

Multimeter Trainer

Learners develop essential measurement and diagnostic skills using this blended e-learning and mechanical training package.

14025060

Discovery



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Achievement

Combining Electude's e-learning modules with a table-top circuit trainer creates an effective blended hands-on environment for every level of learner.

Electude's self-guided online lessons combine photo-realistic visuals, text and questions to guide learners to an understanding of basic relays and circuits, common faults and diagnostics. Tracking every keystroke, the system measures mastery of the content real-time, providing constant feedback to the learner and instructor.

Online lessons prepare the learner for success in use of our mechanical trainer and three circuits: basic, relay and electronic. Each circuit has multiple built in failures activated by the rotary dial; using the V-14 diagnostic method, learners are able to interpret measured voltages and identify the cause of the fault.



The following items are included with the Trainer:

- TS10 Power supply unit
- A set of 2mm test leads



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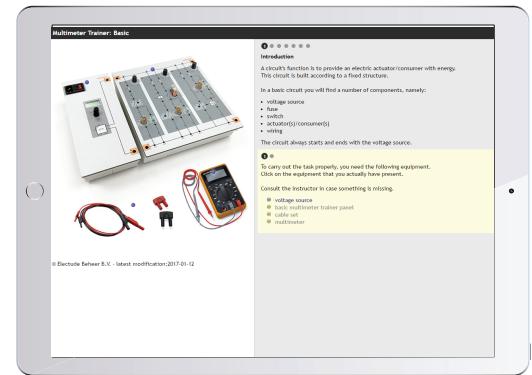
Electude_HardwareFlyer-MultimeterTrainer-UK

MULTIMETER TRAINER

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Through the preliminary theory and practical assignments, the student learns:

- To identify the structure of a basic circuit
- To identify the structure of a relay circuit
- To perform measurements on the basic and relay circuits
- To detect failures on the basic and relay circuits
- To identify the structure of an electronic circuit
- To carry out measurements on the electronic circuit
- To detect failures on the electronic circuit

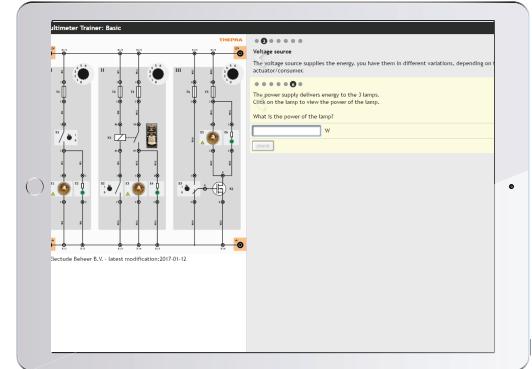


Preliminary theory with Multimeter Trainer (basic)*

- Electrical fundamentals
- Ground-switched and positive-switched
- Kirchhoff's first law basics
- Multimeter auto range
- Magnetism
- Relay
- Relay basic

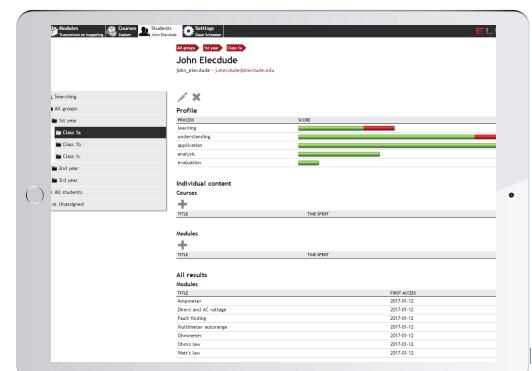
Practical assignments with Multimeter Trainer (basic)

- Multimeter Trainer: Basic
- Multimeter Trainer: Basic - Guided fault finding 1
- Multimeter Trainer: Basic - Failure 2
- Multimeter Trainer: Basic - Failure 3
- Multimeter Trainer: Basic - Failure 4
- Multimeter Trainer: Basic - Failure 5
- Multimeter Trainer: Basic - Failure 6
- Multimeter Trainer: Relay
- Multimeter Trainer: Relay - Guided fault finding 1
- Multimeter Trainer: Relay - Failure 2
- Multimeter Trainer: Relay - Failure 3
- Multimeter Trainer: Relay - Failure 4
- Multimeter Trainer: Relay - Failure 5
- Multimeter Trainer: Relay - Failure 6



Preliminary theory with Multimeter Trainer (advanced) *

- Kirchhoff's first law
- Ohm's law
- Watt's law
- Resistance
- Transistor basic
- Transistor advanced



