









# JOIN OUR ROAD SAFETY SUMMER SCHOOL



Faculty of Transport and Traffic Sciences, University of Zagreb has long been devoted to providing our students with a stimulating environment that encourages them to become active and independent researchers and to develop skills of independent thinking, communication and problem-solving. One of the aims of the Faculty is to also train professionals who possess skills for lifelong learning and a set of high personal and professional values.

Therefore, it is our great pleasure to invite future road safety experts to participate in Road Safety Summer School 2024!

During the course of eight days, world-renowned experts from the field will introduce participants to the state-of-the-art findings related to the main factors of road safety: the human factor, the road and its environment, and the vehicle factor.

Besides theoretical part, through practical work (crash test and field inspections) participants will learn the basics of accident analysis and road safety inspection. Of course, it is not all about learning: excursions and extracurricular activities are planned in order for you to enjoy the beautiful and sunny Croatia.

Join us, learn more to make an impact, meet new friends and colleagues, and make the most out of your summer!

### **ORGANIZER**





University of Zagreb, Faculty of Transport and Traffic Sciences, Centre of Excellence for Road Traffic Safety, Vukelićeva 4, 10 000 Zagreb, Croatia

### **PROGRAM TITLE**

ROAD SAFETY
SUMMER SCHOOL 2024

# ORGANIZATION COMMITTEE

- 1. Prof. Darko Babić, Ph.D.
- 2. Asst. Prof. Dario Babić, Ph.D.
- 3. Assoc. Prof. Željko Šarić, Ph.D.
- 4. Assoc. Prof. Marko Ševrović, Ph.D.
- 5. Assoc. Prof. Luka Novačko, Ph.D.
- 6. Mario Fiolić, Ph.D.
- 7. Lucija Franković, mag. ing. traff.

#### **RESPONSIBLE PERSONNEL**

**Assoc. Prof. Marko Šoštarić, Ph.D.**Dean of the Faculty of Transport

and Traffic Sciences





# SUMMARY OF THE SUMMER SCHOOL

In the course of nine days of theoretical and practical work within the Summer School, participants will be introduced to the state-of-the-art findings related to the main factors of road safety: the human factor, the road and its environment, and the vehicle. The practical part of the summer school will introduce participants to the basics of traffic accident analysis based on the actual data obtained from a crash test. This will be followed by a field road safety inspection.

The main goal of the Summer School is to provide a broad and expert training related to advanced concepts and elements of road safety and thus increase the knowledge and competence of participants.

The Summer School will last nine days, from 02/09 – 11/09/2024, during which the participants will attend theoretical lectures and do practical work according to the Summer School Program. The summer school offers more than 50 hours of lectures, practical exercises, and group work for students. Upon completion of all planned activities, students will receive ECTS credits.

Road Safety
Summer School
is designed for
master and Ph.D.
students in road
engineering and
other experts from
the field.

# CONCEPT AND TARGET GROUP

# 9 days

50 hours of lectures and practical work

**Targeted number**of participants:

**20-2**5

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#### APPLICATION REQUIREMENTS

Participants must be enrolled into Master or Ph.D. studies related to road engineering or road safety. Other eligible professionals must be employed in the road safety sector. A prerequisite for obtaining the Summer School Certificate and ECTS credits is attending all theoretical and practical lectures.

### RESPONSIBILITIES OF THE PARTICIPANTS

Attendance to all classes defined by the Summer School Program.

### **OUTCOMES**

Upon completion of the Summer School, participants will be able to:

- define key safety systems in vehicles
- · describe how a human being processes and perceives the information from the environment and how it influences their behaviour and decision making
- describe contemporary road design concepts aimed at increasing road safety
- elaborate on the main factors impacting the overall road safety
- · explain the impact of traffic signalling on driver behaviour and thus the overall road safety
- · identify different road safety measures and discuss their effectiveness in specific situations
- · describe how road accident analysis and road safety audits are conducted
- · describe the quality assessment of road infrastructure
- plan and organize road safety research

### LITERATURE

All necessary literature, materials and printouts of presentation will be provided to the participants.

