

Project title: Implementation of innovative learning methods in using smart tachographs with the purpose of strengthening digitization and decarbonization processes

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KA210-VET - Small-scale partnerships in vocational education and training

Curriculum TACHO

Activity 2. Creation of an informal curriculum for vocational education and training of members of the target group

Participating organizations:

Pučko otvoreno učilište AMC Nova Gradiška

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1. Introduction about the program – curriculum:

The training program is intended for professional drivers with an emphasis on the use of new generation tachographs, and aims to indirectly increase the number of professionally trained professional drivers who will be able to use the services of digital and smart tachographs to fulfill their obligations to record and store data about their work activities.

In addition to the necessity of getting acquainted with new technologies, in this case, the new generation of measuring devices - tachographs, according to the current law of the Republic of Croatia (Act on working hours, mandatory breaks for mobile workers and recording devices in road transport), employers are obliged to ensure that mobile workers (drivers) are familiar with the provisions of this Act and other regulations, collective agreements, that is, their general acts, which were adopted on the basis of this Act and with the provisions on their implementation, which refer to work or the employment relationship, and thus also the provisions on recording devices in road traffic (tachographs).

2. Adult education and principles of andragogy

The word "andragogy" comes from the Greek words "andros" meaning "man" and "agogus" (guide). It would literally mean "the art and science of teaching adults", as opposed to pedagogy, which is aimed at children and young people. There are differences in learning and teaching children and adults and when teaching is aimed at adults, the teacher can rarely use classical learning and teaching methods and needs to develop new ones in order to succeed in the "art and science of teaching adults".

The term "andragogy" was first used by Alexander Kapp, a German educator, in 1833 and later being taken up by the philosopher Johan Friedrich Herbart. It was not used for almost a century, and reappeared in Europe after the First World War. Over the past thirty years, the use of the term has increased in France (Bertrand Schwartz), England, Switzerland, Yugoslavia and Canada. It became widespread in the United States in the late 1960s under the influence of Edward Lindeman and Malcolm Knowles, pioneers in adult education techniques.

Knowles identified six principles of adult learning listed below:

- Adults are internally motivated and self-directed
- Adults bring life experiences and knowledge into learning experiences
- Adults are goal oriented
- Adults are oriented towards relevance
- Adults are practical
- Adult participants need to be respected.

In order for adult students - participants to easily adopt the contents of this study program, the learning and teaching process in program should be especially focused on their practical knowledge and skills.

The curriculum here presented relies on interactive learning and teaching methods in the adult education system, and specially on the use of available ICT technologies.

However, it is necessary to bear in mind that trainers are dealing with adults, and that the group of participants will often include people of different ages and previous knowledge, especially knowledge and skills related to ICT. Therefore, this curriculum is structured in such a way as to present the possibility of live classes, with the use of ICT that can be adapted to each student, as well as classes through an online learning system, which will enable especially mobile workers (professional drivers) to learn from any corner of the world.

Therefore, when teaching adults, remember to:

- Determine training goals and pedagogical goals

Use information from professional practice: for example, ask the participants how they apply or will they apply the rules of ecological driving in their truck?

- Adults have knowledge and experience

As this program is intended for professional drivers, mobile workers and other workers from the transport sector, at the beginning of the training test the knowledge of the participants through oral questions or questions with multiple answers.

- Facilitate participant interaction

Look for the opinions of the participants, encourage the exchange of professional practices and invite the participants to talk about topics that are particularly familiar to them.

- Adults learn by relying on their own practical experiences

At the beginning of each module, identify the needs and expectations of the participants. Use examples, case studies and driving simulations linked to real driver experience.

- Training participants are very often a heterogeneous group

Determine the prior knowledge of the participants (age, work experience...). Education should not be limited to the mere transfer of information (be aware of the importance of group dynamics).

- Adult participants do not want to be considered children

Before and during training, identify certain limitations, in accordance with group dynamics. Involve drivers in the training process. Explain assessment techniques at the beginning of training as a simple assessment of learned knowledge.

Remember:

There is often a group of drivers and other mobile personnel whose life path is focused on work. The pedagogical methods you will use must not reflect painful school memories.

3. Duration and teaching methods

The program consists of 4 modules, which are a combination of guided learning in the form of theoretical classes, work-based learning (practical exercises and practical work of the participants) and independent learning of the participants.

The total duration of the program is planned for 56 hours, of which 17 hours of guided learning and teaching, 11 hours of work-based learning, and 28 hours of independent learning of the participants are planned.

4. Requirements for enrollment in the program

- Previous qualification at level 1 – qualification obtained at the end of basic education
- At least 18 years of age

5. Conditions for obtaining the program (completion of the program)

Final check of tachograph handling skills and application of eco-driving rules, based on pre-determined achievement evaluation criteria.

After successful completion of the final examination, each participant is issued with a Certificate of completed training.

6. Material conditions and learning environment that are necessary for the execution of the program

6.1. Material conditions:

- theoretical teaching - projector, teacher's computer with Internet access
- practical teaching - analogue, digital and smart tachograph simulator

7. Curriculum TACHO

This curriculum is composed of 4 modules:

- MODULE 1: Theoretical basics
- MODULE 2: Technical basics
- MODULE 3: Practical exercises
- MODULE 4: Eco-driving

7.1. MODULE 1: Theoretical basics

Objective: introduction to definitions and basic concepts from legal acts

Planned learning outcomes:

1. Explain the basic legal concepts and legal principles in the transport of goods, which concern the work of drivers and vehicles
2. Explain the responsibility of the participants in the transport activity
3. Use legal regulations on transportation and traffic safety
4. Explain regulations related to working hours and mandatory breaks for mobile workers in road traffic
5. Describe situations that can cause stress in road vehicle drivers
6. Choose appropriate ways of reacting in stressful and frustrating situations

