

FACULTY OF **ENGINEERING**

DEGREE COURSE: **CIVIL AND ENVIRONMENTAL ENGINEERING**

MASTER DEGREE: **CIVIL ENGINEERING**

SUBJECT: THEORY OF TRANSPORTATION SYSTEMS

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OBJECTIVES

The course deals with the general aspects concerning roadways, airports and railway systems. The goal for the students is to understand the technical-scientific basis which regulates:

- the road vehicle mechanics and the traffic flowing in urban and suburban contexts;
- the design and the construction of airports and railway infrastructures.

CONTENTS

- Part 1 – Roads: road classification and road users; static, kinematic and dynamic characteristics of road vehicles; friction and tire-pavement interaction; organization of road space; elements of traffic analysis, design of road section, Highway Capacity Manual method.
- Part 2 – Airports: airport infrastructures, characteristics of civil aircraft; take-off and landing; airfield and runway configurations; airport classification; airfield geometry; airport lighting, marking and signage.
- Part 3 – Railways: railway sections and superstructures; train characteristics; railway friction and movement resistances; wheel/rail ratio; elements of railway design.

LEARNING OUTCOMES

At the end of the path, the student will have obtained the basic knowledge about roadways, airports and railway systems.

ASSESSMENT

Written exam: multiple choice and open questions.

RECOMMENDED TEXTBOOKS

- Transportation Research Board (TRB), “Highway Capacity Manual”, Washington, D.C. 2000.
- Horonjeff R., McKelvey F. X., Sproule W., Young S. “Planning and Design of Airports”. McGraw-Hill, 5th edition, 2010.