



„CONTEMPORARY APPROACH TO THE DEVELOPMENT OF SPATIAL COMPREHENSION THROUGH AUGMENTED REALITY CONTENT“

**Warsaw University
of Technology**

3. Cutting the cone with 3 planes

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<https://liggd.it/spacar/en/graphic-materials>

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SPACAR

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Intellectual Output: O1: Cutting Geometrical Solids with Planes.

Exercise number: 3

Title: Cutting the cone with 3 planes

Description:

The cone presented below has been cut with 3 planes – α , β , γ . Construct horizontal and profile projections (A3 size, scale 1:1), locate the position of planes yourself, give specific angles designed, use paper and pencil or /and computer software.

After drawings answer the questions below:

1. Are the planes α and β mutually perpendicular?
2. Where do the planes α and γ mutually intersect – within the cone, on its surface or out of the solid?
3. What types of sections correspond to each plane: circle, ellipse, hyperbola, parabola?
4. What type of section would appear, if a vertical plane cuts through the apex of the cone?

Given digital files:

IO1-3-a.pdf: frontal projection of the cone and cutting planes

IO1-3-b.obj: 3D model of the given problem solved.

Result:

Frontal, horizontal and profile projections of the cone cut with 3 planes (A3 size, scale 1:1)
Answer to questions 1-4.

Prior knowledge:

Basic knowledge related to descriptive geometry, knowledge of geometrical surfaces.

Augmented reality content:

3D model of geometric solid cut with relevant cutting planes.



Erasmus+

PROJECT CONSORTIUM PARTNERS:



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P2. Riga Technical University [RTU]

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P3. Warsaw university of technology [WUT]



P4. Polytechnic university of Valencia [UPV]



P5. Siauliai vocational education and training centre [Siauliai PRC]

SNEAKYBOX

P6. SneakyBox [SBox]



P7. Jugendförderverein Parchim/Lübz e.V. [JFV PCH/LBZ e.V.]



P8. DECROLY, SL [DECROLY]