

COURSE DETAIL

ELECTRIC AND ELECTRIC HYBRID VEHICLE TECHNOLOGY

Country

Sweden

Host Institution

Lund University

Program(s)

Lund University

UCEAP Course Level

Upper Division

UCEAP Subject Area(s)

Engineering Electrical Engineering

UCEAP Course Number

175

UCEAP Course Suffix**UCEAP Official Title**

ELECTRIC AND ELECTRIC HYBRID VEHICLE TECHNOLOGY

UCEAP Transcript Title

ELECTRC VEHICLE TECH

UCEAP Quarter Units

6.00

UCEAP Semester Units

4.00

Course Description

There is a large and growing need in the automotive industry for engineers with specialization in electrical drives, power electronics and not least system aspects of electric vehicle control. This course has the ambition to give fundamental knowledge and skills in these areas. Drive and auxiliary drive. Power, torque, and speed. Combustion processes - Otto, Diesel, HCCI among others. Gear - manual, automatic, CVT among others. Efficiency and emissions. Fossil fuel, biofuel - access, cost and performance. EV, HEV - series, parallel, mild, power split, FCV. Conventional servo steering, AC, brake, compressed air and so on. Electrically driven alternatives, function, efficiency. Demands for electric machines and power electronics in vehicles. Criteria for dimensioning. Lifetime, weight, price and so on. Field reduction, starting characteristics, torque ripple and so on. Various types of control, need for sensors. Fuel cells - principle, function and construction. Advantages and drawbacks with various designs. Development trends. Electric storage media - eg batteries and super capacitors. Drive cycles, efficiency, and emission for some selected drive lines. Acceleration, start and other demands for the vehicle. Regenerative braking. The need for effect and energy storage in hybrid and FC vehicles. Assumed prior knowledge: Basic course in physics including mechanics.

Language(s) of Instruction

English

Host Institution Course Number

EIEN41

Host Institution Course Title

ELECTRIC AND ELECTRIC HYBRID VEHICLE TECHNOLOGY

Host Institution Course Details

https://kurser.lth.se/lot/course-syllabus-en/25_26/EIEN41

Host Institution Campus

Lund

Host Institution Faculty

Engineering

Host Institution Degree**Host Institution Department****Course Last Reviewed**

2025-2026

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