

Luca Di Angelo

Programme of “Disegno assistito da calcolatore” “COMPUTER AIDED DESIGN”		
Number of ECTS credits: 6 (workload is 225 hours; 1 credit = 25 hours)		
<ul style="list-style-type: none"> • CODE: • TYPE OF COURSE UNIT: COMPULSORY FOR THE MECHANICAL ENGINEERING SPECIALIZATION • LEVEL OF COURSE UNIT: SECOND CYCLE • YEAR OF STUDY (IF APPLICABLE); SEMESTER: FIRST YEAR, FIRST SEMESTER Lecturer: Luca Di Angelo		
1	Course objectives and Learning outcomes	<p>Computer aided design is a project-based course that develops engineering design skills with a particular focus on the proficient use of modern CAD-integrated analysis tools. The course covers modern tools and methods for product design. The student will develop detailed knowledge and understanding of the most recent advances in 3D computer aided design and in product engineering and simulation. The course lays a firm foundation in 3D modeling theory and the use of computer aided design tools, enable the student to develop creative and innovative solutions to real-world design problems. Teaching is supported by educational workshop with state-of-the-art software and excellent technical support. The student will be equipped with the knowledge and skills to work in computer aided design, specifically in 3D design.</p>
2	Dublin descriptors	<p>Topics of the module include: Introduction to CAD CAE CAX systems. Principal components of CAD systems. Computer-aided drafting and 3D geometric modeling systems. Properties of a valid representation scheme. Representation schemes for solids: Spatial occupancy enumeration, Constructive solid geometry, Boundary representations, Finite elements representations, Wire frame models. Procedural or explicit geometric model. Feature-based and parametrics modeling.</p> <p>Representation and manipulation of curves and surfaces. CAD and CAE integration. Geometric data exchange between systems. Standard for exchange of product data. Methods for the generation of surface grids and mesh. Rapid prototyping technologies. Reverse engineering. Engineering design visualization. Product lifecycle management.</p>
3	Prerequisites and learning activities	The student must know the basic knowledge engineering drawing and design.
4	Teaching methods and language	<p>Lectures and exercises. Language: Italian Ref. Text books Ibrahim Zeid, “Mastering CAD/CAM”, McGraw-Hill, 1 edition (May 21, 2004). Kunwoo Lee, 1999, “Principles of CAD/CAM/CAE Systems”, Addison- Wesley. A.A.G. Requicha, 1980, “Representations for Rigid Solids: Theory, Methods, and Systems”, Computing Surveys, Vol.12, n°4, pp.437-464. Böhm W., Farin G. e Kahmann J., “A survey of curve and surface methods”, Computer Aided Geometric Design, 1, North-Holland, 1984 pp.1-40. Mortenson M.E., “Modelli geometrici in Computer Graphics”, McGraw-Hill.</p>
5	Assessment methods	The final examination is divided into written and oral test. The written test can be replaced by the team project development.