



GRADUATE STUDY: **TRANSPORT**

SEMESTER (II)

Syllabus

Academic year 2025/2026

Course: Water Transportation Planning						
Head of course: Prof. Natalija Kavran , Ph.D. Prof. Mihaela Bukljaš , Ph.D.						
Co-lecturers: Asst. Prof. Vlatka Stupalo , Ph. D.						
Semester: W/S	Course code: 186781	Lectures: 30	Auditory exercises: 7	Laboratory exercises: 8	Seminars: 15	ECTS credits: 7
Group for lectures: 15 students			Group for auditory and laboratory exercises: 15 students			

Objective of the course:

- To familiar students with:
 - the methodology of planning
 - transport planning, the processes of designing and organising the transport system
 - the objects in the function of water transport.
- Acquisition of competences for work in the fields of analysis the transport market, innovation of technological processes and technical equipment, planning, design, improvement of technology and organisation in maritime and river ports, docks and terminals, planning and organisation of the system and work in state administration.

Learning outcomes:

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

1. Distinguish types of planning.
2. Explain the methodology for planning the development of water traffic.
3. Plan investments and personnel in water transport.
4. Evaluate the pre-project documentation.
5. Analyse the technical requirements for the planning and selection of object locations in ports.
6. Evaluate the feasibility study.



LECTURES, EXERCISES and SEMINARS

Week	Syllabus	Form of classes	Performed by	Lessons	Remark
1.	Introduction lecture (familiarization with course content, literature, student responsibilities, dates of first and second colloquium, the conditions for the signature, examination)	L	Mihaela Bukljaš	2	Dates of colloquium
	Seminar methodology (deadlines of the topic registration, submission and oral presentation, title of seminar, rules of seminar drafting).	S	Vlatka Stupalo	2	Seminar topic proposal (Merlin) Submission of seminar via Merlin (merlin.srce.hr)
2.	Theoretical assumptions in planning and designing	L	Natalija Kavran	4	
3.	- Transport planning types and development planning methodology. - Spatial planning. Spatial plan. Transport planning. Transport plan	L	Natalija Kavran	3	
	Distribution of seminar topics. Elaboration of seminar content.	S	Vlatka Stupalo	1	
4.	- Methods of traffic forecast - River, port & terminal design and engineering of navigation safety facilities	LE	Vlatka Stupalo	3	
	Distribution of seminar topics. Elaboration of seminar content.	S	Vlatka Stupalo	1	
5.	Water transport development plans, investment plans and human resource plans	L	Natalija Kavran	3	



	Technical requirements for design, engineering and object location selection.	LE	Vlatka Stupalo	1	MS Project
6.	- Project evaluation and presentation - Project cycle	L	Natalija Kavran	3	
	Technical requirements for design, engineering and object location selection.	LE	Vlatka Stupalo	1	MS Project
7.	- Project types, project design and pre-project documentation - The content of investment project	L	Mihaela Bukljaš	3	
	- Elaboration of seminar content. Division of seminar topics. - Oral presentation of seminar by students using e.g. <i>MS Power Point</i>	S	Vlatka Stupalo	1	Deadline for selection of seminar topic. List of all selected topics, with dates for oral presentation of each seminar (Merlin).
8.	Technical requirements for design, engineering and object location selection.	LE	Vlatka Stupalo	1	MS Project
	- Logical framework matrix. - First colloquium.	AE	Vlatka Stupalo	2	First colloquium (concluded with topic no. 6 of lectures and topic no. 5 of practicum's)
	Oral presentation of seminar by students using e.g. <i>MS Power Point</i>	S	Vlatka Stupalo	1	



9.	Logical framework matrix.	AE	Vlatka Stupalo	3	
	Oral presentation of seminar by students using e.g. <i>MS Power Point</i>	S	Vlatka Stupalo	1	
10.	Technical requirements for design, engineering and object location selection.	LE	Vlatka Stupalo	2	MS Project
	Oral presentation of seminar by students using e.g. <i>MS Power Point</i>	S	Vlatka Stupalo	2	
11.	- Methodology of study (Cost-benefit analysis, Feasibility study) - Project management	L	Mihaela Bukljaš	3	
	Oral presentation of seminar by students using e.g. <i>MS Power Point</i>	S	Vlatka Stupalo	1	
12.	Feasibility Study	L	Mihaela Bukljaš	3	
	Oral presentation of seminar by students using e.g. <i>MS Power Point</i>	S	Vlatka Stupalo	1	Deadline for submission of seminar papers.
13.	Methods of study analysis	L	Mihaela Bukljaš	3	
	Oral presentation of seminar by students using e.g. <i>MS Power Point</i>	S	Vlatka Stupalo	1	Deadline for seminar evaluation (grade).
14.	Second colloquium.	AE	Vlatka Stupalo	1	Second colloquium.



