

DISCIPLINE RECORD
Academic year 2025/2026**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	Accident Investigation and Risk Management in Transport				
Lecture tenured	Assoc. Prof. Radu Hanzu-Pazara PhD				
Application tenured	Assoc. Prof. Radu Hanzu-Pazara PhD				
Year of study	V	Semester	II	Type of examination	E
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	4	Course	2	Seminar	2	Laboratory		Project	
I b) Total hours per semester from the curriculum	56	Course	28	Seminar	28	Laboratory		Project	

II Time distribution for the semester:	ore
II a) Study after manual, course support, bibliography and notes	23
II b) Additional documentation in library, specialized electronic platforms	23
II c) Training seminars / labs, homework, essays, portfolios and essays	23
III Tutorial	
IV Examinations	2
V Other activities:	

Total hours of individual study II (a+b+c)	69
Total hours per semester (Ib+II+III+IV+V)	127
Number of credits	5

4. Prerequisites (if necessary)

Curriculum	<ul style="list-style-type: none"> Management
Expected learning outcomes	<ul style="list-style-type: none"> Understanding the notions of general management

5. Conditions (if necessary)

Progress of the course	<ul style="list-style-type: none"> Video projector, PPT presentation 	
Progress of application	Video projector	<ul style="list-style-type: none"> Video projector
	Laboratory	<ul style="list-style-type: none">
	Project	<ul style="list-style-type: none">

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

The overall objective of discipline	The discipline aims to equip students with the knowledge and skills required to identify and assess hazards, model and manage risks, and conduct systematic accident investigations within transport systems.
The specific objectives of discipline	The discipline specifically aims to enable students to: <ul style="list-style-type: none"> identify hazards and assess risks; apply accident modelling tools;

- conduct systematic accident investigations;
- propose corrective and preventive safety measures;
- support safety management processes within transport systems.

7. Expected learning outcomes:

No.	Knowledge	Skills	Responsibility and autonomy
1	The student understands techniques for financial risk assessment.	The student analyzes internal organizational processes.	The graduate independently proposes risk mitigation strategies.
2	The student understands quality assurance standards in transport services.	The student ensures compliance with quality and safety metrics.	The graduate is responsible for continuous service quality improvement.
3	The student has knowledge of project management methodologies.	The student applies modern economic and decision-making techniques.	The graduate initiates and manages projects with minimal supervision.
4	The student masters techniques for data acquisition and processing.	The student evaluates business performance through financial indicators.	The graduate takes responsibility for continuous professional development.

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

Professional competences	Analyzes external factors affecting companies Adapts to changing situations Ensure project management Performs quality control Focuses on innovation in current practices
Transversal competences	Create risk reports

9. Contents

Course	Nr. hours	Teaching methods	Obs.
• Hazard classification and assessment	2	Presentations, discussions	
• Qualitative Risk Assessment	2	Presentations, discussions	
• Hazard identification	2	Presentations, discussions	
• Risk assessment and management	2	Presentations, discussions	
• Accident modelling	2	Presentations, discussions	
• Safety measure in design and process operations	2	Presentations, discussions	
• Transport systems risk modelling	2	Presentations, discussions	
• Introduction to accident investigation	2	Presentations, discussions	
• Immediate actions in the event of an accident	2	Presentations, discussions	
• Planning the investigation	2	Presentations, discussions	
• Collecting data	2	Presentations, discussions	
• Data organisation/analysis	2	Presentations, discussions	
• Corrective actions and concluding the analysis	2	Presentations, discussions	
• Management measures to prevent major accidents	2	Presentations, discussions	

