



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

**Warsaw University  
of Technology**

## ***20. Cutting the sphere with 5 planes***

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

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**SPACAR**

**No. 2019-1-LT01-KA202-060471**

**Intellectual Output:** O1: Cutting Geometrical Solids with Planes.

**Exercise number:** 20

**Title:** Cutting the sphere with 5 planes

**Description:**

The sphere presented below has been cut with 5 planes –  $\alpha$ ,  $\beta$ ,  $\gamma$ ,  $\delta$ ,  $\epsilon$ . 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. Which pairs of the planes mutually intersect within the outline of the sphere?
2. Which pairs of the planes mutually intersect outside of the solid?
3. Intersection between which planes is the closest to the surface from outside of sphere?
4. Which plane forms the section of the largest surface area?
5. Which plane forms the section of the smallest radius?

**Given digital files:**

IO1-20-a.pdf: frontal projection of the sphere and cutting planes

IO1-20-b.obj: 3D model of the given problem solved.

**Result:**

Frontal, horizontal and profile projections of the sphere cut with 5 planes (A3 size, scale 1:1)

Answer to questions 1-5.

**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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SNEAKYBOX

P6. SneakyBox [SBox]



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



P8. DECROLY, SL [DECROLY]