

## Development report Mechanical Engineering UT

17 October 2024

*BSc Mechanical Engineering (50439)*

*MSc Mechanical Engineering( 60439)*

During the site visit of the BSc and MSc Mechanical Engineering on 16-17 October 2024, panel and programmes engaged in a thematic session on three main topics. Representatives from the programme management, teaching staff and curriculum committee participated in the sessions. Each topic was introduced by a programme representative, followed by a discussion between the participants and panel.

### Topic 1: BSc curriculum renewal

The BSc Mechanical Engineering is working on a curriculum renewal. The participants discuss amongst others about the following issues related to this renewal:

- *Reformulation of the intended learning outcomes (ILOs).* The programme presented the draft of its new intended learning outcomes, which are discussed by the participants. Topics of discussion included the need for general vs specific ILOs, the role of societal challenges and interdisciplinarity and the vision on the T-shaped engineer.
- *Changes in the learning environment.* The programme explains amongst others the ideas to shift from quartiles to a semester system, more emphasis on individual achievements, more formative assessment, and the inclusion of elective components. Panel and programme discussed the desirability of electives in the first bachelor year, the role of formative feedback and continuous assessment, and ideas on how to implement longer group projects.
- *The use of the CDIO (Conceive-Design-Implement-Operate) framework to design learning lines.* Discussions included the role of design methodology in this framework, a possible learning line on project skills, and the realization of more breathing space for students in the curriculum.
- *Semester themes.* The programme asks the panel for advice on new semester themes. Ideas include considering the Sustainable Development Goals as inspiration for projects and suggests giving students the opportunity to choose for a specific application area.
- *Implementation.* Panel and programme exchange ideas on the way forward, which according to the panel should include broad stakeholder involvement, including students, teaching staff and alumni.

### Topic 2: Balance between academia and industry

The programmes note that most students automatically consider a career in industry, and reflects on whether more attention to a career in academia would be advisable. The panel thinks that this is a good idea but suggest doing it without changing the curricula. Suggestions include lunch lectures and career markets focused on research next to the current industry sponsored events, small-scale extracurricular research projects for talented BSc students or allowing for replacing the MSc internship with an extra research assignment or research focus electives. Furthermore, a discussion ensues whether the programmes need more or possibly less focus on industry. The panel thinks that the programmes should foremost focus on academic training, so that universities can educate the industrial frontrunners of the future. This does not necessarily mean more connections to industry, but a strong own vision on the engineer of the future.

### Topic 3: Set-up of the MSc curriculum

Panel and MSc programme representatives discuss the current set-up of the MSc with seven specializations and individual curricula, and consider whether the MSc curriculum needs a common core shared by all students. The panel thinks that it could be worthwhile to connect the specializations, both for connecting students and making it easier to guarantee common knowledge and/or skills for all students. As 60 EC is reserved for the internship and research assignment, the resulting 60 EC should include core, specialization courses and electives, meaning that the core is necessarily small. The panel thinks that this could for instance take the form of skills or methodological courses. Specializations should be kept, as they also serve a marketing purpose: MSc students often use specializations as basis for their choice of programme.