Practical assignments with Multimeter Trainer (advanced)

- Multimeter Trainer: Mosfet
- Multimeter Trainer: Mosfet - Guided fault finding 6
- Multimeter Trainer: Mosfet - Failure 1
- Multimeter Trainer: Mosfet - Failure 2
- Multimeter Trainer: Mosfet - Failure 3
- Multimeter Trainer: Mosfet - Failure 4
- Multimeter Trainer: Mosfet - Failure 5

Duration

- Preliminary theory with Multimeter Trainer (basic) - 183 min
- Practical assignments with Multimeter Trainer (basic) - 496 min
- Preliminary theory with Multimeter Trainer (advanced) - 438 min
- Practical assignments with Multimeter Trainer (advanced) - 235 min

*Separate license may apply for the Preliminary theory.



Toyota Prius 3

14025050

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Electude's integrated Toyota Prius 3 training program combines our state-of-the-art e-learning with a Prius 3 prepared with ten faults and ready for hands-on training. We provide everything a trainer and learner need to succeed in understanding how and why hybrid vehicles work as well as completing diagnostic and repair procedures.

Our e-learning combines words, photo-realistic graphics and questions to guide the student from the basic components of the hybrid vehicle including drive types, the hybrid battery, ECVT drive train, and safety procedures. Using the provided break-out box for the power control module (PCM), the high-voltage battery and other measurement points, learners may complete diagnostic tasks independently and experience solving common problems.

High voltage accessory set

Our included set of accessories designed for safe work on high-voltage vehicles includes:

- Protective gloves
- Certified digital HV voltage tester
- Protective goggles
- Barrier tape
- 3-sided warning sign with suction cup
- 2-sided individual warning sign



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Electude_HardwareFlyer-ToyotaPrius3-1

T-VARIA CONNECT

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Our theory and practical assignments includes:

- To identify the various components of the Toyota Prius.
- To indicate the location of various components of the Toyota Prius.
- To identify the features of various components of the Toyota Prius.
- To identify the features of different drive types.
- To carry out various work procedures on hybrid vehicles.
- To identify the different variants of HV batteries.
- To identify the incoming and outgoing currents of the HV battery.
- To work with various safety features.
- To apply a diagnosis roadmap to a failure on the Toyota Prius.
- To analyse the various battery parameters.
- To identify the function of the ECVT components.
- To identify incoming and outgoing currents of the HV battery.
- To analyse various energy currents from the ECVT.

ELECTUDE'S E-LEARNING COURSE OVERVIEW

Preliminary theory with Toyota Prius 3 (basic)

- Voltage free switching HV system
- Working on hybrid vehicles
- Working with voltage
- Full hybrid
- Rotating magnetic field
- Permanent magnet synchronous motor - basic
- Synchronous motor with permanent magnet - advanced
- Hybrid vehicle with planetary gear system
- Enabling HV system
- Interlock
- Short circuit protection
- Permanent insulation monitoring
- Battery Management System
- State of Health
- Passive balancing
- State of Charge
- Temperature control HV battery

Practical assignments with Toyota Prius 3 (basic)

- Prius 3: Safety and switching voltage-free
- Prius 3: Recognise and identify
- Prius 3: Drive type on the dynamometer

Preliminary theory with Toyota Prius 3 (advanced)

- HV battery
- HV cables
- Battery Management System
- State of Health
- Passive balancing
- State of Charge
- Temperature control HV battery

Practical assignments with Toyota Prius 3 (advanced)

- Prius 3: HV battery
- Prius 3: HV battery on the dynamometer
- Prius 3: Guided fault finding

Fault assignments with Toyota Prius 3 (advanced)

- Prius 3: Failure 1
- Prius 3: Failure 2
- Prius 3: Failure 3
- Prius 3: Failure 4
- Prius 3: Failure 6

Preliminary theory with Toyota Prius 3 (specialists)

- Electric drive
- Energy density
- Energy flow in hybrid vehicles
- Efficiency
- Loss of driving form
- Hybrid vehicle with planetary gear system

Practical assignments with Toyota Prius 3 (specialists)

- Prius 3: HV battery condition
- Prius 3: Energy currents introduction
- Prius 3: Energy currents during electric driving
- Prius 3: Energy currents during recovery
- Prius 3: Energy currents during combined driving
- Prius 3: Control MG2, voltage and current

Fault assignments with Toyota Prius 3 (specialists)