### **EVALUATION OF THE SUMMER SCHOOL ACTIVITIES AND PROGRAM**

The participants will evaluate the entire Summer School via surveys. Entry surveys will provide an insight into the education and work experience of the participants, while exit surveys will assess the quality of Summer School lecturers and programs.

### CONFIRMATION OF SUCCESSFUL COMPLETION OF THE SUMMER SCHOOL

After completing the theoretical and practical lectures, participants will receive a certificate of successful completion.

### **COSTS AND APPLICATION DEADLINES**

The deadline to apply for a scholarship is 31/05/2024 (midnight). Candidates will be informed about the results by 30/06/2024.

The cost of enrolling and attending the Summer School is:

1. Early bird until 1 July 2024 2. Standard - from 1 July 2024

a) 600 EUR – for Master students a) 700 EUR – for Master students

b) 700 EUR – for Ph.D. students

b) 800 EUR – for Ph.D. students

c) 900 EUR - others

c) 1000 EUR - others

Costs include meals and drinks during the lecturing days, all necessary learning materials and printouts of presentations, as well as all other extracurricular activities defined in the Program. Weekend excursions on September 8th is not covered by the participation fee and should be paid by each participant who wants to partake in them.











# BECOME ROAD SAFETY SUMMER SCHOOL AMBASSADOR!

# YOUR APPLICATION MUST INCLUDE:

1. MOTIVATIONAL VIDEO

2. YOUR RESUME IN A PDF FORMAT

3. APPLICATION FORM

# FILL IN THE APPLICATION FORM ONLINE

www.roadsafety-summerschool.eu



# **DETAILED PROGRAM**

SCHEDULE

# **OPENING DAY - 2 September 2024**

GOAL: To introduce participants with the state of road safety policies and strategies; to give insight into role of education in road safety.

#### TIMETABLE:

09:00 - 10:00	Registration
10:00 - 10:10	Welcome speech of the Dean of the Faculty of Transport and Traffic Sciences (Assoc. Prof. Marko Šoštarić, Ph.D Faculty of Transport and Traffic Sciences, University of Zagreb, Croatia)
10:10 - 10:30	Presentation of Faculty of Transport and Traffic Sciences and University of Zagreb (Vice Dean for Science and External Cooperation - Asst. Prof. Dario Babić, Ph.D.)
10:30 - 10:50	Presentation of the summer school program (welcome note from the organizers)
10:50 - 11:00	Coffee break
11:00 - 12:00	Towards Zero Deaths in 2030: Building on the Foundations of the 1st UN Decade of Action for Road Safety - <b>Part 1</b> (Brendan Halleman, Senior Road Safety Advisor, European Investment Bank (EIB))
12:00 - 12:10	Short break
12:10 - 13:10	Towards Zero Deaths in 2030: Building on the Foundations of the 1st UNDecade of Action for Road Safety - <b>Part 2</b> (Brendan Halleman, Senior Road Safety Advisor, European Investment Bank (EIB))
13:10 - 13:40	Lunch break
13:40 - 14:40	Road safety strategies in EU (Antonio Avenoso, Executive Director European Transport Safety Council)
14:40 - 14:50	Short break
14:50 - 16:10	Role of education in road safety (Frank Mütze, Policy and Projects Manager European Transport Safety Council)
19:00	Welcome Dinner (costs included in the participation fee)



# DAY

**HOURS** 

# 4

#### SCHEDULE

# **VEHICLES DAY - 3 September 2024**

GOAL: To introduce participants to active safety and driver assistance systems for road vehicles; to familiarize participants with automated vehicle technologies; to provide a practical understanding of perception sensors for autonomous driving; to introduce participants to safety impacts of partially and fully automated and connected vehicles.

