

## Elements of electrical engineering (IInd Year of study, IVth Semester)

Credit value (ECTS) 5

### Course category

Domain (Imposed)

### Course holder:

Assoc. Prof. Dr. Eng. Petru Marian CÂRLESCU

### Discipline objectives (course and practical works)

The course aims to acquire basic theoretical knowledge of electrotechnics with applicability in the food industry.

The practical work is aimed at familiarizing students with electromagnetism and application in technology, aiming at acquiring elementary knowledge of electricity, as well as practical skills regarding the measurement of electrical quantities, the recognition of circuit components, the understanding of the operation of a electrical circuits, estimation of characteristic values of different electrical signals in a circuit, selection of appropriate measuring instruments, experimental assemblies, lifting, processing and interpretation of experimental data.

### Contents (syllabus)

Course (chapters/subchapters)
<b>Electrostatics.</b>
<b>Electrokinetics.</b>
<b>DC electric circuits:</b> simplification of DC circuits.
<b>AC electric circuits:</b> R-L-C series circuit, R-L-C parallel circuit.
<b>Power in monophas AC circuits.</b>
<b>Rotary-current circuits:</b> production of rotary-current symmetric voltage system, analysis of rotary-current circuits, power in rotary-current symmetrical circuits.
<b>The economic importance of the power factor:</b> ways to improve it.

Practical works
General training for NTN and PSI; symbolism used in electrotechnics.
Study of DC electric circuits.
Studiul circuitelor de curent alternative serie format cu rezistență, inductanță și capacitate.
Improving the power factor.
Measurement of active power and active energy in monophas AC circuits.
Rotary-current electric circuits. Magnetic spin field.
Measurement of power and energy in rotary-current AC circuits.
Final colloquium of knowledge evaluation.

### Bibliography

1. Crețu A. – *Electrotehnică și mașini electrice*. – Curs, Rotaprint IP, Iași, 1990.
2. Kuznețov M. I. – *Electrotehnică industrială*. Ed. Tehnică., Bucuresti.

3. Cristea Gh. si colab. – *Elemente fundamentale de fizică*. Vol. II, Ed. Dacia, 1985.
4. Vasilache V. - *Electrotehnică și mașini electrice*. – *Îndrumar de laborator*, Rotaprint IP, Iași, 1982.
5. Haba P. - *Electrotehnică și mașini electrice*. – *Îndrumar de laborator*, Rotaprint IP, Iași, 1985.
6. *Bazele circuitelor electrice*. – *Module de învățare și aplicații practice*, Christiani, Germania 2018.

### Evaluation

Evaluation form	Evaluation Methods	Percentage of the final grade
Exam	Writing examination	80%
Appreciation of the activity during the semester	Oral assessment during the semester, verification tests and final laboratory colloquium.	20%

### Contact

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