

Clean Technology: Assessment Methods (I002702)

Wegens Covid19 kan mogelijk afgeweken worden van de onderwijs- en evaluatievormen. Dergelijke afwijkingen zullen via Ufora worden gecommuniceerd.

Cursusomvang *(nominale waarden; effectieve waarden kunnen verschillen per opleiding)*

Studiepunten 3.0 **Studietijd 90 u** **Contacturen** 30.0 u

Aanbodsessies en werkvormen in academiejaar 2021-2022

A (semester 1)	Engels	Gent	hoorcollege	17.5 u
			werkcollege: PC- klasoefeningen	5.0 u
			werkcollege: geleide oefeningen	2.5 u
			groepswerk	1.25 u
			microteaching	3.75 u

Lesgevers in academiejaar 2021-2022

Nachtergaele, Pieter	LA24	Verantwoordelijk lesgever
Cadena Martinez, Erasmo	LA24	Medelesgever
Huysveld, Sophie	LA24	Medelesgever

Aangeboden in onderstaande opleidingen in 2021-2022

	stptn	aanbodssessie
Bachelor of Science in Environmental Technology	3	A
Master of Science in de industriële wetenschappen: elektrotechniek (afstudeerrichting automatisering)	3	A
Master of Science in de industriële wetenschappen: elektrotechniek (afstudeerrichting elektrotechniek)	3	A
Master of Science in Biology	3	A
Master of Science in de industriële wetenschappen: elektromechanica	3	A
Master of Science in Environmental Science and Technology	3	A
Master of Science in de bio-ingenieurswetenschappen: milieutechnologie	3	A
Uitwisselingsprogramma bio-ingenieurswetenschappen: chemie en bioprocestechnologie (niveau master-na-bachelor)	3	A
Uitwisselingsprogramma bio-ingenieurswetenschappen: milieutechnologie (niveau master-na-bachelor)	3	A
Uitwisselingsprogramma bio-ingenieurswetenschappen: Food Science and Nutrition (niveau master-na-bachelor)	3	A

Onderwijstalen

Engels

Trefwoorden

clean technology, environmental performance tools, sustainability assessment, life cycle assessment, exergy, exergy analysis

Situering

The Clean Technology course focuses on sustainability (assessment) of technological operations and how to make them more sustainable. The part on assessment methods specifically aims to get a basic knowledge of methods for environmental assessment of technology. A strong focus is on the widely used method Life Cycle Assessment (LCA): framework, strong points and limitations, uses, ISO norms, to understand in practice the challenge of data gathering, methodological choices, data quality and difficulty of interpretation. One will be taught how to conduct an LCA. Additionally, environmental performance tools at tier 1 and tier 2 levels and the concept of exergy are explained. It is taught how to apply exergy

analysis.

Inhoud

Chapter 1: Assessing Technology through Input/Output Analysis
Chapter 2: Assessing Technology through Life Cycle Assessment
Chapter 3: Assessing Technology through Exergy Analysis
(equal to Chapters 6-8 of the course Clean Technology 5 Credits (1002700))

Begincompetenties

Natural sciences at the university level
Good knowledge of the nowadays relevant environmental issues

Eindcompetenties

- 1 Grasp tier 1 and tier 2 environmental performance tools and release quantification methods.
- 2 Grasp the concept of life cycle assessment and all its aspects.
- 3 Being able to conduct a life cycle assessment to a certain extent (this with the aid of software).
- 4 Grasp the concept of exergy and exergy analysis. Being able to quantify the exergy amount of a flow to the extent defined by presented data and formulae.

Creditcontractvoorwaarde

Toelating tot dit opleidingsonderdeel via creditcontract is mogelijk mits gunstige beoordeling van de competenties

Examencontractvoorwaarde

Dit opleidingsonderdeel kan niet via examencontract gevolgd worden

Didactische werkvormen

Groepswerk, hoorcollege, microteaching, werkcollege: geleide oefeningen, werkcollege: PC-klasoefeningen

Toelichtingen bij de didactische werkvormen

Lectures: theory and guestspeakers from industry. Dates will be announced through the student platform.

Seminar - coached exercises: 1 exercise session to solve exercises on exergy in group. Date will be announced through the student platform.

Seminar - practical PC room classes: 2 coached PC sessions to prepare for the LCA assignment (groupwork). Dates will be announced through the student platform.

Groupwork: feedback moment with lecturers for the LCA assignment.

Microteaching: presentation assignment to other students in week 13.

Leermateriaal

A syllabus is available and can be purchased from the student organization of the faculty (www.boerekot.be and vlk.cursus@gmail.com). Slides of the lectures will be uploaded (partially) to the student platform.

Referenties

JRC-IES, 2010. General guide for Life Cycle Assessment - detailed guidance. Publications Office of the European Union, Luxembourg.

JRC-IES, 2010. ILCD handbook. Framework and requirements for Life Cycle Impact Assessment models and indicators. Publications Office of the European Union, Luxembourg.

Vakinhoudelijke studiebegeleiding

Contact hours with the lecturers for individual guidance

Evaluatiemomenten

periodegebonden en niet-periodegebonden evaluatie

Evaluatievormen bij periodegebonden evaluatie in de eerste examenperiode

Schriftelijk examen met open vragen, openboekexamen

Evaluatievormen bij periodegebonden evaluatie in de tweede examenperiode

Schriftelijk examen met open vragen, openboekexamen

Evaluatievormen bij niet-periodegebonden evaluatie

Participatie, werkstuk

Tweede examenkans in geval van niet-periodegebonden evaluatie

Examen in de tweede examenperiode is enkel mogelijk in gewijzigde vorm

Toelichtingen bij de evaluatievormen

Periodic evaluation:

- written open book exam
- study material: theory lectures + guest lectures + exercise session on exergy

Non-periodic evaluation:

- Presence/participation at 1 exercise session, 2 coached PC sessions and 2 guest lectures
- Report and presentation of assignment (groupwork): The assignment is to perform an LCA of a product with the aid of software. Students can start the assignment after the first coached PC session to prepare for the assignment (around week 4). Deadline for submission of the assignment (around week 11) and the date of the presentation (week 13) will be provided through the student platform.
- Presence/participation at assignment presentations of other students (a half day)

Eindscoreberekening

Periodic evaluation (written exam): 50% or 10/20

Non-periodic evaluation (assignment, and participation at 1 exercise session, participation at 2 coached PC sessions, participation at 2 guest lectures and participation at the task presentations): 50% or 10/20

Students who eschew one or more parts of the evaluation may be failed by the examiner. Final scores of 10/20 and above may be reduced to the highest failing mark (9/20).

If there is clearly a different input from the different students in the assignment, then the final mark per student belonging to the same group may differ. The deadlines for the assignment must be respected. If not, the final mark may be reduced. If the student obtains a total mark lower than 10/20, the mark obtained for the non-periodic evaluation during the first examination period can be transferred to the second examination period only if the student did not fail, i.e. he/she did not have a mark lower than 5/10.