#### TIMETABLE:

09:00 - 10:15	Active safety and driver assistance systems for road vehicles (Vidas Žuraulis, Ph.D. – Faculty of Transport Engineering Vilnius Gediminas Technical University)
10:15 - 10:20	Short break
10:20 - 11:05	Automated vehicle technologies (Tomislav Mihalj, Ph.D Institute of Automotive Engineering, Graz University of Technology, Austria)
11:05 - 11:20	Coffee break
11:20 - 12:05	Perception sensors for autonomous driving with practical demonstration (Zoltan Ferenc Magosi, Ph.D Institute of Automotive Engineering, Graz University of Technology, Austria)
12:05 - 13:00	Lunch break
13:00 - 14:15	Reading the road ahead (Harald Mosböck – SWARCO AG - VP RMS Region Europe and President of European Union Road Federation – ERF)
19:00	Guided tour of the City of Zagreb (costs included in the participation fee)



HOURS

SCHEDULE

# **ROAD SAFETY INSPECTION - 4 September 2024**

GOAL: To introduce participants with key aspects of road safety, including perception and attention in driving, the influence of personality on risky behaviors, and distracted driving; to learn about the misuse of vehicle technologies and the importance of responsible usage.

#### TIMETABLE:

09:00 -10:00	The role of perception in safe driving ( <i>Prof. Kris Brijs, Ph.D Transportation Research Institute, Hasselt University, Belgium</i> )
10:00 - 10:10	Short break
10:10 - 11:10	The role of attention in safe driving ( <i>Prof. Kris Brijs, Ph.D Transportation Research Institute, Hasselt University, Belgium</i> )
11:10 - 11:25	Coffee break
11:25 - 12:25	The role of personality and other factors in risky driving (Prof. Kris Brijs, Ph.D Transportation Research Institute, Hasselt University, Belgium)
12:25 -13:00	Lunch break
13:00 - 14:00	Distracted driving (Dr. Oscar Oviedo-Trespalacios - Delft University of Technology, The Netherlands)
14:00 - 14:10	Short break
14:10 - 15:10	Misuse of vehicle technologies and behavioral adaptation (Dr. Oscar Oviedo-Trespalacios - Delft University of Technology, The Netherlands)
Free evening	



DAY

6 HOURS **SCHEDULE** 

# **ROAD AND ENVIRONMENT - 5 September 2024**

GOAL: To extend participants' knowledge of different concepts of safe road design; to introduce and elaborate the contemporary concept of self-explaining and forgiving roads; to familiar participants with the basics of roundabout design and their safety effects.

#### TIMETABLE:

09:00 - 10:00	Safe road design: Practical examples from Italian roads ( <i>Prof. Marco Bassani, Ph.D Laboratory of Road Safety and Driving Simulation, Politecnico di Torino</i> )
10:00 - 10:10	Short break
10:10 - 11:10	Effects of sight limitations to driver behaviour ( <i>Prof. Marco Bassani, Ph.D Laboratory of Road Safety and Driving Simulation, Politecnico di Torino</i> )
11:10 - 11:25	Coffee break
11:25 - 12:25	Concept of self-explaining and forgiving roads – <b>Part 1</b> (Assoc. Prof. Ali Pirdavani, Ph.D Faculty of Engineering Technology, University of Hasselt, Belgium)
12:25 - 13:00	Lunch break
13:00 - 14:00	Concept of self-explaining and forgiving roads – <b>Part 2</b> (Assoc. Prof. Ali Pirdavani, Ph.D Faculty of Engineering Technology, University of Hasselt, Belgium)
14:00 - 14:10	Short break
14:10 - 15:10	Roundabout designs and their safety effects – <b>Part 1</b> (Assoc. Prof. Luka Novačko, Ph.D. – Faculty of Transport and Traffic Sciences, University of Zagreb)
15:10 - 15:20	Short break
15:20 - 16:20	Roundabout designs and their safety effects – <b>Part 2</b> (Assoc. Prof. Luka Novačko, Ph.D. – Faculty of Transport and Traffic Sciences, University of Zagreb)

Free evening



SCHEDULE

# **ROAD SAFETY SYSTEMS - 6 September 2024**

GOAL: To extend participants' knowledge of road safety elements and work zone protection; to familiarize participants with different road restrain systems; to introduce participants to safe road design for motorcyclists; familiarize participants with road safety on level crossings.

