

# ELECTRICAL DRIVELINE

Distance learning Short programme 16 weeks



## Learning outcome

This programme provides knowledge about electrical vehicles and its components. The programme is web based with live seminars, recordings, live presentations and study materials on the learning platform. The program includes courses within Electrification, Safety regulations, Electrical machines, Electrical storage system and Power electronics.

## Who is the program for?

This programme is aimed to offer upskill or reskill opportunity to those who have experience in engineering or similar background. Basic understanding from electricity is preferred.

The programme is free of charge and available for CSN student finance.

## Start 7 September

The first course starts September 7, and the final course ends at December 23. As a participant you will be able to join the lecture in real time or watch the recorded lectures afterwards. There will be skilled teachers with both academic and practical experience. After successfully completed the programme the participant will receive a certificate and diploma.

## Application

Apply for the programme at [ya.se](http://ya.se)

Prerequisites: Basic eligibility and Mathematics 3 alternative experience from basic engineering.

### **Introduction to Hybrid and electric vehicle systems and components**

This course is an introduction to the electrical system in the vehicle's structure, components and function. It is also intended to provide students with knowledge about electrical and electronic equipment that incorporates a hybrid or electric vehicle.

### **Law, standards and guidelines**

The purpose of this course is to give students thorough knowledge about the electrical safety instructions and guidelines which apply working on and in electric vehicles and fully knowledge about the guidelines developed by the MSB.

### **Basics of Electrical Engineering**

The purpose of this course is to give the student the basic knowledge within electricity. First they will be presentations and calculations of DC- and AC-circuits together with the quantity's energy and power and then the students will be introduced to 1 phase, 3 phase,  $j$ -method, active and reactive power and magnetic circuits.

### **Electrical Machines**

The purpose of this course is to give the student knowledge of the electric machine-topologies: Synchronous machines, Permanent magnet, Asynchronous machines. Area of focus will, for example, be Electromagnetic, calculations of parameters of the machines in steady state, arrangements of the winding, diagrams and the impact of number of poles.

### **Power Electronics**

The purpose of this course is that the students should acquire knowledge of the power electronics that controls the electric drive system. The students should have knowledge of power electronics components, functions, topologies, control types and how to dimension power converter. Understanding of power converter operation is necessary for analysis how power electronics impact other electrical equipment.

### **Energy storage systems**

The purpose of this course is that the students is to gain knowledge in the industry of all types of electrical storage systems, Batteries, Fuel cells, Ultracapacitors and Flywheels, Its design, power and performance. In this course, the technical characteristics and principle of operation of existing batteries in the market, especially those of Li-ion, and those that are in development, as well as ultracapacitors, will be analysed.



#### **MORE INFORMATION:**

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