

## Safety, Health and Environmental Management (E072302)

**Course size** *(nominal values; actual values may depend on programme)*

**Credits 3.0**                      **Study time 90 h**

**Course offerings and teaching methods in academic year 2025-2026**

Offering	Language	Location	Teaching Methods
A (semester 2)	English	Gent	independent work lecture
B (semester 2)	Dutch	Gent	

**Lecturers in academic year 2025-2026**

Name	Room	Role
Van Steenberge, Paul	TW11	lecturer-in-charge
Reyes Isaacura, Pablo	TW11	co-lecturer

**Offered in the following programmes in 2025-2026**

Programme	credits	offering
<a href="#">Master of Science in Chemical Engineering</a>	3	B
<a href="#">Master of Science in Chemical Engineering</a>	3	A
<a href="#">Master of Science in Chemical Engineering Technology</a>	3	A

**Teaching languages**

English, Dutch

**Keywords**

Safety, environment, health, management

**Position of the course**

The course unit "Safety, Health and Environmental Management (E072302)" aims to treat a number of basic responsible-care elements in four active areas of health, safety, quality and environment, which are of crucial importance. The ultimate goal is to obtain insight, knowledge and application-oriented know-how about integrated SHEQ-systems and management derived thereof, applied to chemical industry.

**Contents**

- Health, Safety, Environment (minimal): technical, normative and legislative aspects, procedures for risk analysis.
- 12 lectures from the list below, in collaboration with chemical process industry:
  - Introduction (ir. Paul Van Steenberge and ir. Pablo Reyes)
  - Operational safety of chemical processes: Technology of batch and continuous reactors (ir. Bart Geurts, FOD WASO)
  - Catalytic Processes: Process Safety Requirements (ir. Geert Vercruyse, BASF Antwerpen)
  - Regulatory framework for chemicals: Assessment & Communication of hazards & risks (CLP, SDS, REACH) (MSc. Tine Cattoor, essenscia)
  - Gas and dust explosions (ir. Michel Vandeweyer, ISMA)
  - Process safety engineering for distillation towers (ir. Kathleen Vanhaelst, BASF Antwerp)
  - Q&A session: Energy and Climate (ir. Els Brouwers, Nireas)
  - Hazard and Operability Study and Layer Of Protection Analysis (ir. Chantal Marlé, Vinçotte)
  - Quantitative Risk Assessment (ir. Peter Wittevrongel, Vinçotte)
  - Operational excellence and its importance to SHEQ: Lean Six Sigma (ir. Luc De Vos, BASF Antwerpen)
  - Sustainability and integral quality, health and environmental care (dr. Alain

Molinard, BASF Antwerpen)

- Product quality monitoring in the chemical industry (dr. Alain Molinard, BASF Antwerpen)
- Workshop: Process (safety) engineering from PGID to HAZOP (ir. Florian Logghe, ir. Jens van den Bosch, ir. François Haumont and ing. Chris Gentjens, DD Engineering)
- HAZOP workshop (ir. Yannick van der Meulen, ir. Olivier Cardoen and ir. Kris Mampaey, Prohead Engineering)
- Process safety management (Karin Van Laere, Borealis)
- Process Safety and Environmental Safety in Methyl Amines Process Technology (ir. Olivier Dewaele, Eastman-Taminco)
- Q&A session (ir. Paul Van Steenberge and ir. Yoshi Marien)

### Initial competences

Basic knowledge of chemical-technological aspects of the chemical industry

### Final competences

- 1 Responsible use of health, safety and environmental aspects in laboratories and workplaces; integrate and implement these via a management-oriented approach.
- 2 Permanent creative and scientific thinking, judging and acting; applying scientific / technical disciplinary insights on complex engineering problems.
- 3 Integration of sustainability and product quality in management and acting.
- 4 Identifying hazards, defining risks, evaluating risks for chemical process safety.
- 5 Understanding and anticipating safety risks in industrial catalytic fixed-bed reactor processes.
- 6 Identifying and characterizing gas and dust explosion hazards.
- 7 Executing a concise safety study of industrial-scale distillation towers.
- 8 Describing the foundations of a quantitative risk assessment.
- 9 Understanding contemporary issues around energy and climate
- 10 Knowing and understanding process safety concepts for industrial storage and pumping of liquid (food) chemicals in tanks.
- 11 Knowing the procedure and executing a concise hazard and operability (HAZOP) study.
- 12 Identifying sources of quality and efficiency losses for (bio)chemical processes.

### Conditions for credit contract

Access to this course unit via a credit contract is determined after successful competences assessment

### Conditions for exam contract

This course unit cannot be taken via an exam contract

### Teaching methods

Group work, Lecture, Independent work

### Extra information on the teaching methods

The group work encompasses parts of a selection of guest lectures surrounding the use and/or demonstration of software such as MentiMeter, PHApro, Phast-DNV throughout the semester, active participation to a panel discussion, the execution of HAZOPs in team, "question & answer" with the guest lecturer, interacting en understanding of PGIDs during class, etc.

### Study material

Type: Slides

Name: Slides used during lectures

Indicative price: Free or paid by faculty

Optional: no

Language : English

Number of Slides : 1440

Oldest Usable Edition : AY 2023-2024

Available on Ufora : Yes

Online Available : Yes

Available in the Library : No

Available through Student Association : No

Additional information: Each year, ca. two guest lectures (and their slides) change because of updates of the course content.

## References

### Course content-related study coaching

At the end of the lecture series:

- Presentation of historical examination questions
- Q&A session

### Assessment moments

end-of-term and continuous assessment

### Examination methods in case of periodic assessment during the first examination period

Written assessment with open-ended questions

### Examination methods in case of periodic assessment during the second examination period

Written assessment with open-ended questions

### Examination methods in case of permanent assessment

Participation

### Possibilities of retake in case of permanent assessment

not applicable

### Extra information on the examination methods

Closed-book examination

The group work is graded using participation. At most 35% of the total grade can be earned with this group work.

### Calculation of the examination mark

The final score is calculated from two sub-scores, with variable weighting:

Theory exam: 65 to 75%

Participation: 25 to 35%