- Prius 3: Failure 5
- Prius 3: Failure 7
- Prius 3: Failure 8
- Prius 3: Failure 9
- Prius 3: Failure 10
- Prius 3: Teacher's manual
- Electric motor
- Lorentz force
- Magnetism
- Induction
- Electric motor: permanent magnet motor
- Rotating magnetic field
- Permanent magnet synchronous motor - basic
- Squirrel cage induction motor - basic

Practical assignments with Electric Motors Trainer (basic)

- Electric Motors Trainer: Permanent magnet motor
- Electric Motors Trainer: Series-wound motor
- Electric Motors Trainer: Asynchronous squirrel-cage motor
- Electric Motors Trainer: Synchronous three-phase electric motor

Preliminary theory with Electric Motors Trainer (advanced)*

- Electric motor permanent magnet motor
- Synchronous motor with permanent magnet - advanced
- Squirrel cage induction motor - advanced

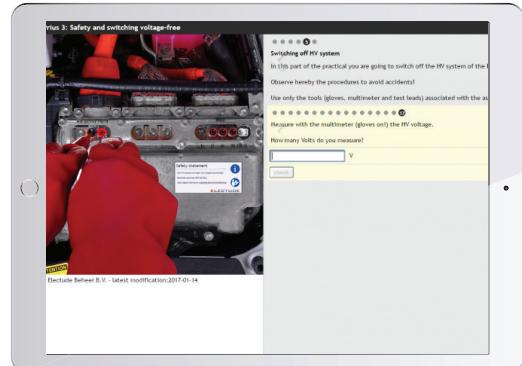
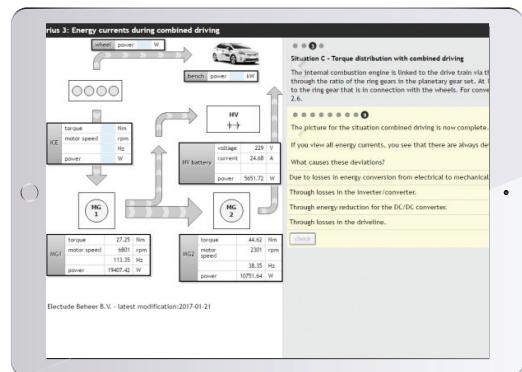
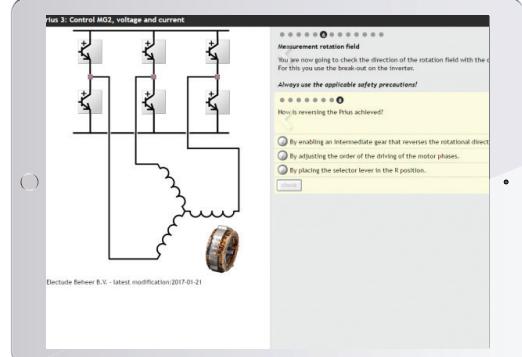
Practical assignments with Electric Motors Trainer (advanced)

- Electric Motors Trainer: Permanent magnet motor generator
- Electric Motors Trainer: Series-wound motor generator
- Electric Motors Trainer: Squirrel-cage motor generator
- Electric Motors Trainer: Synchronous three-phase motor generator

Duration

- Preliminary theory with Electric Motors Trainer (basic) - 694 min
- Practical assignments with Electric Motors Trainer (basic) - 340 min
- Preliminary theory with Electric Motors Trainer (advanced) - 206 min
- Practical assignments with Electric Motors Trainer (advanced) - 149 min

*Separate license may apply for the Preliminary theory.



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Vernier Caliper-Box

14025090

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THEPRA

Today's automotive technology demands ever smaller tolerances and consistently measuring accurately more necessary than ever. Our Vernier caliper online e-learning lessons and hands-on trainer offers an efficient and effective way to learn and practice practical measuring skills.

Our training box includes a ruler, a Vernier caliper and three measuring objects. When used in combination with our online e-learning lessons, the learner may independently practice common measuring methods for reading and recording internal and external dimensions.

Electude's e-learning lessons combine photo realistic graphics, text and formative assessment questions to create an engaging discovery-based and gamified learn-by-doing experience. Capturing every keystroke, our learning system tracks and reports on student progress every step of the way.



