



## COURSE DESCRIPTION CARD - SYLLABUS

Course name

Issues of disabled persons in transport [S1Trans1>ZONT]

### Course

Field of study

Transport

Year/Semester

1/2

Area of study (specialization)

–

Profile of study

general academic

Level of study

first-cycle

Course offered in

Polish

Form of study

full-time

Requirements

compulsory

### Number of hours

Lecture

30

Laboratory classes

0

Other

0

Tutorials

0

Projects/seminars

15

### Number of credit points

3,00

### Coordinators

dr Jarosław Gabryelski

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### Lecturers

### Prerequisites

Knowledge: basic knowledge of technology Skills: logic thinking, the use of information obtained from internet, standards, catalogues Social competences: bases skills action in team, understanding of the need for an example of knowledge.

### Course objective

Getting basic knowledge about: structure, action and the importance of development and technique design of means of transport dedicated to disabled persons and older age people

### Course-related learning outcomes

Knowledge:

The student has ordered and theoretically founded general knowledge in the field of key issues of technology and detailed knowledge in the field of selected issues in this discipline of transport engineering

The student has knowledge of important development trends and the most important technical achievements and of other related scientific disciplines, in particular transport engineering

### Skills:

The student is able to take into account in the process of formulating and solving tasks in the field of transport engineering also non-transport aspects, in particular social, legal and economic issues. The student is able - in accordance with the given specification - to design (create a model of a fragment of reality), formulate a functional specification in the form of use cases, formulate non-functional requirements for selected quality characteristics) and implement a device or a widely understood system in the field of means of transport, using appropriate methods, techniques and tools.

### Social competences:

The student is aware of the importance of knowledge in solving engineering problems, knows examples and understands the causes of malfunctioning transport systems that have led to serious financial and social losses or to serious loss of health and even life.

The student correctly identifies and solves dilemmas related to the profession of a transport engineer.

## Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

Learning outcomes presented above are verified as follows:

Lecture: written test - colloquium

Projects: credit on the basis of a test, own homework and activity during classes

## Programme content

Disability definition. Classification of technical devices using in disabled persons transport and older age people. Development trends of rehabilitation engineering means (new requirements, technologies, materials, design solutions, design and construction means and function). Technique system: human with disability – technical solutions, biomechanical base (elements, biocinematic chain, center of gravity, moment biomechanism), rehabilitation engineering means and assisting technique – discussion (wheelchair orthopedic, active, sport, tourist), passenger car (systems supporting to getting, exit, driving for disabled persons and older age people), collective transport means (road, rail, air, water), close transport technique (measure to verticalization, specific principles of design wheelchair on an example active wheelchair (modular construction, series of construction, rehabilitation construction, structure of construction nodes, ways of supporting body user, searching ideal position of body, dynamic race wheelchair) searching for a need, formulation a list of requirements, principles universal design

## Course topics

Disability definition. Classification of technical devices using in disabled persons transport and older age people. Development trends of rehabilitation engineering means (new requirements, technologies, materials, design solutions, design and construction means and function). Technique system: human with disability – technical solutions, biomechanical base (elements, biocinematic chain, center of gravity, moment biomechanism), rehabilitation engineering means and assisting technique – discussion (wheelchair orthopedic, active, sport, tourist), passenger car (systems supporting to getting, exit, driving for disabled persons and older age people), collective transport means (road, rail, air, water), close transport technique (measure to verticalization, specific principles of design wheelchair on an example active wheelchair (modular construction, series of construction, rehabilitation construction, structure of construction nodes, ways of supporting body user, searching ideal position of body, dynamic race wheelchair) searching for a need, formulation a list of requirements, principles universal design

## Teaching methods

1. Lecture with a multimedia presentation (a form of an information lecture with elements of a problem-based and conversational lecture)
2. Project - credit based on own homework and activity in the classroom (the use of classic problem methods, case study, discussion, practical exercises)

## Bibliography

Basic

Wprowadzenie do inżynierii rehabilitacyjnej, red. M. Zabłocki, Wyd. WMRIiT, Poznań 2017

Projektowanie dla seniorów i osób z niepełnosprawnościami, badania, analizy, oceny, konstrukcje, red.

B. Branowski, Wyd. WMRIIT PP, Poznań 2015

Innowacyjne koncepcje i konstrukcje produktów dla osób niepełnosprawnych i w starszym wieku, red. B.

Branowski, Wyd. CIRITT PP, Poznań 2013

Sydor M., Wybór i eksploatacja wózka inwalidzkiego, Wydawnictwo Uniwersytetu Przyrodniczego w Poznaniu, Poznań 2003

Additional

Biomechanika i inżynieria rehabilitacyjna, red. R. Będziński i inni, Wyd. Akademicka Oficyna Wydawnicza EXIT, Warszawa 2004

Paśniczek R., Wybrane urządzenia wspomagające i fizjoterapeutyczne w rehabilitacji porażen ośrodkowego układu nerwowego i amputacjach kończyn, Oficyna Wydawnicza Politechniki

Warszawskiej, Warszawa 1998

Marciniak J., Szewczenko A., Sprzęt szpitalny i rehabilitacyjny, Wydawnictwo Politechniki Śląskiej, Gliwice 2003

### Breakdown of average student's workload

|                                                                                                                                         | Hours | ECTS |
|-----------------------------------------------------------------------------------------------------------------------------------------|-------|------|
| Total workload                                                                                                                          | 75    | 3,00 |
| Classes requiring direct contact with the teacher                                                                                       | 45    | 2,00 |
| Student's own work (literature studies, preparation for laboratory classes/ tutorials, preparation for tests/exam, project preparation) | 30    | 1,00 |