

PHYS-114

General physics: electromagnetism

Shchutaska Lesya

Cursus	Sem.	Type
Communication systems	BA3	Obl.
Computer science	BA3	Opt.
HES - IC	H	Opt.

Contact language	English
Credits	4
Session	Winter
Semester	Fall
Exam	Written
Workload	120h
Weeks	14
Hours	4 weekly
Lecture	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

Moodle Link

- <https://go.epfl.ch/PHYS-114>