Course description

Department/Unit /	KKS / ZSDM			**Academic Year**	2023/2024
Title	Basics of transport and manipulation			**Type of completion**	Exam
Long Title	Basics of transport and manipulation equipments design				
Accredited/Credits	Yes, 4 Cred.			**Type of completion**	Combined
Number of hours	Lecture 2 [Hours/Week] Tutorial 2 [Hours/Week]				
Occ/max	Status A	Status B	Status C	**Course credit prior to**	YES
Summer semester	18 / -	0 / -	1 / -	**Counted into average**	YES
Winter semester	0 / -	0 / -	0 / -	**Min. (B+C) students**	10
Timetable	Yes			**Repeated registration**	NO
Language of instruction	Czech			**Semester taught**	Summer semester
Optional course	Yes			**Internship duration**	0
Evaluation scale	1|2|3|4			**Ev. sc. – cred.**	S|N
No. of hours of on-premise					
Auto acc. of credit	Yes in the case of a previous evaluation 4 nebo nic.				
Periodicity	K				
Substituted course	None				
Preclusive courses	N/A				
Prerequisite courses	N/A				
Informally recommended courses	N/A				
Courses depending on this Course	N/A				

Course objectives:

The aim of this course is to provide students with a basic information about the machine design in the field of traffic and manipulation machinery.

Requirements on student

Exam kriteria:
- to have the tutorial credit
- to master the content of the course

Content

An overview of the basics of transport and manipulation equipments design.
- Road vehicles: the vehicles conception, engines, output transmission, chassis, bodies.
- Rail vehicles: conception of the rail vehicles and urban transport vehicles. Conception of the driving vehicles and waggons. Output transmission of the independent traction.
- Handling equipments: classification of trasported materials and equipments. Interplant handling. The basic overview of means of manipulation with powdery and lump materials. Robots.

Lectures:
1. Introduction, history of material handling, transport system and handling system
2. Conveyors for loose and lump material
3. Conveyors for piece material
4. Concept of rail and urban public transport vehicles
5. Conception of traction vehicles and trailers
6. Independent traction power transfer
7. Road vehicles for passenger transport - cars, buses.
8. Freight road vehicles - trucks, trailers, vehicle kits.

Fields of study

viz COURSEWARE

Guarantors and lecturers

- **Guarantors:** Doc. Ing. Ladislav Němec, CSc. (100%)
- **Lecturer:** Ing. Jiří Kořínek (33%), Doc. Ing. Ladislav Němec, CSc. (33%), Doc. Ing. Jiří Staněk, CSc. (33%)
- **Tutorial lecturer:** Ing. Jiří Kořínek (33%), Doc. Ing. Ladislav Němec, CSc. (33%), Doc. Ing. Jiří Staněk, CSc. (33%)

Literature

- **Recommended:** Dostál, Josef; Heller, Petr. *Kolejová vozidla I.* V Plzni : Západočeská univerzita, 2007. ISBN 978-80-7043-520-5.
- **Recommended:** Talácko, Jaroslav; Matička, Robert. *Konstrukce průmyslových robotů a manipulátorů*. Praha : Vydavatelství ČVUT, 1995. ISBN 80-01-01291-3.
- **Recommended:** Jílek, Vladimír; Líbal, Vladimír; Remta, František. *Manipulace s materiálem*. Praha : Státní nakladatelství technické literatury, 1980.
- **Recommended:** Douda, Pavel; Heptner, Tomáš; Kolář, Josef. *Pozemní dopravní prostředky*. Praha : ČVUT, 1996. ISBN 80-01-01475-4.
- **Recommended:** Přednášky z předmětu KKS/ZSDM (manipulace s materiálem) v elektronické podobě. (Staněk, Jiří) - http://portal.zcu.cz >
- **Recommended:** Gscheidle, Rolf. *Příručka pro automechanika*. Praha : Sobotáles, 2001. ISBN 80-85920-76-X.
- **Recommended:** Gajdůšek, Škopán. *Teorie dopravních a manipulačních zařízení, skripta*. VUT Brno, 1988.

Time requirements

All forms of study

Activities	Time requirements for activity [h]
Contact hours	52
Preparation for an examination (30-60)	50
Preparation for formative assessments (2-20)	20
Total:	**122**

assessment methods

Knowledge - knowledge achieved by taking this course are verified by the following means:

Combined exam

prerequisite

Knowledge - students are expected to possess the following knowledge before the course commences to finish it successfully:

to orientate in the knowledge from the previous studies (especially in the subjects of machinery design, including CAD) and actively use them

to orientate in general in the basic types of transport means and handling equipments

To use at least one foreign language with a focus on transport and handling equipment (especially for the purpose of studying a foreign literature)

Skills - students are expected to possess the following skills before the course commences to finish it successfully:

to orientate in the basic construction of individual transport means and handling devices and in the design of their typical structural components

to design the design of key components of transport and handling equipment at conceptual or coarse structural level

to use effectively the acquired knowledge at the beginning of constructional subjects of transport and handling equipments in the follow-up magistery study

teaching methods

Knowledge - the following training methods are used to achieve the required knowledge:

Lecture supplemented with a discussion

learning outcomes

Knowledge - knowledge resulting from the course:

to have knowledge of the principle of operation of various types of transport and handling equipment

to have knowledge of basic calculations with respect to the design or control of design solutions for transport and handling equipment

to orientate in the concept and basic design of transport and handling equipmen

to put into context the design of transport and handling machines with their functions and properties

Skills - skills resulting from the course:

to search, take over and modify conceptual and structural solutions to the basic elements of transport and handling technology

to applicate general engineering skills (CAD technology, etc.) to the design of transport and handling machinery

in the position of a bachelor's graduate, he/she is able to act in the position of a middle technical worker in the field of transport and handling equipments

Course is included in study programmes:

Study Programme	Type of	Form of	Branch	Stage	St. plan v.	Year	Block	Status	R.year	R.
Engineering	Bachelor	Full-time	Automotive Industry Specialist	1	2020	2023	Compulsory courses	A	2	LS
Mechanical Engineering	Bachelor	Full-time	Design Engineering of Machines and Technical Devices	1	2020	2023	Compulsory courses	A	3	LS
Mechanical Engineering	Bachelor	Combined	Design Engineering of Machines and Technical Devices	1	2020	2023	Compulsory courses	A	3	LS