Teaching Guide				
Identifying Data				2021/22
Subject (*)	FUNDAMENTOS DA ELECTRICIDADE		Code	730G04012
Study programme	Grao en Enxeñaría en Tecnoloxías Industriais			
Descriptors				
Cycle	Period	Year	Type	Credits
Graduate	1st four-month period	Second	Obligatory	6
Language	SpanishGalician			
Teaching method	Face-to-face			
Prerequisites				
Department	Enxeñaría Industrial			
Coordinador	Vazquez Rodriguez, Santiago	E-mail	santiago.vazquez@udc.es	
Lecturers	Santome Couto, Emilio Vazquez Rodriguez, Santiago	E-mail	emilio.santome@udc.es santiago.vazquez@udc.es	
Web	https://campusvirtual.udc.es			
General description	In this course, the analysis of electrical circuits and a brief introduction to the operation of electric machines is studied.			
Contingency plan	1. Changes in content The contents are not modified. 2. Methodologies All teaching methodologies are maintained, modifying only their face-to-face character. 3. Mechanisms for personalized attention to students Tools: Moodle, Teams, email. With the tutoring schedule published. 4. Modifications in the evaluation The evaluation methodologies and their weighting are maintained, except for their face-to-face character. 5. Modifications of the bibliography or webgraphy. There are no modifications.			

Study programme competences / results	
Code	Study programme competences / results
A10	CR4 Coñecemento e utilización dos principios de teoría de circuítos e máquinas eléctricas.
B2	CB2 Que os estudantes saiban aplicar os seus coñecementos ao seu traballo ou vocación dunha forma profesional e posúan as competencias que adoitan demostrarse por medio da elaboración e defensa de argumentos e a resolución de problemas dentro da súa área de estudo
B3	CB3 Que os estudantes teñan a capacidade de reunir e interpretar datos relevantes (normalmente dentro da súa área de estudo) para emitiren xuízos que inclúan unha reflexión sobre temas relevantes de índole social, científica ou ética
B5	CB5 Que os estudantes desenvolvan aquelas habilidades de aprendizaxe necesarias para emprenderen estudos posteriores cun alto grao de autonomía
B7	B5 Ser capaz de realizar unha análise crítica, avaliación e síntese de ideas novas e complexas
C1	C3 Utilizar as ferramentas básicas das tecnoloxías da información e as comunicacións (TIC) necesarias para o exercicio da súa profesión e para a aprendizaxe ao longo da súa vida.
C5	C7 Asumir como profesional e cidadán a importancia da aprendizaxe ao longo da vida.

Learning outcomes			
Learning outcomes	Study programme competences / results		
Know and use the principles of circuit theory and electrical machines.	A10	B2 B3 B5 B7	C1 C5

Contents	
Topic	Sub-topic
Analysis of DC circuits	Basics Circuit elements Association of elements Waveforms Mesh analysis Nodal analysis Circuit Theorems Transitory regime
Analysis of AC circuits	Basics Analysis of circuits in sinusoidal steady state Power and energy steady state sinusoidal Theorems steady state sinusoidal Transitory regime
Analysis three-phase circuits	Overview Balanced and unbalanced three-phase circuits Power in three-phase circuits Measurement of power in three-phase circuits
Introduction to the operation of electric machines	Magnetic circuits and energy conversion General principles of electrical machines

Planning				
Methodologies / tests	Competencies / Results	Teaching hours (in-person & virtual)	Student?s personal work hours	Total hours
Introductory activities	A10	1.5	0	1.5
Guest lecture / keynote speech	A10 B2 B3 B5 B7 C5 C1	24	39	63
Problem solving	A10 B2 B3 B5 B7 C5 C1	22	30	52
Laboratory practice	A10 B2 B3 B5 B7 C1 C5	9	13.5	22.5
Mixed objective/subjective test	A10	2.5	7.5	10
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 subject, in large group (GG).

