



GRADUATE STUDY: TRANSPORT

(V.) semester

Syllabus

Academic year 2024/2025

Course: Parking and Garages					
Head of course: Assoc. prof Marko Šoštarić , Ph.D.					
Co-lecturers: Assoc. Prof Marko Šoštarić , Ph.D. Assist. Prof Mario Ćosić , Ph.D. Marko Švajda , MSc Orsat Lale , MSc					
Semester: W	Course code: 171527	Lecture hours: 30	Exercise hours: 15	Seminar hours: 15	ECTS credits: 6
Group for lectures: 10 students			Group for exercises and seminars: 10 students		

Course objectives:

- Provide knowledge and information for understanding parking systems and parking infrastructure facilities – on-street and separate parking lots as well as parking garages
- Provide knowledge and information for understanding service and other facilities in transport system
- Develop the knowledge and skills needed for the construction of various types of parking surfaces

Learning outcomes:

1. Define basic terms and concepts in the field of parking systems, describe the role of parking in urban areas and the basic features of transport policy in the parking system. List types and forms of parking spaces, forms of on-street and off-street parking, and types and models of parking garages
2. Explain methods of dimensioning parking supply. Calculate the required number of parking spaces based on the specific space or facility. Predict future demand for parking spaces in a particular area or near a specific facility
3. Research and apply legal regulations and standards of the Republic of Croatia and other European countries for the sizing and designing of parking areas
4. Analyze the current state of the parking system of a specific area, settlement, or facility and provide a critical review. Calculate, construct, and describe the parking system of a specific settlement, area, or facility based on the latest scientific and professional achievements, traffic engineering rules, and applicable laws and regulations. Use





- modern computer programs for the construction of parking facilities (AutoCAD, ParkCAD, and others) in the solution development
5. Design basic types of on-street and off-street parking lots and parking garages
 6. Prepare a seminar paper on a selected parking issue in your environment and propose a solution to the problem. Present the seminar paper
 7. Draw conclusions about the quality of a specific solution in the parking system or garages



LECTURES and EXERCISES

week	Syllabus	Form of class	Performed by	hours	Remark
1.	<ul style="list-style-type: none"> Introductory lecture (familiarization with the course content, literature, flowchart for successful completion of the course, methodology for writing seminar papers) Introduction to parking, garages, and services 	L	Marko Šoštarčić Mario Čosić	2	
	<ul style="list-style-type: none"> Fundamentals of parking – vehicle dimensions, parking space dimensions, dimensions of access areas to parking lots, basic constructions in the field of parking 	E	Marko Švajda Orsat Lale	2	Exercises require a computer lab (AutoCAD and ParkCAD)
2.	<ul style="list-style-type: none"> General about parking The history of parking Definitions and terms related to parking 	L	Marko Šoštarčić	2	
	<ul style="list-style-type: none"> Fundamentals of parking area design Creation of a specific example of on-street parking 	E	Marko Švajda	2	Exercises require a computer lab (AutoCAD and ParkCAD)
3.	<ul style="list-style-type: none"> Parking policy Transport policy and parking policy Managing parking supply and demand 	L	Mario Čosić	2	
	<ul style="list-style-type: none"> Creation of a specific example of a parking lot on a given area using the classical method of drawing in a graphic computer program (AutoCAD) 	E	Marko Švajda	2	Exercises require a computer lab (AutoCAD and ParkCAD)
4.	<ul style="list-style-type: none"> Parking demand Parking supply 	L	Mario Čosić	2	

