

Elective Component (EC) Syllabus

Road safety

Name of discipline	Road safety
Level of higher education:	The first one (Bachelor Degree)
Course page in Moodle:	https://dl2022.khadi-kh.com/course/view.php?id=3972
Volume of educational component	4 credits (120 hours)
Final control form	Test
Consultations:	According to the schedule
The name of the department:	Department of road traffic management and safety
Teaching language:	English
Head of the course:	Olena Zaporozhtseva, Ph.D., Associate Professor
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Brief content of the educational component:

The purpose of the discipline «Road Safety» is the formation of practical skills necessary for the organization of work to ensure road safety executing professional activity in the motor transport industry, familiarization with the system «a driver – a vehicle – a road – a traffic environment» and with the basics of traffic management.

Subject: Laws and principles of functioning of components of the road traffic system and methods of ensuring efficiency and safety of traffic.

The main tasks of studying the educational discipline:

- introduction to traffic flow parameters and the impact of parameters on the environment;
- introduction to methods of management and regulation in transport;
- introduction to the legal and policy framework of road traffic organization and their using for making decisions on safety and traffic regulation;
- mastering the knowledge about the main types of conflict points, basic schemes for road traffic organization and measures to increase safety using road traffic organization;
- mastering the knowledge about the methods of road traffic accident analysis and using them for accident rate evaluation city road network;
- skills development in the organization of independent scientific research work and presentation of the results of scientific research related to the organization of road traffic safety in road transport.

Prerequisites for studying the educational component: OK 05 – Physics, OK 06 – Higher mathematics, OK 08 – Informatics, OK 20 – Automobiles, OK 30 – Introduction to the profession, OK 31 – Academic internship

Competencies acquired by the applicant:

General competence:

Skills of safe activity.

Knowledge and understanding of subject area and understanding of professional

activity.

Ability to abstract thinking, analysis and synthesis. Ability to use information and communication technologies.

Ability to adapt and act in a new situation.

Professional competences:

Ability to analyze and forecast parameters and indicators of motor transport systems and technologies functioning taking into account the influence of the external environment.

Ability to organize efficient operation of road transport facilities, their systems and elements.

The ability to analyze technical and operational indicators of motor vehicles, their systems and elements in order to identify and eliminate negative factors and increasing the efficiency of their usage.

The ability to actively participate in research and experiments, to analyze, interpret and make model of certain phenomena and processes in the field of road transport.

Professional competence (educational program):

Have conceptual scientific and practical knowledge which are necessary for solving specialized complex tasks of road transport, critically consider relevant theories, principles, methods and concepts.

Find necessary information in scientific and technical literature, databases and other sources; analyze and evaluate this information.

Make effective decisions, analyze and compare alternative options taking into account goals and limitations, quality assurance issues, as well as technical, economic, legislative and other aspects.

To give answers, to explain, to understand explanations, to discuss, to report state language at a level sufficient for professional activity.

To investigate transport processes, experiment, analyze and evaluate parameters of transport systems and technologies.

Develop, design, manage projects in the sphere of transport systems and technologies. Investigate the problems of the human factor related to transport, as well as the consequences of errors for security and management. Determine the patterns of behavior of people due to errors.

