



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

**Warsaw University  
of Technology**

## ***13. Cutting the sphere with 3 planes***

*Warsaw University of Technology  
Civil Engineering Faculty*

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

This project is funded with the support of the European Commission.

The European Commission's support for the production of this publication does not constitute an endorsement of the contents, which reflect the views only of the authors, and the Commission cannot be held responsible for any use which may be made of the information contained therein.

**SPACAR**

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

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

**Exercise number:** 13

**Title:** Cutting the sphere with 3 planes

**Description:**

The sphere presented below has been cut with 3 planes –  $\alpha$ ,  $\beta$ ,  $\gamma$ . 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. What type of section do the planes form?
2. Sort the planes according to the radius of the section they form (from smallest to largest radius).
3. If the planes  $\alpha$  and  $\gamma$  mutually intersect, would it break the sphere's outline?
4. Is it possible that the radius of the sphere's section would be greater than the radius of the sphere?

**Given digital files:**

IO1-13-a.pdf: frontal projection of the sphere and cutting planes

IO1-13-b.obj: 3D model of the given problem solved.

**Result:**

Frontal, horizontal and profile projections of the sphere 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:



P1. Vilnius Builders Training Centre [VSRK]



P2. Riga Technical University [RTU]

Warsaw University  
of Technology

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]