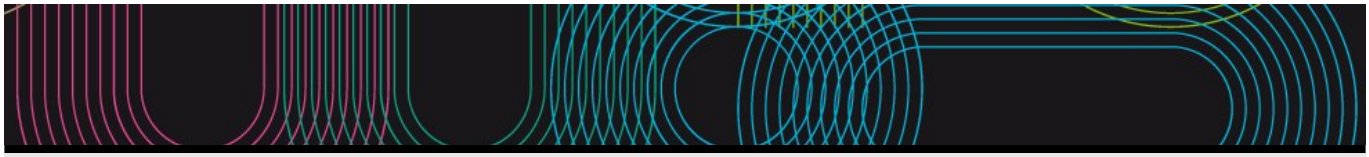

| IDENTIFYING DATA | | | | |
|---|---|---|---|---|
| **Applied electrotechnics** | | | | |
| Subject | Applied electrotechnics | | | |
| Code | V12G360V01501 | | | |
| Study programme | Degree in Industrial Technologies Engineering | | | |
| Descriptors | ECTS Credits | Choose | Year | Quadmester |
| | 6 | Mandatory | 3rd | 1st |
| Teaching language | Spanish | | | |
| Department | | | | |
| Coordinator | Garrido Suárez, Carlos | | | |
| Lecturers | Garrido Suárez, Carlos<br>Novo Ramos, Bernardino | | | |
| E-mail | garridos@uvigo.es | | | |
| Web | http://http://faitic.uvigo.es/ | | | |
| General description | The subject of Applied Electrotechnics has like general aim complete the training of the students that go to study the Degree of Engineering in Industrial Technologies in the Theory of Circuits and of the Electric Machines so as to suplly him specific tools that allow him board, analyze and evaluate the behaviour of the electric circuits so much in stable as in transitory regime. The subject is conceived to suplly knowledges, objective and competitions that are necessary to board with guarantees other subjects of the courses 3º and 4º. To a suitable use of this subject and that do not suppose a additional effort for the student, would owe to have studied previously the subjects of Bases of Theory of Circuits and Electric Machines and Calculation I and II since we will give by imparted basic knowledges of both subjects that serve of starting point stop the development of the Applied Electrotechnics. | | | |

| Competencies | |
|---|---|
| Code | |
| B3 | CG3 Knowledge in basic and technological subjects that will enable them to learn new methods and theories, and equip them with versatility to adapt to new situations. |
| C22 | CE22 Applied knowledge of electrical engineering |
| D1 | CT1 Analysis and synthesis. |
| D2 | CT2 Problems resolution. |
| D6 | CT6 Application of computer science in the field of study. |
| D10 | CT10 Self learning and work. |
| D14 | CT14 Creativity. |
| D17 | CT17 Working as a team. |
| D19 | CT19 Personal relationships. |

| Learning outcomes | | | |
|---|---|---|---|
| Expected results from this subject | Training and Learning Results | | |
| Comprise the behavioural basic aspects of the electric circuits in front of a change of conditions | B3 | C22 | D1<br>D2<br>D6<br>D10<br>D14<br>D17<br>D19 |

| | | | |
|---|---|---|---|
| Dominate the available current techniques for it analysis of electric circuits triphases balanced and unbalanced | B3 | C22 | D1<br>D2<br>D6<br>D10<br>D14<br>D17<br>D19 |
| Know the techniques of measure and register of data in the real electric circuits | B3 | C22 | D1<br>D2<br>D6<br>D10<br>D14<br>D17<br>D19 |
| Purchase skills envelope the process of analysis of electric circuits (transformers) also in regime of foul | B3 | C22 | D1<br>D2<br>D6<br>D10<br>D14<br>D17<br>D19 |

## Contents

| Topic | |
|---|---|
| SUBJECT I: CIRCUITS OF THAT TRIPHASES. MEASURES. COMPENSATION.<br>With this subject, intends that the student know to #analyze circuits triphases so much balanced how unbalanced. It initiates the subject with the basic concepts stop the analysis of circuits balanced. It continues with the unbalanced circuits, the different methods to measure the power and the compensation of power reactivates as well as the methods to determine the sequence of phases. It finalizes with an introduction to the symmetrical components. | Introduction: Generators, cargos and circuits triphases.<br>Circuits triphases balanced. Tensions and intensities.<br>Conversion of sources and triphases charges.<br>Analysis of circuits triphases balanced.<br>Power in circuits triphases balanced. Compensation.<br>Analysis of circuits triphases unbalanced.<br>Determination of the sequence of phases and measure of power and energy.<br>Symmetrical components. |
| SUBJECT II: TRANSFORMERS<br>With this subject, intends that the student know the constructive characteristics more important of the transformers as well as determine his characteristic parameters and main properties, as well as his utilization in the electric systems. | Analogies between electric and magnetic circuits.<br>Introduction to the transformers: constructive aspects.<br>The transformer ideal: bases.<br>Operation of a transformer real.<br>Equivalent circuit of the triphases transformer real: fems and tensions.<br>Essay in emptyness and in short-circuit of the transformer.<br>Fall of tension, losses and performance of a transformer.<br>Autotransformers.<br>Transformers triphases: Constitution, diagrams of connection and essays.<br>Transformers Of Measure and Protection. |

