1. Course number and name

RB-S1-19-W21-2D, Engineering Graphics I

2. Credits and contact hours*

5 ECTS, lectures: 15 hours**, laboratory classes: 30 hours**

3. Instructor's or course coordinator's name

Monika Sroka-Bizoń, Arch, Eng, MSc, PhD

4. Text book, title, author, and year

- Górska R.: Descriptive Geometry, Cracow University of Technology, 2013
- Pare E.G., Loving R.O, Hill I.L.: Descriptive geometry, Collier Macmillan Publishers, 1997

a. other supplemental materials

- Łapińska C.: Descriptive Geometry, Oficyna Wydawnicza Politechniki Warszawskiej, 2016
- online teaching materials - Interactive and animated drawing teaching tools realized in the Erasmus+ project No 2017-1-LT01- KA202-035177 - https://liggd.lt/diad-tools/gb/training-materials

5. Specific course information

a. brief description of the content of the course (catalog description)

Lectures:

The concept of a projection. Projection methods used. Parallel projection and it's properties. Orthogonal projection. Mongean projection. Projection of elementary geometrical elements. Orthographic projection - views. Parallel projection - axonometry, definition, various sorts of axonometry. Affiliation of elements (the construction of the flat polygon). Auxiliary projection planes - helpful views. Common elements. Perpendicular elements. Scales and dimensions in technical drawing. Sections, cross-section and section views. Rotation. Polyhedrons: projection and section. Prisms and pyramids. Development of polyhedrons. Roofs. Development of the roof. Surfaces - projection and section. Sphere. Cone and cylinder. Development of the cone and the cylinder. Topographic projection. Earthworks. Basics of CAD.

Laboratory Classes:

As part of the laboratory classes, drawing design works are realized in which structural geometric problems are solved. The content of design works is based on the topics presented in lectures. There are ten design works to perform: Design Work No 1 – orthographic projection – 6 views of 3D object, according to standards; Design Work No 2 – Construction of axonometric view of spatial object defined by main views; Design Work No 3 - Affiliation of the spatial elements - construction of the flat polygon. Work No 4 - Perpendicular elements; Design Work No 5 - Section, cross - section and section view of 3D object; Design Work No 6 - Scales and dimensions in technical drawing; Design Work No 7 – construction of common elements, the piercing point and the edge between planes; Design Work No 8 – construction of polyhedron's cross-section and its

development; Design Work No 9 – Topographic projection – Earthworks; Design Work No 10 – 2D drawings with CAD.

b. prerequisites or co-requisites

No prerequisites and additional requirements

c. indicate whether a required, elective, or selected elective (as per Table 5-1) course in the program

Required.

6. Specific goals for the course

a. specific outcomes of instruction, ex. The student will be able to explain the significance of current research about a particular topic

The student will know:

- the methods of projection of the graphic spatial elements used in engineering practice and geodesy,
- the compounds and spatial relations arising from the mutual positions of spatial elements,
- the rules for preparing simple construction drawings by using computer techniques.

The student will be able:

- to solve tasks in the field of constructing geometric objects,
- to carry out geometric analysis of building objects on the basis of drawing documentation.

b. explicitly indicate which of the student outcomes listed in Criterion 3 or any other outcomes are addressed by the course.

K1A_W02, K1A_U07

7. Brief list of topics to be covered

1. Parallel projection and it's properties. 2. Orthogonal projection. 3. Mongean projection. Projection of elementary geometry elements. 4. Orthographic projection – views. 5. Parallel projection – axonometry, definition, various sorts of axonometry. 6. Affiliation of elements. 7. Common elements. 8. Perpendicular elements. 9. Scales and dimensions in technical drawing. 10. Cross-sections of spatial objects. 11. Polyhedrons: projections, cross-sections and developments. 12. Roofs. Development of the roof. 13. Surfaces – sphere, cone and cylinder. 14. Topographic projection. Earthworks. 15. Computer Aided Design – basics.

*- Consultations were not included in the contact hours

**-per semester