Thematic plan

Topic №	Topic Name lecture (L), practical work (PW), Self-work (SEW)	Quantity hours
1	2	3
1	L. General provisions. The main problems of traffic management. Requirements for the traffic management. Road traffic as a system.	4
	SEW. Historical aspects of the formation of the road safety problem.	8
	PW Forecasting the accident rate in Ukraine	4
2	L. Regulatory documents and activities of organizations in the field of traffic management. Regulations on the road transport safety management system.	4
	SEW. The state of car and accident in the world and in Ukraine. Quantitative analysis of accidents.	8
3	L. Road traffic accidents. Accident Records and Analysis.	4
	SEW. Objective and subjective factors of accident growth.	5
	SEW. Dynamics of changes in the number of road accidents in Ukraine and in the world.	8
	PW. Quantitative analysis of road accidents (crashes)	2
4	L. Driver and traffic safety.	4
	SEW. Calculation of the reaction time of a person. Methods of accident prevention. Requirements to drivers. Research of the driver's condition.	8
	PW. Calculation of driver reaction time	2
5	L. Vehicle safety and its types.	4
	SEW. Environmental safety of vehicles. Ways to reduce the negative consequences of the automobile on the environment.	8
	PW. Braking properties of a car in traffic.	2
6	L. Road Safety Assessment	4
	SEW. Calculation of the reaction time of a person. Methods of accident prevention. Requirements to drivers. Research of the driver's condition.	8
	PW. Calculation of the possibility of preventing an accident	2
7	L. Road conditions and safety. Influence of road elements on road safety.	4
	SEW. Elements of active safety of vehicles	7
	PW. Assessment of the road site hazard by the method of the final accident coefficient.	2
8	L. Intersection of streets and roads on one level	4
	SEW. The influence of traffic flow parameters on vehicles traffic safety. The influence of car parkings on the vehicle movement in cities.	7
	SEW. Conflict situations on the street-road network. Measures to reduce the consequences of accidents.	5
	PW. Assessment of the danger of an unregulated intersection.	2
Total	L.	32
	PW	16
	SEW	72

Evaluation system and requirements:

1 The current success of degree seeking student for the accomplishment of educational types of work during educational studies and for the accomplishment of tasks for individual work is evaluated using a four-point rating scale with the following recalculation in 100-point scale. During the evaluation of the current educational studies, all types of work provided by the educational program are taken into account.

1.1 Lecture classes are evaluated by determining the quality of accomplishment of the specified tasks.

1.2 Practical classes are evaluated by the quality of accomplishment of the examination or individual task, accomplishment and do the paperwork with practical work.

2 The current progress of degree seeking student is evaluated at each practical lesson (laboratory or seminar) using a four-point scale ("5", "4", "3", "2") and a journal of educational performance is filled in with it.

– «excellent»: degree seeking student mastered the theoretical material flawlessly, demonstrates deep knowledge of the relevant topic or educational discipline, the fundamental principles;

– «good»: degree seeking student has mastered the theoretical material well, knows the main aspects from primary sources and recommended literature, presents it in an argumentative manner; has practical skills, expresses his thoughts on given problems, but has some inaccuracies and errors in the logic of the presentation of theoretical content or in the analysis of practical ones;

– «satisfactory»: degree seeking student has basically mastered the theoretical knowledge of the educational topic or discipline, student is versed in primary sources and recommended literature, but answers unconvincingly, get confused in concepts, answers additional questions uncertainly, does not have stable knowledge; when answering questions of a practical nature, reveals inaccuracy in knowledge, does not know how to evaluate facts and phenomena, connect them with the future profession;

– "fail": degree seeking student has not mastered the educational material of the topic (discipline), does not know scientific facts, definitions, hardly is versed in primary sources and recommended literature, has no scientific thinking, practical skills are not formed.

3 The final grade for the current activity is calculated as the arithmetic average sum of points for each lesson, for individual work, current examinations according to the formula:

$$K^{current} = \frac{K1 + K2 + \dots + Kn}{n},$$

where $K^{current}$ – final assessment of student's successfulness based on the results of current control;

$K1, K2, \dots, Kn$ – evaluation of the student's successfulness n -th measure of the current control measure;

n – the number of measures of current control.

Assessments are converted into points according to the calculation scale (table1).

Table 1 – Recalculation of the average grade for the current activity into a multi-point scale

4-point scale	100-point scale	4-point scale	100-point scale	4-point scale	100-point scale	4-point scale	100-point scale
5	100	4,45	89	3,90	78	3,35	67
4,95	99	4,4	88	3,85	77	3,3	66
4,9	98	4,35	87	3,80	76	3,25	65
4,85	97	4,3	86	3,75	75	3,2	64
4,8	96	4,25	85	3,7	74	3,15	63
4,75	95	4,20	84	3,65	73	3,1	62
4,7	94	4,15	83	3,60	72	3,05	61
4,65	93	4,10	82	3,55	71	3	60
4,6	92	4,05	81	3,5	70	from 1,78 to 2,99	from 35 to 59
						retaking	
4,55	91	4,00	80	3,45	69	from 0 to 1,77	from 0 to 34
4,5	90	3,95	79	3,4	68	relearning	

Final assessment

1 Degree seeking student gets a discipline pass-fail exam on the last lesson based on the results of the current assessment. The average grade for the current activity is converted into points using a 100-point scale, according to the conversion table (table 1).