7. Assess your own health and psychophysical condition and readiness to drive based on your current condition

8. Explain risky situations and dangers to which the driver is exposed while driving

Duration:

Theoretical basics	Hours			
	Guided learning	Work-based learning	Independent learning	TOTAL
Chapter 1	2	/	2	4
Chapter 2	2	/	2	4
Total				8

Literature and specific teaching aids required for the realization of the module:

Republic of Croatia:

Directive 2003/59/EC

Law on Road Transport (Zakon o prijevozu u cestovnom prometu)

Law on working hours, mandatory holidays for mobile workers and recording devices in road transport (Zakon o radnom vremenu, obveznim odmorima mobilnih radnika i uređajima za bilježenje u cestovnom prijevozu)

Law on road traffic safety (Zakon o sigurnosti prometa na cestama)

Rulebook on workshops for tachographs, Rulebook on data transfer to the central tachograph data base and the method of keeping records of the working hours of

mobile workers (Pravilnik o radionicama za tahografe, Pravilnik o prijenosu podataka u središnju bazu tahografskih podataka te načinu vođenja evidencije o radnom vremenu mobilnih radnika)

Republic of Slovenia:

Directive 2003/59/ES

Law on Road Transport (Zakon o prevozih v cestnem prometu (ZPCP))

Act on working hours and mandatory rest periods for mobile workers and on recording equipment in road transport (Zakon o delovnem času in obveznih počitkih mobilnih delavcev ter o zapisovalni opremi v cestnih prevozih (ZDCOPMD))

Law on Road Traffic Safety (Zakon o varnosti cestnega prometa (ZVCP-1))

Rulebook on the approval and orders of workshops for tachographs and speed limiters (Pravilnik o odobritvi in nalogah delavnic za tahografe in naprave za omejevanje hitrosti)

Rulebook on professional training for workshop technicians for tachographs and persons authorized to perform supervision (Pravilnik o strokovnem usposabljanju za tehnike delavnic za tahografe in osebe, ki so pooblašene za izvajanje nadzora)

Rulebook on copying data about working hours from recording devices and keeping records (Pravilnik o prepisovanju podatkov o delovnem času iz zapisovalnih naprav in vodenju evidence)

7.1.1. Chapter 1: Legislative framework of the European Union: road transport

Content:

- **Driver's license format and vehicle categories**
 - DIRECTIVE 2006/126/EC OF THE EUROPEAN PARLIAMENT AND COUNCIL of 20 December 2006 on driving licenses (amended)
- **Qualifications and periodic driver training**
 - DIRECTIVE (EU) 2018/645 OF THE EUROPEAN PARLIAMENT AND COUNCIL of April 18, 2018 amending Directive 2003/59/EC on the initial qualifications and periodic training of drivers of certain road vehicles for the transport of goods or passengers and Directive 2006/126/EC on driving permits
- **Working time, driving time and rest time**
 - REGULATION (EU) no. 165/2014 OF THE EUROPEAN PARLIAMENT AND COUNCIL of February 4, 2014 on tachographs in road traffic, repealing Council Regulation (EEC) no. 3821/85 on tachograph in road traffic and amendment of Regulation (EC) no. 561/2006 of the European Parliament and the Council on harmonization of certain social legislation related to road transport
- **The role and behavior of drivers in traffic (traffic psychology)**
 - Physical and mental fitness of the driver, impact of stress on driver's health, risk assessment and avoidance of dangerous situations, driver's behavior in dangerous and emergency situations, procedures during and after traffic accidents

7.1.2. Chapter 2: Legislative framework of Croatia and Slovenia: road transport

Content

EU directives

Regulation 3821/85/EC, Regulation 2135/98/EC, Regulation 561/2010/EC, Regulation 1266/2009/EC, Regulation 165/2014, Regulation 2016/403 Celex 32016R0403 HR, Directive 2009/5/EC, Directive 2003/59/ES

National legal regulations

RoC:

Law on Road Transport

Law on Working Hours

Mandatory Holidays of Mobile Workers and Recording Devices in Road Transport
NN 75/13, 36/15, 46/17

Law on Road Traffic Safety

Ordinance on Tachograph Workshops

Ordinance on the transfer of data to the central database of tachographic data and the method of keeping records of the working hours of mobile workers)

RoS:

Law on Road Transport (ZPCP)

Partial extension of use (see Article 125 ZPCP-1)

Law on Road Transport (ZPCP-2)

The provisions of point 31.a of the first paragraph of Article 3, 5, 19, 20, 25 and 26 of the second paragraph of Article 4, Article 48 and Article 52 cease to apply 18 months after the entry into force of the ZUJPP (see 40. member of ZUJPP).

Law on Amendments to the Law on Road Transport (ZPCP-2A)

Law on Amendments to the Law on Road Transport (Official Gazette of RS, no. 123/08)

Law on Amendments to the Law on Road Transport (ZPCP-2B)

Law on Amendments and Supplements to the Law on Road Transport (Official Gazette of RS, No. 28/10)

Law on Amendments to the Law on Road Transport (ZPCP-2C)

Law on Amendments and Supplements to the Law on Road Transport (Official Gazette of RS, no. 49/11)

Act on working hours and mandatory rest periods for mobile workers and on recording equipment in road transport (ZDCOPMD)

Law on working hours and mandatory breaks for mobile workers and on recording equipment in road transport (Official Gazette of the RS, no. 45/16 – official revised text, 62/16 – amended, 92/20 – ZPrCP-E and 153/22)

Law on Road Traffic Safety (ZVCP-1)

Law on Road Traffic Safety (Official Gazette of the RS, no. 56/08 – official revised text, 57/08 – ZLDUVCP, 58/09, 36/10, 106/10 – ZMV, 109/10 – ZCes-1, 109/10 – ZPrCP, 109/10 – ZVoz, 39/11 – ZJZ-E, 75/17 – ZMV-1 and 10/18 – ZCes-1C)