	▪ Oral presentation of seminar by students using e.g. <i>MS Power Point</i>	S	Vlatka Stupalo	3	
15.	▪ Revision of course matter.	L	Natalija Kavran	2	List of students that have realized the condition "Courses requirement s achieved" (see page 9) (Merlin)
	▪ Revision of course matter.	L	Mihaela Bukljaš	1	
	▪ Revision of course matter.	AE	Vlatka Stupalo	1	

L = Lectures; **AE** = Auditory Exercises; **LE** = Laboratory Exercises; **S** = Seminars



STUDENT OBLIGATIONS AND EXAMINATIONS

Conditions for obtaining signatures:

Three absences are permitted during the semester, i.e. 20% of all forms of teaching (lectures and tutorials). In addition, the timely submission and oral presentation of a seminar paper is mandatory. Students cannot be admitted to the written and oral examinations if they do not fulfil the condition "Course requirements fulfilled" (see page 9).

Written Examination:

There are two ways to pass the examination:

- a) **through colloquium:** Colloquiums are written according to the previously published timetable and cannot be made up. The first colloquium is written in the middle of the semester and consists of the first part of the course material. Only if the student has successfully completed the first colloquium can they take part in the second colloquium, which covers the second part of the course material and is taken at the end of the semester. The results determine the success of students who have passed the colloquium (the minimum pass mark is 50% for each colloquium). The total number of internal points that a student can achieve in the first colloquium is 50, in the second colloquium is 100. At least 20 points must be achieved in the first colloquium and 70 points in the second colloquium. A student who successfully completes both colloquiums and successfully defends the seminar is exempt from the written examination. In this case the grade is calculated from the average grade of the two written examinations and the grade of the seminar according to the formula:

$$\text{Grade of the written examination} = 0.33 \times (K1 + K2 + OS)$$

K1 – Grade of the first successfully written (passed) colloquium

K2 – Grade of the second successfully written (passed) colloquium

OS – Grade (positive) of the seminar

The average grade is recognized as the grade of the final written examination. A written examination passed colloquiums is recognized during the entire academic year in which the condition is fulfilled.

- b) **through the final written examination:** Students who are not satisfied with the grade obtained in the colloquium or who have not passed one of the colloquia or have not participated in the colloquia may participate in the final written examination according to the previously published examination schedule. In the final written examination, the entire subject matter is examined. The result of the examination is decisive for success, i.e. for the grade (the passing grade must be at least 50%).

Oral examination:

Prerequisites for the oral examination are: 1) fulfilment of the condition "course prerequisites fulfilled" and 2) passing the written part of the examination or fulfilment of the condition "exemption from the written part of the examination" during the course.

The right to participate in the oral examination can be acquired in two ways:

1. after successful fulfilment of the condition "*exemption from the written part of the examination*" – the student must register for the examination in due time via the ISVU Studomat system in accordance with the examination schedule and will only be admitted to the oral part of the examination.



2. after passing the final written examination – according to the examination schedule - access to the oral part of the examination.

The date for the oral part of the examination will be published together with the results of the final written examination via the Merlin system.

Note: Students are required to carry their student ID with them during all examinations (colloquium, written final examination, oral examination) and in class.

Extra points:

The presence at all forms of lectures, in percentage smaller than allowed, can be recovered by creating (drafting) of an additional seminar (alongside the mandatory), solely for the absence of justified reasons, and upon presentation of proper document (verification or confirmation). Additional seminar prepares the student by itself selecting a topic from the list of topics. Through this seminar student can achieve from 5 to 10 internal points.

LITERATURE

a) Obligatory literature:

1. Kavran N. *Water Transportation Planning. Authorized lectures – presentations*. Faculty of transport and traffic sciences of University of Zagreb. Zagreb, 2025. (Available at: merlin.srce.hr)
2. Bukljaš M. *Water Transportation Planning. Authorized lectures – presentations*. Faculty of transport and traffic sciences of University of Zagreb. Zagreb, 2025. (Available at: merlin.srce.hr)
3. Stupalo V. *Water Transportation Planning. Authorized lectures – presentations*. Faculty of transport and traffic sciences of University of Zagreb. Zagreb, 2025. (Available at: merlin.srce.hr)

b) Recommended literature:

1. Biafore B. *Microsoft project 2013: the missing manual*. Sebastopol, California: O'Reilly; 2013.
2. Bichou K. *Port operations, planning and logistics*. London, UK: Informa; 2009.
3. Charvat J. *Project management methodologies: selecting, implementing, and supporting methodologies, and processes for projects*. New Jersey: John Wiley & Sons; 2003.
4. Chatfield C, Johnson T. *Microsoft Project 2013 step by step*. Redmond, Washington: Microsoft Press; 2013.
5. Cook CR. *Just enough project management: the indispensable four-step process for managing any project, better, faster, cheaper*. New York, USA: McGraw-Hill; 2004.
6. Grammenos CT, editor. *The handbook of maritime economics and business*. 2nd ed. London, UK: Lloyd's List; 2010.
7. Kelton WD, Sadowski RP, Zupick NB. *Simulation with Arena*. 6th ed. New York, USA: McGraw-Hill Education; 2014.
8. Ligteringen H. *Ports and terminals*. 2nd ed. Delft Academic Press; 2017. 378 p.
9. UNCTAD. *Port Development: A handbook for planners in developing countries*. 2ed. rev. New York, USA: United Nations; 1985.