Degree seeking student who have a current grade point average in the discipline lower than "3" (60 points) can increase their current grade by taking tests in the discipline during the last session.

Assessment of the knowledge of degree seeking student carried out through testing according to the following scale:

- «Excellent»: at least 90% of correct answers;
- «Very good»: from 82% to 89% of correct answers;
- «Good»: from 74% to 81% of correct answers;
- «Satisfactory»: from 67% to 73% of correct answers;
- «Unsatisfactory»: from 60% to 66% of correct answers;
- «Fail»: less than 60% of correct answers.

2 The condition for obtaining pass-fail exam is:

- making up for all missed classes;
- the average current grade in the discipline is not lower than «3» (60 points).

3 For performing individual independent work and participation in scientific events, additional points are awarded to the degree seeking students.

3.1 Additional points are added to the sum of points scored by the degree seeking students for the current educational activity (for disciplines for which the final form of control is a pass-fail exam), or to the final grade in the discipline for which the final form of control is an exam.

3.2 The number of additional points awarded for different types of individual tasks depends on their scope and significance:

- winning places in the discipline at the international/All Ukrainian contest of scientific student works - 20 points;
- winning places in the discipline at the All Ukrainian Olympiads - 20 points;

- participation in the international/All Ukrainian competition of scientific student works - 15 points;
- participation in international/All Ukrainian scientific conferences of students and young scientists - 12 points;
- participation in All Ukrainian Olympiads from the discipline - 10 points;
- participation in Olympiads and scientific conferences of the KHNADU from the discipline - 5 points;
- accomplishment of individual scientific-research (educational and research) tasks of increased complexity - 5 points.

3.3 The number of additional points cannot exceed 20 points.

4 The learning result is evaluated (select required):

- using a two-point scale (passed/failed) according to table 2;
 - using a 100-point scale (for differentiated pass-fail exam) according to table 3.
- The final grade together with additional points cannot exceed 100 points.

Table 2 – Scale for transferring scores to the national assessment system

Using 100-point scale	Using national scale
from 60 points to 100 points	passed
less than 60 points	failed

Table 3 – Applicants' evaluation score scale according to the final control of the academic discipline

Evaluation score in points	Grade according to the national scale		Grade according to the ECTS	
			Grade	Criteria
	exam	test		
90-100	Excellent	passed	A	The theoretical content of the course has been mastered entirely without gaps, the necessary practical skills for working with the mastered material have been formed, all educational tasks provided by the plan of study have been completed, the quality of their accomplishment has been scored with a number of points close to the maximum
80-89	Very good	passed	B	The theoretical content of the course has been mastered entirely without gaps, the necessary practical skills for working with the mastered material have mainly been formed, all educational tasks provided by the plan of study have been completed, the quality of most of them has been scored with a number of points close to the maximum

75-79	Good	passed	C	The theoretical content of the course has been mastered entirety without gaps, some practical skills of working with the mastered material have not been formed enough, all educational tasks provided by the plan of study have been completed, the quality of none of them has been scored with a minimum number of points, some types of tasks have been completed with errors
67-74	Satisfactory		D	The theoretical content of the course is partially mastered, but the gaps are not of a significant nature, the necessary practical skills for working with the mastered material are basically formed, most of the educational tasks provided by the plan of study have been completed, some of the completed tasks may contain errors
60-66			E	The theoretical content of the course has been partially mastered, some practical work skills have not been formed, many educational tasks provided by the plan of study have not been completed, or the quality of some of them has been scored with a number of points close to the minimum.
35-59	Unsatisfactory	Fail	FX	The theoretical content of the course has been partially mastered, the necessary practical work skills have not been formed, most of the educational tasks provided by the plan of study have not been completed, or the quality of their accomplishment has been scored with a number of points close to the minimum; during additional individual work with the course material, it is possible to improve the quality of the accomplishment of educational tasks (with the possibility of retaking)
0-34	Failed		F	The theoretical content of the course has not been mastered, the necessary practical work skills have not been formed, all completed educational tasks contain gross errors, additional individual work with the course material will not lead to any significant improvement in the quality of the accomplishment of educational tasks (repeating of the course is required).

