UNDERGRADUATE STUDY:

TRANSPORT, ITS AND LOGISTICS, AERONAUTICS

SEMESTER (V)

Syllabus

Academic year 2023/2024

Course: **Traffic Medicine**					
Head of course: Prof. **Eduard Missoni**, M.D., Ph.D.					
Co-lecturers:					
Semester: **V**	Course code: **36067**	Lectures: **30**	Seminars:	Auditory exercises: **15**	ECTS credits: **3**
Group for lectures: **30 - 40 students**			Group for seminars: **30 - 40 students**		

Objective of the course:

- The course is devised to provide knowledge and understanding of road traffic injury risks and human factors in traffic safety. It consists of the following topics: human factors, human performance, human error, prevention of road accidents and health promotion in the transport sector, protection of the most vulnerable groups (including the elderly, children, pedestrians, cyclists and motorcyclists), personal risk factors, risk of injuries, human behaviour during fire and other kind of emergencies on land, air and sea, effects of environmental factors and atmospheric particles on human health, the most frequent travellers' diseases, and telemedicine. Furthermore, this course focuses on human factor issues pertaining to traffic with the aim of articulating and establishing the way forward in view of automation in traffic, directed mainly to the larger community of traffic specialists and policy makers. Human factors within systems will also be discussed in detail while demonstrating how human performance and safety could be compromised due to inherent limitations in humans.

Learning outcomes:

After the completion of this course the students will be able to:

1. Understand and appreciate warehouse transport and human performance in storage systems, procedures, and equipment in use.
2. Define the basic terms of road traffic accidents and the most important human factors in traffic and transport safety.
3. Evaluate the effectiveness of certain methods of protection of the most vulnerable group of persons participating in traffic.

4. Explain the influence of alcohol, drugs and narcotics on human behaviour during driving.
5. Define the modalities of human behaviour occurring in the course of different kind of emergencies at sea, land, and sky.
6. Identify the impact of environmental factors and atmospheric particles on human health, especially on the respiratory tract and distinguish the methods of protection.
7. Determine the most frequently encountered diseases among travellers, as well as explain the ways of transmission (fecal-oral route, by contact or by aerosol) of infective microorganisms.
8. Evaluate the advantages of telemedicine in aviation medicine

LECTURES and EXERCISES

Week	Syllabus	Form of classes	Performed by	Lessons	Remark
1.	▪ Introduction of the course's content. ▪ Initial lecture about aviation medicine, case studies, basic terminology, and literature.	L	Eduard Missoni	2	
	▪ Introduction. ▪ Basics of anatomy of human beings.	AE	Eduard Missoni	1	
2.	▪ Traffic injuries. ▪ Introduction; determinants of injuries, determinants by road user type.	L	Eduard Missoni	2	
	▪ Basics of anatomy and physiology of human beings: respiratory system and the cardio-vascular system of the eye.	AE	Eduard Missoni	1	
3.	▪ Role of human sense organs in human safety: eyes, ears, balance.	L	Eduard Missoni	2	
	▪ Basics of anatomy and physiology of human beings: central nervous system and other organs essential in traffic.	AE	Eduard Missoni	1	
4.	▪ The problem of road traffic rashes and injuries. ▪ Workplace health promotion in the transport sector.	L	Eduard Missoni	2	
	▪ Basics of anatomy and physiology of human beings: other organs essential in traffic.	AE	Eduard Missoni	1	
5.	▪ Road accidents: causes, consequences and prevention.	L	Eduard Missoni	2	

	▪ Transport of passengers with medical conditions.	AE	Eduard Missoni	1	
6.	▪ Effects of atmospheric particles on human bronchial epithelial cells.	L	Eduard Missoni	2	
	▪ Man within the ergonomic system – Basics.	AE	Eduard Missoni	1	
7.	▪ Fatality risk factors for bicyclists. ▪ Effectiveness of helmets in bicycle collisions with motor vehicles.	L	Eduard Missoni	2	
	▪ SHELL model.	AE	Eduard Missoni	1	
8.	▪ Environmental factors in traffic.	L	Eduard Missoni	2	EXAM 1
	▪ High voltage electric power in traffic and its effects on humans. ▪ First aid after electric shock.	AE	Eduard Missoni	1	
9.	▪ Electromagnetic radiation and its effect on the human organism.	L	Eduard Missoni	2	
	▪ Principles and basics of human body examination.	AE	Eduard Missoni	1	
10.	▪ Medical interventions in traffic.	L	Eduard Missoni	2	
	▪ Alcohol, drugs, fatigue, and driving.	AE	Eduard Missoni	1	