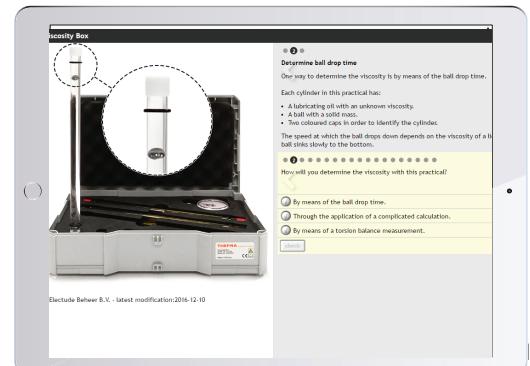
VISCOSITY-BOX

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ELECTUDE'S E-LEARNING COURSE OVERVIEW

Preliminary theory with Viscosity-Box (basic) *

- Engine oil EU
- Lubricating oil: properties



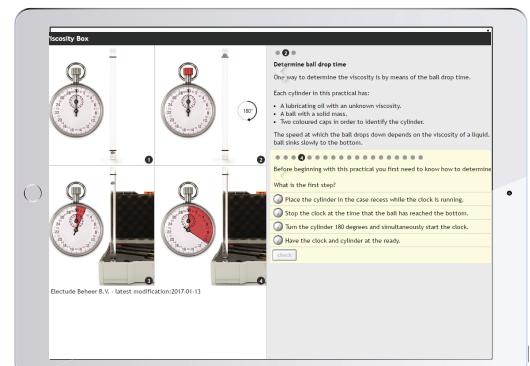
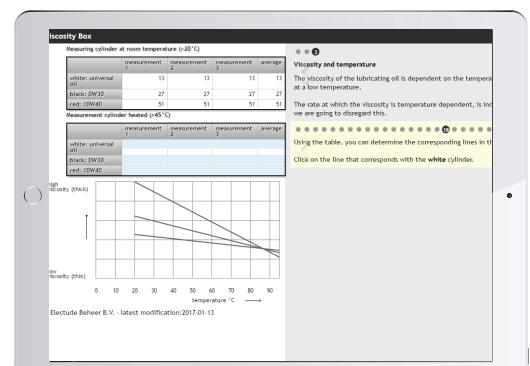
Practical assignments with Viscosity-Box (basic)

- Viscosity-Box

Duration

- Preliminary theory with Viscosity-Box (basic) - 76 minutes
- Practical assignments with Viscosity-Box (basic) - 93 minutes

* Separate license may apply for the Preliminary theory.



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Viscosity-Box

14025050

Discovery



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Achievement

THEPRA

Our Viscosity-Box trainer is an excellent way to help learners understand, through a blend of hands-on and e-learning, the key properties of different types of automotive oil.

This trainer includes three cylinders containing different types of oil and a clock. Learners use this to measure the viscosity of oil at different temperatures and see how the viscosity index fluctuates from one type of oil to the next.

The accompanying e-learning is built in Electude's LMS and uses a combination of photo-realistic graphics/animations, text and assessment questions to engage the learner in this important topic. Students are guided to observe and discover the topic and their progress tracked and reported as they go.



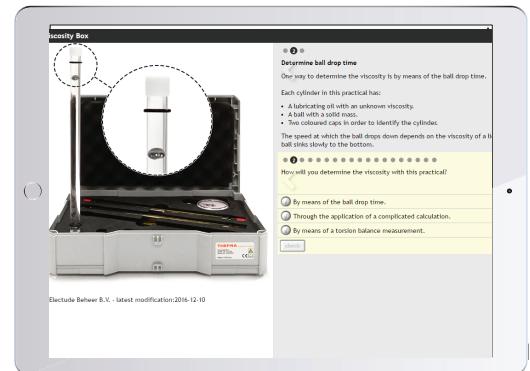
VISCOSITY-BOX

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ELECTUDE'S E-LEARNING COURSE OVERVIEW

Preliminary theory with Viscosity-Box (basic) *

- Engine oil EU
- Lubricating oil: properties



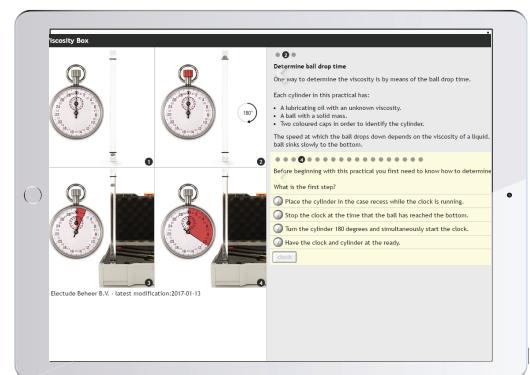
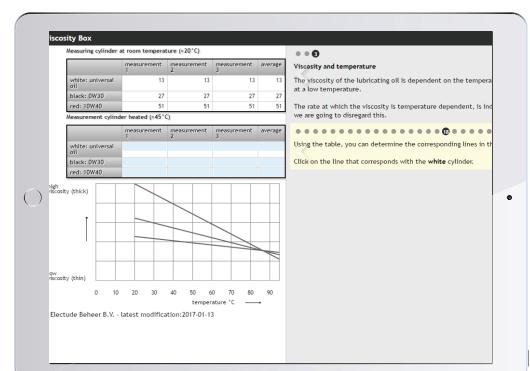
Practical assignments with Viscosity-Box (basic)

- Viscosity-Box

Duration

- Preliminary theory with Viscosity-Box (basic) - 76 minutes
- Practical assignments with Viscosity-Box (basic) - 93 minutes

* Separate license may apply for the Preliminary theory.



