

SafeEngine Module



Safety in process industries SYLLABUS

INSTRUCTORS:

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COURSE DESCRIPTION

The course is designed for Bachelor and master's degree students with a background in chemical and environmental engineering. It provides the basic knowledge on safety procedures and experimental techniques for evaluating risks related to storage, transport, and transformation of hazardous materials. In order to regard the safety issues within industrial plants from a broader perspective, the course tackles the management of contaminated industrial sites, focusing on the risk assessment to set remediation goals. Moreover, as the design and realization of most of these industrial plants undergoes the Environmental Impact Assessment (EIA) procedure, their operation may turn to be a relevant scenario for the preventive evaluation of the wider health implications. To this end, the course will also approach the Health Impact Assessment within EIA studies. The course is structured into lectures, each one consisting of a video and slides.

COURSE OBJECTIVE

By the end of this course, participants should be able to:

- ◆ Predict the occurrence of particular accidental typologies (explosions, fires, release of toxic substances) and evaluate related damages;
- ◆ Identify the conditions useful for the safe handling storage and transformation of chemical substances;
- ◆ Acquire key notions on risk due to contaminated sites and tools to perform the risk analysis procedure.
- ◆ Become aware of the objectives and steps of the health impact assessment as well as of its main features.

COURSE ORGANIZATION

The course will be organized in 9 virtual lessons and 1 virtual practical work exemplification, with compulsory attendance. Virtual lessons and virtual practical work exemplification can be attended by students who enrol to this course. For the dates of exams see the SafeEngine website (www.safeengine.eu). The training sessions will be held in two terms: 1st March 2022 - 31st May 2022 (first training session) and 1st November 2022 - 31st January 2023 (second training session)

The course is organized in the following chapters:

- Explosive phenomena
- Thermokinetic Characterization of Chemical Systems
- Homogeneous and Heterogeneous Explosions
- Heterogeneous Explosions
- Consequence analysis of accidental typologies
- Toxicology and Industrial Hygiene
- Safety Measures
- The Risk assessment applied to contaminated sites
- The Health Impact Assessment within Environmental Impact Assessment (EIA) studies

PRE-REQUISITES

Fundamentals in Chemical and Environmental Engineering, with specific attention to the following disciplines:

- Basic knowledge in chemistry/organic chemistry;
- Basic knowledge of thermodynamics, kinetics, and heat transfer.

MATERIAL

Teaching materials are available on the Federica and EnvYJobs e-learning platform (e-courses, e-books and video with practical works).

EVALUATION

Starting from November 2021 those who have attended the course can take the exam. At the end of each course, a self-evaluating test will be assigned. The test will consist of 10/20 questions per lessons, its' structure consists of: *true/false* or *multiple choice* questions.

The final evaluation of the students will be done at the end of the training sessions

Time frame period for the sessions:

(first training session)- 1st November 2021-31st January 2022

(second training session) 1st March 2022-31st May 2022

Students can sign up for exams only after successfully attending all web-lessons and web-practical works (compulsory attendance, verified through online check).

The exam aims at evaluating the Student's learning progress (competency and achievement of desired learning objectives). Exams will be computer-based and will consist of a multiple choice questionnaire which has to be successfully completed. The final evaluation test will include a set of 50 questions.

The students will be evaluated through the online examination system.

Exam results are reported as pass and score or fail. Exams are considered successful if the correct answers provided by the student are at least 50% of the total number of questions (50 questions).

Examination will be graded according to a scale ranging from 0 to 100, with 50 as a pass mark. The final grade of the SafeEngine module (2/4), based on the average of the single courses results, will be converted into the local grading scale of UPB partner.

To students that failed the exams, a diagnostic report indicating subject areas of relative strength and weakness will be provided. The diagnostic report can assist them to study for a successful re-examination.

Student registration for participating in the exams will be done over the web.

The exam registration is done via the web. For more information please visit the *SafeEngine website*, pre-registration section.

RESOURCES

Resources available on the Federica and EnvYJobs platforms.