



E-DRIVETOUR Newsletter / No 3 / October 2021

MESSAGE FROM THE PROJECT COORDINATOR

Dear reader,

Welcome to our third newsletter of the *bEyonD the boRder of electrIc VEhicles: an advanced inTeractive cOURse* (E-DRIVETOUR) project. The newsletter series provide you with latest information on project progress, achievements and important forthcoming activities related to education on electric mobility.

E-DRIVETOUR is a 36-month project, which started on January 1st, 2020 and is funded by the European Union, under the Erasmus+ Programme Knowledge Alliances (Project Number: 612522-EPP-1-2019-1-EL-EPPKA2-KA).

Its aim is to develop an advanced interactive course related to Sustainable Electric Mobility Engineering that will train individuals with the necessary skills and knowledge to work in the electric automotive industry, including Ultra Lightweight Vehicles (ULV) that comprise e-bikes and e-cargo bikes.

In this second year of the project, the development of the overall educational material was completed and the e-Learning platform was launched, while integration, deployment and benchmarking as well as dissemination activities are under way.

More information can be found on our website <https://www.edrivetour.eu/> which offers in-depth information about the project, E-DRIVETOUR partners consortium, results, as well as news and events relevant to the project.

Enjoy reading and please do not hesitate to send us your feedback.

Associate Professor Theodoros Kosmanis

Coordinator of the E-DRIVETOUR project

With the support of the
Erasmus+ Programme
of the European Union



The European Commission's support for the production of this newsletter does not constitute an endorsement of the contents, which reflect the views only of the authors, and the Commission cannot be held responsible for any use which may be made of the information contained therein.

TEACHING MATERIAL AND LABORATORY EXPERIMENTS DEVELOPMENT

SPECIFICATIONS OF E-DRIVETOUR COURSES

WP1 was devoted to the management and definition of the requirements for the project's core elements, i.e., courses' specifications. These requirements define not only the prerequisites, content, expected learning outcomes and student assessment of the courses, but also a series of educational experiments and/or simulations for selected ones. Of significant importance to the project are the two demonstrators that will be implemented for the students to enhance their understanding on electric vehicles and gain hands-on experience.

COURSE SYLLABUS DEVELOPMENT

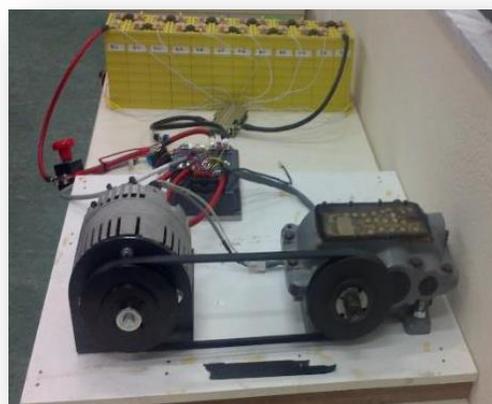
The tasks in WP2 dealt with managing all the aspects of course syllabus development. Based on the courses' specifications, the teaching program has been developed and all teaching material has been categorized into three groups, namely:

- **course notes**, entailing all documents prepared to cover the necessary background information and skills for teaching all major EV components and technologies to the students in the frame of theoretical lectures,
- **practical exercises and typical examination subjects**, including typical exercise material to evaluate the students' learning progress and provide valuable feedback on the course development as well as prepare them for the examinations that will follow, and
- **teaching material**, i.e., lecture presentations and any other means that will be used by the educators during teaching.

All educational material prepared is meant to cover not only the developers and teachers of the specific courses but any possible teacher having the required scientific background to teach the courses.

LABORATORY EXPERIMENTS DEVELOPMENT

WP3 was related with the design and development of the reconfigurable interactive laboratory apparatus. The course-accompanying laboratory experiments are necessary for the student's hands-on experience and understanding of important course topics. The laboratory apparatus in conjunction with its accompanying software have been developed focusing on it being reconfigurable and to provide an interactive student experience.



Motor coupling structure for Electric Motors and Drives laboratory course



Specifically, the laboratory material developed is categorized into:

- **experiment design**, related to the design and development of interactive reconfigurable laboratory apparatus to accompany the course lectures. Most of the developed experiments are linked to the e-Learning platform for distance experimentation
- **teaching software**, including typical software codes and simulation models, useful for students and educators during lectures, and
- **laboratory teaching material**, i.e., teaching material to provide essential support to laboratory deployment for students and educators. This material will contain the complete working instructions for educators to build and run all the experiments of curriculum and to troubleshoot the apparatus.

