Course: Machine Engineering — credits: 5

Course code	WBVB25MB
Name	Machine Engineering
Study year	2026-2027
ECTS credits	5
Language	Dutch, with parts in English, English
Coordinator	B. Heikema
Modes of delivery	Education
Assessments	Machine Engineering - Assignment

Learning outcomes

The student can:

- Apply the machinery directive in the process of designing a safe machine. Moreover, the student understands the various subjects of the directive and knows how/where to use them;
- Conduct a risk-analysis on a machine;
- Indicate which design principles are to be used during the design of a construction based on stiffness and make a substantiated choice of the optimum shape of the construction in a given situation;
- Specify a number of machine parts (brakes, clutches, gears, etc.) based on applicable demands and by comparing different options provided by suppliers;
- Can analyze and solve practical dynamics problems by first correctly schematizing the situation using free-body diagrams (FBDs) and kinetic diagrams (KDs), after which the corresponding calculations are performed
- Provide and solve equations for impulse and momentum in a practical situation;
- Size machine parts and sub-assemblies based on strength and stiffness calculations using FEM-software and based on worst case scenarios encountered during the actual application of the machine. The design calculations are properly validated and documented.

Content

In this 5 EC module, an existing machine is used as a means to study a number of subjects. ‘Guide to application of the Machinery Directive 2006/42/EC’ is used to analyse the machine. Moreover, a risk-analysis (FMEA) is performed to show all current problems, malfunctions and/or hazards of the existing machine. A number of engineering skills are used, such as selection of machine parts (brakes, clutches, gears, etc.), determining the applicable load cases in a dynamic situation and strength/strain calculations for machine parts and sub-assemblies using FEM-software in the worst case situation.

Included in programme(s)

Mechanical Engineering VWO a 3-year variant
Mechanical Engineering
Exchange Research, Design & Engineering (spring)

School(s)

Engineering, Life Sciences & ICT

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