

STUDY MODULE DESCRIPTION FORM		
Name of the module/subject Technological machines		Code 1011101241011102395
Field of study Engineering Management - Full-time studies -	Profile of study (general academic, practical) (brak)	Year /Semester 2 / 4
Elective path/specialty -	Subject offered in: Polish	Course (compulsory, elective) elective
Cycle of study: First-cycle studies	Form of study (full-time, part-time) full-time	
No. of hours Lecture: 15 Classes: 15 Laboratory: - Project/seminars: -		No. of credits 4
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 %) 4 100% 4 100%
Responsible for subject / lecturer: dr inż. Karolina Werner-Lewandowska email: karolina.werner@put.poznan.pl tel. 616653414 Wydział Inżynierii Zarządzania ul. Strzelecka 11 60-965 Poznań		
Prerequisites in terms of knowledge, skills and social competencies:		
1	Knowledge	Basic knowledge of materials science, machine construction, manufacturing techniques
2	Skills	Student has the ability to think logically, to use information obtained from literature and the Internet
3	Social competencies	A student understands the need to learn and acquire new knowledge
Assumptions and objectives of the course: To familiarize with the basic issues concerning the design of technological processes of machine parts manufacturing and assembly		
Study outcomes and reference to the educational results for a field of study		
Knowledge:		
1. The student should list and describe basic material technologies and process design during the life of the machine - [K1A_W21]		
2. Student Knows basic methods, techniques, tools that utilize the solving of simple engineering tasks in the field of construction and operation of forming, shaping, improving machines - [K1A_W24]		
Skills:		
1. The student is able to characterize the technological machines in terms of construction, function and working parameters depending on the process of forming or shaping the product and from the technique used - [K1A_U05]		
2. The student is able to select and apply materials and technologies of machine parts exposed to damage (traditional and unconventional materials) - [K1A_U17]		
3. Can design the design and technology of simple parts and subassemblies of process machines used for production processes and to design the organization of production units of the first complexity - [K1A_U19]		
Social competencies:		
1. Student is able to discuss the influence of vibrations on machine, product and operator, ecology of machines - [K1A_K08]		
2. The student is aware that the creation of products that meet the needs of users requires a system approach in machine technology with technical, economic, marketing, legal, organizational and financial issues. - [K1A_K09]		

Assessment methods of study outcomes		
<p>Formative evaluation</p> <p>a) in terms of exercise: based on the current progress of the exercise</p> <p>b) lectures: too many lecture classes and limited time prevents any knowledge test procedure</p> <p>Summary summary:</p> <p>Lecture: Examination based on a written test consisting of 4 questions rated on a scale of 0 to 1. Credit for a minimum of 2.4 points.</p> <p>Exercise: Pass on oral or written answers in the scope of each lab exercise, report on each laboratory exercise as instructed by the instructor. All exercises must be completed in order to pass the laboratory tests (positive feedback and report).</p> <p>Exercise: Pass on oral or written answers from the content of each exercise, report on each exercise as instructed by the instructor. All exercises must be completed in order to pass the test (positive assessment of the answer and report).</p>		
Course description		
<p>Lecture:</p> <p>General introduction to machine technology. Phases of the existence of a technical object. The essence of machine technology. New tendencies in machine technology. Production process. Technological process. Technological documentation. Outputs for the design of the technological process. Semis. Technical standard of working time. Machining centers. Allowances. Processing accuracy, errors. Quality of the product. Outer layer and shaping factors. Technological tooling. Costs. Construction technology. Assembly. Design of technological processes of typical machine parts. Components of computer-aided design of technological processes.</p> <p>Lecture with elements of discussion</p> <p>exercises:</p> <ol style="list-style-type: none"> 1 Axis-symmetrical workpiece technology (shaft, sleeve, disc) 2 finishing techniques 3 Technology of machining non-axisymmetric objects (body, lever, plate, bracket) 4 Robotized assembly technology 5 Technological process of cylindrical gear <p>Lecture: information lecture in combination with conversational, case method</p> <p>Exercise: exercise method, oxford method, round table, games, case method</p>		
<p>Basic bibliography:</p> <ol style="list-style-type: none"> 1. Legutko S., Podstawy eksploatacji maszyn i urządzeń, WSiP, Warszawa, 2004 2. Białek M., Bacia A., Maszyny technologiczne w konwencjonalnej technologii formującej i kształtującej, Oficyna Wydawnicza Politechniki Warszawskiej, Warszawa, 2002 3. Pająk E., Podstawy obróbki mechanicznej - materiały pomocnicze do wykładów i laboratoriów, Skrypt PWSZ Konin, 2007 4. Biały W., Podstawy maszynoznawstwa, PWE, Warszawa, 2016 		
<p>Additional bibliography:</p> <ol style="list-style-type: none"> 1. Kołodziej A., Maszynoznawstwo, PWSZ w Kaliszu, Kalisz, 2008 2. Okoniewski S., Technologia maszyn, WSiP, Warszawa, 1999 3. Praca pod redakcją J. Erbla., Encyklopedia technik wytwarzania stosowanych w przemyśle maszynowym, tom I, tom II, Oficyna Wydawnicza Politechniki Warszawskiej, Warszawa, 2001 4. Mały poradnik mechanika - tom 1 i 2, WNT, Warszawa, 2015 		
Result of average student's workload		
Activity	Time (working hours)	
1. Participation in lectures	15	
2. Participate in exercises	15	
3. Preparation for exercises	30	
4. Student's own work	18	
5. Consultation	20	
6. Test	2	
Student's workload		
Source of workload	hours	ECTS

Total workload	100	4
Contact hours	52	2
Practical activities	15	1