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T-Varia Connect

14025070

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Achievement

THEPRA

T-Varia Connect combines Thepra's hands-on lighting system trainer with Electude's state-of-the-art e-learning to create a complete learning environment. T-Varia Connect includes three panels with controls, front and rear lighting. Thepra also offers enhancement modules for basic circuits, relay circuits, wipers and trailer.

This combined e-learning and hands-on trainer provides discovery-based online learning modules with practical assignments that teach learners:

- How to read and use wiring diagrams
- How to identify electrical and electronic components, assemblies and systems
- Testing and maintenance of electrical and electronic circuits
- Selection and use of measuring and testing devices
- Measurement and evaluation of electrical values and signals
- Documentation of results by comparing calculated values to manufacturer specifications



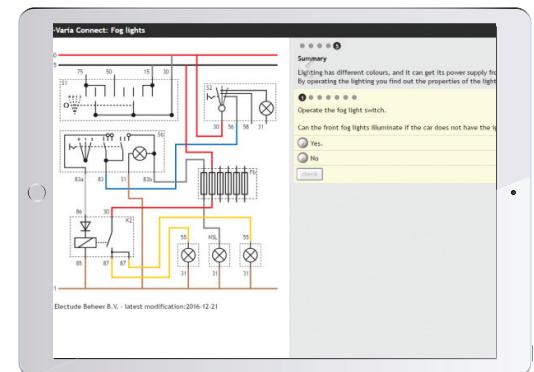
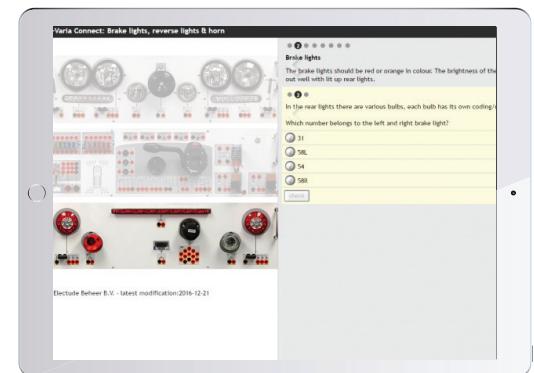
T-VARIA CONNECT

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ELECTUDE'S E-LEARNING COURSE OVERVIEW

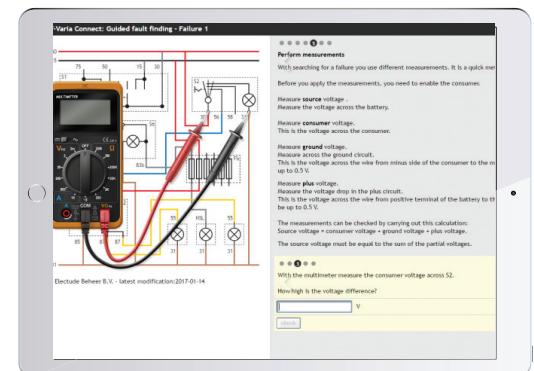
Preliminary theory with T-varia Connect (basic)

- Electrical fundamentals
- Resistance
- Ohm's law
- Multimeter autorange
- Series circuits
- Parallel circuits
- Watt's law
- Relay
- Lighting
- Light sources
- Tail lights
- Headlights
- Cornering lights
- Legal regulations for lights (UNCE)



Practical assignments with T-Varia Connect (basic)

- T-Varia Connect: Parking lights / rear lights
- T-Varia Connect: Dipped headlights / main beam
- T-Varia Connect: Daytime running lights
- T-Varia Connect: Brake lights, reverse lights & horn
- T-Varia Connect: Fog lights
- T-Varia Connect: Indicators
- T-Varia Connect: Guided fault finding - Failure 1
- T-Varia Connect: Guided fault finding - Failure 2
- T-Varia Connect: Failure 1
- T-Varia Connect: Failure 2
- T-Varia Connect: Failure 3
- T-Varia Connect: Failure 4
- T-Varia Connect: Failure 5
- T-Varia Connect: Failure 6
- T-Varia Connect: Failure 7



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Electric Motors Trainer

A state-of-the-art blended learning approach to electric motors and their application for electric drive

14025030

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Achievement

Learners basic to advanced will benefit from our integrated hands-on and online learning solution for electric motors. Presenting four types of electric motors, learners progress from learning component functions to assembly of the motors and ultimately application.

