Relativité, électromagnétisme et optique ondulatoire

Lecturer
Petr TINIAKOV (Coordinator)

Course mnemonic
PHYS-F202

ECTS credits
10 credits

Language(s) of instruction
French

Course period
First and second terms

Course content

Special Relativity and fundamental Electromagnetism in the relativistic framework. Emphasis on the mathematical physics methods that are common to all fields of Physics: tensors, symmetry groups, conserved quantities, expansions of functions in basis of orthogonal polynomials in functional spaces, solution of partial derivative equations by variables separation.

Objectives (and/or specific learning outcomes)

The objective is to give the student a general formation in Special Relativity and Electromagnetism along with an introduction to several mathematical tools that are common to all fields of Physics. After this course, the student should be prepared to start learning Quantum Field Theory, General Relativity, Statistical Physics and more specialized sectors of Physics like Astrophysics or Nuclear Physics.

Pre-requisits and co-requisits

Pre-requisites courses

PHYS-F110 | Physique générale I et II | 15 crédits and PHYS-F110 | Physique générale I et II | 20 crédits

Course having this one as pre-requisit

PHYS-F305 | Physique des particules et Physique Nucleaire | 5 crédits

Courses having this one as co-requisit

INFO-F207 | Informatique | 5 crédits and PHYS-F201 | Thermodynamique | 5 crédits

Teaching method and learning activities

Theoretical course with black board derivations of results. Exercise seminars carried on by students with the help of an assistant teacher.

References, bibliography and recommended reading

Classical Electrodynamics, J.D.Jackson Introduction to Electrodynamics, D.J.Griffith Feynman's Lecture on Physics, volume II

Other information

Contact(s)

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Evaluation method(s)

Other

Evaluation method(s) (additional information)

Written examination followed by oral examination. The latter is essentially based on the failed questions of the written exam.

Programmes

Programmes proposing this course at the faculty of Sciences

BA-MATH | Bachelor in Mathematics | unit 2 and BA-PHYS | Bachelor in Physics | unit 2