Bibliography

- James Thornhill, "Accidents: Causes, investigation and prevention", Abramis Publisher, 2011
- Andrew Sharman, "From accidents to zero", 2nd Edition, Routledge Publisher, 2016
- Modarres, Mohammad, Mark Kaminskiy and Vasilij Krivtsov: "Reliability Engineering and Risk Analysis: A Practical Guide", Marcel Dekker, New York, 1999
- Kumamoto, Hiromitsu, "Satisfying Safety Goals by Probabilistic Risk Assessment", Springer, London 2007
- Rausand, Marvin: "Risk Assessment: Theory, Methods, and Applications," Wiley, Hoboken NJ, 2011.
- Vose, David: "Risk Analysis; A Quantitative Guide", Wiley, 3rd ed. 2008.
- Hale, Andrew, Bernhard Wilpert and Matthias Freitag: "After the event: From accident to organizational learning", Pergamon, 1997
- Reason, James: "Managing the Risks of Organizational Accidents", Ashgate, Aldershot, 1997
- Dhillon, Balbir S.: "Human Reliability and Error in Transportation Systems", Springer, London, 2007
- Slovic, Paul: "The Perception of Risk". Earthscan, London, 2000
- NASA: "Probabilistic Risk Assessment Procedures Guide for NASA Managers and Practitioners", NASA, 2002
- Ericson, Clifton A.: "Hazard Analysis Techniques for System Safety", Wiley, Hoboken, New Jersey, 2005

Selective bibliography

- James Thornhill, “*Accidents: Causes, investigation and prevention*”, Abramis Publisher, 2011
- Andrew Sharman, “*From accidents to zero*”, 2nd Edition, Routledge Publisher, 2016
- Reason, James: “*Managing the Risks of Organizational Accidents*”, Ashgate, Aldershot, 1997
- Slovic, Paul: “*The Perception of Risk*”. Earthscan, London, 2000
- Ericson, Clifton A.: “*Hazard Analysis Techniques for System Safety*”, Wiley, Hoboken, New Jersey, 2005
- Course notes 2025, available on the platform campus.cmu-edu.eu

Application (Seminar / laboratory / project)	Nr. hours	Teaching methods	Obs.
• Hazards identification process – case study	2	Presentations, case study, discussions	
• Applying of Qualitative Risk Assessment for transport systems	2	Presentations, discussions	
• Average fatal risk – case study	2	Presentations, case study, discussions	
• Event Tree Analysis – case study	2	Presentations, case study, discussions	
• Fault Tree Analysis – case study	2	Presentations, case study, discussions	
• Development of the HAZOP Method – case study	2	Presentations, case study, discussions	
• Accident modelling – case study	2	Presentations, case study, discussions	
• Risk modelling for transport systems – case study	2	Presentations, case study, discussions	
• Accident investigation – immediate actions	2	Presentations, discussions	
• Investigation planning and data collecting – case study	2	Presentations, case study, discussions	
• Data analysis – case study	2	Presentations, case study, discussions	
• Corrective actions and lessons learned – case study	2	Presentations, case study, discussions	
• Major accident prevention through management and procedures	4	Presentations, discussions	

Bibliography

- James Thornhill, “*Accidents: Causes, investigation and prevention*”, Abramis Publisher, 2011
- Andrew Sharman, “*From accidents to zero*”, 2nd Edition, Routledge Publisher, 2016
- Modarres, Mohammad, Mark Kaminskiy and Vasilii Krivtsov: “*Reliability Engineering and Risk Analysis: A Practical Guide*”, Marcel Dekker, New York, 1999
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- Ericson, Clifton A.: “*Hazard Analysis Techniques for System Safety*”, Wiley, Hoboken, New Jersey, 2005
- Sklet, S., “*Methods for Accident Investigation*”, 2002
- ESReDA , “*Guidelines for Safety Investigations of Accidents*”, 2009

Selective bibliography

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- Reason, James: “*Managing the Risks of Organizational Accidents*”, Ashgate, Aldershot, 1997
- NASA: “*Probabilistic Risk Assessment Procedures Guide for NASA Managers and Practitioners*”, NASA, 2002
- ESReDA , “*Guidelines for Safety Investigations of Accidents*”, 2009
- Sklet, S., “*Methods for Accident Investigation*”, 2002
- 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

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11. Examination

Type of activity	Examination Criteria	Methods of examination	Percentage of final grade
Course		Project (essay)	80%
Seminar		Homework project	20%

10.5 Promotion 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

The master student should be able to understand and to apply the basic knowledges

Date of completion	Signature of lecture tenured	Signature of application tenured
25.09.2025	Assoc. Prof. Radu Hanzu-Pazara PhD	Assoc. Prof. Radu Hanzu-Pazara PhD

Date of approval in the department	Signature of Director of Department
26.09.2025	Lector univ.dr. Ana-Camelia Olteanu

Date of approval in the faculty council	Signature of Dean
29.09.2025	Conf.univ.dr.ing. Nicoleta Acomi