the design of transport systems. They will:

- Acquire skills in data collection for the analysis and planning of transport systems
- Understand the important concepts of transport systems
- Understand the history of the development of transport systems and the way in which transportation and networks affect the pace at which society develops
- Model transport systems, considering the interaction between different systems, including public transport, freight transport, and the sustainability of transport systems
- Understand the concept of the level of service (LoS) of transport systems
- Understand the stages of modeling demand, the two-way relationship between land use and transport, and how demand modeling is part of the transport system design process
- Understand the procedures for improving the safety of transport systems
- Identify signaling design arrangements to minimize congestion and other social costs
- Understand the transport system services in relation to distance and capacity parameters
- Assess and compare the performance of different transport systems
- Analyze the role of freight movements in the economy and why certain goods tend to be carried by specific modes of transport
- Understand the concept of sustainable transport systems

General Competences

Taking into consideration the general competences that students/graduates must acquire (as those are described in the Diploma Supplement and are mentioned below), at which of the following does the course attendance aim?

Search for, analysis and synthesis of data and information by the use of appropriate technologies,

Adapting to new situations

Decision-making

Individual/Independent work

Group/Team work

Working in an international environment

Working in an interdisciplinary environment

Project planning and management

Respect for diversity and multiculturalism

Environmental awareness

Social, professional and ethical responsibility and

sensitivity to gender issues

Critical thinking

Development of free, creative and inductive thinking

.....

(Other.....citizenship, spiritual freedom, social

- Project management
- Quality management
- Respect for diversity and multiculturalism
- Respect for the natural environment
- Demonstrate social, professional and moral responsibility and sensitivity to gender issues
- Exercise of criticism and self-criticism
- Promote free, creative and inductive thinking
- Making decisions
- Autonomous work
- Teamwork
- Working in an international environment
- Work in an interdisciplinary environment
- Producing new research ideas

(3) COURSE CONTENT

The content of the course is divided into chapters:

- Introductory framework, concepts, and categorization of transport systems
- Transportation system elements: internal analysis
- Transportation system elements: external analysis
- Customer and service level
- Transport systems networks
- Transport systems: Key points
- Models and frameworks
- Systems modeling
- Freight transport
- The Logistics system and the level of service
- Rail lines: Introductory concepts
- Railway operations
- Railway Terminals: P-MAKE Analysis for Predicting Network Performance
- Car cost and service level
- KWON model: A simulation application
- Measurement of origin-destination and other railway issues
- Trucks
- Shipping and international freight transport
- Passenger transport
- Passenger service level
- Intelligent transport systems
- Urban transport planning and real-time network control
- Traffic signals and other control measures
- Queuing theory
- Public transport
- Intercity Traveler: Air Transport
- Intercity Traveler: Rail

(4) TEACHING METHODS--ASSESSMENT

<p>MODES OF DELIVERY <i>Face-to-face, in-class lecturing, distance teaching and distance learning etc.</i></p>	Face-to-face													
<p>USE OF INFORMATION AND COMMUNICATION TECHNOLOGY <i>Use of ICT in teaching, Laboratory Education, Communication with students</i></p>	<ul style="list-style-type: none"> ▪ Support of the course through the e-class electronic platform ▪ Communication with students (email) ▪ Lectures through PowerPoint 													
<p>COURSE DESIGN <i>Description of teaching techniques, practices and methods: Lectures, seminars, laboratory practice, fieldwork, study and analysis of bibliography, tutorials, Internship, Art Workshop, Interactive teaching, Educational visits, projects, Essay writing, Artistic creativity, etc.</i></p> <p><i>The study hours for each learning activity as well as the hours of self-directed study are given following the principles of the ECTS.</i></p>	<table border="1"> <thead> <tr> <th><i>Activity/Method</i></th> <th><i>Semester workload</i></th> </tr> </thead> <tbody> <tr> <td><i>Lectures</i></td> <td>52</td> </tr> <tr> <td><i>Case studies</i></td> <td>10</td> </tr> <tr> <td><i>Written project (team or individual)</i></td> <td>30</td> </tr> <tr> <td><i>Self-guided study</i></td> <td>58</td> </tr> <tr> <td><i>Total</i></td> <td>150</td> </tr> </tbody> </table>		<i>Activity/Method</i>	<i>Semester workload</i>	<i>Lectures</i>	52	<i>Case studies</i>	10	<i>Written project (team or individual)</i>	30	<i>Self-guided study</i>	58	<i>Total</i>	150
	<i>Activity/Method</i>	<i>Semester workload</i>												
	<i>Lectures</i>	52												
	<i>Case studies</i>	10												
	<i>Written project (team or individual)</i>	30												
	<i>Self-guided study</i>	58												
<i>Total</i>	150													
<p>STUDENT PERFORMANCE EVALUATION/ASSESSMENT METHODS <i>Detailed description of the evaluation procedures:</i></p> <p><i>Language of evaluation, assessment methods, formative or summative (conclusive), multiple choice tests, short- answer questions, open-ended questions, problem solving, written work, essay/report, oral exam, presentation, laboratory work, other.....etc.</i></p> <p><i>Specifically defined evaluation criteria are stated, as well as if and where they are accessible by the students.</i></p>	<p>1. Written final examination (60%) in Greek which includes Constructed Response Questions and / or Multiple-Choice Questions</p>													
	<p>2. Individual (or team) written project (40%)</p>													

(5) SUGGESTED BIBLIOGRAPHY:

-Suggested bibliography:

Joseph Sussman, Introduction to transport systems

-Scientific journals:

- Accident Analysis & Prevention
- Economics of Transportation
- Journal of Rail Transport Planning & Management
- Journal of Transport & Health
- Research in Transport Business and Management
- Transportation
- Transportation Research Parts A-E
- Transportation Science
- Travel Behavior and Society