



Teaching Guide				
Identifying Data				2022/23
Subject (*)	Advanced Computer Science and Integrated Design in Manufacturing	Code	771G01019	
Study programme	Grao en Enxeñaría de Deseño Industrial e Desenvolvemento do Produto			
Descriptors				
Cycle	Period	Year	Type	Credits
Graduate	2nd four-month period	Third	Optional	6
Language	Spanish			
Teaching method	Face-to-face			
Prerequisites				
Department	Enxeñaría Naval e Industrial			
Coordinador	González Castro, Manuel Jesús	E-mail	manuel.gonzalez@udc.es	
Lecturers	Bottero , Francisco González Castro, Manuel Jesús	E-mail	francisco.bottero@udc.es manuel.gonzalez@udc.es	
Web	moodle.udc.es			
General description	Students will learn how to use two types of 3D CAD modeling programs: industry-wide parametric modeling software (SolidWorks) and surface modeling software with T-Splines suitable for rapid conceptual modeling (Sculpt mode in Fusion 360 / Alias SpeedForm). No prior knowledge of these programs is required, and licenses will be provided to install on student computers.			

Study programme competences	
Code	Study programme competences
A5	Identificar, formular e resolver problemas de enxeñaría.
A6	Formación ampla que posibilite a comprensión do impacto das solucións de enxeñaría nos contextos económico, medioambiental, social e global.
A7	Capacidade para deseño, redacción e dirección de proxectos, en todas as súas diversidades e fases.
A8	Capacidade de usar as técnicas, habilidades e ferramentas modernas para a práctica da enxeñaría.
A9	Capacidade para efectuar decisións técnicas tendo en conta as súas repercusións ou custos económicos, de contratación, de organización ou xestión de proxectos.
A10	Comprensión das responsabilidades éticas e sociais derivadas da súa actividade profesional.
B5	Resolver problemas de forma efectiva.
C6	Acquiring skills for healthy lifestyles, and healthy habits and routines.
C7	Developing the ability to work in interdisciplinary or transdisciplinary teams in order to offer proposals that can contribute to a sustainable environmental, economic, political and social development.
C8	Valuing the importance of research, innovation and technological development for the socioeconomic and cultural progress of society.

Learning outcomes			
Learning outcomes		Study programme competences	
Model products with 3D CAD parametric software (SolidWorks).	A5	B5	
	A7		
	A8		
	A9		
Model products with CAD 3D software based on T-Spline surfaces (Fusion 360).	A5	B5	
	A7		
	A8		



Get basic knowledge of CAD/CAE/CAM/PDF and its applications in product design.	A5	B5	C6
	A6		C7
	A7		C8
	A8		
	A10		

Contents	
Topic	Sub-topic
3D CAD modelling with SolidWorks.	Parts. Assemblies. Drawings. Advanced features. Configurations. Introduction to surface modelling. Introduction to render and animation.
T-Spline surface modelling (Sculpt mode in Fusion 360/Alias SpeedForm).	Introduction. Create T-Splines. Edit T-Splines. Convert to solids.
Os bloques ou temas seguintes desenvolven os contidos establecidos na ficha da Memoria de Verificación	Introduction. CAD (Computer Aided Design). CAE (Computer Aided Engineering). CAT (Computer Aided Testing). CAM (Computer Aided Manufacturing). CAPP (Computer Aided Processing and Planning). RE (Reverse Engineering). VR (Virtual Reality). RP&T (Rapid Prototyping and Tooling). CAT&M (Computer Aided Testing and Maintenance). PDM (Product Data Management).

Planning				
Methodologies / tests	Competencies	Ordinary class hours	Student's personal work hours	Total hours
Introductory activities	C6 C7 C8	2	2	4
Workshop	A5 A7 A8 A9 B5	0	98	98
Problem solving	A5 A7 A8 A9 B5	39	0	39
Workbook	A10 A6 C6 C7 C8	0	2	2
Practical test:	A5 A7 A8 B5 C6	3	0	3
Practical test:	A5 A7 A8 B5 C6	3	0	3
Personalized attention		1	0	1

(\*)The information in the planning table is for guidance only and does not take into account the heterogeneity of the students.

