

DISCIPLINE RECORD

Academic year 2026/2027

1. Information about the program

University	Constanta Maritime University
Faculty	Navigation and Maritime Transport
Department	Management in Transport
Domain of study	Engineering and Management
Academic level	Master
Study programme/ qualification	Business Administration in Transport

2. Information about discipline

Course title	Transport Systems Engineering				
Lecture tenured	Assoc. Prof. Cristina DRAGOMIR PhD				
Application tenured	Assoc. Prof. Cristina DRAGOMIR PhD				
Year of study	VI	Semester	I	Type of examination	V
Conditions of discipline	Course category: DF – Fundamental subjects, DS – Specialization subjects, DC – Complementary subjects				DS
	Course type: DOB – compulsory subjects; DOP – elective subjects; DFA – optional subjects				DOB

3. The total time estimated

I a) Number of hours per week	3	Course	2	Seminar	1	Laboratory		Project	
I b) Total hours per semester from the curriculum	42	Course	28	Seminar	14	Laboratory		Project	

II Time distribution for the semester:	ore
II a) Study after manual, course support, bibliography and notes	40
II b) Additional documentation in library, specialized electronic platforms	38
II c) Training seminars / labs, homework, essays, portfolios and essays	5
III Tutorial	
IV Examinations	2
V Other activities:	

Total hours of individual study II (a+b+c)	83
Total hours per semester (Ib+II+III+IV+V)	127
Number of credits	5

4. Prerequisites (if necessary)

Curriculum	•
Expected learning outcomes	•

5. Conditions (if necessary)

Progress of the course	•	
Progress of application	Seminar	•
	Laboratory	•
	Project	•

6. Objectives of discipline (based on the grid of specific skills acquired – no7)

The overall objective of discipline	<ul style="list-style-type: none"> The <i>Transport Systems Engineering</i> discipline aims to provide students with an integrated understanding of how modern transportation systems are planned, designed, operated, evaluated, and managed across all modes (road, rail, air, and maritime). The course develops the knowledge and skills needed to analyze
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	transportation networks, model traffic and travel demand, apply intelligent transportation systems and specialized software tools, and assess the safety, environmental, and policy implications of transport projects, in order to support sustainable urban and regional mobility solutions.
The specific objectives of discipline	<ul style="list-style-type: none"> • Explain the structure and functioning of transportation networks and intermodal systems, including how different modes connect and interact to form integrated transport chains. • Apply fundamental concepts of traffic engineering and Intelligent Transportation Systems (ITS) to analyze traffic flow, assess performance indicators, and propose ITS-based solutions for improving efficiency and safety. • Describe the main components, operational principles, and constraints of different transport systems • Develop and evaluate transport network plans by defining objectives, collecting and processing relevant data, generating and comparing alternative scenarios, and supporting investment decisions.

7. Expected learning outcomes:

No.	Knowledge	Skills	Responsibility and autonomy
1	The student masters ICT solutions applicable to business problems.	The student advises on strategic business decisions based on data analysis.	The graduate assumes responsibility for implementing ICT innovations.
2	The student is knowledgeable about ethical principles in engineering management.	The student communicates technical information clearly to diverse audiences.	The graduate promotes ethical and social responsibility in professional practice.

8. Competences covered by the discipline, according to the diploma supplement

Professional competences	<ul style="list-style-type: none"> • Analyzes external factors affecting companies • Adapts to changing situations • Focuses on innovation in current practices • Plans transport operations • Port operations manager
Transversal competences	<ul style="list-style-type: none"> • Create risk reports • Seek innovation in current practices • Propose ICT solutions to business problems

9. Contents

Course	Nr. hours	Teaching methods	Obs.
• 1. Transportation networks and intermodal systems	2	Lecture. Power-Point presentations	
• 2. Traffic Engineering and ITS	2	Lecture. Power-Point presentations	
• 3. Transport Network Planning	2	Lecture. Power-Point presentations	
• 4. Transportation Systems Modeling and Evaluation	2	Lecture. Power-Point presentations	
• 5. Urban and Regional Policy	2	Lecture. Power-Point presentations	
• 6. Air Transport	2	Lecture. Power-Point presentations. Case study	
• 7. Railway Engineering	2	Lecture. Power-Point presentations. Case study	

• 8.Maritime Transport	2	Lecture. Power-Point presentations. Case study	
• 9.Safety, Noise and Air Quality	2	Lecture. Power-Point presentations	
• 10.Software Systems and Simulation for Transportation Applications	2	Lecture. Power-Point presentations Case study	
• 11.Applications of GIS in Transportation	2	Lecture. Power-Point presentations. Case study	
• 12.Traffic, Streets and Highways	2	Lecture. Power-Point presentations. Case study	
• 13.Traffic Control Systems	2	Power-Point presentations. Case study	
• 14.Traffic Congestion	2	Power-Point presentations Case study	

