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 VEHCLE 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

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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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