# Universida<sub>de</sub>Vigo

Subject Guide 2023 / 2024

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IDENTIFYIN	G DATA				
Electrical e	ngineering				
Subject	engineering				
Code	V12G320V01401				
Study	Grado en Ingeniería				
programme	Eléctrica				
Descriptors	ECTS Credits	Choose	Year	Quad	mester
	9	Mandatory	2nd	2nd	
Teaching	Spanish				
language					
Department	Míguoz Carcía, Edelmira				
	Miguez García, Edelmiro				
Lecturers	Moreira Meira, Iulio César				
E-mail	edelmiro@uvigo.es				
Web	http://www.uvigo.es/uvigo_gl/departamentos/are	a tecnologica/enxeneri	a electrica.html		
	tackle, analyse and evaluate the behaviour of the transitory diet. The matter is conceived to supply tackle with guarantees other matters of the cour and that do not suppose a *sobreesforzo addition matters of Foundations of Theory of Circuits and by given basic knowledges of both matters that Electrotechnics.	e electrical circuits so n y knowledges, aims and rses 3º and 4º. For a *ap nal for the student, wou Electrical Machines and serve of starting point fo	competitions that competitions that provechamiento su Id owe to have *cu I Calculation I and pr the developmen	ionario a are nece itable of irsado pr Il since v t of the	s in essary to this matter eviously the ve will give
Training an Code B3 CG3 Kn	d Learning Results owledge in basic and technological subjects that	will enable students to l	earn new methods	and the	ories, and
provide	them the versatility to adapt to new situations.				
CIU CEIUK	nowledge and use of the principles of circuit theol	ry and electrical machin	es.		
$D_2$ CT2 FIC	alf learning and work				
D14 CT14 C	reativity				
D17 CT17 W	/orking as a team.				
Expected r	esults from this subject				
Expected res	sults from this subject		Tr	aining ar	nd Learning
·				Res	ults
Comprise th conditions	e basic appearances of the behaviour of the elect	rical circuits in front of a	a change of B3	C10	D2 D10 D14
Dominate	o pupiloblo curront tooknisions for the enclusion	alastrical size the the	leas balance dos	C10	
and unhalan	e available current lecrinicians for the analysis of ced		sicos palancedB3	C10	D2 D10
					D14
					D17
Know the te	chnicians of measure and register of data in the re	eal electrical circuits	B3	C10	D2
	-				D10
					D14
Durchast		in diate of fourth	<b>D</b> 2	<u></u>	D17
Purchase SK	is on the process of analysis of electrical circuits	in diels of fault	В3	C10	D2 D10

D14 D17

#### Contents Topic SUBJECT I: CIRCUITS IN TRANSITORY DIET Types of answers and diets in the linear circuits. The aim that pretends reach with this subject is □ Methods to obtain the answer of circuits in transitory diet. that the student know to analyse the answer of □ Linear circuits of first order. the electrical circuits in \*réximen transitory, □ Linear circuits of second order. differentiating clearly between the permanent □ Resolution by the method \*discretizado answer and the transitory and the identification of the same in the circuits considering the performance of the initial conditions and of the sources. It begins with simple circuits of first order, \*incidiéndose on the behaviour of the distinct elements of the circuit and the typification of the answers. It explains also the difference between the natural answer and the forced, that is to say, the answer owed the initial conditions imposed by the elements \*almacenadores of energy and the answer owed the sources of independent excitation. It extends the study to circuits of second order, and explain technicians of analytical resolution and by means of the transformed of Laplace. They enter new technicians of resolution so much temporary (method \*discretizado) like \*frecuenciales (application of the transformed of Laplace). SUBJECT II: CIRCUITS OF THAT TRIPHASES. □ Introduction: Introduction: Generators, cargos and circuits triphases. MEASURES. COMPENSATION. □ Circuits triphases balanced. Tensions and intensities. Conversion of sources and triphases charges. With this subject, intends that the student know to analyze circuits triphases so much balanced □ Analysis of circuits triphases balanced. how unbalanced. It initiates the subject with the □ Power in circuits triphases balanced. Compensation. basic concepts stop the analysis of circuits □ Analysis of circuits triphases unbalanced. balanced. It continues with the unbalanced □ Determination of the sequence of phases and measure of power and circuits, the different methods to measure the enerav. power and the compensation of power □ Symmetrical components. reactivates as well as the methods to determine the sequence of phases. It finalizes with an introduction to the symmetrical components. SUBJECT III: ANALYSIS OF \*CORTOCIRCUITOS IN □ Introduction to the \*cortocircuitos. Analysis of \*cortocircuitos \*trifásicos balanced. ELECTRICAL CIRCUITS. The aim that pretends reach with this subject is □ Networks of sequence. Connection of networks of sequence. that the student know and know to analyse the □ \*Cortocircuitos Unbalanced. different types of \*cortocircuitos that can present [] Norms for the calculation of \*cortocircuitos. in circuits and electrical networks using methods of suitable analyses to each situation as well as know the application of norms for his determination.

Planning			
	Class hours	Hours outside the classroom	Total hours
Lecturing	30	60	90
Problem solving	28.8	2.88	31.68
Autonomous problem solving	0	54.32	54.32
Practices through ICT	20	20	40
Essay questions exam	3	0	3
Essay questions exam	3	0	3
Essay questions exam	3	0	3
*The information in the planning table is f	or guidance only and does no	ot take into account the het	erogeneity of the students.

