Course Unit Descriptor

Study Programme: Mechanical Engineering; Industrial engineering in exploitation of oil and gas; Engineering Management; Information technology

Course Unit Title: Technical Drawing with Computer Graphics

Course Unit Code: OAS130

Name of Lecturer(s): Ivan Palinkaš, PhD

Type and Level of Studies: Bachelor Academic Degree

Course Status (compulsory/elective): Compulsory/elective

Semester (winter/summer): Winter

Language of instruction: English

Mode of course unit delivery (face-to-face/distance learning): face-to-face

Number of ECTS Allocated: 6

Prerequisites: None

Course Aims:

To educate students about methods and procedures of showing 3D objects on 2D format, to instruct students that drawings clearly, precisely define the object, from idea to constructive solution. Also, the task of this course is to develop persistency, consistency, systematic, accuracy, tidiness, etc., in students

Learning Outcomes:

At the end of this course students will be capable to read and use technical documentation and to develop ability of imagining object in space and on drawing. Acquired knowledge can be applied in practice.

Syllabus:

Theory

Graphics – the language of engineering. Basics of descriptive geometry – types of projection, projection surfaces and invariants of parallel projection. Showing elements of space in isometric and in pair of orthogonal projection. Coordinate system. Point, straight line and plane in general and special position. Point and straight line in plane. Straight line through plane and their parallel or perpendicular relation. Transformation. Rotation of point, straight line and plane. Solving the spatial relations of point, straight line and plane. Showing the geometric primitives (pyramid, prism, polyhedral, cone, sphere, cylinder). Technical drawing. Axonometric drawing. Orthographic drawing. Special orthographic views. Types of intersection. Multiple parts intersection in assembly. Dimensioning. Reading of orthographic drawing. Drawing of mechanical elements, screws, springs, gear drive, chain drives, belt drive, marking the quality of surface roughness, assembly drawing, technical drawing. Measuring and drawing of machine part.

Practice

Drawing examples from area of theory. Application of CAD software in technical drawing.

Required Reading:

[1] Frederick E. Giesecke, Alva Mitchell, Henry C. Spencer, Ivan L. Hill, John T. Dygdon, James E. Novak, R. O. Loving, & 3 more: Technical drawing with engineering graphics (15th edition), Peachpit Press, 2016. ISBN-13: 978-0134306414; ISBN-10: 9780134306414

[2] David E. Goetsch, Raymond L. Rickman, William S. Chalk: Technical drawing for engineering communication 7th edition, Cengage Learning, 2015. ISBN-10: 1285173015; ISBN-13: 978-1285173016

[3] George Omura, Brian Benton: Mastering AutoCAD 2017 and AutoCAD LT 2017, Sybex, 2016. ISBN: 978-1-119-24005-1

[4] Maguire, D. ENGINEERING DRAWING FROM FIRST PRINCIPLES Using AutoCAD, Arnold, London, Great Britain, John Wiley & Sons Inc., ISBN 0 340 69198 0, New York, USA, 1998.

Weekly Contact Hours: 4	**Lectures: 2**	**Practical work:2**

Teaching Methods:

Verbal teaching methods. Illustrative teaching methods. Demonstration teaching methods. Laboratory and experimental. Development of project work.			
Knowledge Assessment (maximum of 100 points):			
Pre-exam obligations	points	**Final exam**	points
Active class participation	10	written exam	40
Practical work		oral exam	
Preliminary exam(s)	40		
Seminar(s)	10		