## Planning

| | Class hours | Hours outside the classroom | Total hours |
|---|---|---|---|
| Laboratory practises | 9 | 9 | 18 |
| Practice in computer rooms | 9 | 9 | 18 |
| Troubleshooting and / or exercises | 9 | 18 | 27 |
| Master Session | 20 | 60 | 80 |
| Long answer tests and development | 7 | 0 | 7 |

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

## Methodologies

| | Description |
|---|---|
| Laboratory practises | Experimental manufacture of the practices or essays proposed, realization of measures and presentation of results. |
| Practice in computer rooms | Simulación by means of computer programs of circuits triphases and transformers. |
| Troubleshooting and / or exercises | Resolution put student with attention customized of problems proposed. |

| | |
|---|---|
| Master Session | Exhibition by part of the professor of the contained theoretical of the subject, with clarification of question and punctual doubts that can arise during the exhibition. |

**Personalized attention**

| Methodologies | Description |
|---|---|
| Master Session | The doubts and questions that can arise during the kinds and the personal work of the student will be resolved well in situ or during it time of tutorials. Also it will be possible to attention by means of the email stop the resolution of doubts. |
| Laboratory practises | The doubts and questions that can arise during the kinds and the personal work of the student will be resolved well in situ or during it time of tutorials. Also it will be possible to attention by means of the email stop the resolution of doubts. |
| Practice in computer rooms | The doubts and questions that can arise during the kinds and the personal work of the student will be resolved well in situ or during it time of tutorials. Also it will be possible to attention by means of the email stop the resolution of doubts. |
| Troubleshooting and / or exercises | The doubts and questions that can arise during the kinds and the personal work of the student will be resolved well in situ or during it time of tutorials. Also it will be possible to attention by means of the email stop the resolution of doubts. |

**Assessment**

| | Description | Qualification | Training and Learning Results |
|---|---|---|---|
| Long answer tests and development | Continuous assessment (100%): At the end of each subject the student will perform a test that will be scored from 0 to 10 points, reaching the approved with a 5. The test will assess theoretical issues and practical exercises. In each test the student can reach 50% of the final grade. The approved partial tests are released from the corresponding part in the final exam. Students who pass all tests, the final grade will be the weighted average of the marks of the partial tests. For students who suspend or fail to submit to any or all partial tests, they will take a final exam in the official exam that will be scored from 0 to 10 points. To overcome the subject it is necessary to achieve a minimum grade of 3 points in each subject. The students approved by partial tests can modify the note and also present the final test. The examination will indicate the dates and places of publication of grades and revisions. | 100 | B3 C22 D1 D2 D6 D10 D14 D17 D19 |

**Other comments on the Evaluation**

The student only has to realize in the second announcement the mid-terms no surpassed in the first. The final result calculates of the even way that in the first announcement

**Sources of information**

**Basic Bibliography**

Parra V.M., Ortega J., Pastor A. y Pérez-Coyto A, **Teoría de Circuitos**, UNED,

González E., Garrido C. y Cidrás J, **Ejercicios resueltos de circuitos eléctricos**, Tórculo Edicións,

Fraile Mora, Jesús, **Máquinas Eléctricas**, McGraw-Hill,

Jesús Fraile Mora y Jesús Fraile Ardanuy, **Problemas de Máquinas Eléctricas**, McGraw-Hill/InterAmericana de España,

**Complementary Bibliography**

**Recommendations**

**Subjects that continue the syllabus**

Electrical machines/V12G360V01605

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

Physics: Physics 2/V12G360V01202
Mathematics: Calculus 2 and differential equations/V12G360V01204
Basics of circuit analysis and electrical machines/V12G360V01302

**Other comments**

Requirements: To enrol in this subject is necessary to had surpassed or well be enrolled of all the subjects of the inferior courses to the course in the that is summoned this subject