

# PHYS-114 General physics: electromagnetism

Dii Hugo		
Cursus	Sem.	Type
Communication systems	BA3	Obl.
Computer science	BA3	Obl.
HES - IN	Н	Obl.
HES -SC	Н	Obl.

Language of teaching	English
Credits	4
Session	Winter
Semester	Fall
Exam	Written
Workload	120h
Weeks	14
Hours	4 weekly
Courses	2 weekly
Exercises	2 weekly
Number of positions	

### Summary

The course first develops the basic laws of electricity and magnetism and illustrates the use in understanding various electromagnetic phenomena.

#### Content

#### **ELECTRICITY AND MAGNETISM**

Electric fields: electric charges and fields; Coulomb's law; Gauss's law

Electric potential and energy: potential; energy; capacitance and capacitors; dielectric materials

Magnetism: magnetic forces and fields; Ampere's law; Biot-Savart law

Electromagnetism: electromotive force; Farady's law; inductance and inductors; Maxwell's equations

Electromagnetic waves: electromagnetic spectrum; antennas

#### **Learning Prerequisites**

**Recommended courses** 

General Physics I

## **Learning Outcomes**

By the end of the course, the student must be able to:

- Formulate approach for solving physics problems
- Analyze physical systems
- Establish competence in complex problem solving

## Transversal skills

- Use a work methodology appropriate to the task.
- Take feedback (critique) and respond in an appropriate manner.
- Access and evaluate appropriate sources of information.

## **Teaching methods**

Ex cathedra with demonstrations, exercises in class

### Assessment methods

only final written exam

Supervision

Assistants Yes

Resources

Bibliography

polycopiés / course notes