Bibliography

- Kutz, Myer (ed.), Handbook of Transportation Engineering, McGraw-Hill, 2004
- European Conference of Ministers of Transport (ECMT). 1998.Efficient Transport for Europe: Policiesfor Internalisation of External Costs.Paris: OECD Publications Service.
- Roess, R. P., W. R. McShane, and E. S. Prassas. 1998.Traffic Engineering, 2nd ed. Englewood Cliffs:Prentice-Hall.
- Vonderohe, A. 1993.Adaptation of Geographic Information Systems for Transportation.NCHRP Report20-27, National Research Council, Washington, DC.
- May, A. 1990.Traffic Flow Fundamentals. Englewood Cliffs: Prentice Hall

Selective bibliography

- Kutz, Myer (ed.), Handbook of Transportation Engineering, McGraw-Hill, 2004
- Course notes available on the platform campus.cmu-edu.eu

Application (Seminar / laboratory / project)	Nr. hours	Teaching methods	Obs.
• 1.Improvement of railroad yard operations	2	Interactive Power-Point presentations. Case study application	
• 2. Airport planning and design	2	Interactive Power-Point presentations. Case study application	
• 3. Non-automobile transportation	2	Interactive Power-Point presentations. Case study application	
• 4. Urban transit	2	Interactive Power-Point presentations. Case study application	
• 5.Parking management in urban areas	2	Interactive Power-Point presentations. Case study application	
• 6.Incident management	2	Interactive Power-Point presentations. Case study application	
• 7.Transportation hazards	2	Interactive Power-Point presentations. Case study application	

Bibliography

- Kutz, Myer (ed.), Handbook of Transportation Engineering, McGraw-Hill, 2004
- European Conference of Ministers of Transport (ECMT). 1998.Efficient Transport for Europe: Policiesfor Internalisation of External Costs.Paris: OECD Publications Service.

Selective bibliography

- Kutz, Myer (ed.), Handbook of Transportation Engineering, McGraw-Hill, 2004 (<http://www.icivil-hu.com/Nedal/Handbook%20of%20Transportation%20Engineering.pdf>)
- Seminar notes available on the platform campus.cmu-edu.eu

Additional Notes

- Students may take photographs or make audio-video recordings in classrooms where teaching activities are conducted **only with the consent of the instructor and under the conditions established by the instructor.**
- Upon entering the classroom, students are kindly requested to **switch their mobile phones to silent mode and refrain from using them during classes.**
- All materials received by students, either directly or through postings on the platform *campus.cmu-edu.eu*, are subject to **national and international copyright legislation.** These materials may be used by students **solely for educational purposes.** Any other use or posting on publicly accessible websites without the consent of the copyright holder may be punished in accordance with **Law no. 8/1996 on copyright and related rights** and the **Berne Convention.**

10. The corroboration of contents of discipline with expectations epistemic community representatives, professional associations and representative employers in the corresponding program

- The contents of the Transport Systems Engineering discipline are aligned with the expectations and current trends of the academic and professional community in transportation engineering, as well as with the competency needs expressed by employers in the field. The discipline ensures a good match between the academic training of students and the competencies demanded on the labor market, supporting their integration in professional practice and their continued development in the transport engineering epistemic community.

11. Examination

Type of activity	Examination Criteria	Methods of examination	Percentage of final grade
Course	Elaboration and presentation of project on ESM topic (oral + written) – 80%	Power Point presentation	80%
Seminar	Applied questions based on the seminar topics	Accomplishment of seminar tasks	20%
Laboratory			
Project			

Grading Requirements

Minimum score required: **50 points: 50-54->nota 5; 55-64-> nota 6; 65-74-> nota 7; 75-84-> nota 8; 85-94-> nota 9; 95-100-> nota 10**

Additional Notes

- A **midterm exam** may be organized during the semester.
- If a student participates in **conferences** (student, local, national, or international) or **competitions** (national or international) related to the subject of this course, they may receive **additional points or equivalence for certain assignments, papers, and/or attendance**, depending on the results obtained.
- During written examinations, students are **not allowed to use mobile phones or any other electronic devices, except for simple scientific calculators.**

Minimum performance standards: 50 points (nota 5)

Date of completion	Signature of lecture tenured	Signature of application tenured
22.09.2025	Assoc. Prof. Cristina DRAGOMIR PhD	Assoc. Prof. Cristina DRAGOMIR PhD

Date of approval in the department	Signature of Director of Department
26.09.2025	Lecturer Ana Cornelia OLTEANU PhD

Date of approval in the faculty council	Signature of Dean
29.09.2025	Associated Professor Nicoleta ACOMI EngD