



MODULE SPECIFICATION

Module code	
Module title in Polish	Geometria wykreślna i grafika komputerowa CAD
Module title in English	Descriptive Geometry and CAD Computer Graphics
Module running from the academic year	2016/2017

A. MODULE IN THE CONTEXT OF THE PROGRAMME OF STUDY

Field of study	Surveying and Cartography
Level of qualification	first cycle (first cycle, second cycle)
Programme type	academic (academic/practical)
Mode of study	full-time (full-time/part-time)
Specialism	All
Organisational unit responsible for module delivery	The Department of Geotechnical and Hydraulic Engineering
Module co-ordinator	Zbigniew Szczerbowski, PhD hab., Eng., Professor of the University
Approved by:	Ryszard Florek-Paszowski, PhD, Eng.

B. MODULE OVERVIEW

Module type	core module (core/programme-specific/elective HES*)
Module status	compulsory module (compulsory/optional)
Language of module delivery	English
Semester in the programme of study in which the module is taught	semester 1
Semester in the academic year in which the module is taught	Winter semester (winter semester/summer semester)
Pre-requisites	None (module code/module title, where appropriate)
Examination required	No (yes / no)
ECTS credits	3

* elective HES – elective modules in the Humanities and Economic and Social Sciences

Mode of instruction	lectures	classes	laboratories	project	others
----------------------------	-----------------	----------------	---------------------	----------------	---------------



Total hours per semester	15		30		
--------------------------	----	--	----	--	--

C. LEARNING OUTCOMES AND ASSESSMENT METHODS

Module aims	The aim of the module is to familiarise students with the ability of spatial thinking and applying computer drawing tools in presenting images. At the same time, a student becomes acquainted with projection techniques and the principles of technical drafting (including those which concern a surveying drawing). These principles ought to be utilised while making drawing in a classical form (as well as with the application of computer techniques).
--------------------	--

Module outcome code	Module learning outcomes	Mode of instruction (l/c/lab/p/ others)	Corresponding programme outcome code	Corresponding discipline-specific outcome code
W_01	A student has basic knowledge as regards basic geometrical principles in a graphical presentation of objects, regulations binding in graphical engineering (including a technical and surveying drawing).	I	GiK_W16	T1A_W03, T1A_W04, T1A_W05, TA1_W07
W_02	A student has basic theoretical knowledge as regards computer graphics.	I	GiK_W16	T1A_W03, T1A_W04, T1A_W05, TA1_W07
W_03	A student can use the AutoCAD program (to a basic extent); a student can also make simple 2D and 3D drawings.	I	GiK_W16	T1A_W03, T1A_W04, T1A_W05, TA1_W07
U_01	A student can apply the learnt projection methods in engineering practice.	II	GiK_U02	T1A_U01, T1A_U02, T1A_U03, T1A_U05, T1A_U07
U_02	A student can communicate with the use of various techniques in the professional environment (as well as in other environments).	II	GiK_U05	T1A_U02
K_01	A student understands the necessity (and knows the possibilities) of continuous education as well as raising his/her professional, personal, and social competences.	II	GiK_K01	T1A_K01
K_02	A student is aware of the necessity of self-education as well as acting professionally and responsibly (according to the principles of professional ethics).	II	GiK_K02	T1A_K01, T1A_K02, T1A_K05, T1A_K07

Module content:

1. Topics to be covered in the lectures

No.	Topics	Module outcome code
1.	Basic notions and definitions in engineering graphics and technical drawing. The types of technical and surveying drawings. Legal regulations connected with the principles of making drawings.	W_01 W_02 K_02
2.	Geometric fundamentals of engineering graphics. The types of projections and their characteristics. Axonometric projection: projection principles, the properties of an axonometric projection, the types of axonometry and its application in engineering issues. Rectangular projection in engineering issues: projection planes and the properties of rectangular projections, the principles of presentations in rectangular projections. Sections.	W_01 W_02 K_02