11.	▪ Injuries in traffic: slight, serious and fatal. ▪ Mechanical, thermal and chemical injuries.	L	Eduard Missoni	2	
	▪ Procedures regarding an injured traffic participant. ▪ Reanimation.	AE	Eduard Missoni	1	
12.	▪ Drinking and driving. ▪ Telemedicine and telecare.	L	Eduard Missoni	2	
	▪ Performing first aid procedures. ▪ Submission of seminar papers.	AE	Eduard Missoni	1	
13.	▪ Travellers' health. ▪ Transmission of microorganisms.	L	Eduard Missoni	2	
	▪ Protocols with infected and potentially contaminated passengers. ▪ Visit to a hospital's emergency department.	AE	Eduard Missoni	1	
14.	▪ Professional chronic diseases. ▪ Forensic assessment of traffic accidents.	L	Eduard Missoni	2	
	▪ Gathering data and observations on specific body parts of an injured traffic participant.	AE	Eduard Missoni	1	
15.	▪ Bioterrorism.	L	Eduard Missoni	2	Lecturer's signature confirming attendance at classes
	▪ Organization of emergency medical care in traffic on land, air and sea.	AE	Eduard Missoni	1	EXAM 2

L = Lectures; **AE** = Auditory Exercises; **LE** = Laboratory Exercises; S = Seminars

STUDENT OBLIGATIONS AND EXAMS

Conditions for obtaining signatures:

During the course of the semester, the students will have an option of taking one test. This test consists of theoretical questions in which it is possible to achieve a maximum of 40 points. Students which achieve a total of 20 points or more, have an option of taking the second test. Students which achieve a total of 20 points or more on the second test are exempt from a written exam. Students that do not achieve a minimum of 20 points have to take a written exam.

The written and oral exam is provided for all students, regardless. To pass the written exam, it is necessary to answer 51% of questions correctly, and the scoring system is shown in Tables 1 and 2.

Students are required to attend lectures and exercises. Students that at the end of semester have a minimum of 80% of attendance get 20 points (10 points for lectures and 10 points for exercise attendance). Students which do not achieve those points have to repeat the course. In the case of justified absences (for more than 3 times during lectures and more than 3 times for exercises), students have to submit medical records or other official records (which are subject of verification). After successful verification process students will get 20 points.

LITERATURE

a) Obligatory literature:

1. Missoni E. Ljudski čimbenik u prometu, Udžbenik za studente Fakulteta prometnih znanosti, Zagreb, 2017.
2. Missoni E, Mlinarić-Missoni E. Prometna medicina, Udžbenik za studente Fakulteta prometnih znanosti, Zagreb, 2002. (drugo, promijenjeno i dopunjeno izdanje); udžbenik za dodiplomsku nastavu.
3. Barss P, Smith G, Baker S, Mohan D. Injury prevention: An international perspective, Oxford, 1998.
4. Robertson LR. Injury epidemiology: Research and control strategy. 2nd ed., Oxford, 2011.

b) Recommended literature:

1. Missoni E. Zrakoplovna medicina, Udžbenik za studente Fakulteta prometnih znanosti, Zagreb, 2003.; udžbenik za dodiplomsku nastavu.
2. Isolani L. et al. EU policy orientations on road accidents prevention and workplace health promotion in the transport sector. Ital Med Lav Ergon 2012;34(3 Suppl): 372-4.
3. Missoni, E.; Mlinaric, T. J.; Bozic, B. Children traffic fatalities in Croatia from 2005 until 2016 // 13th International Conference Modern Electrified Transport – MET 2017, 180 2018, Article Number 06001.
4. Dawood R. Travellers' health: How to stay healthy abroad. Oxford: University Press, 6th ed., 2010.
5. Missoni E, Kern J. Fatality risk factors for bicyclists in Croatia. Croat Med J 2003; 44: 610-13.