Law on Amendments and Supplements to the Law on Road Traffic Safety (ZVCP-1D)

Law on Amendments and Supplements to the Law on Road Traffic Safety (Official Gazette of RS, no. 105/06)

Law on Amendments to the Law on Road Traffic Safety (ZVCP-1E)

Law on Amendments and Supplements to the Law on Road Traffic Safety (Official Gazette of RS, no. 37/08)

Law on Amendments to the Law on Road Traffic Safety (ZVCP-1F)

Law on Amendments and Supplements to the Law on Road Traffic Safety (Official Gazette of RS, no. 58/09)

Law on Amendments to the Law on Road Traffic Safety (ZVCP-1A)

Law on Amendments and Supplements to the Law on Road Traffic Safety (Official Gazette of RS, no. 35/05)

Rulebook on the approval and orders of workshops for tachographs and speed limiters

Rulebook on the approval and orders of workshops for tachographs and speed limiters (Official Gazette of RS, no. 24/19, 184/20, 163/21 and 15/22)

Rulebook on professional training for workshop technicians for tachographs and persons authorized to perform supervision

Rulebook on professional training for workshop technicians for tachographs and persons authorized to carry out supervision (Uradni list RS, no. 11/19)

Rulebook on copying data about working hours from recording devices and keeping records

Rulebook on copying data about working hours from recording devices and keeping records (Official Gazette of the RS, no. 25/06)

Teaching methods: ex cathedra and interactive lecture

Evaluation methods: theoretical quizzes, oral examination

7.2. MODULE 2: Technical basics

Objective: introduction to the functioning of the tachograph device

Learning outcomes:

1. Demonstrate the preparation of the workplace
2. Explain the devices for recording data in road transport vehicles
3. Differentiate communication systems in transport vehicles
4. Explain data transmission systems in road transport vehicles

Duration				
Technical basics	Hours			
	Guided learning	Work-based learning	Independent learning	TOTAL
Chapter 1	1	/	/	1
Chapter 2	1	/	/	1
Chapter 3	4	/	4	8
Chapter 4	2	/	2	4
Total				14

Literature and specific teaching aids required for the implementation of the module:

Jelinić, J. (2020): CESTOVNA VOZILA, Školska knjiga, Zagreb

Čevra, A. (2003): Motori i motorna vozila 1, Školska knjiga, Zagreb

Golac, B. (2007): Organizacija i prijevoz tereta u cestovnom prometu, Škola za cestovni promet, Zagreb

Peulić, V. (2004): Profesionalne kompetencije vozača, Grafid d.o.o., Banja Luka

Peulić, V. (2011): Tahografi 2. AMMS Centar za motorna vozila d.o.o., Beograd

Digitalni tahograf (2017): Mala škola tahografa, Digitalni tahograf d.o.o, Zagreb

7.2.1. Chapter 1: Basic characteristics of an analog tachograph

Content:

Ways of using and functions of the analog tachograph

- type of data recorded, monitoring and analysis of obtained data, reporting and verification procedures

Teaching methods: ex cathedra and interactive lectures, practical examples and demonstrations of the use of analog tachographs

Evaluation methods: solving theoretical quizzes, working on technical problems, independent work of participants, group work

7.2.2. Chapter 2: Basic characteristics of a digital tachograph

Content:

Ways of using and functions of the digital tachograph

- type of data recorded, monitoring and analysis of obtained data, reporting and verification procedures

Teaching methods: ex cathedra and interactive lectures, practical examples and demonstrations of the use of digital tachographs

Evaluation methods: solving theoretical quizzes, working on technical problems, independent work of participants, group work

7.2.3. Chapter 3: Basic characteristics of the second generation tachograph (smart tachograph)

Content:

Ways of using and functions of the smart tachograph

- type of data recorded, monitoring and analysis of obtained data, reporting and verification procedures

Teaching methods: ex cathedra and interactive lectures, practical examples and demonstrations of the use of smart tachographs

Evaluation methods: solving theoretical quizzes, working on technical problems, independent work of participants, group work

7.2.4. Chapter 4: Warnings and prohibited activities in the actions of drivers and repairmen; procedures of control bodies in case of manipulation of the device and falsification of data; penal provisions

Contents:

Warnings and prohibited activities in the actions of drivers and service technicians

Procedures of control bodies in case of manipulation of the device and falsification of data

Penal provisions

Teaching methods: ex cathedra and interactive lectures, practical examples and demonstrations of the wrong use and misuse of tachographs

Evaluation methods: solving theoretical quizzes, working on technical problems, independent work of participants, group work

7.3. MODULE 3: Practical exercises

Objective: to be familiar with the practical application of different types of tachographs

Learning outcomes:

1. Show the preparation of the workplace and measuring device (tachograph)
2. Correctly perform the actions of starting the operation of the measuring device - the tachograph
3. Analyze data related to working hours and mandatory rest of mobile workers in road transport of goods and passengers
4. Properly implement the data transfer procedure in road vehicles, depending on the type of measuring device

Duration				
Technical basics	Technical basics			
	Guided learning	Work-based learning	Independent learning	Total
Chapter 1	1	1	2	4
Chapter 2	1	2	2	5
Chapter 3	1	4	4	9
Total				18

Literature and specific teaching aids required for the implementation of the module:

The literature corresponds to a particular theoretical module

Various tachograph models

7.3.1. Chapter 1: Practical exercises in using an analog tachograph

Content:

Repeat the practical skills acquired so far - known procedures and procedures related to the practical use and use of different models of analog tachograph.

