

STUDY MODULE DESCRIPTION FORM		
Name of the module/subject Engineering Drawing		Code 1010601111010640054
Field of study Aerospace Engineering	Profile of study (general academic, practical) (brak)	Year /Semester 1 / 1
Elective path/specialty -	Subject offered in: Polish	Course (compulsory, elective) obligatory
Cycle of study: First-cycle studies	Form of study (full-time, part-time) full-time	
No. of hours Lecture: 1 Classes: 1 Laboratory: - Project/seminars: 1		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: Ph.D. Dominik Wilczyński email: dominik.wilczynski@put.poznan.pl tel. 61224 4512 Faculty of Transport Engineering Piotrowo 3 Street, 60-965 Poznań		Responsible for subject / lecturer: Ph.D. Krzysztof Talaśka email: krzysztof.talaska@put.poznan.pl tel. 61665 2246 Faculty of Transport Engineering Piotrowo 3 Street, 60-965 Poznań
Prerequisites in terms of knowledge, skills and social competencies:		
1	Knowledge	Fundamental knowledge on geometry and stereometry. Fundamental knowledge on theory of machines and machine parts.
2	Skills	Problem solving skills with the use of the knowledge and skills of information acquisition from the selected sources.
3	Social competencies	Understanding the necessity of enlarging the competences, willingness to take a cooperation in a team.
Assumptions and objectives of the course: Mastership of basic principles of image construction of spatial objects on the plane. Training of spatial imagination. Learning the methods and principles of engineering drawing. Practical skills of preparing the technical documentation. Skills of "reading" the engineering drawing.		
Study outcomes and reference to the educational results for a field of study		
Knowledge:		
1. has basic knowledge in the field of the main branches of technical mechanics: statics of kinematics and dynamics of the material point and rigid body and strength of materials, including the basis of theory of elasticity and plasticity, performance hypotheses, methods for calculating beams, membranes, shafts, joints and other simple structural elements - [[K1A_W04]]		
2. has ordered, theoretically founded knowledge in the field of engineering graphics and machine construction: technical drawing, projection of objects, basic principles of engineering graphics, the use of graphic computer programs CAD (Computer Aided Design) in the construction of machines - [[K1A_W07]]		
3. has basic knowledge necessary to understand social, economic, legal and other non-technical conditions of engineering activities - [[K1A_W24]]		
Skills:		
1. is able to communicate using various techniques in a professional environment and other environments using a formal record of construction, technical drawing, concepts and definition of the scope of the studied field of study - [[K1A_U02]]		
2. can use verbal communication in one additional foreign language at the level of everyday language, can describe issues in the field of the studied field of study in this language, can prepare technical documentation for descriptive and engineering tasks, transport and / or logistics - [[K1A_U07]]		
3. can draw a schematic and a simple machine element in accordance with the principles of technical drawing - [[K1A_U16]]		
Social competencies:		

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| 1. understands the need to learn throughout life; can inspire and organize the learning process of others - [[K1A_K01]]
2. is aware of the importance and understands the non-technical aspects and effects of engineering activities, including its impact on the environment, and the related responsibility for decisions - [[K1A_K02]]
3. correctly identifies and resolves dilemmas related to the profession - [[K1A_K05]] |
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Assessment methods of study outcomes

Written exam, credit, project.

Course description

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| 1. Introduction, standardization in engineering drawing.
2. Projection of 3D objects on the plane of the drawing.
3. Presentation of object interior with the use of sectional views, types of sectional views.
4. Presentation of object cross-section with the use of revolved section.
5. The application of geometrical constructions for drawing the objects.
6. Lines of intersection of typical solids.
7. Dimensioning.
8. Tolerances for production drawings and fits for assembly drawings.
9. Geometrical Product Specification.
10. Production drawings for shaft and hub. Splines.
11. Production drawings for gear wheels.
12. Assembly drawings of screw joints and splined connections.
13. Simplifications for rolling bearings drawings.
14. The principles of drawing welds and welded joints.
15. The design of bearing modulus.
16. The analysis ("reading") of assembly drawings. |
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Basic bibliography:

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| 1. Dobrzański T., Rysunek techniczny maszynowy, WNT, W-wa 1997.
2. Lewandowski T., Rysunek techniczny dla mechaników, WSiP, W-wa 2009.
3. Figurski J., Popis St., Rysunek techniczny zawodowy w branży mechanicznej i samochodowej, WSiP, Warszawa 2016.
4. Bober A., Dudziak M., Zapis konstrukcji, PWN, W-wa 1999.
5. Bajkowski J., Podstawy zapisu konstrukcji, Oficyna Wydawnicza Politechniki Warszawskiej, Warszawa 2014.
6. Jankowski W. Geometria Wykreślna. Wydawnictwo P.P. 1999 r.
7. Korczak J., Prętki Cz. Przekroje i rozwinięcia powierzchni walcowych i stożkowych. Wydawnictwo P.P. 1999 r.
8. Loska J., Zbiór zadań ćwiczeniowych z rysunku technicznego, Wyd. Politechniki Śląskiej, Gliwice 1982. |
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Additional bibliography:

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| 1. Poradnik mechanika, Wydawnictwo Rea-SJ Sp. z o.o. Warszawa 2014
2. Freuch T.E., Vierck C.I., Fundamentals of engineering drawing, McGraw-Hill Book Co., New York 1960.
3. Freuch T.E., Vierck C.I., Engineering drawing and graphic technology, McGraw-Hill Book Co., New York 1972. |
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Result of average student's workload

Activity	Time (working hours)
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1. Participation in lectures	15
2. Memorizing the knowledge from lectures	6
3. Consultations concerning the knowledge from lectures	2
4. Preparation to exam	8
5. Participation in exam	2
6. Preparation to classes	4
7. Participation in classes	15
8. Memorizing the knowledge from classes	4
9. Consultations concerning the knowledge from classes	2
10. Preparation to class exam	4
11. Participation in class exam	2
12. Preparation to project classes	5
13. Participation in project classes	15
14. Elaboration of project	15
15. Consultations concerning the knowledge from project classes	2
16. Preparation to project classes exam	8
17. Participation in project classes exam	2
Student's workload	
Source of workload	hours
ECTS	
Total workload	111
Contact hours	57
Practical activities	47