

**Syllabus**  
**Course description**

<b>Course title</b>	<b>Digital Design: 3D CAD Advanced</b>
<b>Course code</b>	97097
<b>Scientific sector</b>	INF/01
<b>Degree</b>	Bachelor in Design and Art (L-4)
<b>Semester</b>	Winter semester 2023/2024
<b>Year</b>	2 <sup>nd</sup> and 3 <sup>rd</sup> year
<b>Credits</b>	6
<b>Modular</b>	No

<b>Total lecturing hours</b>	60
<b>Total hours of self-study and/ or other individual educational activities</b>	about 90
<b>Attendance</b>	not compulsory but recommended
<b>Prerequisites</b>	To have passed the Drawing 3D CAD exam.
<b>Maximum number of students per class</b>	30

<b>Course description</b>	<p><i>The course belongs to the class "caratterizzante" in the major in Design.</i></p> <p>The course Digital Design:3D CAD Advanced will introduce the students to the most emerging digital design techniques and methods for digital modelling through advanced operational tools.</p> <p>Aim of the course is to achieve the production and control of highly complex geometries and their representation.</p> <p>Students will use different techniques to produce innovative digital design working and understanding different typologies of geometries, including Meshes, SubD, NURBS, and their representation. Particular attention will be to understand and learn the process of polygonal modelling and the workflow between the different geometries and their properties.</p> <p>The students will deepen the knowledge of digital design through an integrated system between designer and software, providing methods and techniques in which CAD tools become an integrated system with the designer, with the propose of generation, design, visualization, and production of advanced design geometries and providing the base for further studies.</p>
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<b>Specific educational objectives</b>	<b>Knowledge and understanding</b> <ul style="list-style-type: none"> <li>- have acquired one's own work methodology in the field of 3D CAD. This methodology includes the ability to oversee all phases of implementation, from the generation of ideas to the realisation of the finished project. Through the integrated teaching of different subjects, graduates will be able to simultaneously address all these aspects and consider them as synonymous with the development of a project that is successful on a formal and technical level.</li> </ul>
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<b>Lecturer</b>	Cecilia Sannella, Office F3.04, e-mail Cecilia.Sannella@unibz.it, lecturer's page: <a href="https://www.unibz.it/en/faculties/design-art/academic-staff/person/38303-cecilia-sannella">https://www.unibz.it/en/faculties/design-art/academic-staff/person/38303-cecilia-sannella</a>
<b>Scientific sector of the lecturer</b>	INF/01
<b>Teaching language</b>	English
<b>Office hours</b>	Thursday 10:00-11:00
<b>List of topics covered</b>	Advanced digital design, 3D modelling, visualization, Mesh, SubD, Nurb to Mesh, polygonal modelling, design strategies, rendering and postproduction, animation. From 3D to fabrication.
<b>Teaching format</b>	Frontal lessons based on handouts. The students will have studies to developed using the techniques learned. Desk critics during class and group review during the semester (PIN-UP). Possibility of realization of rapid prototyping based on availability of the spaces.

<b>Expected learning outcomes</b>	<b>Disciplinary competence</b> <p><i>Knowledge and understanding</i></p> <ul style="list-style-type: none"> <li>- have acquired the knowledge necessary to realise a project in the field of 3D CAD;</li> <li>- have acquired the basic knowledge necessary for further Master's studies in all components of project culture as well as in technical subjects, with a particular attention to the field of 3D CAD.</li> </ul> <p><i>Applying knowledge and understanding</i></p> <ul style="list-style-type: none"> <li>- use the basic knowledge acquired in the technical fields to realise a mature project;</li> <li>- make use of the skills acquired during the course of study in the event of continuing studies in a Master's degree programme and to develop them further.</li> </ul> <p><b>Transversal competence and soft skills</b></p>
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	<p><i>Making judgements</i></p> <ul style="list-style-type: none"> <li>- Be able to make independent judgements for the purpose of developing their own design skills and in relation to all those decisions that are necessary to bring a project of 3D CAD to completion.</li> </ul> <p><i>Communication skills</i></p> <ul style="list-style-type: none"> <li>- present an independently realised project in the field of 3D CAD in the form of an installation, orally as well as in writing in a professional manner.</li> </ul> <p><i>Learning skills</i></p> <ul style="list-style-type: none"> <li>- have learned a work methodology at a professional level - in the sense of being able to identify, develop and realise solutions to complex problems by applying the acquired knowledge in the different fields, with a particular attention to the field of 3D CAD - in order to start a professional activity and/or continue their studies with a master's degree programme;</li> <li>- have developed a creative attitude and learned how to enhance it and develop it according to their own inclinations;</li> <li>- have acquired basic knowledge in the field of 3D CAD as well as a study methodology suitable for continuing studies with a Master's degree programme.</li> </ul>
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<p><b>Assessment</b></p>	<p><i>By the exam's date, each student must upload on the Microsite of the faculty detailed documentation of the work done during the course.</i></p> <p><a href="http://portfolio.dsgn.unibz.it/wp-admin">http://portfolio.dsgn.unibz.it/wp-admin</a></p> <p><i>Documentation is an integral part of the exam. The documentation must include visual documentation and an abstract of the project.</i></p> <p><b>Attending Students</b></p> <p>Final Exam at the end of the course. Oral and project work.</p> <p>Students must present the studies developed during the course and the final project. The exam will be oral with review questions to test knowledge application skills, evaluation of results.</p> <p><b>Non-attending Students</b></p> <p>Final Exam at the end of the course. Oral and project work.</p> <p>Students must present the studies developed during the course and the final project. Specific material on the information for the exam. The exam will be oral with</p>
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	<p>review questions to test knowledge application skills, evaluation of results. Questions regarding notions and topics covered in the handouts and readings, question finalized to prove the knowledge and understanding of the topics covered during the course.</p>
<b>Assessment language</b>	The same as the teaching language
<b>Evaluation criteria and criteria for awarding marks</b>	<p>The final assessment is based on the content of all the exercises according to the following criteria:</p> <p>Attending and Non-attending          One final mark          Threshold: 18/30</p> <p>Relevant for the course will be the ability to think critically and clear communicate the design strategies and processes. Problem solving. Apply complex transformation tasks, move independently between different platforms and topologies, control of highly complex geometries.</p>
<b>Required readings</b>	<p>Handouts of the different topics will be provided and loaded on the server in the course folder and/or on Microsoft Teams</p> <p>Attending students          Recommended</p> <p>Non-attending students          Mandatory</p>
<b>Supplementary readings</b>	<p>G. Lynn (1999), <i>Animated Form</i>, Princeton Architectural Press New York</p> <p>A.Menges – S. Ahlquist (2011), <i>Computational Design Thinking</i>, AD Reader</p> <p>L.Hovestadt, U. Hirschberg, O. Fritz (2020), <i>Atlas of Digital Architecture</i>, Birkhäuser</p> <p>Supplementary reading will be loaded in the reserve collection and/or on the server and/or Microsoft Teams.</p>