Teaching methods: interactive lectures, practical examples and demonstrations of the use and misuse of tachographs

Evaluation methods: solving technical problem tasks, independent work of participants, work in groups

Forms of work-based learning:

- The Practical Exercises module implies the acquisition based on skills and is, to a lesser extent, knowledge related to handling different types of tachographs. Therefore, work-based learning is integrated into the education program with the application of real tasks in the business sector.
- The form of work-based learning in this program is learning at the workplace, which includes periods of learning at the employer's workplace. As it is the first

generation of tachographs that will eventually be completely replaced by newer generations of tachographs, this form of learning can be carried out in an educational institution on a tachograph simulator.

- The participant performs the preparation and start-up of the analog tachograph, as well as the extraction and storage procedures of the tachograph slip.
- The participant independently implements the procedures of using an analog tachograph with the use of digital technologies

By the end of the chapter, the participant acquired basic knowledge and skills in handling an analog tachograph.

7.3.2. Chapter 2: Practical exercises in using a digital tachograph

Content:

Inserting and removing tachograph cards

Recording of manual entries of the driver

Reading from data memory, recording and storing data in memory

Reading from tachograph cards and recording and storage on tachograph cards

Display, alert, print and download data to external devices

Error analysis

Teaching methods:

interactive lectures, practical examples and demonstrations of the use and misuse of tachographs, individual work of participants, work in small groups (a trainer or other responsible person supervises participants during exercises and provides assistance during individual work and work in groups)

Evaluation methods: solving technical problem tasks, independent work of participants, work in groups

Forms of work-based learning:

- The Practical Exercises module implies the acquisition based on skills and is, to a lesser extent, knowledge related to handling different types of tachographs. Therefore, work-based learning is integrated into the education program with the application of real tasks in the business sector.
- The form of work-based learning in this program is learning at the workplace, which includes periods of learning at the employer's workplace. As it is about the second generation of tachographs that will eventually be completely replaced by newer generations of tachographs, this form of learning can be carried out in an educational institution on a tachograph simulator.
- Through the project assignment, participants solve specific work tasks related to the preparation and start-up of a digital tachograph, as well as the printing and saving procedures of reports and error analysis.
- The participant independently implements the procedures for using a digital tachograph with the use of digital technologies.

7.3.3. Chapter 3: Practical exercises in using the second generation tachograph (smart tachograph)

Contents:

- Recording the position of the vehicle in certain places during daily working hours
- Remote early detection of possible manipulation or abuse
- Connection with intelligent means of transport
- Documentation in case of inspection supervision

Teaching methods:

interactive lectures, practical examples and demonstrations of the use and misuse of tachographs, individual work of participants, work in small groups (a trainer or other responsible person supervises participants during exercises and provides assistance during individual work and work in groups)

Evaluation methods: solving technical problem tasks, independent work of participants, work in groups

Forms of work-based learning:

- Work-based learning is integrated into the education program with the application of real tasks in the business sector.
- The form of work-based learning in this program is learning at the workplace, which includes periods of learning at the employer's workplace. As it is a new generation of tachographs, this form of learning can be carried out to a lesser extent in an educational institution on a tachograph simulator, and to a greater extent at the employer, at the driver's workplace.
- Through the work assignment, the participant prepares and starts the tachograph, as well as printing and storing reports and error analysis.
- The participant shows the procedures performed during the inspection, the documents he is required to provide during the inspection, and participates in compiling the inspection report using digital technologies, which proves that he has acquired the basic knowledge and skills of operating a second-generation tachograph.

7.4. MODULE 4: Eco-driving

Objective: to be familiar with the theoretical and practical elements of eco-driving

Learning outcomes:

1. List the legal regulations related to the reduction of harmful substances in the exhaust system
2. Differentiate between EURO standards and periodic vehicle inspections
3. Apply the principles of defensive driving while anticipating a dangerous traffic situation
4. Explain the impact of traffic on the environment and human health
5. Enumerate the units of measure and legal restrictions used to measure the impact of traffic on the environment
6. Apply regulations for waste disposal in the transportation and storage of goods

Duration:

Technical basics	Hours			
	Guided learning	Work-based learning	Independent learning	Total
Chapter 1	2	/	2	4
Chapter 2	/	4	8	12
Total				16

Literature and specific teaching aids required for the implementation of the module:

Jelinić, J. (2020): CESTOVNA VOZILA, Školska knjiga, Zagreb

Čevra, A. (2003): Motori i motorna vozila 1, Školska knjiga, Zagreb

Golac, B. (2007): Organizacija i prijevoz tereta u cestovnom prometu, Škola za cestovni promet, Zagreb

Peulić, V. (2004): Profesionalne kompetencije vozača, Grafid d.o.o., Banja Luka

Peulić, V. (2011): Tahografi 2. AMMS Centar za motorna vozila d.o.o., Beograd

Digitalni tahograf (2017): Mala škola tahografa, Digitalni tahograf d.o.o, Zagreb

DeCarbo Traffic – Webinar Transcript

Grupa autora (2013): Kako upravljati motornim vozilom primjenjujući pravila eko vožnje, Škola za cestovni promet, zagreb

7.4.1. Chapter 1: Theoretical framework

Contents:

Getting to know the concept of eco-driving

Eco-driving rules (models and ways of rational and optimal use of the means of transport)

Advantages of eco-driving (contribution to the technical characteristics and maintenance of the means of transport, contribution to the quality of driving and the feeling of comfort of the driver and passengers, contribution to the quality of the environment and its long-term sustainability, contribution to the reduction of financial expenses)

Examples of good eco-driving practice - case studies of electric and gas vehicles, examples of cleaning motor vehicles (European Union, Croatia, Slovenia)

Teaching methods: ex cathedra lectures, interactive lectures, practical examples and demonstrations of eco-driving

Evaluation methods: theoretical quizzes, oral examination

7.4.2. Chapter 2: Practical work

Contents:

Simulation of test drives in "free" style versus "eco" style driving - measurement and comparison of time spent and fuel consumption

Decarbonization: simulation of cleaning carbon deposits from critical engine parts and exhaust system elements

Teaching methods: ex cathedra lectures, interactive lectures, practical examples and display of eco-driving, demonstration

Evaluation methods: on the basis of the records noted out by the participants during the agreed period of time, determine the level of improvement in the eco driving techniques of the participants

Forms of work-based learning:

- Work-based learning is integrated into the education program with the application of real tasks in the business sector, but also at the level of changing the personal paradigm of traffic-related behavior. It is to be expected that the participants of the program will apply the principles of eco-driving to the private part of their lives as well, through driving private vehicles.

