COURSE DESCRIPTION CARD - SYLLABUS

Course name
Engineering Drawing (CAD) [S1Lot2>RTCAD]

Course

Field of study
Aviation

Year/Semester
1/1

Area of study (specialization)
–

Profile of study
general academic

Level of study
first-cycle

Course offered in
Polish

Form of study
full-time

Requirements
compulsory

Number of hours

Lecture
15

Laboratory classes
15

Other
0

Tutorials
0

Projects/seminars
15

Number of credit points

4,00

Coordinators

dr inż. Maciej Berdychowski
maciej.berdychowski@put.poznan.pl

Lecturers

Prerequisites

Basic knowledge of elementary geometry and stereometry. Basic knowledge of mechanical engineering and machine parts.

Course objective

Mastering the basic rules of constructing images of spatial formations on a plane. Developing spatial imagination. Learning the methods and principles of recording constructions. Acquiring practical skills in creating drawing documentation and the ability to "read" drawings.

Course-related learning outcomes

Knowledge:
1. has an ordered, theoretically founded knowledge in the field of engineering graphics and machine construction: technical drawing, object projection, basic principles of engineering graphics, the use of CAD (Computer Aided Design) graphic programs in the construction of machines

Skills:
1. is able to communicate using various techniques in the professional environment and other environments

using the formal notation of construction, technical drawing, concepts and definitions of the scope of the field of study studied
Social competence
1. understands that in technology, knowledge and skills very quickly become obsolete
2. is aware of the social role of a graduate of a technical university, in particular understands the need to formulate and convey to the society, in an appropriate form, information and opinions on engineering activities, technological achievements, as well as the achievements and traditions of the engineer profession
3. correctly identifies and resolves dilemmas related to the profession of an aerospace engineer

Social competences:
-

Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

Written exam on the lecture, assessment of laboratories based on completed tasks/exercises.

Programme content

Basics of preparing technical documentation - technical drawing.
Types of technical drawings, diagrams, their symbols, dimensions, tolerances and projections; Information identifying title plates;
Specification 100 of the American Air Transport Association (ATA); Aviation and other applicable standards.

Course topics

1. Introductory information, standardization in the notation of structures.
2. Methods of mapping three-dimensional objects on the drawing plane.
3. Representation of the internal structure of an object using cross-sections, types of cross-sections.
4. Representation of the cross-section of an object using sections.
5. Application of geometric structures to drawing utility objects.
6. Interpenetration lines of intersecting typical solids.
7. Notation of dimensions.
8. Tolerances on manufacturing drawings and fits on assembly drawings.
9. Geometric structure of the GSP surface.
10. Manufacturing drawings of parts in the class shaft and sleeve. Splines.
11. Manufacturing drawings of parts in the class wheel; gear wheels.
12. Assembly drawings of threaded and splined connections.
13. Simplifications in drawing rolling bearings.
14. Principles of drawing welds and welded joints.
15. Design of a bearing node.
16. Analysis ("reading") of assembly drawings.
PART - 66 (THEORY - 11.25 hrs, PRACTICE - 11.25 hrs) MODULE 7A. TECHNICAL SERVICE ACTIVITIES
7.5 Technical machine drawings, diagrams and standards
Types of engineering drawings, diagrams, their symbols, dimensions, tolerances and projections; Identification
information for title blocks;
Microfilm, microfiche and computer presentations;
American Air Transport Association (ATA) Specification 100; Aeronautical and other applicable standards including ISO, AN, MS, NAS and MIL;
Wiring diagrams and schematic diagrams. [2]
7.6 Fits and Tolerances
Bolt hole drill sizes, fit classes; Commonly used fit and clearance system;
Fit and clearance schedule for aircraft and engines; Bending, twist and abrasion limits;
Standard methods for checking shafts, bearings and other parts. [2]

Teaching methods

Lecture: multimedia presentation, supplemented with examples given on the board

Laboratories: Illustrated didactic boards or multimedia presentations, supplemented with examples on the board;
performing tasks given by the instructor practical exercises

Bibliography

Basic:
1. Dobrzański T., Rysunek techniczny maszynowy, WNT, W-wa 1997.
2. Lewandowski T., Rysunek techniczny dla mechaników, WSiP, W-wa 2009.
3. Bajkowski J., Podstawy zapisu konstrukcji, Oficyna Wyd. Polit. Warszawskiej, 2014
4. Bober A, Dudziak M., Zapis konstrukcji, PWN, W-wa 1999.
5. Jankowski W. Geometria Wykreślna. Wydawnictwo P.P. 1999 r.
6. Korczak J., Prętki Cz. Przekroje i rozwinięcia powierzchni walcowych i stożkowych. Wydawnictwo P.P. 1999 r.
7. Loska J., Zbiór zadań ćwiczeniowych z rysunku technicznego, Wyd. Politechniki Śląskiej, Gliwice 1982

Additional:
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.

Breakdown of average student's workload

	Hours	ECTS
Total workload	100	4,00
Classes requiring direct contact with the teacher	47	2,00
Student's own work (literature studies, preparation for laboratory classes/ tutorials, preparation for tests/exam, project preparation)	53	2,00