

<b>STUDY MODULE DESCRIPTION FORM</b>		
Name of the module/subject <b>Geometry and engineering graphics</b>		Code <b>1010314331010642735</b>
Field of study <b>Power Engineering</b>	Profile of study (general academic, practical) <b>(brak)</b>	Year /Semester <b>2 / 3</b>
Elective path/specialty <b>-</b>	Subject offered in: <b>polish</b>	Course (compulsory, elective) <b>obligatory</b>
Cycle of study: <b>First-cycle studies</b>	Form of study (full-time, part-time) <b>part-time</b>	
No. of hours Lecture: <b>15</b> Classes: <b>15</b> Laboratory: <b>-</b> Project/seminars: <b>-</b>		No. of credits <b>4</b>
Status of the course in the study program (Basic, major, other) <b>(brak)</b>		(university-wide, from another field) <b>(brak)</b>
Education areas and fields of science and art <b>technical sciences</b>		ECTS distribution (number and %) <b>4 100%</b>
<b>Responsible for subject / lecturer:</b>  Michał Śledziński, Ph.D, Eng email: <a href="mailto:michal.sledzinski@put.poznan.pl">michal.sledzinski@put.poznan.pl</a> tel. 48616652245 Working Machines and Transportation ul. Piotrowo 3, 60-965 Poznań		
<b>Prerequisites in terms of knowledge, skills and social competencies:</b>		
1	<b>Knowledge</b>	Basics of engineering. Elementary knowledge of structure and operation of machines and devices. Geometry.
2	<b>Skills</b>	Principles of projection. Spatial imagination. Sketching skills. Unaided solving of problems.
3	<b>Social competencies</b>	Individual and team work. Honesty. Reliability and regularity. Activity.
<b>Assumptions and objectives of the course:</b> Transfer of theoretical and practical knowledge of descriptive geometry and engineering graphics. Learning of principles of graphical engineering record in the system of orthogonal projections. Development of spatial imagination and reading of engineering drawing. Improvement of unaided preparation of engineering drawings of machines and machine elements.		
<b>Study outcomes and reference to the educational results for a field of study</b>		
<b>Knowledge:</b>		
1. Knowledge of graphical engineering record, axonometric projections and geometrical constructions. - [-K_W04++] 2. Selection of methods of solids penetrations, sections and polyhedron developments. - [-K_W04+++] 3. Recognition and selection of methods of presentation of machine elements in orthogonal projections. - [-K_W026++] 4. Identification of simplified representation of standard elements. - [-K_W028++] 5. Knowledge of principles of dimensioning, tolerance and fit. - [-K_W04++]		
<b>Skills:</b>		
1. Drawing of connections and machine elements such as: shaft, sleeve, lever, gears etc. - [-K_U01+] 2. Making use of standards and standard elements selection. - [-K_U01+] 3. Dimensioning of machine elements with taking into account the manufacturing technology. - [-K_U03++] 4. Tolerance and fit of machine elements. - [-K_U03++] 5. Notation of form and position tolerances and roughness of surface. - [-K_U06+] 6. Preparation of assembly and production drawings. - [-K_U03+]		
<b>Social competencies:</b>		
1. Creativity and conceptual thinking. Presentation of technical solutions in a group. - [-K_K05++] 2. Perception of the influence of knowledge and occupational improvement on the level of life and society. - [-K_K04++] 3. Pro-ecological thinking. - [-K_01++,K_2+]		

<b>Assessment methods of study outcomes</b>		
<p>- Lectures                      Assessment of knowledge and practical skills during written exam. Additional points for knowledge, activity, interest and creativity.</p> <p>- Classes                      Verification of drawings during classes. Assessment of knowledge and practical skills of drawing of machine elements, spatial imagination and methodology of work.                      Assessment of project ? assembly and production drawings of a part of gear transmission. Additional points for activity, creativity, unaided work and methodology of work. Assessment of drawings ? homeworks.</p>		
<b>Course description</b>		
<p>Teaching of principles of drawings preparation in the system of orthogonal projections. Training of skills of unaided drawing of engineering drawings of real objects and gaining of reading skills of technical documentation. Acquisition of dimensioning skills of machine elements with taking into account the manufacturing technology of elements. Carrying out assembly and production drawings. Execution of individual project in a range of drawing of non-standard elements and selection of standard elements.</p>		
<b>Basic bibliography:</b>		
<ol style="list-style-type: none"> <li>1. Dobrzański T.: Rysunek techniczny maszynowy. WNT Warszawa 2009.</li> <li>2. Lewandowski Z.: Zbiór zadań z rysunku technicznego maszynowego. PWN Warszawa.</li> <li>3. Kozak B. :Ćwiczenia z rysunku technicznego. PWRiL Warszawa.</li> <li>4. Giędowski L.: Rzutowanie prostokątne. Widoki. WSiP Warszawa 1998</li> <li>5. Giędowski L.: Przekroje. WSiP Warszawa 1998</li> <li>6. Giędowski L.: Wymiarowanie. WSiP Warszawa 1999</li> </ol>		
<b>Additional bibliography:</b>		
<ol style="list-style-type: none"> <li>1. Kochanowski M. Zapis konstrukcji z geometrią wykreślną. Wydawnictwo Politechniki Gdańskiej. Gdańsk 2002</li> <li>2. Lewandowski T. Rysunek techniczny dla mechaników. WSiP Warszawa 2008</li> </ol>		
<b>Result of average student's workload</b>		
Activity	Time (working hours)	
1. participation in lectures	15	
2. participation in classes	15	
3. consultations concerning lectures	4	
4. consultations concerning classes	5	
5. preparation to classes	15	
6. carrying out homeworks	15	
7. preparation to examination	10	
8. participation in examination	3	
<b>Student's workload</b>		
Source of workload	hours	ECTS
Total workload	82	4
Contact hours	42	2
Practical activities	15	1