METHODOLOGY OF IMPLEMENTATING THE COURSE PLAN

Knowledge of the English language is a prerequisite for this course

1. LECTURES

Lectures are usually delivered using Power Point presentations and blackboards, with video presentations used in some units. In some lessons it is possible to use multimedia and the internet. Students actively participate in the lectures by working on the given material, i.e. preparing for the work in class, and by discussing the topics of the lectures. Lecture presentations in pdf format are available to students via the Merlin system (moodle.srce.hr/yyyy-yyyy or merlin.srce.hr).

2. AUDITORY EXERCISES

Auditory exercises build on the lecture and recapitulate the basic concept presented in the lecture using practical examples and problem solving with student participation. The aim is to encourage students to work independently and in teams. The exercises are carried out with the help of Power Point presentations and blackboards, in some units also with video presentations. For some units it is possible to use multimedia and the internet.

3. LABORATORY EXERCISES

The laboratory exercises also build on the lecture. Students will mainly work with MS Project. The exercises will be done with MS Project, Power Point presentations, video presentations, multimedia and the internet.

4. SEMINAR

A seminar is a technical elaboration of a specific topic. Students write a seminar individually or in groups. The seminar topic (title) is chosen by the students themselves (the appropriateness of the topic is approved by the teacher) or the students can choose the topic proposed by the teacher (the list of proposed topics is published in the Merlin system at the beginning of the semester). The seminar paper is submitted and approved via the Merlin system. Once the seminar has been approved, students can start preparing and submitting the oral presentation of the seminar. The use of PowerPoint presentations is recommended for the seminar presentation. The presentations are also sent to the lecturer via the Merlin system. After the presentation, the seminar will be assessed (graded). The seminar grade is included in the grade for the final written examination, which is achieved through colloquiums.

Note: Individual and/or group viewing of the negative exam

Individual inspection of the negative written examination is possible after each colloquium or final examination in the office hour of the teacher (the teacher who conducted the examinations) or in the period provided for this purpose, which is published with the results of the colloquium or final examination.



5. DOCUMENTATION

Continuous monitoring of the course is carried out by electronically recording attendance in lectures, exercises and colloquiums via the SAN system (hrv. *Sustav Autorizacije i Nadzora*). Students register their attendance in class by swiping their student ID card (hrv. *iksica*) through the device. Students must have their student ID with them during lessons and during the examination.

The grade of the written examination and the final grade are recorded in the ISVU application.

All course announcements (results of colloquia and written exams, date of the oral part of the exam, etc.) are published via the Merlin system (moodle.srce.hr/yyyyy-yyyy or merlin.srce.hr). At the end of the semester, a list of all students who have fulfilled the conditions: 1. course requirements fulfilled, 2. exemption from the written part of the examination, as well as the list of students who have not fulfilled the condition "course requirements fulfilled" will be published.

6. SCORING SYSTEM

Table 1 The scoring system for the monitoring of students and explained credit values in ECTS credits

no	Segment:		Required credits to be achieved:		Remark:	ECTS credits
			Min.	Max.		
Points for the realization of the condition: Course requirements fulfilled *						
1.	Presence at the lectures		5	5	During the semester three absences are allowed, i.e. 20% of all forms of classes (lectures and exercises).	1
2.	Presence at the exercises (auditory and laboratory)		5	5		0.5
3.	Seminar		20	45	Students must successfully defend the seminar	0.5
Other points						
4.	First colloquium	= Written exam	20	50	Students must pass both colloquiums or min 50% on written final exam.	1
5.	Second colloquium		70	100		1
6.	Oral exam		/	/	At the final exam, a final grade is formed based on the written examination and oral examination. The final grade is than entered in the ISVU system.	3
Σ	Overall points:		120	205	Overall ECTS points:	7

*During the course the student is evaluated based on the sum of the internal points earned through participating in class (lectures and exercises) and grading the seminar work. The student, to realize the condition "courses requirements achieved", must achieve a minimum of 30 points.



Table 2 - Explanation of the credit values in evaluations

CREDITS:	Estimate based on attendance, seminar paper and two colloquies (or written exam) - [4 ECTS]*:	The final score [7 ECTS]*:
120 – 130	Sufficient (2)	Exemption from the written part of the examination, the final grade after oral exam.**
140 – 160	Good (3)	
165 – 195	Very good (4)	
195 – 205	Excellent (5)	

*All 7 ECTS can be gained in total only if the student has received a positive opinion on the oral part of the exam. All 7 credits are recorded simultaneously with the entry of the final grade in ISVU system.

** At the final exam, a final grade is formed based on the written examination and oral examination. The final grade is then entered in the ISVU system.

Information for students (scoring system, implementation plan, learning outcomes, syllabus, literature, consulting teachers, announcement of examination or colloquium results and all other information):

- <https://moodle.srce.hr/2025-2026/> (<https://merlin.srce.hr>)
- <https://www.isvu.hr/visokaucilista/en/podaci/135/akademskagodina/2024/predmet/186781/razina/4/izvedba/R/smjer/49>

Student assistants:

Additional individual work with students through one-on-one consultations for assignments from the seminar paper, as well as to review the negative written portion of the written exam or colloquium.