6. Nikolić N, Missoni E, Medved G. Medical problems in cycling tourism. Journal of Travel Medicine, 2005; 12: 53-4.
7. Missoni E, Kern J, Missoni I. Physical inactivity changes in Croatia: The CroHort study, Coll Antropol 2012: 36 (Suppl. 1): 257-9.
8. Missoni E, Božić B, Missoni I. Alcohol-related road traffic accidents before and after passing of the Road Traffic Safety Act in Croatia. Coll Antropol 2012; 36 (4): 1483-9.
9. Missoni E, Nikolić N, Missoni I. Civil aviation rules on crew flight time, flight duty, and rest: Comparison of 10 ICAO member states. Aviat Space Environ Med 2009; 80(2):135-8.
10. Missoni, E, Luburić G, Hasani, H. Preschool children traffic casualties and drivers' behaviour. *International Conference on Innovative Technologies, IN-TECH 2015*. Dubrovnik, 2015. 77-9.
11. Golubić J, Vogrin Z, Missoni E. Dynamic anthropometric characteristics of pedestrians in case of car collision. *Promet – Traffic & Transportation*. 28 (2016) , 5; 549-56.
12. Lulić Z, Missoni E, Tomić R. The relevance of GNG emissions from motor vehicles. *Transactions of FAMENA*. 37, 2013 , 2; 39-56.
13. Nikolić N, Pavletić M, Missoni E. Are we winning the war with the pirates? Int Marit Health, ISSN 1641.9251 2012; 63, 4:195-203.

METHODOLOGY OF THE IMPLEMENTATION OF THE COURSE PLAN

1. LECTURES

Lectures follow specific topics from compulsory literature and are performed using Power Point presentations (in English). The use of a textbook and recommended literature allows students to prepare the lecture topics in advance. Lectures are published on student's portal on the Faculty's web-page (e-student). The students are encouraged to read the topic of the forthcoming lecture in advance and to take part in the pro-active discussion.

2. EXERCISES

During the seminars the students will learn how to reanimate injured persons. Students will also analyse the example of organization a SHELL model, with the addition of acquiring skills that will enable them to properly manage incapacitated passengers.
Furthermore, learning outcomes will result in students' perception of aviation transport and human performance in systems, procedures, equipment in use applied methods.

Note: Individual and/or group viewing negative written test

3. DOCUMENTATION

The student's attendance record is kept during the semester. Their achievement are recorded by continues monitoring of the information system ISVU. All tests are kept in the lecturer's file for one year.

4. SCORING SYSTEM

Table 1 The scoring system for the monitoring of students and explained credit values in ECTS credits

no	Segment:	Required credits to be achieved:		Remark:	ECTS credits
		Min.	Max.		
1.	Presence in lectures:	10	10	Presence ≥ 70%	**1**
2.	Seminar paper	20	20		**1**
3.	Written exam (terms):	10	20		**1**
4.	The verbal part of the exam:	/	/	Theoretical part with lectures	**1**
Σ	Overall points:	**Σ 40**	**Σ 50**	Overall ETCS points:	**Σ 3**

Table 2 - Explanation of the credit values in evaluations

CREDITS:	Estimate based on attendance, seminar paper and two colloquies (or written exam) - [4 ECTS]:	The final score [5 ECTS]:
40 - 45	Sufficient (2)	Exemption from the written part of the exam, the final score after oral exam
46 - 50	Good (3)	
51 - 55	Very good (4)	
56 - 60	Excellent (5)	Exemption from verbal parts of exam

All 4 ECTS can be gained in total only if the student has received a positive opinion on the oral part of the exam, or according to Table 2 is exempt from free verbal parts of the exam.

Information for students (scoring system, implementation plan, learning outcomes, syllabus, literature, consulting teachers, announcement of results of examinations or colloquium, and all other information):

- **https://moodle.srce.hr/2022-2023/**
- **http://www.fpz.unizg.hr**

Student assistants: Additional individual work with the students through individual consultations for assignments from auditory exercises and / or research designs from laboratory exercises, for optional homework, as well as for insight into the negatively written part of the exam.