

Paolo Di Stefano

Programme of “Progettazione e sviluppo di prodotto” “PRODUCT DESIGN AND DEVELOPMENT”		
Number of ECTS credits: 9 (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: SECOND YEAR, SECOND SEMESTER Lecturer: Paolo Di Stefano		
1	Course objectives and Learning outcomes	Product design and development is a project-based course that covers modern tools and methods for product design. The cornerstone is a project in which teams of students conceive and design an industrial product. The students work on real-life projects through our links with industry. Students are taught to do what design engineers do, namely to use innovative and creative skills. The course covers procedures that are not typically included in the engineering science subjects.
2	Dublin descriptors	Topics of the module include: The scope of design process of industrial products. Strategies in new product development. Customer needs identification. Product specification. Independence of the functional requirements. Generate concepts and select them. Identification of the product functions and their decomposition. Product architecture development. Design-for-life cycle. Design to standards. The models of the product in the life cycle. Creative design and paradigmatic design. Embodiment design. Design for quality and minimum cost. Robust parameters design. Tolerance design: worst-case and statistical approach. Cost based optimal tolerances.
3	Prerequisites and learning activities	The student must know the basic knowledge and understanding on mechanical design of the first cycle of the industrial engineering specialization.
4	Teaching methods and language	Lectures and exercises. Language: Italian Ref. Text books Kai Yang, Basem El-Haik, “Design for Six Sigma”, McGraw-Hill, 2003; Norman Donald, “Emotional Design”, Basic Book, New York, 2004; Suh Nam Pyo, “The principles of design”, Oxford Press, New York, 1999, 2001; Ulrich K. T. ed Eppinger S.D., “Product Design and Development”, McGraw-Hill, 2001.
5	Assessment methods	The final examination is divided into written and oral test. The written test can be replaced by the team project development.