STUDY MODULE DESCRIPTION FORM

Name of the module/subject	Code
Basics of Machine Design	**1010601241010640394**

Field of study	Profile of study (general academic, practical)	Year /Semester
Mechanical Engineering	**(brak)**	**2 / 4**
Elective path/specialty	**Subject offered in:**	**Course (compulsory, elective)**
-	**Polish**	**obligatory**

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

No. of hours	No. of credits
Lecture: **2** Classes: **-** Laboratory: **-** Project/seminars: **2**	**4**

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	**4 100%**
Technical sciences	**4 100%**

Responsible for subject / lecturer:

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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 basic knowledge of the basics of machine construction and the theory of machines and mechanisms, including mechanical vibrations - [M1_W05]
2. Has basic knowledge of standardized principles of construction record and engineering graphics - [M1_W06]
3. Has basic knowledge in the field of strength of materials, including the basis of the theory of elasticity and plasticity, performance hypotheses, methods for calculating beams, membranes, shafts, connections and other simple structural elements, as well as methods for testing the strength of materials and the state of strain and stress in mechanical constructions - [M1_W11]
4. Has basic knowledge of manufacturing techniques used in the machine industry, such as casting, plastic working, loss and incremental machining, welding and other techniques of joining materials, cutting, coating and surface treatments. - [M1_W014]

Skills:

1. Is able to plan and carry out the process of constructing uncomplicated machine sets or machines and to formulate requirements for electronic components and automatic control systems for industry professionals in mechatronic systems - [M1_U14]

2. Student is able to perform basic functional and strength calculations of machine elements such as tension, cogged, friction gears, bearings, rolling and sliding gears, couplings, brakes - [M1_U15]

3. He can prepare technical documentation descriptively - drawing engineering tasks - [M1_U19]

Social competencies:

1. Is ready to critically evaluate your knowledge and content you receive - [M1_K01]

2. Is ready to recognize the importance of knowledge in solving cognitive and practical problems and to consult experts in the event of difficulties in solving the problem - [M1_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.

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. 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. Lectures	30
2. Consultations	2
3. Preparation to pass the exam	10
4. Participation in the exam	2
5. Participation in the project classes	30
6. Preparation to the project classes	15
7. Consultations about project classes	2
8. Preparing to pass the project	25

Student's workload

Source of workload	hours	ECTS
Total workload	101	4
Contact hours	51	2
Practical activities	57	2