#### TIMETABLE:

09:00 - 10:00	Road Restraint Systems – The use of Crash cushions on forgiving highways (Fernando Ribeiro - Lindsay, The Netherlands)
10:00 - 10:10	Short break
10:10 - 11:10	Work Zone Safety – Temporary road marking, positive protection and TMAs (Fernando Ribeiro - Lindsay, The Netherlands)
11:10 - 11:25	Coffee break
11:25 - 12:25	Road Connect – Asset monitoring (Fernando Ribeiro - Lindsay, The Netherlands)
12:25 - 13:00	Lunch break
13:00 - 14:00	Smart Roadside Guardrails for Improved Road Safety - Case Study for Motorcyclist Safety ( <i>Darko Žvan – Micro-Link Ltd., Croatia</i> )
14:00 - 14:10	Short break
14:10 - 15:10	Road design and motorcycle safety ( <i>Prof. Tomaž Tollazzi, Ph.D Faculty of Civil Engineering, Transportation Engineering</i> and Architecture, University of Maribor, Slovenia)
15:10 - 15:20	Short break
15:20 - 16:20	Level Crossing: To Cross or Not to Cross? ( <i>Prof. Danijela Barić, Ph.D. – Faculty of Transport and Traffic Sciences, University of Zagreb</i> )
Free evening	



**HOURS** 

**SCHEDULE** 

### **ROAD AND ENVIRONMENT - 7 September 2023**

GOAL: To familiarize participants with safety risks related to low visibility conditions; to extend participants' knowledge of safe road infrastructure; to evaluate the effect of different low-cost measures for traffic signalling on driver behaviour and overall road safety; to familiarize participants with the basic concepts behind traffic lights.

#### TIMETABLE:

09:00 - 10:00	Importance of road markings and their quality on road safety - <b>Part 1</b> ( <i>Prof. Darko Babić, Ph.D. – Faculty of Transport and Traffic Sciences, University of Zagreb</i> )
10:00 - 10:15	Coffee break
10:15 - 11:15	Importance of road markings and their quality on road safety - <b>Part 2</b> ( <i>Prof. Darko Babić, Ph.D. – Faculty of Transport and Traffic Sciences, University of Zagreb</i> )
11:15 - 11:25	Short break
11:25 - 12:25	Importance of road signs and their quality on road safety - <b>Part 3</b> (Andrija Novaković - 3M)
12:25 - 13:00	Lunch break
13:00 - 14:00	Importance of road markings and signs their quality on road safety - <b>Part 4</b> - Laboratory demonstration ( <i>Andrija Novaković - 3M</i> )
14:00 - 14:10	Short break
14:10 - 15:10	Presentation of measuring equipment for quality control of road markings and road signs ( <i>Prof. Darko Babić, Ph.D.; Asst. Prof. Dario Babić, Ph.D.; Mario Fiolić, Ph.D Faculty of Transport and Traffic Sciences, University of Zagreb, Croatia</i> )
15:10 - 15:20	Short break
15:20 - 16:20	Basic concepts behind traffic lights (Slaviša Babić, Croatian Roads Ltd.)
16:20 - 16:30	Short break
16:30 - 17:30	Smart traffic light and road safety (Slaviša Babić, Croatian Roads Ltd.)
Free evening	



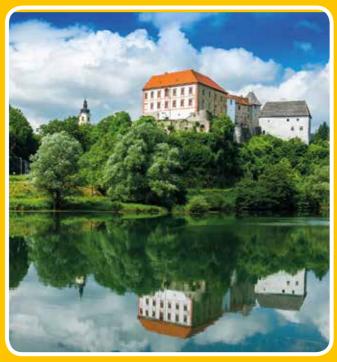
# **Sunday** 8 September 2024

#### Optional extracurricular activities:

- 1. Excursion to the Plitvice Lakes National Park
- 2. Excursion to Zagorje County, visit to Baroque castles, visit to Krapina Neanderthal Museum
- 3. Excursion to the City of Karlovac and Ozalj

\*Costs of the optional extracurricular activities are not included in the participation fee









#### SCHEDULE

# **CRASH ANALYSIS - 9 September 2024**

GOAL: To introduce participants to impact of vehicle technical inspections on road safety and introduce to the methodologies of road crash analysis and expert evaluation based on actual data obtained in a crash test.