	<ul style="list-style-type: none"> Creation of a specific example of a parking lot on a given area using an automated drawing method in a specialized program for designing parking lots (ParkCAD) 	E	Marko Švajda	2	Exercises require a computer lab (AutoCAD and ParkCAD)
5.	<ul style="list-style-type: none"> The role of parking in urban areas 	L	Marko Šoštarčić	2	
	<ul style="list-style-type: none"> Designing a conceptual transport solution for a city parking garage – defining the location and basic traffic characteristics (number of parking spaces, number of floors, number of entrances and exits) 	E	Marko Švajda	2	Exercises require a computer lab (AutoCAD and ParkCAD)
6.	<ul style="list-style-type: none"> Dimensioning of parking supply Calculation of the number of parking spaces Methods for calculation 	L	Marko Šoštarčić	2	Preliminary exam 1
	<ul style="list-style-type: none"> Designing a conceptual traffic solution for a city parking garage – creating the foundation of the garage's construction in a graphic computer program 	E	Marko Švajda	2	Exercises require a computer lab (AutoCAD and ParkCAD)
7.	<ul style="list-style-type: none"> Parking space On-street parking lots 	L	Marko Šoštarčić	2	
	<ul style="list-style-type: none"> Traffic directing to garages and directional systems – creation of a specific example of a signage project for directing traffic to parking lots and garages 	E	Marko Švajda	2	Exercises require a computer lab (AutoCAD and ParkCAD)
8.	<ul style="list-style-type: none"> Parking lots as special areas Off-street parking 	L	Marko Šoštarčić	2	
	<ul style="list-style-type: none"> Creation of parking lot examples for trucks, buses, and motorcycles 	E	Marko Švajda	2	Preliminary Exam (Exercises)



9.	<ul style="list-style-type: none">▪ Parking lots as special areas▪ Additional areas and equipment in the parking lot	L	Marko Šoštarčić	2	
	<ul style="list-style-type: none">▪ Selection of a seminar paper topic from the list of offered topics▪ Presentation of basic instructions for writing the seminar paper	S	Orsat Lale	2	
10.	<ul style="list-style-type: none">▪ Parking garages – locations, capacity, basic elements▪ Typical parking garages	L	Marko Šoštarčić	2	
	<ul style="list-style-type: none">▪ Presentation of student seminar papers and discussion on the topic covered	S	Orsat Lale	2	
11.	<ul style="list-style-type: none">▪ Mechanical parking garages, partially mechanized and fully mechanized	L	Marko Šoštarčić	2	
	<ul style="list-style-type: none">▪ Presentation of student seminar papers and discussion on the topic covered	S	Orsat Lale	2	
12.	<ul style="list-style-type: none">▪ Vertical and horizontal traffic signage for parking purposes	L	Mario Ćosić	2	
	<ul style="list-style-type: none">▪ Presentation of student seminar papers and discussion on the topic covered	S	Orsat Lale	2	
13.	<ul style="list-style-type: none">▪ Legal framework of the Republic of Croatia in the field of parking	L	Mario Ćosić	2	
	<ul style="list-style-type: none">▪ Presentation of student seminar papers and discussion on the topic covered	S	Orsat Lale	2	





14.	<ul style="list-style-type: none">Innovative parking systemsThe future of parking	L	Marko Šoštarčić	2	Preliminary Exam 2
	<ul style="list-style-type: none">Presentation of student seminar papers and discussion on the topic covered	S	Orsat Lale	2	
15.	<ul style="list-style-type: none">Field course – visit to a parking garage and the garage control center	L	Marko Šoštarčić	2	
	<ul style="list-style-type: none">Presentation of student seminar papers and discussion on the topic covered	S	Orsat Lale	2	





STUDENT OBLIGATIONS AND EXAMINATION PROCEDURE

Conditions for achieving the status of having attended the course for a student:

To achieve the status of having attended the course, a student needs to attend at least 80% of lectures and 80% of exercises and to create and present a seminar paper.

Written knowledge assessment:

The written knowledge assessment is conducted in two ways:

1. In two parts through preliminary exams on theory: the first preliminary exam is held in the middle of the semester, and the second at the end of the semester. Success on the preliminary exam is scored in percentages. To pass the preliminary exam, it is necessary to achieve a success rate of over 50%. Students who have passed the first preliminary exam can attend the second one. Students who have passed both exams have passed the written part of the exam. The grade for the written part is determined based on the average percentage achieved through both preliminary exams. All students who regularly attend classes (min 80%) can attend the preliminary exam.
2. In one part through a written final exam: success on the written exam is scored in percentages. Students who achieve a percentage higher than 50% have passed the written part of the exam. The written exam is taken by all those students who have not passed through preliminary exams or are not satisfied with the result achieved on the preliminary exams or did not attend the written knowledge assessment through preliminary exams.