Our self-guided online lessons combine photo-realistic visuals, text and questions to guide learners in identifying types of motors, their components and operation. Tracking every key stroke, the system measures mastery of the content real-time, providing constant feedback to the learner and instructor.

The online lessons prepare the learner for success in use of our practical mechanical trainer. We've included all the motors and generators critical to today's automotive industry, with an operating range of 0 to 24V.

Electude's mechanical trainer includes:

- One three-phase console with variable speed
- Three coils (250 turns) with pole shoes
- Two permanent magnets with pole shoes
- One rotor with permanent magnet
- One electromagnet rotor
- One short circuit stud
- One centering ring
- One carbon brush holder
- One drive belt
- One power supply
- One drive unit
- Set of 4mm test leads



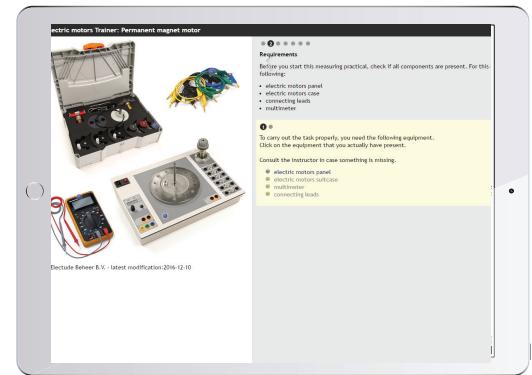
ELECTRIC MOTORS TRAINER

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ELECTUDE'S E-LEARNING COURSE OVERVIEW

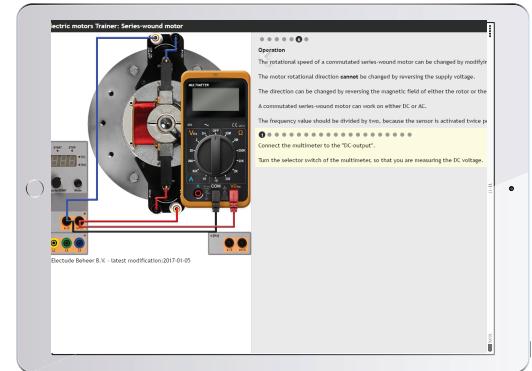
Preliminary theory with Electric Motors Trainer (basic)*

- Electric motor
- Lorentz force
- Magnetism
- Induction
- Electric motor: permanent magnet motor
- Rotating magnetic field
- Permanent magnet synchronous motor - basic
- Squirrel cage induction motor - basic



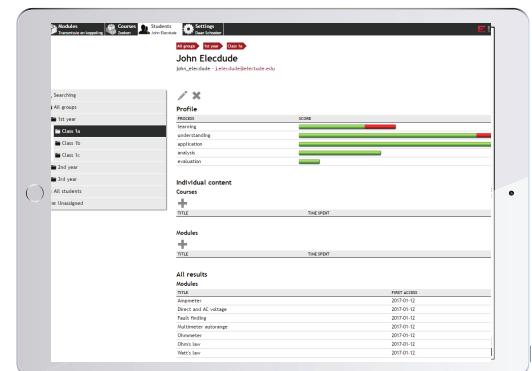
Practical assignments with Electric Motors Trainer (basic)

- Electric Motors Trainer: Permanent magnet motor
- Electric Motors Trainer: Series-wound motor
- Electric Motors Trainer: Asynchronous squirrel-cage motor
- Electric Motors Trainer: Synchronous three-phase electric motor



Preliminary theory with Electric Motors Trainer (advanced)*

- Electric motor permanent magnet motor
- Synchronous motor with permanent magnet - advanced
- Squirrel cage induction motor - advanced



Practical assignments with Electric Motors Trainer (advanced)

- Electric Motors Trainer: Permanent magnet motor generator
- Electric Motors Trainer: Series-wound motor generator
- Electric Motors Trainer: Squirrel-cage motor generator
- Electric Motors Trainer: Synchronous three-phase motor generator

Duration

- Preliminary theory with Electric Motors Trainer (basic) - 694 min
- Practical assignments with Electric Motors Trainer (basic) - 340 min
- Preliminary theory with Electric Motors Trainer (advanced) - 206 min
- Practical assignments with Electric Motors Trainer (advanced) - 149 min

*Separate license may apply for the Preliminary theory.