#### TIMETABLE:

09:00 - 10:00	Traffic accidents analysis using data from event data recorder (Assoc. Prof. Željko Šarić, Ph.D Faculty of Transport and Traffic Sciences, University of Zagreb)
10:00 - 10:15	Coffee break
10:15 - 11:15	Impact of vehicle technical inspections on road traffic safety (Prof. Goran Zovak, Ph.D Center for Vehicles of Croatia / Faculty of Transport and Traffic Sciences, University of Zagreb)
11:30 - 12:15	Crash test
12:15 - 13:00	Lunch break
13:00 - 14:00	Traffic accident reconstruction with PC Crash - <b>Part 1</b> (Tomislav Kučinić, MSc. Traff. Eng Faculty of Transport and Traffic Sciences, University of Zagreb)
14:00 - 14:10	Short break
14:10 - 15:10	Traffic accident reconstruction with PC Crash - <b>Part 2</b> (Tomislav Kučinić, MSc. Traff. Eng Faculty of Transport and Traffic Sciences, University of Zagreb)
15:10 - 15:20	Short break
15:20 - 16:00	Traffic accident reconstruction with PC Crash - <b>Part 3</b> (Tomislav Kučinić, MSc. Traff. Eng Faculty of Transport and Traffic Sciences, University of Zagreb)

#### Free evening



HOURS

**SCHEDULE** 

# **ROAD SAFETY INSPECTION - 10 September 2024**

GOAL: To familiarize participants with the process of "black spots" identification based on a Croatian case study; to familiarize participants with the basic concepts and regulations related to road safety inspection in the EU and with the overall road safety inspection process; to introduce participants with basics of crash modification factors and importance of surrogate safety measures.

#### TIMETABLE:

Free evening

09:00 - 10:00	Black spots: Croatian case studies (Slaviša Babić, MSc. Eng Croatian Roads, Ltd.)
10:00 - 10:10	Short break
10:10 - 11:10	iRAP – experience with road safety assessment worldwide (Assoc. Prof. Marko Ševrović, Ph.D Faculty of Transport and Traffic Sciences, University of Zagreb, Croatia)
11:10 - 11:25	Coffee break
11:25 - 12:25	Road safety impact assessment (Assoc. Prof. Marko Šoštarić, Ph.D Faculty of Transport and Traffic Sciences, University of Zagreb, Croatia)
12:25 - 13:00	Lunch break
13:00 - 14:00	Crash modification factors ( <i>Prof. Carmelo D'Agostino, Ph.D Lund University, Sweden</i> )
14:00 - 14:10	Short break
14:10 - 15:10	Surrogate Safety Measures - <b>Part 1</b> (Andrew P. Tarko, Ph.D Purdue University, USA)
15:10 - 15:20	Short break
15:20 - 16:20	Surrogate Safety Measures - <b>Part 2</b> (Andrew P. Tarko, Ph.D Purdue University, USA)



**SCHEDULE** 

# ROAD SAFETY INSPECTION - FIELD WORK - 11 September 2024

GOAL: To use the knowledge acquired in theoretical lectures to conduct a road safety inspection on a real road; to identify potential safety issues and discuss potential solutions based on group work.

#### TIMETABLE:

09:00 - 13:00	Road Safety Inspection – field work - <b>Part 1</b> (Juraj Leonard Vertlberg, MSc. Traff. Eng.; Marko Švajda, MSc. Traff. Eng Faculty of Transport and Traffic Sciences, University of Zagreb, Croatia)
13:00 - 13:30	Lunch break
13:30 - 16:30	Road Safety Inspection – Group work on a case study - <b>Part 2</b> (Juraj Leonard Vertlberg, MSc. Traff. Eng.; Marko Švajda, MSc. Traff. Eng Faculty of Transport and Traffic Sciences, University of Zagreb, Croatia)
20:00	Gala dinner (costs included in the participation fee)

# **LECTURERS**

Road Safety Summer SCHOOL 2024

- Brendan Halleman Senior Road Safety Advisor, European Investment Bank (EIB)
   Expert in the field of road safety policy
- 2. Antonio Avenoso, Executive Director European Transport Safety Council (ETSC)

