



Course unit English denomination	Helicoids and architecture: geometric genesis, digital applications and solutions
Teacher in charge (if defined)	Andrea Giordano (12 hh / 2 ECTS) Cosimo Monteleone (12 hh / 2 ECTS)
Teaching Hours	24
Number of ECTS credits allocated	4
Course period	May - July
Course delivery method	<input checked="" type="checkbox"/> In presence <input type="checkbox"/> Remotely <input type="checkbox"/> Blended
Language of instruction	English
Mandatory attendance	<input checked="" type="checkbox"/> Yes (75 % minimum of presence) <input type="checkbox"/> No
Course unit contents	The course introduces the geometrical genesis of helical surfaces starting with the definition of cylindrical, conical and spherical helix. The next step deals with the digital representation of helicoids. A detailed analysis of Frank Lloyd Wright's Guggenheim Museum in New York and other contemporary buildings clarifies the role of helicoids in the world of architecture
Learning goals	Students will learn notions of pure geometry applied to parametric 3D modeling of helicoids. The purpose is to provide ph.d. Students with important technical knowledge so that they can expand their compositional skills
Teaching methods	The course includes a brief introduction to pure geometry devoted to helices and helicoids. The central part of the course involves the use of new parametric technologies for the geometric understanding of complex surfaces such as helicoids. While training digital programs, students will face laboratory activities aimed at verifying their learning. The synthesis part of this course is entrusted to famous constructions from the contemporary world, which clarify the many structural and aesthetic possibilities, offered by geometry when correctly applied to architecture
Course on transversal, interdisciplinary, transdisciplinary skills	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Available for PhD students from other courses	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Prerequisites (not mandatory)	CAD and BIM programs
Examination methods	Students will be valuated basing om exercises to perform in class



(in applicable)

Suggested readings

- A. Giordano, *Cupole, volte e altre superfici. La genesi e la forma*, Utet: Torino 1999.
- C. Monteleone, *Frank Lloyd Wright. Geometria e astrazione nel Guggenheim Museum*, Aracne: Roma 2013.
 - J. Stillwell, *Geometry of Surfaces*, Springer: Cham 1992.
 - S. Kobayashi, E. Shinozaki Nagumo, *Differential Geometry of Curves and Surfaces*, Springer, Cham 2019.
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Additional
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