

## Développement Durable

### Lifecycle and system thinking

#### IDENTIFICATION

CODE : GI-3-S1-EC-PSC  
ECTS : 2.0

#### HOURS

Lectures : 2.0 h  
Seminars : 12.0 h  
Laboratory : 18.0 h  
Project : 0.0 h  
Teacher-student  
contact : 32.0 h  
Personal work : 0.0 h  
Total : 32.0 h

#### ASSESSMENT METHOD

Exam  
Written report

#### TEACHING AIDS

Scientific publications for group text  
survey.  
Simplified "home-made" LCA tool  
using the ADEME's "Base IMPACTS"  
database.

#### TEACHING LANGUAGE

French

#### CONTACT

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#### AIMS

"This course belongs to teaching unit GI-3-S1-UE-CPSI Design of industrial products and systems and contributes to the following skills :

By allowing the student to work and be evaluated on the following knowledge:

- General culture on environmental issues;
- Notion of systemic, anthropocene ;
- Energy and distribution;
- State of the art of energy resources and associated issues;
- Environmental impacts of materials and their transformation processes;
- Impacts of different modes of transport;
- Notion of product life cycle taking into account the usage and the end of life.

By allowing the student to work on and be evaluated on the following abilities:

- Generate data for an LCA (Life Cycle Assessment);
- Produce an LCA based on the data generated;
- Use simple tools for LCA."

#### CONTENT

Global warming: understanding of the scientific concept, history on a planetary scale, presentation of the latest IPCC report (2 hours of tutorials).

Environmental impacts: impacts presentation, situation at the world level, orders of magnitude to better understand these notions, study on electric/thermal vehicles (6 hours of tutorials)

Life Cycle Assessment (LCA): methodology presentation and link with eco-design and environmental communication, increase in competence with the realization of simplified LCA (6 hours of tutorials), advanced implementation of the methodology through the manufacture of an object (16 hours of practical work).

#### BIBLIOGRAPHY

<https://www.ipcc.ch/languages-2/francais/>  
<https://www.learnlifecycle.com/>  
<https://www.lifecycleinitiative.org/>  
<https://eplca.jrc.ec.europa.eu/ilcd.html>  
<https://base-impacts.ademe.fr/>

#### PRE-REQUISITE

Ability to quickly read and synthesize scientific texts in French and English.  
General scientific culture, have a good understanding of units of measurement.  
Good knowledge of Excel.