INTERMEDIUM PROJECTS 1 AND 2

Significant part of the educational procedure play the two medium sized projects, referred to as Intermedium Project 1 and 2 respectively in the curriculum. In the frame of these projects the students will have to build or work on an existing small scale electric vehicle, e.g. a scooter, bike, trike or kart using all the appropriate components. Each vehicle will be able to collect sensor information regarding currents, voltages, speed and distance travelled.

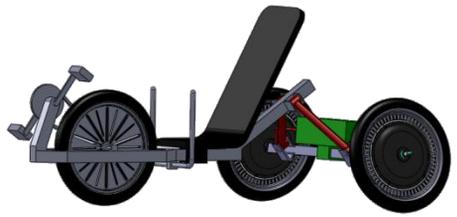


Delta type electric tricycle



Electric kart of IHU

The students will have to pass information of the vehicles to simple Augmented Reality codes taking into account the already existing 3D drawings. The codes will be able to be exploited by appropriate devices like the Microsoft HoloLens.



3D presentation of delta type electric tricycle





E-DRIVETOUR E-LEARNING PLATFORM



E-DRIVE TOUR

Login/Register

e-drive

Latest announcements

(No announcements have been posted yet.)

Available courses



Teacher: Theodoros Kosmanis
TS1.1 Introduction to Vehicle Electrification
 Teaching hours: 3 (Lectures: 3h, Lab: -)
 Working effort: 0.2 ECTS



Teacher: George Katranas Teacher: Panagiotis Maroulas
 Teacher: Dimitrios Tziourtzioumis
TS1.2 NI LabVIEW Training
 Teaching hours: 22 (Lectures: 6h, Lab: 16h)



Teacher: Theodoros Kosmanis Teacher: Dimitris Triantafyllidis
TS1.3 Automotive Energy Sources
 Teaching hours: 16 (Lectures: 12h, Lab: 4h)

E-DRIVETOUR has launched its advanced e-Learning platform providing access to educational material, classroom-to-classroom interconnected projects, remote experimentation on laboratory apparatus and the intermediate projects' demonstrators. The E-DRIVETOUR e-Learning platform is available at: <http://edrivotour.ea.consulting/>

E-DRIVETOUR STUDENT BROCHURE

E-DRIVETOUR has released its student brochure, providing general information about the program as well as detailed information about its structure, mobility periods, and requirements for the final certification of the Expert in "Electric Vehicle Technology".

The E-DRIVETOUR Student Brochure can be downloaded [here](#).

Consortium

INTERNATIONAL HELLENIC UNIVERSITY
 CERCA TROVA
 KAZIMIERZ PIŁASKI UNIVERSITY OF TECHNOLOGY AND HUMANITIES IN RAVENNA
 EEE eProInn
 HCAA Trigga

Contact

Project Coordinator: Theodoros Kosmanis (Associate Professor)
 Department of Industrial Engineering and Management
 International Hellenic University
 Alexander University Campus
 GR-57400, Sindos, Greece
info@edrivotour.eu
www.edrivotour.eu

Find us

Instagram YouTube LinkedIn Twitter

With the support of the Erasmus+ Programme of the European Union

The European Commission's support for the production of this brochure does not constitute an endorsement of the contents, which reflect the views only of the authors, and the Commission cannot be held responsible for any use which may be made of the information contained therein.

About

E-DRIVETOUR aims at the development of an interactive course on electric vehicles with a comprehensive interdisciplinary curriculum that includes recognizable laboratory apparatus, innovative demonstrator group assignment and an industrial experience to equip the participants with the necessary experience to enter the emerging market of Electric Mobility.

The course program will be implemented in the two hosting Universities, namely International Hellenic University (IHU) and Eastern Macedonia University of Technology and Humanities in Eastern (EMU) with the active participation of the University of Calabria (UC).

A total of 40 placements will be available from the participating universities, where the students will be taught the same course simultaneously in order to have the same knowledge and understanding when they participate in the three large scale laboratories.

Curriculum structure

The course duration is two months split in two terms, scheduled for March 2022 and May 2022. A third term devoted to practical experience is scheduled for the summer 2022 (June-August).

The main courses in the curriculum cover vehicle modelling, formulation, analysis and implementation of simulation tools, for advanced engineering problems, real life technical hands on problems and maintenance techniques designed for EVs, as well as market insight, business and innovation.

