

**Monika SROKA-BIZOŃ, Ewa TERCZYŃSKA, Krzysztof TYTKOWSKI**

Silesian University of Technology  
Geometry and Engineering Graphics Centre  
Krzywoustego Street 7, 44-100 Gliwice, Poland  
phone/fax: +48 32 237 26 58

e-mail: monika.sroka-bizon@polsl.pl  
ewa.terczynska@polsl.pl  
krzysztof.tytkowski@polsl.pl

## GEOMETRIC DESIGN

**Keywords:** *design, geometry, industrial design.*

What is design? [5] Can a helix be beautiful? [2] [3] What is a logo and how do we design it? [5] What is a tint and how does it differ from a colour? [1] Is perspective hand drawing restricted for artists and architects only? [2] How can a design engineer use a hand drawing to illustrate a design solution? [5] The authors of this paper and the students were searching for the answers for the above and some more questions in the classes of the subject „Geometric fundamentals of industrial design”. This new subject has been implemented at the Faculty of Mechanical Engineering of Silesian University of Technology for the students of Mechanics and Structure of Machines Department, as part of the pro-quality research at the Faculty. The classes comprising 30h design instruction were accomplished for the first time in the winter semester of 2015/2016 academic year with the students of the 5<sup>th</sup> semester of full-time studies.

The weekly meetings with design took place in the form of combined activities – a brief, 30-minute long theoretical introduction, which formed a basis for 60-minute long design classes. Their main purpose was to convince the students that they are able to use hand drawing. The accompanying, though no less important, aim was to present geometrical constructions as a tool in solving design issues. [2] [3] [4]

The culmination of the classes was a project made in teams of 2 or 3 students, in its form close to the design works made by the students of Industrial Design Departments of Academies of Fine Arts. The students’ task was to develop a preliminary design of a new or significantly modified device containing mechanical elements. The design portfolio included the team logo design, conceptual sketches of the assumed design solution, orthogonal and axonometric projections presenting the basic dimensions of the designed device. The public presentation of the design portfolio was an occasion to show to the wide circle of peers and lecturers the creativeness of the design teams and skills learned or improved by the students in the classes of „Geometric fundamentals of industrial design”.

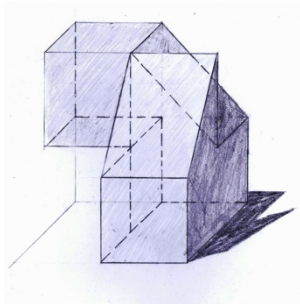


Fig. 1 Student work – hand axonometric sketch of a 3D object including a determined shadow projected by the object and its own shadow.

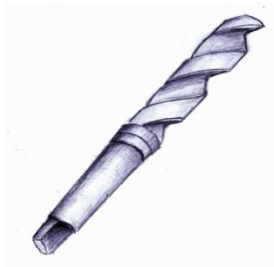


Fig. 2 Student work – a hand sketch of a drill with structurally determined helix.

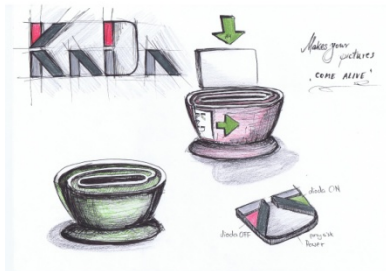


Fig. 3 Student work – a conceptual sketch of a new computer printer, a fragment of KADA team design portfolio – Aleksandra Dziwoki, Konrad Adamczyk, MiBM 3

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