- The form of work-based learning in this program is learning at the workplace, which includes periods of learning at the employer's workplace and/or in a private car.

- Based on the rules of eco-driving, using available vehicles, in consultation with the trainer, the participant selects, proposes and presents measures for rational and optimal use of the means of transport and analyzes the impact of eco-driving on fuel consumption and other technical-technological characteristics of the vehicle.

8. METHODOLOGICAL INSTRUCTIONS

At the beginning of the program, explain the program to the participants, the working methods, and the potential assessment techniques that should contain a simple assessment of the knowledge learned.

It is especially important to help participants feel welcome and comfortable when joining the program, because any further relationship depends on the first approach. Participants will expect respect, trust and friendliness from the trainer. The participants will observe You (trainer) regardless of which model of education your participants will choose - classic or interactive, so Your behavior should be based on professionalism and friendliness.

It is desirable to get to know the participants, regardless of the education model, so that the participants can also get to know each other. In this step, You will also recognize the expectations and needs of Your participants, as well as knowledge gaps that you will address more during the program. For participants who will follow the program with interactive teaching through an independent learning system, take a special look at the duration of the program and suggest a plan for mastering the curriculum.

Example of activities that should be done at the beginning of the training:

- Prepare the room to facilitate learning and interaction among group members
- Introduce yourself
- Ask drivers to introduce themselves, explaining their work experience, education, work they do, etc.
- Record the expectations of the participants
- Present the administrative aspects of the program (attendance lists, etc.)
- Define the objectives of the program and the competencies that the participants should acquire as a result of the training activities
- Explain how the process will be structured and organized
- Present the basic rules of communication (mutual respect, listening to others, Internet etiquette, etc.)

8.1. MODULE 1: Theoretical basics

8.1.1. Chapter 1 - Legislative framework of the European Union: road transport

Recommended duration: 2 hours of guided learning, 2 hours of independent learning by participants		
CONTENT AND TOPICS:	Teaching ex cathedra	Interactive teaching
	Learning and teaching methods	
<p>Content:</p> <p>Driver's license format and vehicle categories</p> <p>Topics:</p> <p>DIRECTIVE 2006/126/EC OF THE EUROPEAN PARLIAMENT AND COUNCIL of 20 December 2006 on driving licenses (amended)</p>	<p>PowerPoint presentation</p> <p>Reminder: don't forget the introductory activity to get to know the participants and check knowledge through oral and multiple-choice questions.</p> <p>Ask the drivers to show their driver's license or driver's card, and explain where CODE-95 is located, and where it is stated until when their professional and classic category is valid</p>	<p>Presentation slides</p> <p>Note: Before starting, it is necessary to check the participant's ability to actively follow and participate in the program, and based on that, direct him to study or suggest classical forms of teaching (interactive quiz to check the participant's ability)</p>
<p>Content: Qualifications and periodic driver training</p>	<p>PowerPoint presentation</p>	<p>Presentation slides</p>

<p>Topics: DIRECTIVE (EU) 2018/645 OF THE EUROPEAN PARLIAMENT AND COUNCIL of April 18, 2018 amending Directive 2003/59/EC on the initial qualifications and periodic training of drivers of certain road vehicles for the transport of goods or passengers and Directive 2006/126/EC on driver's licenses</p>	<p>Quiz (how to become a professional driver) and discussion – evaluation of the quiz with a discussion with the participants</p> <p>Reminder for the lecturer: if you have drivers in the group who obtained their initial qualifications in another country, compare the process of obtaining the qualification</p>	<p>Quiz (how to become a professional driver)</p> <p>Quiz evaluation (correct answers)</p>
<p>Contents: Working time, driving time and rest time</p> <p>Topics: REGULATION (EU) no. 165/2014 OF THE EUROPEAN PARLIAMENT AND COUNCIL of February 4, 2014 on tachographs in road traffic, repealing Council Regulation (EEC) no. 3821/85 on tachograph in road traffic and amendment of Regulation (EC) no. 561/2006 of the European Parliament and the Council on harmonization of certain social legislation related to road transport</p>	<p>PowerPoint presentation</p> <p>Completing the employment contract according to the given example (Essential elements of the employment contract)</p> <p>Interactive quiz - combining signs and meanings on the tachograph (rest time, driving time, waiting time, etc.).</p> <p>Remember: Learners will invest heavily in learning if</p>	<p>Presentation slides</p> <p>Independent completion of the segments of the employment contract according to the given example (clarification of essential elements of the employment contract)</p> <p>Interactive quiz – combining signs and meanings on the tachograph (rest time, driving time, waiting time, etc.), with additional explanations of the correct solutions.</p>

	it provides them with real added value.	
<p>Content: The role and behavior of drivers in traffic (traffic psychology)</p> <p>Topics: Driver's physical and mental fitness, impact of stress on driver's health, risk assessment and avoidance of dangerous situations, driver's behavior in dangerous and emergency situations, procedures during and after traffic accidents</p>	<p>PowerPoint presentation</p> <p>Practical work: stretching exercises in accordance with the tasks that the participants perform</p> <p>Solve the case study: How to prevent illegal immigrants from entering your vehicle with the help of the learning system with the participants</p> <p>Complete the checklist with the drivers: the vehicle safety checklist</p> <p>Complete the checklist with the drivers: Steps to be taken in case the vehicle was targeted by illegal immigrants</p> <p>Make sure that the drivers are able to compile a traffic accident report independently without errors.</p>	<p>Presentation slides</p> <p>Practical work: physical exercises suitable for mobile and non-mobile workers - video work with stretching exercises</p> <p>Case Study: How to Prevent Illegal Immigrants from Entering Your Vehicle</p> <p>Checklist: vehicle safety checklist</p> <p>Checklist: Steps to be taken in case the vehicle was targeted by illegal immigrants</p> <p>Quiz - emergency numbers</p> <p>Independent task: based on the given example, compile a traffic accident report without errors. (possible situation: it is 07:00 in the morning of December 20, 2022.</p>

