

## Automotive Technology (E061621)

**Course size** *(nominal values; actual values may depend on programme)*

**Credits 3.0** **Study time 90 h**

**Course offerings and teaching methods in academic year 2026-2027**

|                |         |      |            |
|----------------|---------|------|------------|
| A (semester 2) | English | Gent | lecture    |
|                |         |      | group work |

**Lecturers in academic year 2026-2027**

|                     |      |                    |
|---------------------|------|--------------------|
| Verhelst, Sebastian | TW08 | lecturer-in-charge |
|---------------------|------|--------------------|

**Offered in the following programmes in 2026-2027**

|   | <b>crdts</b> | <b>offering</b> |
|---|--------------|-----------------|
| <a href="#">Master of Science in Electromechanical Engineering(main subject Control Engineering and Automation)</a> | 3            | A               |
| <a href="#">Master of Science in Electromechanical Engineering(main subject Electrical Power Engineering)</a>       | 3            | A               |
| <a href="#">Master of Science in Electromechanical Engineering(main subject Maritime Engineering)</a>               | 3            | A               |
| <a href="#">Master of Science in Electromechanical Engineering(main subject Mechanical Construction)</a>            | 3            | A               |
| <a href="#">Master of Science in Electromechanical Engineering(main subject Mechanical Energy Engineering)</a>      | 3            | A               |
| <a href="#">Master of Science in Electromechanical Engineering</a>  | 3            | A               |
| <a href="#">Master of Science in Mechanical and Electrical Systems Engineering</a>                                  | 3            | A               |

**Teaching languages**

English

**Keywords**

Road vehicles, traction, powertrain, suspension, steering

**Position of the course**

An application of the basic courses which were already lectured (Kinematics and dynamics of mechanisms, Machine parts, Mechanical vibrations, reciprocating machines and internal combustion engines, Turbo machines). The theoretical backgrounds concerning the design of road vehicles are treated. Different designs of vehicle components are shown and explained.

**Contents**

- Wheels and tyres: construction, grip, tyre properties, tyre diagrams, identification
- Powertrain: theoretical background, implementation (clutch, manual gear box, automatic gear box, CVT, DCT, driveshaft, final drive)
- Brakes: brake and deceleration diagrams, practical realisation (master cylinder, brake booster, circuit, disc and drum brakes, ABS)
- Vibrations: vibration excitation, assessment criteria, suspension systems (spring and damper systems)
- Steering: vehicle dynamics, practical realisations (steering system, suspension designs)
- Chassis: aerodynamics and safety

**Initial competences**

Basic notions of kinematics and dynamics, positive displacement machines, internal combustion engines, turbo machinery, machine parts, mechanical vibrations.

**Final competences**

- 1 Understand the origin of dynamic tyre properties.
- 2 Apply tyre properties to the study of braking stability and vehicle dynamics.
- 3 Explain the course of forces and velocities throughout the powertrain and compare to the requirements for vehicle traction.
- 4 Evaluate the powertrain, braking system, suspension and steering system against the most important criteria.
- 5 First order dimensioning of the powertrain, braking system, suspension and steering system.
- 6 Explain how a choice in the design of a part can influence the operation of other vehicle parts.

#### **Conditions for credit contract**

Access to this course unit via a credit contract is determined after successful competences assessment

#### **Conditions for exam contract**

This course unit cannot be taken via an exam contract

#### **Teaching methods**

Group work, Lecture

#### **Study material**

Type: Syllabus

Name: Automotive Technology

Indicative price: Free or paid by faculty

Optional: no

Language : English

Number of Pages : 180

Oldest Usable Edition : 2017

Available on Ufora : Yes

Online Available : Yes

Available in the Library : No

Available through Student Association : Yes

#### **References**

#### **Course content-related study coaching**

#### **Assessment moments**

end-of-term and continuous assessment

#### **Examination methods in case of periodic assessment during the first examination period**

Oral assessment

#### **Examination methods in case of periodic assessment during the second examination period**

Oral assessment

#### **Examination methods in case of permanent assessment**

Assignment

#### **Possibilities of retake in case of permanent assessment**

examination during the second examination period is possible

#### **Extra information on the examination methods**

During examination period: oral closed-book exam, written preparation. During semester: project report.

#### **Calculation of the examination mark**

$(\text{project report} * 6 + \text{oral exam} * 14) / 20$