3.	The issues of presenting measures in a technical and surveying drawing, measuring.	W_01 W_03 K_02
4.	CAD techniques in the presentation of spatial elements.	W_01 W_02 K_02
5.	Monge projections: reflecting basic elements of space. Mutual position of straight lines and planes (parallelism, common elements, and perpendicularity). Sections and rotations. Measurement issues.	W_01 W_02 K_02
6.	Projections with elevations: reflecting basic elements of space as well as their mutual relations. Sections and rotations. Measurement issues.	W_01 W_03 K_02
7.	The application of projections in surveying: in the issues concerning topographic surface. Operations on a topographic surface.	W_01 W_02 K_02

2. Topics to be covered in the laboratories

No.	Topics	Module outcome code
1.	The fundamentals of technical drawings. A technical drawing in relations to descriptive geometry. Making a simple drawing as an element of practice with drafting supplies.	W_01 U_01 K_01
2-3.	Rectangular projections in a technical drawing and their relations with Monge projections. Axonometric projections. Allocating tasks connected with projections.	W_01 U_02 K_01
4.	Monge projections. The principles and relationships between geometric elements: relationships, a common part of planes, etc.	W_03 U_01 K_01
5.	Monge projections. Measurement issues of determining distance and angles.	W_01 U_01 K_01
6.	Projections with elevations. The principles and relationships between geometric elements: relationships, a common part of planes, etc. Construction practice. Measurement issues (determining distance and angles). The application of projections with elevations in a surveying drawing.	W_03 U_01 K_02
7.	Introduction to AutoCAD. Making a drawing and basic drawing settings.	W_01 U_01 K_01
8.	Applying layers and simple drawings in the program; familiarising students with basic drawing tools.	W_01 U_01 K_01
9.	The application of characteristic AutoCAD commands in creating intermediate drawings.	W_01 U_01 K_01
10– 11.	The application of a program in surveying applications.	W_01 U_01 K_01
12.	Making independent drawings: projecting individual objects.	W_01 U_01 K_01
13-14.	Making independent drawings: 3D drawings of individual objects. Sections.	W_01 U_01 K_02
15.	A final test.	K_02

Assessment methods

Module outcome code	Assessment methods <i>(Method of assessment; for module skills – reference to specific project, laboratory and similar tasks)</i>
---------------------	---



W_01	A test, reports during laboratory classes
W_02	A test, reports during laboratory classes
W_03	A test, reports during laboratory classes
U_01	A test during laboratory classes, reports during laboratory classes
U_02	A test during laboratory classes
K_01	A test during laboratory classes, a discussion during tutorials
K_02	Reports during laboratory classes, a discussion during tutorials

D. STUDENT LEARNING ACTIVITIES

ECTS summary		
	Type of learning activity	Study time/ credits
1	Contact hours: participation in lectures	15
2	Contact hours: participation in classes	
3	Contact hours: participation in laboratories	30
4	Contact hours: attendance at office hours (2-3 appointments per semester)	5
5	Contact hours: participation in project-based classes	-
6	Contact hours: meetings with a project module leader	-
7	Contact hours: attendance at an examination	-
8		
9	Number of contact hours	50 <i>(sum)</i>
10	Number of ECTS credits for contact hours <i>(1 ECTS credit = 25-30 hours of study time)</i>	2.0
11	Private study hours: background reading for lectures	2
12	Private study hours: preparation for classes	
13	Private study hours: preparation for tests	2
14	Private study hours: preparation for laboratories	4
15	Private study hours: writing reports	8
16	Private study hours: preparation for a final test in laboratories	2
17	Private study hours: preparation of a project/a design specification	
18	Private study hours: preparation for an examination	2
19		
20	Number of private study hours	25 <i>(sum)</i>
21	Number of ECTS credits for private study hours <i>(1 ECTS credit = 25-30 hours of study time)</i>	1.0
22	Total study time	75
23	Total ECTS credits for the module <i>(1 ECTS credit = 25-30 hours of study time)</i>	3.0
24	Number of practice-based hours <i>Total practice-based hours</i>	46
25	Number of ECTS credits for practice-based hours <i>(1 ECTS credit = 25-30 hours of study time)</i>	1.8

E. READING LIST



Politechnika Świętokrzyska

WYDZIAŁ INŻYNIERII ŚRODOWISKA, GEOMATYKI I ENERGETYKI

References	
Module website	