

# Syllabus

Basic data of the subject			
Academic unit:	Faculty of Engineering and Informatics		
Title of the subject:	3D Modelling and Visualisation		
Level:	Master		
Course Status:	Core		
Year of studies:	2		
Number of hours per week:	3		
Value of Credits - ECTS:	6		
Time / location:			
Course lecturer:	Prof.ass.dr. Rrahim Sejdiu		
Contact details:	rrahim.sejdiu @ushaf.net		
<b>Course Description</b>			
	<i>This course will provide students with the knowledge and concepts of creating advanced 3D models. After designing the product, the next part is its 3D modelling as the visualization of the design in order to better perceive it before deciding on its production.</i>		
<b>Objectives of the course:</b>			
	<i>The purpose of the subject is to provide an introduction to 3D modeling and visualization of design. Students should be able to create three-dimensional geometric patterns, drawings, assembling 3D models, realistic photos and animations, and visualize their design.</i>		
<b>Expected learning outcomes:</b>			
	<p><i>Upon successful completion of this subject, student will be able to:</i></p> <ul style="list-style-type: none"> <li>• <i>demonstrate the ability to create a 3D model / product through CAD applications</i></li> <li>• <i>demonstrate the ability to produce and animate photo-realistic renders from a 3D model.</i></li> <li>• <i>exploit various computer applications in product design and visualization in the form of a prototype</i></li> <li>• <i>visualize a product design of large size (over those that can be printed in 3D) with VR (Virtual Reality)</i></li> </ul>		
<b>Contribution to the student load (which must correspond with learning outcomes)</b>			
Activity	Hour	Day/Week	In total
Lectures with lab tutorials	3	15	45
Internship	1	5	5
Contacts with teacher / consultations	1	7	7
Field exercises	2	2	4
Midterm, seminars and projects.	2	2	4

Homework	2	6	12
Self-learning time student (at the library or at home)	3	15	45
Final preparation for the exam	2	15	30
Time spent on evaluation (tests, quiz and final exam)	3	2	6
Projects and presentations.	1	1	1
<b>Total</b>			<b>150</b>
<b>Teaching methodology:</b>			
	<i>Lectures combined with laboratory exercises using CAD and Virtual Reality (VR) applications Presentations, exercises with tasks and examples, seminar tasks and works, discussions.</i>		
<b>Assessment methods:</b>			
	<i>First evaluation: 20% Second evaluation: 20% Seminar work: 20% Final exam: 40% Total: 100%</i>		
<b>Literature</b>			
<b>Basic Literature:</b>	<i>Innovation in Product Design: From CAD to Virtual Prototyping by Monica Bordegoni and Caterina Rizzi (e-book from KTH the Library)</i>		
<b>Additional Literature:</b>	<i>D.K. Lieu and S. Sorby, Visualization, Modeling, and Graphics for engineering Design, CENGAGE Learning, Latest Edition.</i>		
<b>The ratio of theory and practice</b>	<i>40% theory and 60% laboratory work.</i>		

<b>Designed learning plan</b>	
<b>Week:</b>	<b>Lectures and exercises to be held</b>
<b>Week one:</b>	<i>Historical and Contemporary Developments in 3D Visualization and Generated Computing Images (CGI)</i>
<b>Week two:</b>	<i>3D modeling techniques</i>
<b>Week three:</b>	<i>Introduction to design - Characteristics of good design, customer perspective, manufacturer's perspective, role of materials</i>
<b>Week four:</b>	<i>Creativity and Design Process - What is Design?</i>
<b>Week five:</b>	<i>Introduction to engineering design process, creativity in design</i>
<b>Week six:</b>	<i>Visual thinking (brainstorming, concept design) and its relationship with design innovation, computer design (CAD) design</i>
<b>Week seven:</b>	<i>CAD lab work</i>
<b>Week eight:</b>	<i>CAD lab work</i>
<b>Week nine:</b>	<i>Visualization of dizan - sketches</i>
<b>Week ten:</b>	<i>Prototypes (virtual prototypes, 3D print, physical prototypes)</i>
<b>Week eleven:</b>	<i>Realization of visualization in 3D</i>
<b>Week twelve:</b>	<i>Virtual reality, technology and application possibilities</i>

<b>Week thirteen:</b>	<i>Applying Virtual Reality to Visualization</i>
<b>Week fourteen:</b>	<i>Laboratory work in VR</i>
<b>Week fifteen:</b>	<i>Presentation of seminar papers</i>

<b>Academic policies and rules of conduct</b>
---

<i>Regular attendance of lectures and exercises is necessary, as well as active participation with discussion and solution of tasks. Not impeding the progress required for learning using mobile phones turned off or in silent mode.</i>
--