

Project title: Deepening Multidisciplinary with Systems & Control

Period: January, 2021-January, 2022

Funded by: Research Proposal Innovation Fund

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At Eindhoven University of Technology (TU/e), the collaborative project of the departments Applied Physics (AP) and Mechanical Engineering (ME): “3BYX0P – Challenge Based Learning (CBL) Systems and Control project” was granted. Our project is an accompanying research that focuses on the multidisciplinary aspect of the course: 3BYX0P – CBL Systems and Control Project. The course integrated the knowledge and methods AP and ME around a specified challenge. The course included 30 registered students from AP and ME. The students collaborated in multidisciplinary teams of six throughout the course. Approaching an overarching theme or a problem with the knowledge and methods of multiple disciplines lies at the core of CBL courses. Multidisciplinary teamwork is of great value in that it allows for the interaction and collaboration of students coming from different disciplines. The research questions of this project were: 1) What are students’ learning gains in relation to multidisciplinary teamwork in a CBL course? 2) what are the factors that influence multidisciplinary teamwork in a CBL course? and 3) how does students’ competencies to work in multidisciplinary teams change during the course?

The project included multiple methods of data collection; student interviews, teacher interviews, classroom observations, student design artefacts, and survey. Data was collected at different points of time during the course. The qualitative and the quantitative data are being analysed to arrive at complementary results. The completion of the project will shed light on: a) the improvement of the course; 3BYX0P– CBL Systems and Control Project and development of similar courses, b) how to better promote multidisciplinary teamwork for improved learning outcomes, and c) the changes in students’ competencies to identify their disciplinary skills and knowledge and to synthesize other disciplines’ knowledge in relation to a given challenge.