



COURSE DESCRIPTION CARD - SYLLABUS

Course name

Safety of operation and servicing of vehicles with HV installation [S2Elmob1-SSP>BEiSP]

Course

Field of study

Electromobility

Year/Semester

1/2

Area of study (specialization)

Car Onboard Systems

Profile of study

general academic

Level of study

second-cycle

Course offered in

Polish

Form of study

full-time

Requirements

compulsory

Number of hours

Lecture

15

Laboratory classes

15

Other

0

Tutorials

0

Projects/seminars

0

Number of credit points

2,00

Coordinators

dr hab. inż. Leszek Kasprzyk prof. PP
leszek.kasprzyk@put.poznan.pl

Lecturers

Prerequisites

Basic knowledge of electrical engineering, electrical machines and electricity storage. Ability to interpret the messages and effective education in the field related to electric and hybrid vehicles.

Course objective

Familiarizing students with the safety rules for the operation and servicing of electric and hybrid vehicles in accordance with the requirements prevailing at Volkswagen Poznań (company qualifications of a high-voltage technician (HVT) based on the EFft course - Elektrofachkraft für festgelegte Tätigkeiten).

Course-related learning outcomes

Knowledge:

He knows the basic legal regulations and the required qualifications related to the operation of high-voltage systems in motor vehicles

He knows the safety rules applicable to the operation and maintenance of electric and hybrid vehicles with a high-voltage installation.

Knows the construction and principle of operation of the basic components of the high-voltage installation of electric vehicles and the rules applicable during certified disconnection of traction power

in Volkswagen vehicles.

Skills:

Can carry out the procedure for assessing the risk of electric shock in electric vehicles; measure the voltage on the elements powered from the HV installation and verify the correct functioning of dedicated measuring devices. Is able to assess the condition of insulation of high-voltage circuits in electric and hybrid vehicles. He is able to carry out the procedure of certified voltage deactivation in electric and hybrid Volkswagen vehicles.

Social competences:

He is aware of the need for lifelong learning.

Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

Lecture: The knowledge acquired during the lecture is verified during the written test, which takes place during the last lecture. The assessment consists of open questions, scored according to the level of difficulty. Passing threshold: 50% of points. The credit issues are sent to the head of the group by e-mail using the university's e-mail system 2-3 weeks before the date of the credit.

Laboratory: Knowledge of the material converted into a laboratory is verified during individual and team work during the implementation of exercises and demonstrations.

Programme content

Principles of operation and safety of electric vehicle operation

Course topics

VW EUP training (a person instructed in the field of electrics): legal basis; professional qualification levels; basics of HV vehicles / HV systems; hazards and effects of electric current; OHS and protection measures against direct and indirect contact in electric and hybrid vehicles; measures to prevent accidents when working on HV electrical components; first aid after electrical accidents. VW EFfT training (electrician for specific activities on high-voltage vehicles): basics of high-voltage technology, alternative drives; hands-on work on an HV vehicle and the handling of special tools. risk assessment for high-voltage vehicles; structure, functions and performance of EV and HEV vehicle components; high voltage electrical system; vehicle component protection; basic construction of HV batteries; construction of VW vehicles with HV installation; component labeling, notes, hazard warnings; safe disconnection of the voltage in a vehicle with HV installation; measurements on a vehicle with a high-voltage system; high voltage vehicle safety instructions.

Teaching methods

Lecture: Multimedia presentation, illustrated with examples given on the board, initiating discussion during the lecture. Additional materials placed in the eKursy system.

Laboratory: demonstrations and exercises, team work in the VW-Poznań QTC laboratory in Jasin (Training Centre).

Bibliography

Basic:

1. Volkswagen company training materials

Additional:

1. Qualifizierung für Arbeiten an Fahrzeugen mit Hochvoltsystemen - GUV Information 209-093 (<https://publikationen.dguv.de/widgets/pdf/download/article/3982>)
2. <https://sip.lex.pl/akty-prawne/dzienniki-UE/regulamin-nr-100-europejskiej-komisji-gospodarczej-organizacji-narodow-68511729>

Breakdown of average student's workload

	Hours	ECTS
Total workload	55	2,00
Classes requiring direct contact with the teacher	30	1,00
Student's own work (literature studies, preparation for laboratory classes/ tutorials, preparation for tests/exam, project preparation)	25	1,00