The students will participate in 248 teaching hours (a mix of classroom and laboratory time) and will be awarded the equivalent ECTS credits. The workload of 628 hours (248 teaching and 272 additional working hours) corresponds to 20 ECTS credits, while an additional 10 hour time of weekend is foreseen for the students to write a report after the demonstrator phase.

Certification

A blend of educational approaches are implemented in order to reach the final certification of the Expert in "Electric Vehicle Technology". Traditional in-class teaching will be combined with web and laboratory courses to develop a student's background that will be taken advantage of in order to deal with the two medium sized, practical, augmented reality oriented projects. Successful delivery of the projects' report together with a 14-day practical training in the project's industrial partner premises will ultimately lead to the certification.

Mobility

E-DRIVETOUR is designed to include three mobility periods for the participating students and three for the educators. For the first two (14-day) periods the students and educators from two universities will travel to the third one to participate in the large scale laboratories.

The final mobility period is reserved only for the participating students and its duration is also 14 days. During this period, the students will have a unique chance to apply all the knowledge that they learned during the course and also learn new on-the-job techniques.

Stability periods:
 - 1. March 2022
 - 2. May 2022
 - 3. June-August 2022

E-Learning platform

An advanced e-learning platform will offer teaching material, online experimentation and networking between the students.

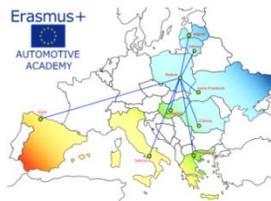
Available at: <http://edrivotour.ea.consulting/>





E-DRIVETOUR NEWS

Kazimierz Pulaski University of Technology and Humanities in Radom
Erasmus+ Automotive Academy



E-DRIVETOUR AT THE ERASMUS+ AUTOMOTIVE ACADEMY

The E-DRIVETOUR project was advertised within the Erasmus+ Automotive Academy. From March 15 to June 7, 2021, several hundred EU students participated in a series of lectures focused on selected aspects of the automotive industry. As part of this event, the E-DRIVETOUR project was also promoted.

<https://www.edrivetour.eu/post/edrivetour-at-the-erasmus-automotive-academy>

E-DRIVETOUR AT MSCA EUROPEAN GREEN DEAL CLUSTER EVENT

The E-DRIVETOUR coordinator presented the project objectives as well as its progress during the first 18 months under the topic Green Transport of the Marie Skłodowska-Curie Actions (MSCA) European Green Deal Cluster event, organized on 6-7 July 2021 by the European Commission and Research Executive Agency.

<https://www.edrivetour.eu/post/e-drivetour-at-msca-european-green-deal-cluster-event>



E-DRIVETOUR PARTNERS WELCOME ECQA IN THE CONSORTIUM

E-DRIVETOUR is pleased to announce that the European Certification and Qualification Association (ECQA) joined the consortium to evaluate the educational material and laboratory approaches and certify the overall curriculum in terms of market needs. ECQA is an expert organisation in certifying job roles and providing exams for other organisations as well as certification of prior knowledge.

<https://www.edrivetour.eu/partners>



E-DRIVETOUR PARTNERS WELCOME TRIGGO IN THE CONSORTIUM

E-DRIVETOUR is pleased to announce that Triggo also joined the consortium to contribute to the evaluation of educational material, laboratory apparatus and demonstrators, as well as to the practical training of students. Triggo developed revolutionary electric vehicle that combines the advantages of a car and a motorcycle in one enclosed body.

<https://www.edrivetour.eu/partners>





NEXT STEPS

The consortium will be working towards the recruitment of students that will participate in the teaching program. An international group of 40 students from IHU, UTHR and UoC will be formed after selection according to appropriately defined criteria. The third year of the project will be mostly devoted to the educational procedure which is expected to be launched on February 2022.

FIND US ON SOCIAL MEDIA



CONSORTIUM



International Hellenic University (Coordinator), Greece



University of Craiova, Romania



Cerca Trova Ltd, Bulgaria



Kazimierz Pulaski University of Technology and Humanities in Radom, Poland



Inteligg P.C., Greece



eZee Europe, Belgium



eProInn s.l.r. – Energy and Propulsion Innovation, Italy



European Certification and Qualification Association, Austria



Hellenic Institute of Transport / Centre for Research and Technology Hellas, Greece



Triggo, Poland