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Lock-out Trainer

Safely learn and apply HV manufacturer's practices with the Electude Lock-out Trainer

14025110

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Electude's integrated hands-on and online learning solution teaches critical skills for anyone working on modern vehicles with high-voltage systems. Learners progress from self-guided online lessons to use of a hands-on interlock circuit device.

Our self-guided online lessons combine photo-realistic visuals, text and questions to guide learners in understanding the properties of high voltage, the use of HV components, the shut-down procedure on a vehicle, identification of damaged HV cables, and activation of airbags in a collision. Tracking every keystroke, the system measures mastery of the content real-time, providing constant feedback to the learner and instructor.

The online lessons prepare the learner for success in use of our table-top mechanical trainer. We provide a complete package for the learner to then apply what they have learned, including rotary dials that allow the learner to vary properties of the interlock trainer.

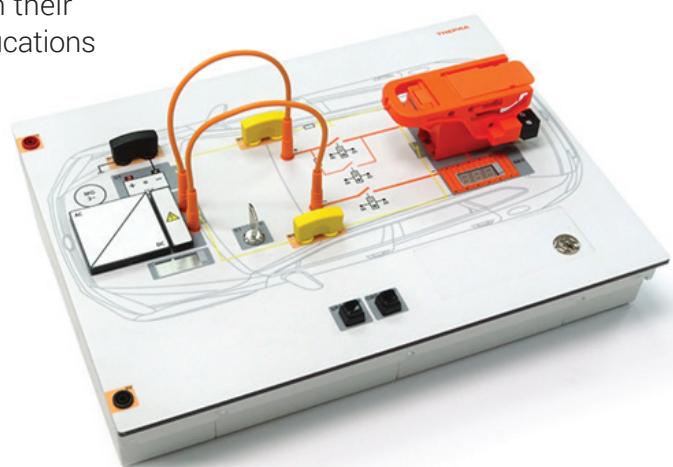
Virtually every car manufacturer has a high-voltage vehicle in their product line today. Knowing the different manufacturers' specifications is therefore essential.

The following items are included with the Trainer:

- High voltage accessory set
- Power supply unit; TS10

This high voltage accessory set, for working safely on high voltage vehicles, includes:

- HV Protective gloves
- Protective goggles
- Certified digital high voltage tester
- Caution tape
- 3-sided warning sign with suction cup
- 2-sided stand up warning sign



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LOCK-OUT TRAINER

14025110

E-LEARNING COURSE OVERVIEW

Lock-out Trainer (basic)

Preliminary theory with Lock-out Trainer content (basic)*

- Working on hybrid vehicles
- High voltage shutdown of HV Systems
- High voltage system 10 software content

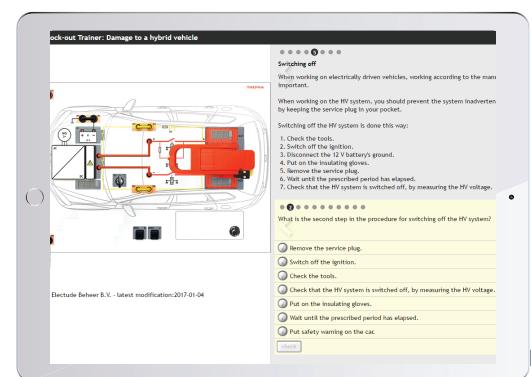
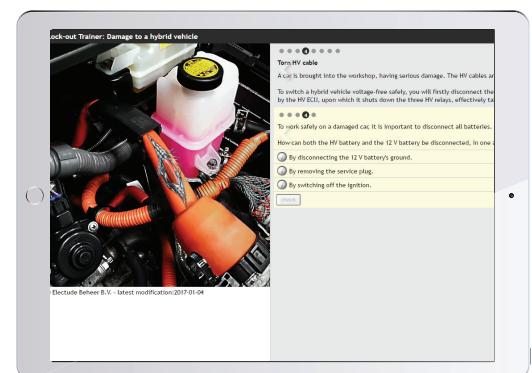
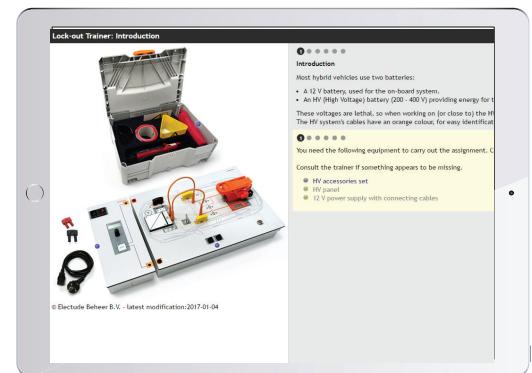
Practical assignments with Lock-out Trainer content (basic)

