STUDY MODULE DESCRIPTION FORM

Name of the module/subject	Code
(-)	**1010604221010628482**

Field of study	Profile of study (general academic, practical)	Year /Semester
Mechanical Engineering	**(brak)**	**1 / 2**
Elective path/specialty	Subject offered in:	Course (compulsory, elective)
-	**Polish**	**obligatory**

Cycle of study:	Form of study (full-time,part-time)
First-cycle studies	**part-time**

No. of hours	No. of credits
Lecture: **18** Classes: **9** Laboratory: **-** Project/seminars: **-**	**3**

Status of the course in the study program (Basic, major, other)	(university-wide, from another field)
(brak)	**(brak)**

Education areas and fields of science and art	ECTS distribution (number and %)
technical sciences	**3 100%**
Technical sciences	**3 100%**

Responsible for subject / lecturer:

Marek - Zabłocki
email: marek.zablocki@put.poznan.pl
tel. 616652056
IT
ul. Piotrowo 3

Prerequisites in terms of knowledge, skills and social competencies:

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

Assumptions and objectives of the course:

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

Study outcomes and reference to the educational results for a field of study

Knowledge:

1. Has a basic knowledge in biomechanics and biological - [K1A_W03]
2. Is up-to-date with the latest trends in mechanical engineering, i.e. machine design and construction processes, increase in safety and ease of operation, use of modern construction materials - [K1A_W18]

Skills:

1. Is able to obtain information from the literature, internet, databases and other sources. Can integrate the information to interpret and learn from them, create and justify opinions - [K1A_U03]
2. Is able to plan and carry out the process formulate requirements - [K1A_U19]

Social competencies:

1. Understands the need and knows the possibilities of lifelong learning. - [K1A_K01]
2. Is aware of and understands the importance and impact of non-technical aspects of mechanical engineering activities and its impact on the environment and responsibility for own decisions. - [K1A_K02]

Assessment methods of study outcomes

Lecture: written exam ? test

Classes: credit on the basis of test, homework, class activity

Course description

Problem section of rehabilitation engineering and assistive technology

Technique measure in medical, social and professional rehabilitation

Concept of disability

Contemporary reasons research and design technique measure in rehabilitation engineering

Statistics and reasons request for technique measures rehabilitation engineering

Design for people with disabilities ? design process, design work team, design principles, examples.

Biomechanics ? definition, space of work

Human operational potential ? elements, functions

Biocinematic chain, number of degrees of freedom, locomotor system of human, moment biomechanism

Center of gravity

Basic features and structure of supporting devices (definition geometry and cinematics based on anthropometrical features of human, control methods of devices, choosing materials).

Wheelchairs ? definition and classification

Wheelchairs ? functions, structure, progress and tendencies

Modular construction, construction series based on manual wheelchair:

Design of frame active wheelchair (dimensions, structure of construction nodes).

Requirements regarding using type active wheelchair (support of spine, support of human body, ideal position of body)

Energy efficiency and wheelchair dynamics.

Individual means of transport and collective disabled persons.

Devices supporting in means of transport ? functions, application, universal design principles.

Principles of construction technical measures dedicated to disabled persons and older age people.

Rehabilitation devices (wheelchairs, car, means of collective transport, hospital beds, rehabilitation equipment, lifts, medical rehabilitation gear)

Basic bibliography:

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

2. Projektowanie dla seniorów i osób z niepełnosprawnościami, badania, analizy, oceny, konstrukcje, red. B. Branowski, Wyd. WMRiT PP, Poznań 2015

3. Innowacyjne koncepcje i konstrukcje produktów dla osób niepełnosprawnych i w starszym wieku, red. B. Branowski, Wyd. CIRiTT PP, Poznań 2013

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

Additional bibliography:

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

2. Paśniczek R., Wybrane urządzenia wspomagające i fizjoterapeutyczne w rehabilitacji porażeń ośrodkowego układu nerwowego i amputacjach kończyn, Oficyna Wydawnicza Politechniki Warszawskiej, Warszawa 1998

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

Result of average student's workload

Activity	Time (working hours)
1. Preparation for the lecture, exercises	6
2. Participation in the lecture, exercises	27
3. Fixing the content of the lecture	8
4. Participation in consultations	2
5. Preparation for the sentence	10
6. Participation in passing the lecture, classes	4

Student's workload

Source of workload	hours	ECTS
Total workload	57	3
Contact hours	27	0
Practical activities	0	0