STUDY MODULE DESCRIPTION FORM

Name of the module/subject		Code
Foundations of Machine Construction		**1011101241010601256**
Field of study	Profile of study (general academic, practical)	Year /Semester
Safety Engineering - Full-time studies - First-	**(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: **30** Classes: **15** Laboratory: **-** Project/seminars: **15**		**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 **Technical sciences**		**4 100%** **4 100%**

Responsible for subject / lecturer:

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Prerequisites in terms of knowledge, skills and social competencies:

1	**Knowledge**	Basics of physics, mechanics and strength of materials, the principles of preparation of technical documentation.
2	**Skills**	The ability to make a technical documentation in accordance with the principles of engineering drawing, strength calculations.
3	**Social competencies**	A consciousness of responsibility for taking the decisions during engineering calculations.

Assumptions and objectives of the course:

Transfer of knowledge concerning mechanical engineering and application of basic elements and assemblies used in mechanical engineering. Focus on the possibilities of practical application of knowledge from physics, mechanics, strength of materials and engineering drawing.

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

Knowledge:

1. Student has a basic knowledge on production technology, including engineering drawing. - [K1A_W05]
2. Student knows the development tendencies and the best practices in a scope of technique and standardization. - [K1A_W15]
3. Student know the basic problems connected with reliability and safety of operation of technical devices, technical objects and systems. - [K1A_W20]

Skills:

1. Student can use analytical methods and simulations to formulate and solve the engineering tasks. - [K1A_U09]
2. During formulating and solving the engineering tasks, student can notice the system and out of technology aspects of a problem, and also socio-technique, organization and economy aspects. - [K1A_U10]
3. Student can make a critical analysis of operation and assessment of the existing technical solution, in a connection with Safety Engineering, in particular machines, devices, objects and systems - [K1A_U13]
4. Student can identify and formulate a specification of simple practical engineering tasks which are typical for Safety Engineering - [K1A_U14]
5. Student can design and make a simple device, object, system or process, which is typical for Safety Engineering - according to the given specification; with the use of proper methods, techniques and tools. - [K1A_U16]

Social competencies:

1. Student is conscious of importance and can understand the out-of-technical aspects and effects of engineering activity, including the influence of this activity on environment and the responsibility for the made decisions. - [K1A_K02]
2. Student is conscious of responsibility for his/her own work and is ready to conform to the principles of team work and can be responsible for joint tasks. - [K1A_K03]
3. Student can notice the reason-result relations during obtaining the objectives and can graduate a significance of alternative or competitive tasks. - [K1A_K04]

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

Design process, computer aided design, the principles of designing, constructional features, dimensional tolerances and fits, basic strength calculations. Bonded connections: soldered connections, welded joints, glue joints; riveted joints, shaped connections: key joints, pin joints, spigot joints; screwed connections. Screw gears: examples and applications, engineering calculations, constructional solutions. Elastic elements: springs, rubber elastic elements, thermal bimetals. Axles and shafts: designing, materials. Bearings: friction phenomenon, slide and rolling bearings. Clutches and brakes: the principles of selection, permanent couplings, controlled and self-acting couplings. Transmissions: friction gears, toothed gears and strand gears.

Basic bibliography:

1. Maluśkiewicz P.; Podstawy konstrukcji maszyn dla studentów kierunków niemechanicznych, Wydawnictwo Politechniki Poznańskiej, Poznań 2009.

2. Skrzyszowski Z.; Podnośniki i prasy śrubowe - PKM projektowanie, Kraków 1999.

3. Shigley J., Mischke Ch, Budynas R.: Mechanical Engineering Design, 2003

Additional bibliography:

1. Dietrich M.; Podstawy konstrukcji maszyn, Wydawnictwo Naukowo - Techniczne 1995.

2. Niezgodziński M. E., Niezgodziński T.; Wzory, wykresy i tablice wytrzymałościowe, Wydawnictwo Naukowo - Techniczne, 1996

3. Sempruch J., Piątkowski T,; Podstawy konstrukcji maszyn z CAD, Piła, Państwowa Wyższa Szkoła Zawodowa w Pile, 2006

Result of average student's workload

Activity	Time (working hours)
1. Lectures	30
2. Classes	15
3. Consultations	20
4. Preparing to pass	20
5. Pass the exam	2
6. Project	15
7. Exam	2

Student's workload

Source of workload	hours	ECTS
Total workload	104	4
Contact hours	84	3
Practical activities	30	1