	<p>Reminder for the lecturer:</p> <ul style="list-style-type: none"> - Don't forget to encourage drivers to participate (ask them about their company's policy related to dangerous situations, encourage them to demonstrate stretching exercises according to their physical capabilities) - Through a case study, raise awareness of the risks of transporting immigrants in a vehicle (penalties, dangers) - Ask them to list the numbers of the emergency services they know from different countries 	<p>Antun is a truck driver employed by the company "LEDO" and drives a truck with a refrigerator. He needs to make a delivery from Požega to Nova Gradiška. While driving down the street, a car leaves the parking space and collides with Anta's truck.)</p>
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8.1.2. Chapter 2 - Legislative framework of Croatia and Slovenia: road transport

Recommended duration: 2 hours of guided learning, 2 hours of independent learning by participants		
CONTENT AND TOPICS:	Teaching ex cathedra	Interactive teaching
	Learning and teaching methods	
Content:	PowerPoint presentation	Presentation slides

<p>National legal regulations</p> <p>Topics:</p> <p>National legal regulations in the Republic of Croatia</p>	<ul style="list-style-type: none"> • Show national regulations related to drivers' obligations and highlight the specifics of Croatian legislation in relation to EU directives (night working hours, etc.) • Check knowledge with a quiz 	<p>Knowledge test quiz (max 3 questions)</p>
<p>Content:</p> <p>National legal regulations</p> <p>Topics:</p> <p>National legal regulations in the Republic of Slovenia</p>	<p>PowerPoint presentation</p> <ul style="list-style-type: none"> • Show national regulations related to the obligations of drivers and highlight the specifics of Slovenian legislation in relation to EU directives (night working hours, etc.) • Check knowledge with a quiz 	<p>Presentation slides</p> <p>Knowledge test quiz (max 3 questions)</p>

8.2. MODULE 2: Technical basics

8.2.1. Chapter 1: Basic characteristics of an analog tachograph

Recommended duration: 1 hour of guided learning

CONTENT AND TOPICS:	Teaching ex cathedra	Interactive teaching
	Learning and teaching methods	
<p>Content:</p> <p>Ways of using and functions of the analog tachograph</p> <p>Topics:</p> <p>Type of data recorded, monitoring and analysis of obtained data, reporting and verification procedures</p>	<p>PowerPoint presentation: Theoretical basis of work and technical circuits and elements of analog tachograph. Differences and common functional specifications of tachograph devices from different manufacturers.</p> <p>In the conversation with the participants, get them to describe the ways of controlling tachograph slips, reporting, monitoring and analyzing the available data obtained in the control process.</p> <p>Invite the participants to talk about topics that are particularly familiar to them, related to tests.</p> <p>Note: In accordance with the Act on working hours, mandatory breaks for mobile workers and recording devices in road traffic, the obligation to install digital tachographs in new vehicles that are registered for the first time</p>	<p>Presentation slides: Theoretical basics of work and technical circuits and elements of analog tachograph. Differences and common functional specifications of tachograph devices from different manufacturers.</p> <p>Practical task ("crossword puzzle") - parts of an analog tachograph and data on the tachograph slip</p> <p>Presentation slides: methods of control of tachograph slips, reporting, monitoring and analysis of available data obtained in the control process.</p>

	<p>in the Republic of Croatia from January 1, 2009 is prescribed, therefore this chapter is not it is necessary to give more space, it is necessary to determine the existing knowledge of the participants</p>	
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8.2.2. Chapter 2: Basic characteristics of a digital tachograph

Recommended duration: 1 hour of guided learning		
CONTENT AND TOPICS:	Teaching ex cathedra	Interactive teaching
	Learning and teaching methods	
<p>Content:</p> <p>Ways of using and functions of the digital tachograph</p> <p>Topics:</p> <p>Type of data recorded, monitoring and analysis of obtained data, reporting and verification procedures</p>	<p>PowerPoint presentation: Theoretical basics of work and technical circuits and elements of a digital tachograph. Procedures for downloading data from a digital tachograph.</p> <p>Describe the methods of control, reporting, monitoring and analysis of the available data obtained in the control process.</p>	<p>Presentation slides with work tasks for participants (basic parts of the tachograph, card insertion procedure and manual data entry and card removal)</p> <p>Quiz: types of digital tachograph cards</p> <p>Quiz: pictograms</p> <p>Reminder for lecturers: Do not forget to check the</p>

	<p>In a conversation with the participants, get them to explain the key differences between analog and digital tachographs</p> <p>Task for students' independent work: quiz pictograms</p> <p>Reminder for lecturers: Do not forget that adult participants come with a wide range of previous experiences, knowledge, expectations, interests, competences, motivations, work experience and educational levels.</p> <p>Note: From June 15, 2019, all new heavy goods vehicles with a maximum permissible mass of more than 3.5 tons, all new buses and all new towing vehicles with a maximum permissible mass in combination with a trailer vehicle of more than 3.5 tons, which are put into circulation for the first time (which are registered for the first time) on the European Union market,</p>	<p>knowledge of the participants based on the solved quiz. Repeat the pictogram together once more</p>
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	<p>must be equipped with a smart tachograph, therefore it is not necessary to give more space to this chapter, but it is necessary to determine the existing knowledge of the participants</p>	
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8.2.3. Chapter 3: Basic characteristics of the second generation tachograph (smart tachograph)

