

Railway technology and management

Options for study courses at University of Žilina,

2nd semester (Start: February)

One semester Transport Studies – Railway technology and management

Coordinator: assoc. prof. Ing. Martin Bugaj, PhD.

assoc. prof. Ing. Anna Dolinayová, PhD

Duration: 13 weeks

Attendance fee: 790 Euro/student/semester

Payment: before the start of his/her mobility

Credits: 30 ECTS

Objectives: One full semester of railway technology and management

Every students applying for this exchange program have to submit Learning Agreement containing the subjects, credits, dates of mobility and a program of study, which the student must comply with, and the student, home and host institution approved it.

Modules

1. Railway traffic operation (8 ECTS)

The students will be able to understand the principle of traffic management in railway transport such as rail traffic operation, ensuring the train movement and transport services operation. The students will formalize with model of wagon follow organization, components of train forming plan and technological process in railway station. The students should have knowledge of:

- securing in the area of station
- ensuring train movement in inter-stationary section
- anticipated departure
- automatic block
- safety device remote control
- inputs for train forming plan
- assessment criteria in train formation
- approaches to train formation
- marshalling yards

The main role of the course is to open the door for the basic principle of train traffic diagram construction.

The students will be able to visit specialized railway transport laboratory with large model railway (overall length of tracks is 100 meters). The equipment allows simulate real railway traffic.

2. Railway passenger transport and transportation (5 ECTS)

The course aims to introduce students to the operation of railway passenger transport. the students will formalize with evaluation of quality of railway passenger transport and integrated transport systems. The students should have knowledge of:

- factors that influence the demand and supply of rail passenger transport
- the methods of determining the passenger flows
- suburban railway passenger transport – requirements for vehicles and organization
- long-distance passenger transport - requirements for vehicles and organization
- types of timetable in suburban railway passenger transport
- integrated time table in urban and suburban passenger transport

The students will be able to obtain the knowledge needed to solve the problematic of railway passenger transport organization.

3. Rail transport management (4 ECTS)

The course will be an introduction to the management of railway transport. The course will focus on multicultural management and collaboration between railway undertaking, interoperability in rail transport, change management in railway transportation, time management in railway transport, safety management in railway transport and risk management in railway transport. An extensive part of the course will be devoted to the management of information and knowledge. The students will be able to obtain the theoretical knowledge combined with solving of real situation in the railway transport operation.

4. Quality management in railway transport (6 ECTS)

The course aims to introduce students to the methods of evaluation of the quality of transport services and provides model examples of transport services provided by railway companies. The students should have knowledge of:

- objective assessment of the quality of transport services by means of indicators
- subjective assessment of the quality of transport services by multi-criteria attribute methods and the Sperling method
- assessment of the quality of transport services with the use of relative weight importance of customer requirements
- demand-oriented assessment of the quality of rail transport services
- event-oriented assessment of the quality of rail transport services
- supply-oriented assessment of the quality of rail transport services
- employee-oriented assessment of the quality of rail transport services

An extensive part of the course will be devoted to the dynamic quality models and their application in the condition of railway transport such as the model Raymond Fisk, the model Leonard Berry, the model Stauss and Neuhas and others.

5. Economic of railway transport (7 ECTS)

The students will be able to understand the economic efficiency of railway passenger and freight transport. The course will focus on rail transport market, economic efficiency of rail services, costs in railway transport. The students should have knowledge of:

- quantification of the supply and demand in the rail transport market
- economic efficiency of rail freight and passenger transport
- economic efficiency of investment in railway transport (NPV, IRR)
- direct costs of railway transport
- indirect cost of railway transport
- fixed and variable costs of railway transport
- transport output indicators needed for cost calculation

The main role of the course is to open the door for the basic principle of costs calculation in railway transport.

For more details please contact: anna.dolinayova@fpedas.uniza.sk