GHENT UNIVERSITY

Course Specifications

Valid as from the academic year 2024-2025

Automotive Technology (E061621)

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

Credits 3.0 **Study time 90 h**

Course offerings in academic year 2027-2028

A (semester 2) English Gent

Lecturers in academic year 2027-2028

Verhelst, Sebastian TW08 lecturer-in-charge

Offered in the following programmes in 2027-2028	**crdts**	**offering**
Master of Science in Electromechanical Engineering	3	A
Master of Science in Mechanical and Electrical Systems Engineering	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 exitation, 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

(project report * 6 + oral exam * 14) /20