Course description

1 General information

Course name	Virtual Prototyping of Vehicles
Course code	
Level of study (B.Sc, M.Sc., Ph.D.)	B. Sc, M. Sc
ECTS	6
Course manager	Tomasz KUCZEK, PhD, Institute of Rail Vehicles
Course length	One (1) semester
Coordinator for international programs	erasmus@mech.pk.edu.pl

2 Prerequisites

- None

2 Program

Type	Lectures	Classes	Labs	Computer labs	Project	Seminar
Hours				45		

3 Contents

Computer labs		
No.		Hours
1	General information about 3D prototyping	2
2	Parametric modeling in CAD systems (CATIA V5 or AUTODESK Inventor)	9
3	Assembly design of vehicles	3
4	Basics of 2D technical drawing in CAD systems	3
5	Designing of sheet metal parts	3
6	Designing of welded parts	3
7	Kinematic/Dynamic simulation of mechanisms	3
8	Dimensional optimization of 3D parts	6
9	Topology optimization of 3D parts	6
10	Individual/Team project	7

3 Learning Outcomes (skills and knowledge):

- Knowledge and ability in design and analyze vehicles
- Ability in 3D parametric modelling
- Knowledge of 2D technical drawing techniques
- Skills in modelling of sheet metal parts/welded parts
- Ability in 3D optimization techniques

4 Assessment policy (examination):

- Attendance
- Final project

5 Literature

1. Catia V5-6r2017 Basics, Tutorial Books, Createspace Independent Publishing Platform, 2017
2. Autodesk Inventor 2019 Essentials Plus, Banach Daniel T., SDC Publications, 2018
3. A Hands-On Introduction to Topology Optimization, Amir M. Mirzendehdel, Krishnan Suresh, CreateSpace Independent Publishing Platform, 2017