Teaching Guide			
Identifying Data			2020/21
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	Dopico Dopico, Daniel González Castro, Manuel Jesús López Varela, Álvaro	E-mail	daniel.dopico@udc.es manuel.gonzalez@udc.es alvaro.lopez1@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.		
Contingency plan	This course will be taught in a non-face-to-face mode because Covid-19 prevention measures make it difficult to use the center's computer room. Therefore, a contingency plan is not necessary for possible confinements.		

Study programme competences / results	
Code	Study programme competences / results
A5	Identificar, formular e resolver problemas de enxeñaría.
A6	Formación amplia 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.
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 / results		
Model products with 3D CAD parametric software (SolidWorks).	A5 A7 A8	B5	
Model products with CAD 3D software based on T-Spline surfaces (Fusion 360/Alias SpeedForm).	A5 A7 A8	B5	

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

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 / Results**	**Teaching hours (in-person & virtual)**	**Student?s personal work hours**	**Total hours**
Introductory activities	C6 C7 C8	2	2	4
Workshop	A5 A7 A8 B5	0	98	98
Problem solving	A5 A7 A8 B5	40	0	40
Workbook	A10 A6 C6 C7 C8	0	2	2
Practical test:	A5 A7 A8 B5 C6	5	0	5
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:	Final exam consisting of creating 3D CAD models with SolidWorks.

Personalized attention	
Methodologies	**Description**
Problem solving	It may be done by different means, in order of preference: - Forums of doubts in the Moodle of the subject. - Email. - Chat by Microsoft Teams. - Videoconference by Microsoft Teams. - In person in the teacher's office if it is not possible to use the above means.

Assessment			
Methodologies	**Competencies / Results**	**Description**	**Qualification**
Practical test:	A5 A7 A8 B5 C6	This evaluation consists of a final exam. It will consist of 2 parts: Basic SolidWorks and SolidWorks Surfaces. Passing the "SolidWorks Basic" part is an essential requirement to pass the course, and this part will be graded 0 in case of failure.	50
Problem solving	A5 A7 A8 B5	This evaluation consists of a continuous evaluation. 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.	50
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): Only the practical test will be repeated (final exam). 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 this course the subject is already taught in person.

Sources of information	
Basic	- Manuel González (). Material docente de la asignatura. - Various (). Video-tutoriales software CAD 3D.
Complementary	

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 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.