


5.00 credits

30.0 h + 20.0 h

Q2

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| Teacher(s) | Cherpon Marielle ;Dos Santos Santana Forte Vaz Pedro ; |
| Language : | French |
| Place of the course | Louvain-la-Neuve |
| Main themes | 1. Euclidean geometry and its generalizations. In particular curves (curvature, torsion, special curves), surfaces (curvatures, ruled surfaces), 3D objects (regular polyhedra, convex geometry, intersection of 3D objects) 2. The projective extension of euclidean geometry (projective space, projective transformations, duality, ...) 3. Introduction to other geometries : non-euclidean geometry and the axiom of parallels, topological classification of surfaces (Klein bottle, Euler characteristic, orientation), hyperbolic geometry (Escher paintings), ... 4. Forms and numbers in nature : the golden ratio and the Fibonacci numbers (properties, geometrical interest), fractals objects (constructions, fractal dimension) |
| Learning outcomes | At the end of this learning unit, the student is able to : 1) To describe a set of mathematical tools that enable the technical geometric calculations (lengths, areas, volumes, angles,...) 2) To help students to visualize, imagine and construct new spaces |
| Content | The different chapters of the course are: - axiomatic geometry, - affine geometry, - euclidean geometry, - polyhedra, - quadrics, - metric curve theory, - metric theory of surfaces, - tilings, - fractal geometry. |
| Other infos | LEPL1101, LEPL1102 and LEPL1105 or equivalent courses |
| Faculty or entity in charge | LOCI |

| Programmes containing this learning unit (UE) | | | | |
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| Program title | Acronym | Credits | Prerequisite | Learning outcomes |
| Bachelor in Engineering : Architecture | ARCH1BA | 5 | |  |