

COBRA REPORT

Study programme: Master in de nanowetenschappen, nanotechnologie en nano-engineering; Master of Nanoscience, Nanotechnology and Nanoengineering; **Vorbereidingsprogramma:** Master in de nanowetenschappen, nanotechnologie en nano-engineering.

Drawn up on: May, 2023.

Since 2010 the Faculty of Engineering Science acknowledged the opportunities and benefits of a transnational accreditation and sought contact with CTI. CTI or "Commission des titres d'ingénieur" (CTI) is a French accreditation organization and is equally composed of representatives of employers and professional engineers and academia. CTI is also a member of ENQA (European Network for Quality Assurance) and EQAR (European Quality Assurance Register). Furthermore CTI is authorised by ENAEE (European Network for Accreditation of the Engineering Education) to award the EUR-ACE label.

Therefore the Faculty based its Quality Assurance on the accreditation process of the "Commission des titres d'ingénieur" (CTI) and the achievement of the EURACE label.

At institutional level, the KU Leuven uses the [COBRA method](#) to work on the quality of its study programmes. In this report the programme committee reports every four years on the quality of its programme(s) and describes the identified strength(s) and planned action(s) of its programme(s). **Master in de nanowetenschappen, nanotechnologie en nano-engineering; Master of Nanoscience, Nanotechnology and Nanoengineering; Vorbereidingsprogramma: Master in de nanowetenschappen, nanotechnologie en nano-engineering.**

Strengths of the study programme(s)

[Indicate the strengths of the study programme(s) that were discussed during the past four-year COBRA cycle (2015-2019). Please note that this report needs to be comprehensible for external readers and that enough context has to be given. (Max. half a page).]

- **Intended programme outcomes:** Intended programme outcomes are clearly stated and are also clearly achieved according to students feedback.
- **Structure and study load:** The programmes offer a broad education covering all aspects of nanoscience and nanotechnology where the students are acquiring the necessary knowledge, skills and attitudes, with on one hand a strong horizontal multidisciplinary core education, in the various underlying disciplines, and on the other hand a more vertical specialisation in one specific subfield of nanoscience and nanotechnology. All this is realised in programmes with a strong international dimension. The programme is well structured with choice of several subdisciplines as specialisation options which allows for individual tuning of the students study programme to their individual interest. Course content builds on one another throughout the programme.
- **Academic and professional orientation:** The programme sufficiently refers to specific current situations and relevant problems, and can be considered as state-of-the-art. It gives a broad multidisciplinary education with sufficient attention to theoretical foundation. Each year a number of company visits is organised in the second semester to expose students to the type of companies in which they can find jobs (Holst Centre, Melexis, Europlasma, Solvay, On Semiconductor, ASML, etc.)
- **International orientation:** The Erasmus Mundus label gives prestige to the programme, promotes European education and research; it allows attracting the best students from all over the world (brain magnet), gives a strong international dimension to both the Erasmus Mundus and the local Master's programmes and guarantees that the education closely follows the international leading research of the contributing universities.

This COBRA report is a result of the past four-year COBRA cycle (2015-2019). Each study programme that participated in the COBRA cycle has drawn up this document, which specifies the strengths and planned actions of the study programme. These strengths and actions result from the dialogue between the programme and its stakeholders (primary actors, alumni, professional field and international experts from the discipline). This report aims to give a comprehensive indication of the study programme's realised quality. The COBRA report will be made available in the programme guide, so it will be accessible to the public.



- **Pedagogical learning environment and research infrastructure:** The expertise of the professors and assistants is an asset of the programme. The research infrastructure and the contributing faculties is state-of-the-art. The link, both in teaching and in research, to a world renowned research organisation in the field of Nanotechnology such as IMEC adds to the uniqueness of the programmes. According to the students feedback they find it positive that the programme challenges them to work hard during their studies
- **Master's thesis:** Students find that there is a very broad variation and a wide choice of Master's thesis topics offered and that the guidance during the development of the Master's thesis is good.

Planned actions

[Indicate the challenge(s) and the planned actions the programme committee has formulated after the past COBRA cycle (2019-2022). Please note that this report must be comprehensible for external readers and that enough context has to be given. (Max. half a page).]

- Although the profile of the graduates is well known at universities and research institutes involved in the local and EMM program, and many of them are attracted for PhD positions, it is not yet very well known by industry. Awareness of nano-related industry for the master program has further to be increased and in parallel job and internship opportunities should be shared with the students.
- Both student guidance and feedback on their performance can still be improved. One action is to Increase the involvement of teaching assistants.
- Although actions were taken, there are still some courses where a large percentage of the students need a second exam opportunity to pass. The impact of the actions will be followed-up and where required additional actions will be implemented.
- Except for the P&O, the first master year does not contain much practical learning. It will be encouraged to include more active learning and training within the current lectures without compromising the overall study load.
- Because students come from different backgrounds and nationalities, and their courses are spread over different options, they do not easily connect to each other for both educational and social support. We will enable and encourage student discussion groups and gatherings to reduce this barrier..
- Increase the visibility of sustainability development aspects.
- A joint Industrial Board meeting with EMM is planned for November 2023. This should be repeated yearly.
- The recent changes that were implemented in the options of the program, resulting in 5 options, might result in a wrong balance of the different options. This has to be followed up closely on the longer term, and adapted if required, ensuring that the program remains industrial relevant, with horizontal multidisciplinary and vertical specialization.

More information on CTI:

- <https://www.cti-commission.fr/en/>
- Remaud, B, Berbers Y, Jolly, AM, Nolland, J (2017), Accreditation of Flemish Civil Engineers programmes (2016): an experience of cross-border Quality Assurance, Proceedings of the SEFI Annual Conference 2017.
- Sánchez, T. (2015), ESG 2015, part 1: https://www.cti-commission.fr/wp-content/uploads/2017/04/colloque_cti_esg201508.pdf.