STUDY MODULE DESCRIPTION FORM

Name of the module/subject		Code
Engineering Drawing		**1010601311010640054**

Field of study	Profile of study (general academic, practical)	Year /Semester
Transport	**general academic**	**1 / 1**
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: **1**	Classes: **-**	Laboratory: **-**	Project/seminars: **1**	**5**

Status of the course in the study program (Basic, major, other)	(university-wide, from another field)
basic	**university-wide**

Education areas and fields of science and art	ECTS distribution (number and %)
technical sciences	**5 100%**
Technical sciences	**5 100%**

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**	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 a structured, theoretically founded knowledge in the field of engineering graphics and machine construction: technical drawing, objects projecting, the basic principles of engineering graphics, use of CAD (Computer Aided Design) graphics in the construction of machines - [K1A_W13]

Skills:

1. Is able to obtain information from the literature, internet, databases and other sources in Polish and English. Can integrate the information to interpret and learn from them, create and justify opinions. - [K1A_U01]

2. Is able to communicate using a variety of techniques in a professional environment and other environments using the formal record of the design, technical drawings, concepts and definitions in the scope of the study area. - [K1A_U02]

Social competencies:

1. Understands the need and knows the possibilities of lifelong learning, knows the need for acquiring new knowledge for professional development. - [K1A_K01]

2. Is aware of and understands the importance and impact of non-technical aspects of mechanical engineering activities and its impact on the environment and responsibility for own decisions in short and long-term aspect. - [K1A_K02]

3. Is able to act in a professional manner, comply with the rules of professional ethics and respect for cultural diversity. - [K1A_K03]

4. Has a sense of responsibility for one?s own work and is willing to comply with the principles of teamwork and taking responsibility for collaborative tasks. - [K1A_K04]

Assessment methods of study outcomes

Written exam, project.

Course description

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.

Basic bibliography:

1. Dobrzański T., Rysunek techniczny maszynowy, WNT, W-wa 1997.
2. Lewandowski T., Rysunek techniczny dla mechaników, WSiP, W-wa 2009.
3. Bober A, Dudziak M., Zapis konstrukcji, PWN, W-wa 1999.
4. Jankowski W. Geometria Wykreślna. Wydawnictwo P.P. 1999 r.
5. Korczak J., Prętki Cz. Przekroje i rozwinięcia powierzchni walcowych i stożkowych. Wydawnictwo P.P. 1999 r.
6. Loska J., Zbiór zadań ćwiczeniowych z rysunku technicznego, Wyd. Politechniki Śląskiej, Gliwice 1982

Additional bibliography:

1. Freuch T.E., Vierck C.I., Fundamentales of engineering drawing, McGraw-Hill Book Co., New York 1960.
2. Freuch T.E., Vierck C.I., Engineering drawing and grafic technology, McGraw-Hill Book Co., New York 1972.

Result of average student's workload

Activity	Time (working hours)
1. Participation in lectures	15
2. Memorizing the knowledge from lectures	15
3. Consultations concerning the knowledge from lectures	6
4. Preparation to exam	10
5. Participation in exam	2
6. Participation in project classes	15
7. Preparation to project classes	15
8. Elaboration of project	15
9. Consultations concerning the knowledge from project classes	15
10. Preparation to project classes exam	15
11. Participation in project classes exam	2

Student's workload

Source of workload	hours	ECTS
Total workload	125	5
Contact hours	55	2
Practical activities	77	3