Guest lecture / keynote speech	Oral presentation complemented the use of media and the introduction of questions aimed at motivating students, in order to impart knowledge and facilitate learning. Corresponds to the kind of theory, large group (GG).
Problem solving	Technique by to be solved a particular problem situation, from the knowledge and procedures that have been studied and worked. Corresponds to the class of problems, medium (GM) group.
Laboratory practice	Methodology that allows students to apply the knowledge acquired through the completion of practical activities. It is for the workshop exercises, small group (GP).
Mixed objective/subjective test	This test consists of the resolution of problems and / or elements, and will be valued among 0 to 10 points.

Personalized attention	
Methodologies	**Description**
Guest lecture / keynote speech Problem solving Mixed objective/subjective test	Tutorials review. In the case of part-time students, they will have exam sessions before each continuous assessment exam. In addition, they will be given a collection of objective tests and problems to solve throughout the course.

Assessment			
Methodologies	**Competencies / Results**	**Description**	**Qualification**
Laboratory practice	A10 B2 B3 B5 B7 C1 C5	In the January announcement, the grade will be the sum of the amount of the assistance and assessment practices workshop note, which is valued between 0 and 5 points, and the note of a final exam (multiple choice test), which was also assessed from 0 to 5 points. In the July, qualifying match corresponding note final exam (multiple choice test), which is valued between 0 and 10 points.	20
Mixed objective/subjective test	A10	This test consists of the resolution of problems and / or elements, and will be valued among 10 points. In laboratory practices: In the January exam, the grade will be the sum of the grade corresponding to the attendance and evaluation of the workshop practices, which will be assessed between 0 and 5 points, and the final exam grade (mixed test), which will also be assessed. between 0 and 5 points. . In the July session, the grade will coincide with the corresponding final exam (mixed test), which will be assessed between 0 and 10 points.	80

Assessment comments

To pass the subject it is necessary to approve the theory and problems part and the laboratory practices part. The subject will also be approved if reaching a grade superior or equal to 3'5 points in the note of laboratory practices, will compensate with the part of theory and problems. The final grade is the sum of the (note of theory and problems) * 0'80 and of the (note of laboratory practices) * 0'20. In the presentation of the subject (first day of class) may indicate additional activities whose assessment will be added to the note of the objective test of the theory and problems. In any case, the note of this part can not be higher than 10 points.

In the case of part-time students, there will be a periodic and continuous evaluation, with objective tests and problems, after imparting each topic of the subject. On the second opportunity, all subjects will enter the exam. Attendance at theory and problem classes is not mandatory (100% waiver), although you will be offered full flexibility to assist the group of your choice; however, attendance at the workshop practice class is necessarily mandatory (0% waiver), although you will also be offered full assistance flexibility

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Sources of information	
Basic	- Fraile Mora, J. (2012). Circuitos eléctricos. Madrid: Pearson - Gomollón García, Jesús Á. y Vázquez Rodríguez, Santiago (2003). Teoría de Circuitos. Santiago de Compostela: Andavira - Ortega Jiménez, Jesús; Parra Prieto, Valentín; Pastor Gutiérrez, Antonio; Pérez Coyto, Ángel (2003). Circuitos Eléctricos. Vol. I. Madrid: UNED - Fraile Mora, J. (2008). Máquinas eléctricas. Madrid: McGraw-Hill
Complementary	

Recommendations
Subjects that it is recommended to have taken before
Calculus /730G03001 Linear Algebra/730G03006 Physics II/730G03009
Subjects that are recommended to be taken simultaneously
Subjects that continue the syllabus
Fundamentals of Electronic Circuits/730G03016 Installations for Industrial Plants/730G03031
Other comments
"To help achieve a sustained immediate environment and meet the goal of action number 5: "Healthy and sustainable environmental and social teaching and research" of the "Green Campus Ferrol Action Plan":   The delivery of the documentary works that are made in this matter: ? Will be requested in virtual format and / or computer support   ? It will be done through Moodle, in digital format without the need to print them   ? If it is necessary to make them on paper: - Plastics will not be used   - Double-sided prints will be made.   - Recycled paper will be used.   - Printing of drafts will be avoided. ? There must be a sustainable use of resources and the prevention of negative impacts on the natural environment .

(*)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.