- Lock-out Trainer - Introduction
- Lock-out Trainer - Damage to a hybrid vehicle
- Lock-out Trainer - Instructor's manual

Duration

- Preliminary theory with Lock-out Trainer (basic) - 134 min
- Practical assignments with Lock-out Trainer (basic)- 192 min

*Separate license may apply for the Preliminary theory.



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MRE Trainer

Learn the operation and diagnosis of faults in the three most common wheel speed sensors.

14025080

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Achievement

This blended e-learning and mechanical trainer package introduces the learner to common speed sensor operation and diagnostics.

The self-paced online lessons combine photo-realistic visuals, including a virtual oscilloscope, text, and questions to guide learners in identifying and understanding resistors, signals, and modulation. Practical assignments are included for use of the MRE mechanical trainer.

The MRE mechanical trainer consists of a magnetic ring and three MRE sensors, as found in typical motor vehicles today. Learners will take measurements of generated signals and interpret deviations to practice making diagnosis of faults.

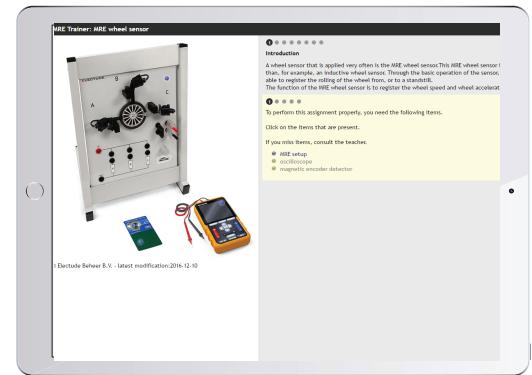


MRE TRAINER

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Through the preliminary theory and practical assignments the student learns:

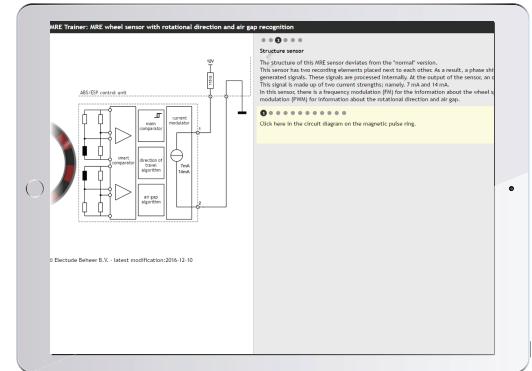
- To identify the structure of an MRE wheel sensor.
- To identify the structure of the wheel bearing.
- To explain the operation of the various MRE wheel sensors.
- To perform measurements on an MRE wheel sensor and analyze the results.
- To diagnose the MRE wheel sensor



E-LEARNING COURSE OVERVIEW

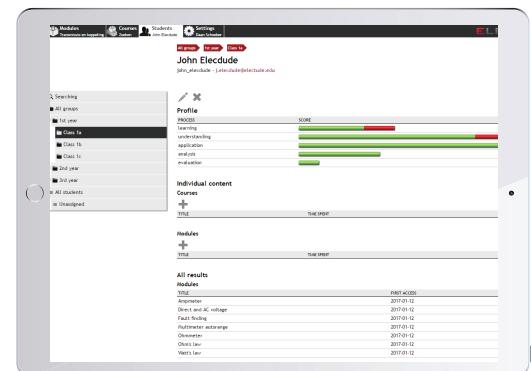
Preliminary theory with MRE Trainer (advanced)*

- Magnetic dependent resistor
- Signals
- Frequency Modulation
- Pulse Width Modulation
- ESP: Wheel Speed Sensors MRE



Practical assignments for MRE Trainer (advanced)

- MRE Trainer: MRE wheel sensor
- MRE Trainer: MRE wheel sensor with rotational direction and air gap recognition
- MRE Trainer: MRE wheel sensor with encoded signal
- MRE Trainer: Teacher's guide



Duration

- Preliminary theory with MRE Trainer (advanced) - 90 min
- Practical assignments for MRE Trainer (advanced) - 295 min

*Separate license may apply for the Preliminary theory.



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