

# **ELECTROTECHNICS**

## **The objective of the discipline**

The course deals, through the topics addressed, with fundamental aspects of the theoretical bases of electrotechnics: the stationary magnetic field, the time-varying electromagnetic field, alternating current electric circuits and three-phase electric circuits. The main objective of the course consists in the study of the electromagnetic field in its various particular regimes as well as in the analysis of linear electrical circuits (mono and three-phase) in the permanent harmonic regime. It is also aimed at the formation of skills and strategies specific to the engineering approach to electrotechnical problems, useful also for the study of other disciplines.

## **The content of the discipline**

1. General considerations on the study of electromagnetic phenomena
2. The electrostatic regime
3. The electrokinetic regime
4. Electric circuits - general considerations, definitions, laws, theorems
5. Passive circuit elements and their parameters
6. Direct current electrical circuits
7. The stationary regime of the magnetic field
8. The variable regime of the electromagnetic field
9. Passive circuit elements and their parameters
10. Single-phase alternating current electrical circuits
11. Three-phase electrical circuits
12. Electric circuits with distributed parameters
13. Electric circuits in transient mode
14. Quadripole theory