Practical Knowledge Assessment

Practical knowledge assessment is conducted in two ways:

1. Through **practical exams during exercises**: in the final exercises, students solve a practical task that requires creating a solution for a specific parking lot or parking garage. Students create the solution on computers using modern computer applications in the field of parking system design. At the practical exam, students are graded with a pass or fail.
2. **Just before the oral knowledge assessment**: students who have not passed the practical exam from the exercises can take the exam on a computer just before the oral knowledge assessment.

Oral Knowledge Assessment:

To attend the oral part of the exam, it is necessary to pass both the written and practical knowledge assessments. The oral knowledge assessment further examines the theoretical and practical knowledge and skills of students in the area of designing parking system solutions.





Additional Points:

Students can earn additional points through above-average engagement in exercises (solving assigned tasks faster than average, demonstrating above-average understanding of the topics covered, creating innovative solutions, etc.). Additional points are added to the results of the preliminary exams or written knowledge assessment.

LITERATURE

a) Mandatory literature

1. Brčić, D., Šoštarić, M.: **Parking and garages**, Faculty of Transport and Traffic Sciences, Zagreb, 2012.

b) Additional literature

1. Myer Kutz: **Handbook of Transportation Engineering**, McGraw-Hill Kraft, H., Walter: Traffic Engineering Handbook 6th edition, Institute of Transportation Engineers, 2009., Washington, USA
2. McCourt, S. Ransford: **Parking generation 3rd Edition**, Institute of Transportation Engineers, 2004, Washington, USA
3. Ministry of the Sea, Transport and Infrastructure: Regulation on Traffic Signs, Equipment, and Road Signaling (NN 92/2019)
4. Studies and projects in the field of parking conducted at the Faculty of Transport and Traffic Sciences.

COURSE DELIVERY METHODOLOGY

1. LECTURES

Lectures follow the material presented in the authorized lectures listed in the required literature and are primarily conducted using presentations and the board. For each unit presented in the lectures, specific examples are shown through photographs or video recordings. Lectures encourage discussion on the issues being taught.

2. EXERCISES

Laboratory exercises are conducted to equip students with the skills to create concrete solutions in the area of parking systems. Exercises are carried out in a PC classroom, where students perform calculations and technical drawings of various forms of parking lots and garages. The drawings are made using modern computer applications for traffic design – AutoCAD and ParkCAD.

3. SEMINAR PAPER





The seminar paper is conducted in such a way that the student chooses a topic from the list of offered topics. The topics of the seminar papers are related to the area of parking, parking lots, garages, and other accompanying facilities in transportation. After the seminar paper is prepared, the student presents it in front of the teaching group, and the students discuss each presented solution. After the presentation and discussion, the seminar paper is graded as satisfactory or unsatisfactory.

4. DOCUMENTATION

Attendance records are kept for lectures and exercises.

5. COURSE GRADING

Monitoring student performance:

activity/segment		ECTS credits	
Lectures + exercises		1,5	
1. preliminary exam	= written exam	1	2
2. preliminary exam		1	
Preliminary exam exercises		0,5	
Oral exam		1	
Seminar paper		1	
Total		6	

Grading and evaluating student performance during the course and on the final exam:

The final grade is based on the results achieved in the written and oral parts of the exam, as well as the seminar paper.

The criteria for grading the written exam are given in the table:

Success in the written exam (%)	grade
91 - 100	5
76 – 90	4
61 – 75	3
50 – 60	2

The grade from the written exam can be confirmed or adjusted during the oral exam based on the demonstrated theoretical and practical knowledge, as well as additional explanation and commentary on the solutions proposed in the seminar paper.

