UNIVERSIDADE DA CORUÑA

Teaching Guide				
Identifying Data				2019/20
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	Menacho Garcia, Carlos Miguel	E-mail	miguel.menacho@udc.es	
Lecturers	Menacho Garcia, Carlos Miguel	E-mail	miguel.menacho@udc.es	
	Santome Couto, Emilio		emilio.santome@udc.es	
Web	moodle.udc.es			
General description	In this course, the analysis of electrical circuits and a brief introduction to the operation of electric machines is studied.			

Study programme competences	
Code	Study programme competences

Learning outcomes			
Learning outcomes	Study programme competences		
Apply Ohm's law and Kirchhoff's laws.	A10	B2	C1
Use correct general methods of analysis of DC circuits.		B3	C5
Analyze any direct current circuit using the most appropriate method.		B5	
Obtain and solve the differential equation representative of an CC circuit in the transient regime.		B7	

Contents	
Topic	Sub-topic
Analysis, of DC circuits	Basics
	Circuit elements
	Association of elements
	Waveforms
	Mesh analysis
	Nodal analysis
	Circuit Theorems
	Transient regime
Analysis of AC circuits	Basics
	Analysis of circuits in sinusoidal steady state
	Power and energy steady state sinusoidal
	Theorems steady state sinusoidal
	Transient 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	Ordinary class hours	Student?s personal work hours	Total hours
Introductory activities	A10	1.5	0	1.5
Guest lecture / keynote speech	A10 B2 B3 B5 B7 C1 C5	24	39	63
Problem solving	A10 B2 B3 B5 B7 C1 C5	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). Teachers: Miguel Menacho (theory and problems) and Emilio Santomé (Workshop Practice).
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). Professor Miguel Menacho.
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. Professor Miguel Menacho.
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). Instructor: Emilio Santomé.
Mixed objective/subjective test	This test consists of the resolution of problems and / or elements, and will be valued among 10 points. Instructors: Miguel Menacho and Emilio Santomé.

Personalized attention	
Methodologies	Description
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	Description	**Qualification**

Mixed objective/subjective test	A10	This test consists of the resolution of problems and /or ítems, 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.	70
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.	30

Assessment comments
To pass the subject it is necessary to approve the part of theory and problems and the part of laboratory practices. The subject will also be approved if it reaches a mark of more than or equal to 3'5 points in the note of laboratory practices, compensate with the part of theory and problems. The final grade is the sum of the (theory and problems note) * 0'80 and the (laboratory practice note) * 0'20. In the presentation of the subject (first day of class) may indicate additional activities whose assessment will add to the note of the objective test of the part of theory and problems. In any case, the note of this part can not be more than 10 points. In the case of part-time students, a periodic and continuous evaluation will be made, with objective tests and problems, after imparting each topic of the subject. At 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.

Sources of information	
Basic	- Paul, C.R. (2001). Fundamentals of electric circuits analysis. USA: John Willey and Sons - Alexander, C.K. y Sadiku, M.N.O. (2013). Fundamentos de circuitos eléctricos. Méjico: McGraw-Hill - Sánchez Barrios, P. et al. (2007). Teoría de circuitos: problemas y pruebas objetivas orientadas al aprendizaje.. Madrid: Pearson/Prentice Hall - Humet, L., Alabern, X. y García, A. (1997). Tests de Electrotecnia. Fundamentos de circuitos. Barcelona: Marcombo - Eguiluz Morán, L.I. et al. (2001). Pruebas objetivas de circuitos eléctricos. Barañáin (Navarra): EUNSA - Eguiluz Morán, L.I. y Sánchez Barrios, P. (1989). Pruebas de examen de teoría de circuitos. Santander: Universidad de Cantabria - Parra, V. et al. (1976). Unidades didácticas de teoría de circuitos (2 vols.). Madrid: UNED - Fraile Mora, J. (2008). Máquinas eléctricas. Madrid: McGraw-Hill - Eguiluz Morán, L.I. (1986). Pruebas objetivas de ingeniería eléctrica. Madrid: Alhambra - Fraile Mora, J. (2012). Circuitos eléctricos. Madrid: Pearson
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.