Recommended duration: 4 hours of guided study, 4 hours of independent study		
CONTENT AND TOPICS:	Teaching ex cathedra	Interactive teaching
	Learning and teaching methods	
<p>Content:</p> <p>Ways of using and functions of the smart tachograph</p> <p>Topics:</p> <p>Type of data recorded, monitoring and analysis of obtained data, reporting</p>	<p>PowerPoint presentation: Legal basis and requirements related to vehicles and tachograph; theoretical bases of work and elements of a smart tachograph. Procedures for downloading data from a smart tachograph.</p> <p>Describe the methods of control, reporting, monitoring and analysis of</p>	<p>Presentation slides with work assignments for participants (basic parts of the system, registration and data transfer procedure)</p> <p>Quiz: elements of a smart tachograph system</p> <p>Independent research: legal basis and deadlines</p>

<p>and verification procedures</p>	<p>the available data obtained in the control process.</p> <p>In a conversation with the participants, get them to explain the key differences between digital and smart tachographs</p> <p>Clarify the goal of introducing smart tachographs and the benefits for drivers and the company - participants will invest more in education if it represents a real added value for them</p> <p>SOTAH system</p> <p>As it is a relatively new system for recording working hours and other related data, participants should be encouraged to express their expectations and prejudices related to the introduction of smart tachographs</p> <p>Personal data of the driver and the importance of keeping the personal data of the driver</p>	<p>for installing smart tachographs</p> <p>Knowledge test quiz: prerequisites for vehicles and deadlines for replacing old-generation tachographs with smart tachographs</p> <p>Quiz; advantages of introducing a smart tachograph system</p> <p>Encourage the exchange of professional practices in such a way that the participants exchange with the lecturer and other participants their experiences, expectations and prejudices related to the use of a smart tachograph (group discussion, email discussion or other convenient way)</p> <p>Task: to offer participants relevant links to external sources where they can learn more about the smart tachograph and the SOTAH system, as well as the rights and obligations of employers and employees</p>
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	Reminder for lecturers: When communicating with each other, don't forget to manage group conflicts	
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8.2.4. Chapter 4: Warnings and prohibited activities in the actions of drivers and repairmen; procedures of control bodies in case of manipulation of the device and falsification of data; penal provisions.

Recommended duration: 2 hours of guided study, 2 hours of independent study		
CONTENT AND TOPICS:	Teaching ex cathedra	Interactive teaching
	Learning and teaching methods	
<p>Content:</p> <p>Warnings and prohibited activities in the actions of drivers and repairmen; procedures of control bodies in case of manipulation of the device and falsification of data; penal provisions</p> <p>Topics:</p> <p>Warnings and prohibited activities in the actions of drivers and repairmen</p>	<p>PowerPoint presentation: obligations of the employer, driver and transport staff</p> <p>Legal basis and requirements related to vehicles and tachograph</p> <p>Prohibited activities</p> <p>The inspection procedure, the driver's behavior during the inspection</p> <p>Completing the minutes</p>	<p>Presentation slides</p> <p>Presentation of the most common errors in the use of digital and smart tachographs</p> <p>Check list - what to prepare in case of an inspection with a digital tachograph</p> <p>Checklist - what to prepare in the event of a vehicle inspection with a smart tachograph system</p>

<p>Procedures of control bodies in case of manipulation of the device and falsification of data</p> <p>Penal provisions.</p>	<p>Penal provisions</p> <p>Reminder for lecturers: During the activity, make the participants aware of their personal responsibility</p>	<p>Completing the inspection report based on examples from the inspection</p> <p>Independent research: penal provisions</p>
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8.3. MODULE 3: Practical exercises

Practical exercises can be partially performed on a tachograph simulator, as well as previously prepared documentation, but participants should be encouraged to do independent activities in real working conditions, in accordance with the capabilities of the participants and the employer.

8.3.1. Chapter 1: Practical exercises in using an analog tachograph

Recommended duration: 1 hour of guided learning, 1 hour of work-based learning, 2 hours of independent activities		
CONTENT AND TOPICS:	Teaching ex cathedra	Interactive teaching
	Learning and teaching methods	
<p>Content:</p> <p>Ways of using and functions of the analog tachograph</p> <p>Topics:</p> <p>Type of data recorded, monitoring and analysis of obtained data, reporting and verification procedures</p>	<p>Use an analog tachograph simulator so that participants can repeat the theoretical basics of using this generation of tachographs</p> <p>Give the participants the task of reading the tachograph slip</p> <p>Task for students: Spot the mistakes on the printed sheet</p> <p>Note: The participants of this program are</p>	<p>Practical task 1 – reading the tachograph slip</p> <p>Practical task 1 – spot the mistakes on the example</p>

	<p>professional drivers or personnel of transport companies with experience, it is assumed that they are familiar with the use of an analogue tachograph, therefore this set of exercises is the shortest</p>	
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8.3.2. Chapter 2: Practical exercises in using a digital tachograph

<p>Recommended duration: 1 hour of guided learning, 2 hours of work-based learning, 2 hours of independent activities</p>		
CONTENT AND TOPICS:	Teaching ex cathedra	Interactive teaching
	Learning and teaching methods	
<p>Content:</p> <p>Ways of using and functions of the digital tachograph</p> <p>Topics:</p> <p>Inserting and removing tachograph cards</p> <p>Recording of manual entries of the driver</p>	<p>Use a digital tachograph simulator so that participants can repeat the theoretical basics of using this generation of tachographs</p> <p>Give participants the task of inserting the tachograph card and manual data entry</p> <p>Task for students: Spot the mistakes on the printed sheet</p>	<p>Practical task 1 – inserting the tachograph card and manual data entry</p> <p>Practical task 1 – spot the mistakes on the example</p>