Methodologies	
Methodologies	Description
Introductory activities	Presentation of the course. Software installation on student computers.
Workshop	Each week, students will use the video tutorials provided by the teacher to learn 3D modeling techniques through simple step-by-step guided exercises. Some of the video-tutorials will be in English, but can be understood with the B1 level of English.
Problem solving	Each week, after learning the modeling techniques through video-tutorials, the students will carry out individual 3D CAD modeling practical exercises that they must deliver to the teacher. The teacher will help to solve the difficulties found, will evaluate the delivered exercises and will indicate the necessary improvements or corrections. After that, the students will be able to deliver a second revised version of the exercises, which will be evaluated again by the teacher.
Workbook	Deepen some content of the subject.
Practical test:	Exame consistente en crear modelos CAD 3D con SolidWorks (nivel básico).



Practical test:	Final exam consisting of creating 3D CAD models with SolidWorks.
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### Personalized attention

Methodologies	Description
Problem solving	<p>It may be done by different means, in order of preference:</p> <ul style="list-style-type: none"> <li>- Forums of doubts in the Moodle of the subject.</li> <li>- Email.</li> <li>- Chat by Microsoft Teams.</li> <li>- Videoconference by Microsoft Teams.</li> <li>- In person in the teacher's office if it is not possible to use the above means.</li> </ul>

### Assessment

Methodologies	Competencies	Description	Qualification
Practical test:	A5 A7 A8 B5 C6	<p>This assessment consists of an advanced SolidWorks knowledge exam.</p> <p>It may consist of one or more parts.</p> <p>To pass the course it is not necessary to pass this exam.</p> <p>Due to the duration of the different parts of this exam and the existing time limitations in the official calls, some parts of this exam can only be taken by students if they previously passed the practical test "Basic SolidWorks knowledge" in the attempt to It will take place during the class period, before the exam period.</p>	20
Problem solving	A5 A7 A8 A9 B5	<p>This evaluation consists of a continuous evaluation.</p> <p>The calendar of exercises to be carried out and the delivery dates will be published in Moodle. The total score of this part is the sum of points obtained in the exercises delivered throughout the course.</p> <p>Part of the exercises will be done in class with the help of the teachers.</p> <p>The rest of the exercises will be done outside class, usually with the help of video tutorials.</p>	50
Practical test:	A5 A7 A8 B5 C6	<p>This assessment consists of a basic SolidWorks knowledge exam.</p> <p>Passing this exam is an essential requirement to pass the course and to be able to take the other practical test (SolidWorks advanced exam).</p> <p>This part will be scored 0 in case of failure, and the maximum grade of the course will be 4,5.</p>	30
Others			

### Assessment comments

Class attendance is voluntary and is not evaluated, but it is recommended to attend to make the most of the subject.

Second chance (July) and december chance: Only the practical tests (exams) will be repeated. The mark obtained for solving problems will be the one obtained in the continuous evaluation during the course, without the possibility of delivering the exercises again on the second opportunity in July.

The evaluations will be carried out through online platforms such as Moodle or similar, in digital format without the need to print on paper.

The academic exemption is not accepted, since class attendance is voluntary.

Part-time students will be assessed the same as full-time students, since class attendance is voluntary.

### Sources of information



<b>Basic</b>	- Manuel González (). Material docente de la asignatura. - SolidWorks (). Video-tutoriales software CAD 3D.
<b>Complementary</b>	 

## Recommendations

### Subjects that it is recommended to have taken before

Computer Aided Design/771G01017

### Subjects that are recommended to be taken simultaneously

### Subjects that continue the syllabus

### Other comments

Students will need a personal computer with Windows operating system to carry out the practices of the subject. Students will be provided licenses for the software used in the course to install on their personal computers. The availability of these licenses is conditional on the University of A Coruña paying the annual maintenance of the licenses at the beginning of the academic year. The delivery of works and evaluation tests will be done in digital format without the need to print paper.

(\*)The teaching guide is the document in which the URV publishes the information about all its courses. It is a public document and cannot be modified. Only in exceptional cases can it be revised by the competent agent or duly revised so that it is in line with current legislation.