

Physics-Chemistry

1^{ere} (11th Grade) [4 periods per week during e-learning]

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Course Description

The goal of this class is for students to acquire fundamental cognitive skills and knowledge in Physics and Chemistry and to prepare them for the baccalaureate exam and college studies in these two subjects.

Knowledge content in each part will be constructed by the students themselves as often as possible through guided document and experimental activities, allowing them to acquire reasoning and technical skills and develop a deeper understanding of the nature of scientific knowledge. Skills developed during the Physics-Chemistry class are inscribed in 5 domains of skills:

- Identify the problem: State a problem; Research and organize information related to the problem studied; represent the situation by a diagram.
- Analyze/Reason: Formulate hypotheses: Propose a resolution strategy; Schedule tasks; Evaluate orders of magnitude; Choose a model or relevant laws; Choose, elaborate, justify a protocol; Make predictions using a model; Make analogies.
- Perform: Implement the steps of an approach; Use a template; Perform routine procedures (calculations, representations, collections of data, etc.); Implement an experimental protocol respecting the lab safety rules.
- Validate: To be critical, to carry out controlled tests; Identify sources of error, estimate uncertainty, compared to a reference value; Confront a model with experimental results; Suggest possible improvements of the approach or the model.
- Communicate: Written as well as oral: present an approach in a reasoned, synthetic and coherent way: use target vocabulary and choose appropriate modes of representation; exchange between peers.

Timeline

Part 1a: Constitution of matter - 24 hours (5 weeks)

Part 1b: Transformations modeling - 24 hours (5 weeks)

Part 2: Movement and interactions - 24 hours - (5 weeks)

Part 3: Energy: Conversions and Transfers - 16 hours - (4 weeks)

Part 4: Waves and signals 24 hours - (5 weeks)