

ELECTROTECHNICS

Code: 322038

Main Scientific Area: Automation, energy and cyber-physical systems

Lecturer: Alexandrino José Fortes da Silva

Language of Instruction: Portuguese

Regime: S2

Contact Hours: 60h Total Workload: 100h

ECTS: 6,0

Objectives

This course presents the concepts necessary to analyze linear circuits and alternating current methods of production, transport and distribution of electricity. It is intended that students have general knowledge of the use of electricity from low voltage to high voltage, letting them know the advantages of its use and the ability to interact with the electrical method and language.

Learning Outcomes

Students who successfully complete this course should be able to:

1. Analyze AC circuits in both single and three phase sinusoidal;
2. Correct the power factor of a circuit of alternated sinusoidal current;
3. Knowing the methods of production and transport of electricity;
4. Knowing the methods of distribution of electricity;
5. Apply the knowledge gained in solving concrete problems.

Course Contents

1. Sinusoidal Alternating Voltage and Current.
2. Complex algebra and phasors.
3. Circuit Analysis of AC.
4. Power in AC circuits.
5. Three-phase circuits.
6. Generation and Transmission of Electricity.
7. Electricity Distribution.

Recommended Bibliography

Brandão, D. (1987). Electrotenia Geral. Fundação Calouste Gulbenkian.

Malley, J. (1992). Basic Circuit Analysis, 2nd Edition. McGraw-Hill.

Learning and Teaching Methods

The syllabus is presented in order to explore in a sustained way the topics needed to complement the training students in the field of electrotechnics seeking to deepen concepts related areas of major importance to the design activities of electronic circuits of alternated current. The content of the proposed syllabus addresses the various aspects essential to the fulfillment of these objectives, particularly in respect to current topics and recent developments.

Assessment Methods

Students will be evaluated in two stages in the form of written test which aims to assess the retention of knowledge.

The minimum score on each test is 7.5 points and each will have a 40% of the final grade. It is also considered a practical work on power factor correction with a 20% of the final grade, encompassing the laboratory observation (individual) and a written report (per group) with equal weights. This component has a minimum score of 9.5 and can only be assessed during the regular season.

If the student does not obtain the minimum score in any of the above, he can always submit to a final exam.