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DESCRIPTIVE GEOMETRY WITH COMPUTER AIDED DESIGN AT THE MAJOR GEODESY AND CARTOGRAPHY

Applying Computer Aided Design is gradually changing the practice of teaching Descriptive Geometry at the technical universities, initially by developing individual drawing tasks and illustrations of academic lectures, up to creating complete educational platforms. Knowledge resources constructed in this way may support traditional teaching or work entirely remotely and encourage the development modern learning environment. In the case of Descriptive Geometry it is particularly essential due to the detailed and laborious graphic record of the content of education and the need to condense the program associated with a limited number of teaching hours.

At the same time, the use of CAD in engineering practice makes it necessary to take into account the properties of the tools that these software offer in the programs of appropriate subjects in the process of studies. Currently used graphic software for modeling of engineering 3D visualization provide a perspective projection, hence the need to acquaint Civil Engineering students with the basis of this type of projection. To meet the emerging need, the elements of perspective were introduced in the program of Descriptive Geometry at the Faculty of Civil and Environmental Engineering of Gdansk University of Technology. At the Major Geodesy and Cartography as well as Transportation even a larger module of perspective with particular reference to the specialization was implemented.

The paper presents selected drawing exercises of perspective performed with the use of AutoCAD, including aspects of engineering problems of future work. At Geodesy and Cartography it is the application of central projection to the remote measurement in photogrammetry, for the Major Transport the visualization of the road. While preparing the exercises it was the priority that the simplified real-life engineering tasks could be considered interesting by the students and thereby increase their involvement in a subject.

One of the examples referring to the graphic methods of solving practical engineering problems is simplified measurement of the ground floor and elevations of the building on the basis of its photograph. In the task it is assumed that the image of the object is a vertical perspective and after establishing the main vertical plane it is necessary to determine the vanishing and measuring points of the main directions of the building. The tasks are created using the opportunities offered by pasting photo images into AutoCAD.