# Vak: Mechanics for Mechatronics — credits: 5

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| **Vakcode** | ELVB25MFM |
| **Naam** | Mechanics for Mechatronics |
| **Studiejaar** | 2025-2026 |
| **ECTS credits** | 5 |
| **Taal** | Engels |
| **Coördinator** | M. Sedighi |
| **Werkvormen** | Hoorcollege<br>Practicum / Training<br>Simulatie |
| **Toetsen** | Mechanics for Mechatronics - Schriftelijk, organisatie ToetsCentrum |

**Leeruitkomsten**

**Design**

The starting professional considers various solutions to arrive at a detailed and well-founded (electro)technical product/service/process based on the program of requirements, using appropriate design methods and taking social interests and engineering standards into account.

**Definition**

The starting professional uniformly maps out a problem or customer need, places it in the right context, consults relevant sources and converts this into an objective, problem definition and electrotechnical requirements.

**Inhoud**

This module treats the statics and dynamics aspects of mechanics in the context of mechatronic constructions.

**Professional Products**

- Mechatronic calculations and simulations – Analytical and virtual methods used to predict and evaluate the behaviour and performance of integrated mechanical, electrical, and control systems. Calculations involve formulas and models to determine parameters like force, torque, current, or speed, while simulations use software tools to visualize and test system dynamics, control responses, and interactions before physical implementation. *In this module: calculations on forces, momentum and torque and applying them in mechatronic systems under static and dynamic conditions.*
- Mechatronic specifications of a (partial) product - Detailed descriptions of the properties, functionalities, dimensions, performance, materials, behaviour, components and interfaces of a system that integrates mechanical, electrical, and software elements. They indicate exactly how the product must be designed, built and function in order to meet the stated requirements.

**Skills**

- Mechatronic calculating and simulating – The process of using mathematical methods and software tools to analyze, model, and predict the behaviour of systems that integrate mechanical, electrical, and control components. It supports design, optimization, and validation by evaluating system performance, dynamics, and interactions before physical implementation. *In this module: Calculations on statics and dynamics*.

**Knowledge**

- Statics and dynamics – Branches of mechanics that study the behavior of physical systems under forces. Statics deals with objects at rest or in equilibrium, analyzing how forces and moments balance. Dynamics focuses on objects in motion, examining how forces affect movement, acceleration, and system behavior over time. Both are essential for designing stable and functional mechanical systems.
- Material science – The study of the properties, structure, processing, and performance of materials—such as metals, polymers, ceramics, and composites—to understand and improve their behaviour in various applications. It plays a key role in designing and selecting materials for engineering, manufacturing, and technology development. *In this module: Stress, strain and stiffness.*

**Opgenomen in opleiding(en)**

Exchange Mechatronics (spring)
Minor Mechatronics

**School(s)**

Instituut voor Engineering

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