Methodologies	
	Description
Lecturing	The professor exposes in class of big group the contents of the matter
Problem solving	In the classroom the professor resolves problems and exercises of the *temario and arouse to the student similar exercises for his resolution with other mates.
Autonomous problem solving	The student will have to resolve by his account a series of exercises and questions of the matter proposed by the professor.

The student in collaboration with other mates has to resolve diverse electrical settings using a computer software that allow him put in practice the knowledges purchased in the classes of classroom.

Personalized assistance		
Methodologies	Description	
Lecturing	The doubts and questions that can arise during the classes and the personal work of the student will be resolved well in situ or during the time of *tutorías.Also it will be possible to attention by means of the email for the resolution of doubts.	
Problem solving	The doubts and questions that can arise during the classes and the personal work of the student will be resolved well in situ or during the time of *tutorías. Also it will be possible to attention by means of the email for the resolution of doubts.	
Practices through ICT	The doubts and questions that can arise during the classes and the personal work of the student will be resolved well in situ or during the time of *tutorías.Also it will be possible to attention by means of the email for the resolution of doubts.	
Autonomous problem solving	The doubts and questions that can arise during the classes and the personal work of the student will be resolved well in situ or during the time of *tutorías. Also it will be possible to attention by means of the email for the resolution of doubts.	

Assessment					
	Description	Qualification	Т	raining	) and
			Lea	rning l	Results
Essay questions exam	First continuous assessment test.	25	B3	C10	D2 D10
	The contents corresponding to the analysis of circuits in TRANSITORY REGIME are evaluated.				D14 D17
	This is a written test in which the student has to solve problems and/or theoretical-practical questions about this part of the subject.				
	The exercise will be valued from 0 to 10 points, and it is necessary to obtain a minimum grade of 3 points to pass the subject.				
Essay questions exam	Second continuous assessment test.	40	В3	C10	D2 D10
	The contents corresponding to the analysis of BALANCED AND UNBALANCED THREE-PHASE alternating current circuits are evaluated.	)			D14 D17
	This is a written test in which the student has to solve problems and/or theoretical-practical questions about this part of the subject.				
	The exercise will be valued from 0 to 10 points, and it is necessary to obtain a minimum grade of 3 points to pass the subject.				
Essay questions exam	Third continuous assessment proof.	35	В3	C10	D2 D10
	The contents corresponding to the analysis of unbalanced triphasic circuits by means of SYMMETRICAL COMPONENTS and the CALCULATION OF symmetrical and asymmetrical SHORT CIRCUITS are evaluated.				D14 D17
	This is a written test in which the student has to solve problems and/or theoretical-practical questions about this part of the subject.				
	The exercise will be valued from 0 to 10 points, and it is necessary to obtain a minimum grade of 3 points to pass the subject.				

### Other comments on the Evaluation

Calculation of the final qualification

The final qualification in each of the two calls available in the course will be obtained as follows:

Let **M** be the weighted average of the results **N1**, **N2**, **N3** corresponding to the three continuous assessment tests:

## M = 0.25 \* N1 + 0.40 \* N2 + 0.35 \* N3

If all the results **N1**, **N2**, and **N3** are greater than or equal to 3.0, the final qualification N will be equal to the weighted average **M**:

#### M=N

However, if any of the results N1, N2 or N3 is less than 3.0, the final qualification N is obtained by the following expression: N = minimum (M, 4.9)

It is necessary to obtain a final qualification GREATER OR EQUAL TO 5.0 to pass the course.

#### Final exams

On the official dates established by the university for the first and second calls, a final exam will be held, to which those students who have renounced continuous assessment may take. It is a written exam, structured in three parts whose content and assessment criteria are the same as in the three continuous assessment tests.

Students who have not renounced continuous assessment may also take the final exam and take all or one of the three parts in which it is structured. To calculate the final qualification, the last result obtained in the final exam in each of the two calls will be taken into account in each part.

#### **Ethical commitment**

The student is expected to exhibit appropriate ethical behavior. In the case of detecting unethical behavior (copying, plagiarism, use of unauthorized electronic devices, and others) it will be considered that the student does not meet the necessary requirements to pass the course. In this case, the overall qualification for this academic year will be fail (0.0).

Sources of information
Basic Bibliography
/.M. Parra, A. Pérez, A. Pastor, J. Ortega, <b>Teoría de Circuitos</b> , 1991,
E. Estévez, C. Garrido, J. Cidrás, <b>Ejercicios resueltos de circuitos eléctricos</b> , 1999,
Barrero, Sistemas de Energía Eléctrica, 2004,
Complementary Bibliography

#### Recommendations Subjects that continue the syllabus Electrical installations 1/V12G320V01503 Electrical machines/V12G320V01504

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

Physics: Physics 1/V12G320V01102 Physics: Physics 2/V12G320V01202 Mathematics: Calculus 1/V12G320V01104 Mathematics: Calculus 2 and differential equations/V12G320V01204 Basics of circuit analysis and electrical machines/V12G320V01304

#### **Other comments**

Requirements: To enrol in this matter is necessary to have surpassed or be enrolled of all the matters of the inferior courses to the course in that it is \*emplazada this matter.