Course policy:

- the course involves working in a team, the environment in the classroom is friendly, creative, open to constructive criticism;
- for mastering the discipline attendance of lectures and practical classes is required, as well as individual work;
- individual work involves the study of selected topics of the educational discipline, which are chosen in the program for independent study, or were considered briefly;
- all tasks provided by the program must be completed till the deadline;
- if degree seeking student is absent from classes for a good reason, he can show his completed tasks during self instruction and consultation of the teacher;
- the course paper must be defended no later than a week before the beginning of the examination session (**indicated if available**);
- while studying the course degree seeking student must hold to the rules of academic integrity defined in the following documents: «Rules of academic integrity of participants in the educational process of the KHNADU» (https://www.khadi.kharkov.ua/fileadmin/P_Standart/pologeniya/stvnz_67_01_dobroch_1.pdf), «Academic integrity. Checking the text of academic, scientific and qualification papers for plagiarism» (https://www.khadi.kharkov.ua/fileadmin/P_Standart/pologeniya/stvnz_85_1_01.pdf), «Moral and ethical code of participants in the educational process of the KHNADU» (https://www.khadi.kharkov.ua/fileadmin/P_Standart/pologeniya/stvnz_67_01_MEK_1.pdf).
- in case of detection of plagiarism, the degree seeking student receives 0 points for the task and must make the tasks provided for in the syllabus again;
- write-offs during control works and check-offs are prohibited (including using mobile devices). Mobile devices are only allowed to be used during online testing.

Recommended literature:

1. Orhanizatsiia ta bezpeka dorozhnoho rukhu: Pidruchnyk / O. O. Bakulich, O. P. Dziuba, V. I. Yeresov ta in.: za. zah. red. V. P. Polishchuka. — K., Znannia Ukrainy, 2016. — 467 s.
2. Abramova L.S. Dovidkovyi slovnyk terminiv ta vyznachen z orhanizatsii ta bezpeky dorozhnoho rukhu: slovnyk/ L.S. Abramova, H.H. Ptytsia, V.V. Shyrin. Kh.: KhNADU, 2016. 220 s.
3. Upravlinnia dorozhnim rukhom na rehulovanykh perekhrestiakh u mistakh: monohrafiia / Ye. Yu. Fornalchyk, I. A. Mohyla, V. E. Trushevskiy, V. V. Hilevych: za. zah. red. Ye.Iu. Fornalchyka. - Lviv: Vydavnytstvo Lvivskoi politekhniki, 2018. - 236 s.
4. Highway Capacity Manual. Transportation Research Board, Washington, DC 2010. - 1134 p.
5. Turenko A.M. Avtotekhnichna ekspertyza. Doslidzhennia obstavyn DTP: pidruchnyk dlia vyshchykh navchalnykh zakladiv / A.M. Turenko, V.I. Klymenko, O.V. Saraiev, S.V. Danets.-Kh.: KhNADU, 2013. – 320 s.
6. O. V. Stepanov, N. O. Semchenko, O. O. Kholodova, T. V. Volobuieva, V. M. Syrota. Bezpeka dorozhnoho rukhu z urakhuvanniam vplyvu faktora liudyny: monohrafiia / za. zah. red. O. V. Stepanova. — Kharkiv: Vyd-vo «Estet Prynt». - 288 s.
7. Bezpeka dorozhnoho rukhu v Ukraini: navch. pos. / Pid red. V.P. Petkova. - K.: KNT, 2012. - 488 s.

Additional sources:

1. A distance course on the training site of the HNADU. Access mode: <https://dl2022.khadi-kh.com/course/view.php?id=2888>
2. Distance course on the discipline "Organization and traffic safety" on the training site of the HNADU. Access modes: <https://dl2022.khadi-kh.com/course/view.php?id=311>
<https://dl2022.khadi-kh.com/course/view.php?id=1436>
3. Traffic regulations in Ukraine 2021. Access mode: <https://vodiy.ua/pdr/>
4. Distance course: <https://dl2022.khadi-kh.com/course/view.php?id=3972>

Developer(s) of the
syllabus of the educational discipline



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