<p>Reading from data memory, recording and storing data in memory</p> <p>Reading from tachograph cards and recording and storage on tachograph cards</p> <p>Display, alert, print and download data to external devices</p> <p>Error analysis</p>	<p>Note: The participants of this program are professional drivers or transport company personnel with experience, it is assumed that they are familiar with the use of a digital tachograph, therefore this set of exercises is shorter</p>	
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8.3.3. Chapter 3: Practical exercises in using the second generation tachograph (smart tachograph)

<p>Recommended duration: 1 hour of guided learning, 4 hours of work-based learning, 4 hours of independent activities</p>		
<p>CONTENT AND TOPICS:</p>	<p>Teaching ex cathedra</p>	<p>Interactive teaching</p>
	<p>Learning and teaching methods</p>	
<p>Content:</p> <p>Ways of using and functions of the smart tachograph</p> <p>Topics:</p> <p>Recording the position of the vehicle in certain</p>	<p>During guided learning, use the smart tachograph simulator so that participants can repeat the theoretical basics of using this generation of tachographs</p> <p>Student's independent task:</p>	<p>Practical task 1 – inserting the tachograph card and manual data entry</p> <p>Practical task:</p> <p>- inserting the tachograph card</p>

places during daily working hours	- inserting the tachograph card	- reading data from the tachograph – driver, employer, tachograph workshop
Remote early detection of possible manipulation or abuse	- reading data from the tachograph – driver, employer, tachograph workshop	- tachograph calibration
Connection with intelligent means of transport	- tachograph calibration	- work analysis and detection of possible abuse
Documentation in case of inspection supervision	- work analysis and detection of possible abuse	

8.4. MODULE 4: Eco-driving

8.4.1. Chapter 1: Theoretical framework

Recommended duration: 2 hours of guided learning, 2 hours of independent activities		
CONTENT AND TOPICS:	Teaching ex cathedra	Interactive teaching
	Learning and teaching methods	
<p>Content:</p> <p>Getting to know the concept of eco-driving</p> <p>Topics:</p> <p>Eco-driving rules (models and ways of rational and optimal use of the means of transport)</p> <p>Advantages of eco-driving (contribution to the technical characteristics and maintenance of the means of transport, contribution to the quality of driving and the feeling of comfort of the driver and passengers, contribution to the quality</p>	<p>The introductory activity is to get the participants to answer questions related to ecology and eco-driving. To examine the attitudes of the participants about eco-driving.</p> <p>State the rules and advantages of eco-driving as well as practical examples</p> <p>Independent task 1 for participants: find several examples of good practice related to eco-</p>	<p>Introductory quiz: questions related to ecology and eco-driving, participants' views on eco-driving</p> <p>Presentation: rules and advantages of eco-driving as well as practical examples</p> <p>Independent task 1 for participants: find several examples of good practice related to eco-driving in your environment</p> <p>Independent task 2 for participants: list the advantages of eco-driving</p>

<p>of the environment and its long-term sustainability, contribution to the reduction of financial expenses)</p> <p>Examples of good eco-driving practice - case studies of electric and gas vehicles, examples of cleaning motor vehicles (European Union, Croatia, Slovenia)</p>	<p>driving in your environment</p> <p>Independent task 2 for participants: list the advantages of eco-driving for the driver and the employer</p>	<p>for the driver and the employer</p>
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8.4.2. Chapter 1: Practical exercises

<p>Recommended duration: 4 hours of work-based learning, 8 hours of independent activities</p>		
CONTENT AND TOPICS:	Teaching ex cathedra	Interactive teaching
Learning and teaching methods		
<p>Content:</p> <p>Getting to know the concept of eco-driving</p> <p>Topics:</p> <p>Each participant demonstrates the knowledge acquired during the theoretical part in eco-driving simulations</p>	<p>Conduct a quiz - workshop with participants on the topic: How to apply ecological driving in your truck?</p> <p>Together with the drivers, determine the eco-driving rules that are applicable when driving a truck.</p> <p>Highlighted impact of the smart tachograph system on fuel consumption</p> <p>Task 1 for participants: Drive the vehicle using the correct gear ratio</p>	

<p>(simulations of test drives in "free" style versus driving in "eco" style - measurement and comparison of time spent and fuel consumption)</p> <p>Decarbonization: simulation of cleaning carbon deposits from critical engine parts and exhaust system elements</p>	<p>Task 2 for participants: Monitor fuel consumption over the course of a week, whether it has decreased and by how much</p> <p>Watch the video about decarbonization in the interactive system. Ask about the possibility of decarbonizing your own vehicle</p>
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9. RECOMMENDED METHODS OF MONITORING THE QUALITY AND SUCCESS OF PROGRAM IMPLEMENTATION

In the process of monitoring the quality and performance of the education program, the following activities are applied:

- research and anonymous surveying of participants is carried out on the delivery of classes, literature and learning resources, support strategies for participants, implementation and improvement of the learning and teaching process, workload of participants, knowledge checks, and communication with teachers
- research and survey of teachers on the same issues mentioned in the previous paragraph is carried out
- an analysis of the success, transparency and objectivity of checks and achievement of learning outcomes is carried out
- an analysis of the material and personnel conditions necessary to carry out the learning and teaching process is carried out

The results of the surveys provide an overview of the success of the program, as well as an assessment of the quality of the teacher's work.

Valuation procedures

Evaluation procedures are aimed at monitoring and checking achievements according to learning outcomes. It is conducted through oral knowledge tests and tests of the acquired skills of the participants in operating the tachograph and applying the principles of eco-driving, based on predetermined criteria for evaluating achievements.

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