



UNIVERSITÀ  
DEGLI STUDI DI MILANO-BICOCCA

## COURSE SYLLABUS

### Environmental Control and Safety

1920-3-E2702Q043

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#### Aims

Introducing the students to the main topics concerning industrial health, safety and environment applied to industry activities and operations by learning management and operational practices.

#### Knowledge and understanding

at the end of the course the students learned:

- methodologies for evaluation of risks and environmental impact
- methodologies for calculation of risk level, safety instrumentation level
- captioned international legislation

#### Application of knowledge and understanding

at the end of the course the students is able to:

- calculate risk level
- calculate the level of exposure to risk in different operational situations
- calculate SIL
- calculate the risk priority number of a FMEA
- evaluate the legislation to be enforced in different operational situations

#### Making judgements

at the end of the course the students has the capability to evaluate the more appropriated methodologies and techniques to be adopted for evaluation of risks and exposures

#### Communication skills

being able to clearly and completely describe targets, processes and results with the right technical terms and measurement units

## **Learning skills**

being able to apply the acquired knowledge in different context and situations from the one seen during the course

## **Contents**

Basics and principle, Italian legislation, international standards, risk evaluation, risk management, controls and auditing

## **Detailed program**

Fundamentals: danger, risk, prevention, exposure, protection, barrier, ALARP, stewardship, sustainability, culture, ...

Legal requirements and accountabilities concerning health, safety and environment in Italy: 81, 152, 334; European regulations: REACH, CLP, ADR/RID; national and international standards and certification: INAIL, Federchimica, IPIECA, OGP, OSHA, ISO, OHSAS, Accredia.

Risks (chemical and physical agents, electric, fire and explosions, confined spaces, other agents ...); threshold limit value (TLV) concept, protective equipment

Chemical risk: property of substances, reaction runaway.

Techniques: management system, health and environmental impact assessments, Hazard Identification, risk analysis (check list, root cause, balance, HAZOP, FMEA), work permit, material safety data sheet (MSDS), labeling, material safety data sheet (MSDS),

sensors and detectors.

Process safety and safety instrumentation (SIL)

Product stewardship and sustainability.

## **Prerequisites**

basic courses about process and plants

## **Teaching form**

classroom lessons with powerpoint slides and videoclips plus question time

## **Textbook and teaching resource**

teacher's slides (text, figures, sketches and drawings), released to students

## **Semester**

3rd year, 2nd semester

## **Assessment method**

spoken examination, in italian or english at student's choice, based on questions aimed at the assessment of the knowledge and of the understanding achieved on the matter, with reference to the slides (text, figures, sketches and drawings) distributed to the students, then the capacity of the candidate to process the information in applying to actual situations.

the final evaluation will take into account how complete and accurate are the answers, the effectiveness of processing and a comprehensible exposition of concept

## **Office hours**

by date

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