Module Description, available in: EN

Integrated Sustainable Management of Production Systems

General Information

Number of ECTS Credits

3

Module code

CM_IntSust

Valid for academic year

2026-27

Last modification

2022-01-10

Coordinator of the module

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Explanations regarding the language definitions for each location:

- Instruction is given in the language specified for each location and module execution.
- Documentation is available in the language(s) listed for each location and module execution. If the documentation is in multiple languages, the percentage distributed is indicated (100% = all documentation provided).
- The examination, including both questions and answers, is provided entirely (100%) in the language(s) specified for each location and module execution. The exams are on-site.

	Lausanne			Lugano	Zurich		
Instruction				**X** E 100%			
Documentation				**X** E 100%			
Examination				**X** E 100%			

Module Category

CM Context module

Profile Recommendations

This module is recommended for the following profiles:

	Lugano
Profile	BE, DS, ME, MA

Lessons

2 lecture periods and 1 tutorial period per week

Entry level competences

Prerequisites, previous knowledge

none

Brief course description of module objectives and content

Companies are increasingly interested in conducting their activities so that a long-term future is assured for its business, society and environment. The purpose of this class is to deal with the well-recognized but sometimes vague concept of sustainability from an engineering perspective. The module is meant to introduce students to the implementation of sustainable management in industries and provide them with tools enabling the enhancement of the sustainability performances of production systems.

Aims, content, methods

Learning objectives and competencies to be acquired

During lectures, practitioners gain knowledge on the sustainability concept and are educated on its concrete application into the present industrial context. Standards, sustainability assessment tools, reporting systems and best practices are presented as the main instruments to answer market and regulations sustainability requirements raised in the last decades. The approach used to treat the sustainable management of manufacturing systems is a holistic one since all the three sustainability dimensions are addressed (i.e. environment, economy and society) and the industrial activities considered include the design and the management of product, process and supply chain in an integrated way. The course is divided into two main blocks aiming at:

1. Defining what is meant by sustainability and present the role of standards and regulations into sustainable management systems;
2. Providing students with tools allowing to assess, report and communicate on sustainability performances of products and processes. The measure of sustainability level enable to monitor the management system effectiveness and to enhance performances.

Module content with weighting of different components

The sustainability concept applied into the industrial context: Course ID -01

- Introduction to sustainability: the concept and its history;
- The elements of sustainability implementation in industry;
- The implementation of Environmental, Health and Safety and Energy Management systems;
- Corporate Social Responsibility;
- Circular Economy concept

Sustainability Assessment, Reporting and Labelling: Course ID -02

- Assessing the environmental performances: the Life Cycle Assessment (LCA);
- The GHG Protocol;
- Environmental labeling of products.

Teaching and learning methods

Frontal theoretical lessons, case studies and exercises supported by the use of Life Cycle Impact Assessment databases.

Literature

ISO 14001

ISO 45001

ISO 50001

ISO 26000

ISO 14040 and 14044

ISO 14020 series

GHG Protocol

Assessment

Additional performance assessment during the semester

The module does not contain an additional performance assessment during the semester

Basic principle for exams

As a rule, all standard final exams are conducted in written form. For resit exams, lecturers will communicate the exam format (written/oral) together with the exam schedule.

Standard final exam for a module and written resit exam

Kind of exam

Written exam

Duration of exam

120 minutes

Permissible aids

No aids permitted

Exception: In case of an electronic Moodle exam, adjustments to the permissible aids may occur. Lecturers will announce the final permissible aids prior to the exam session.

Special case: Resit exam as oral exam

Kind of exam

Oral exam

Duration of exam

30 minutes

Permissible aids

No aids permitted