STUDY MODULE DESCRIPTION FORM

Name of the module/subject		Code
Basics of Machine Design		**1010604341010640394**
Field of study: **Transport**	Profile of study (general academic, practical): **(brak)**	Year /Semester: **2 / 4**
Elective path/specialty: **-**	Subject offered in: **Polish**	Course (compulsory, elective): **obligatory**
Cycle of study: **First-cycle studies**	Form of study (full-time,part-time): **part-time**	
No. of hours: Lecture: **18** Classes: **18** Laboratory: **-** Project/seminars: **18**		No. of credits: **7**
Status of the course in the study program (Basic, major, other): **(brak)**	(university-wide, from another field): **(brak)**	
Education areas and fields of science and art: **technical sciences** **Technical sciences**		ECTS distribution (number and %): **7 100%** **7 100%**

Responsible for subject / lecturer:

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Prerequisites in terms of knowledge, skills and social competencies:

1	**Knowledge**	knowledge of physics (statics, kinematics and dynamics), mathematics, after completing the program of study
2	**Skills**	problem-solving skills of the basics of machine design based on their knowledge, ability to obtain the information from identified sources
3	**Social competencies**	understanding of the need to broaden their competence, willingness to work together as a team

Assumptions and objectives of the course:

1. Provide students with knowledge of the basics of machine design
2. Develop students' skills:
- calculation and design of components and assemblies of machines,
- making and reading the technical documentation on the basis of the knowledge from the subject of Engineering Drawing
- practical use of the knowledge gained from the course: Mechanics,Strength of materials, Theory of machines, Materials.
3. Development of students' teamwork skills.

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

Knowledge:

1. has extended and in-depth knowledge of physics useful for formulating and solving selected technical tasks, in particular for correct modeling of real problems - [T1A_W02]
2. has a structured and theoretically founded general knowledge in the field of key issues of technology and detailed knowledge in the field of selected guesses of this discipline in transport engineering - [T1A_W04]
3. knows the basic techniques, methods and tools used in the process of solving tasks in the field of transport, mainly of engineering nature - [T1A_W07]

Skills:

1. can, by formulating and solving tasks in the field of transport, apply properly selected methods, including analytical, simulation or experimental methods - [T1A_U04]
2. can design elements in the field of transport engineering and construct simple machines - [T1A_U13]
3. can communicate in Polish and English using specialized terminology, using various techniques, both in the professional environment and in other environments, also using tools in the field of transport engineering - [T1A_U15]

Social competencies:

1. understands that in the technology knowledge and skills quickly become obsolete - [T1A_K01]
2. is aware of the importance of knowledge in solving engineering problems and knows examples and understands the reasons for malfunctioning transport systems that led to serious financial or social losses or to serious health and even life loss - [T1A_K02]

Assessment methods of study outcomes

Forming assessment:

a) in a scope of the project: assessment of current progress of the project

b) in a scope of lectures: assessment of the answers for the questions concerning the knowledge which was presented during previous lectures

Summarizing assessment:

a) in a scope of project: assessment of the course of work on the project and the final result of the project

b) in a scope of lectures: written exam.

Course description

The basic principles of the design process, elements of the mechanism, the characteristics of workloads, defining loads and appropriate strenght conditions. Connections and their calculation: soldered, welded, glued, riveted joints, fasteners: T-slot nuts, bolt, screw connections. Screw mechanisms: examples and applications, structural calculations. Susceptible elements: springs, rubber components susceptible. Axes, shafts and their bearings. Clutches and brakes. Gearboxes in drive systems.

Basic bibliography:

1. Praca zbiorowa pod red. Z. Osińskiego, Podstawy konstrukcji maszyn, PWN, W-wa, 1999
2. Praca zbiorowa pod red. M. Dietricha: Podstawy konstrukcji maszyn. Tom 3, WNT, Wa-wa, 1999
3. Osiński Zbigniew, Sprzęgła, PWN, Warszawa 1998
4. Dziama A., Michniewicz M., Niedźwiedzki A.: Przekładnie zębate. PWN, Wa-wa, 1989.
5. Ochęduszko K.: Koła zębate, WNT 1985.
6. Dudziak M.: Przekładnie cięgnowe. PWN, Warszawa, 1997.

Additional bibliography:

1. Niemann G., Maschinenelemente t. I, II, III, Springer ? Verlag Berlin, 1965
2. Müller L., Przekładnie obiegowe, PWN, Warszawa, 1983
3. Bahl G., Beitz W., Nauka konstruowania, WNT, Warszawa 1984

Result of average student's workload

Activity	Time (working hours)
1. Participation in lectures	18
2. Consultations regarding lectures	2
3. Preparation to pass the exam	20
4. Participation in the exam	2
5. Preparation to exercises	10
6. Participation in exercise classes	18
7. Consultations regarding exercise classes	2
8. Preparation to pass exercises	20
9. Participation in passing exercises	2
10. Preparation to the project classes	35
11. Participation in the project classes	18
12. Consultations about project classes	2
13. Preparing to pass the project	25
14. Passing the project	2

Student's workload

Source of workload	hours	ECTS
Total workload	176	7
Contact hours	66	3
Practical activities	82	3