

Physics

Mechanics and Electricity 1

IDENTIFICATION

CODE : PC-S1-PH-P
ECTS : 7.0

HOURS

Lectures : 15.0 h
Seminars : 48.0 h
Laboratory : 22.0 h
Project : 0.0 h
Teacher-student
contact : 85.0 h
Personal work : 90.0 h
Total : 175.0 h

ASSESSMENT METHOD

Continuous assessment all along the school semester to check acquired knowledge and skills by tests and practical exams. A final exam will be held at the end of the school semester to evaluate the ability to analyze and solve a problem using the knowledge and skills acquired during the whole year.

TEACHING AIDS

Textbooks with lecture notes, exercises and problems for tutorials and practicals wordings. Multiple-choice questionnaire for autonomous training and self-assessment are available (French only).

TEACHING LANGUAGE

French

CONTACT

M. BLUET Jean-Marie
jean-marie.bluet@insa-lyon.fr
M. CALMON Francis
francis.calmon@insa-lyon.fr
Phone : 0472436159
MME CARMES Lena
@
MME CASANOVA Sophie
sophie.casanova@insa-lyon.fr
M. CHANTRENNE Patrice
patrice.chantrenne@insa-lyon.fr
MME DER LOUGHIAN
Christelle
christelle.der-loughian@insa-lyon.fr
M. GAUTIER Brice
brice.gautier@insa-lyon.fr
M. LEGUAY Pierre-Marie
pierre-marie.leguay@insa-lyon.fr
M. RULLIERE Romuald
romuald.rulliere@insa-lyon.fr
Last modification date : November 27, 2023

AIMS

To gain an understanding and to master a lasting knowledge in different areas of Physics (Geometric Optics, Metrology, Electricity), thanks to reflection and to critical mind. This comprehensive knowledge is essential to take the 2nd year courses and to an engineer education.

To develop a scientific approach to solve theoretical and experimental problems, by implementing a multiple stage approach (observation, questioning, analysis of the problem, experimentation, modelling, interpretation, critical analysis...).

The main skills aimed by this teaching are:

C11 - To split up a problem or a system into its component parts in interaction; C13 - To model a system or a problem by convenient dimensions or objects in relation; C14 - To build a scheme of the system or the problem; C16 - To build a proof; C21 - To compute by graphical resolution an exact or approximate solution; C24 - To implement strategies to verify results coming from modelization; C32 - To acquire experimental data by identifying and evaluating acquisition limits; C51 - To select and implement well-adapted tools to represent and analyze data; C54 - To interpret data in the context of a model

CONTENT

- Introduction to the scientific approach
- Measurements and uncertainties
- Introduction to energy
- Electricity in continuous and transient regimes
- Mechanics: statics of the solid and kinematics

BIBLIOGRAPHY

All physics books written for first undergraduate cycle.

PRE-REQUISITE

Notions learnt during secondary education: calculus, plane geometry, and trigonometric functions, calculation skills (derivatives, anti-derivatives, complex numbers, quadratic equations, systems of linear equations, trigonometry, vectors), statistics (average and standard deviation), data and functions plots.

This teaching will also use the mathematical tools and skills that will be learnt all along the school year.

INSA LYON

Campus LyonTech La Doua

20, avenue Albert Einstein - 69621 Villeurbanne cedex - France
Phone +33 [0]4 72 43 83 83 - Fax +33 [0]4 72 43 85 00

www.insa-lyon.fr