  Expert in the field of road safety policy
- 3. Frank Mütze, Policy and Project Manager European Transport Safety Council (ETSC)Expert in the field of road safety policy
- 4. Harald Mosböck SWARCO AG VP RMS Region Europe and President of European Union Road Federation ERF Expert in the field of road markings
- 5. Tomislav Mihalj, Ph.D. Institute of Automotive Engineering, Graz University of Technology, Austria
  - Expert in the field of automated vehicle technologies
- 6. Zoltan Ferenc Magosi, Ph.D. Institute of Automotive Engineering, Graz University of Technology, Austria

  Expert in the field of automated vehicle technologies
- 7. Prof. Kris Brijs, Ph.D. Transportation Research Institute, Hasselt University, Belgium
  - Expert in traffic psychology
- 8. Asst. Prof. Oscar Oviedo-Trespalacios, Ph.D.- Delft University of Technology, The Netherlands
  - Expert in driver behaviour safety
- Asst. prof. Dario Babić, Ph.D. Faculty of Transport and Traffic Sciences, University of Zagreb, Croatia
- Expert in the field of traffic signalling and road safety

  10. Prof. Darko Babić, Ph.D. Faculty of Transport and Traffic Sciences, University of Zagreb, Croatia
  - Expert in the field of traffic signalling and road safety
- 11. Andrija Novaković 3M
  - Expert in the field of traffic signalling
- **12. Slaviša Babić, MSc. Eng. Croatian Roads Ltd., Croatia** Expert in the field of road safety
- 13. Prof. Carmelo D'Agostino, Ph.D. Lund University, Sweden Expert in the field of road safety and crash modification factors
- **14. Prof. Andrew P. Tarko, Ph.D. Purdue University, USA** Expert in the field of road safety and surrogate safety measures
- 15. Assoc. Prof. Marko Ševrović, Ph.D. Faculty of Transport and Traffic Sciences, University of Zagreb, Croatia
  - Expert in the field of road safety and road safety inspection
- 16. Assoc. Prof. Marko Šoštarić, Ph.D. Faculty of Transport and Traffic Sciences, University of Zagreb, Croatia
  - Expert in the field of road safety and road safety inspection

- 17. Prof. Marco Bassani, Ph.D. Laboratory of Road Safety and Driving Simulation, Politecnico di Torino
  - Expert in the field of road geometrics and road safety
- 18. Assoc. Prof. Ali Pirdavani, Ph.D. Faculty of Engineering Technology, University of Hasselt, Belgium
  - Expert in the field of road design and safety
- 19. Assoc. Prof. Luka Novačko, Ph.D. Faculty of Transport and Traffic Sciences, University of Zagreb
  - Expert in the field of road design and road safety
- 20. Prof. Tomaž Tollazzi, Ph.D. Faculty of Civil Engineering, Transportation Engineering and Architecture, University of Maribor, Slovenia

  Expert in the field of road design and road safety
- **21.** Darko Žvan MICRO-LINK Ltd. Expert in the field of intelligent sensors
- **22. Fernando Ribeiro Lindsay** Expert in the field of safety elements related to road infrastructure
- 23. Assoc. Prof. Željko Šarić, Ph.D. Faculty of Transport and Traffic Sciences, University of Zagreb, Croatia
  - Expert in the field of road safety and accidents analysis
- 24. Prof. Goran Zovak, Ph.D. Center for Vehicles of Croatia / Faculty of Transport and Traffic Sciences, University of Zagreb, Croatia

  Expert in the field of road safety and accidents analysis
- 25. Prof. Danijela Barić, Ph.D. Faculty of Transport and Traffic Sciences, University of Zagreb, Croatia
  - Expert in the field of multi-criteria decision-making and accident prevention at level crossings
- 26. Assoc. Prof. Vidas Žuraulis, Ph.D. Faculty of Transport Engineering (Lithuania)

  Expert in the field of road vehicle dynamics and safety
- 27. Tomislav Kučinić, MSc. Traff. Eng. Faculty of Transport and Traffic Sciences, University of Zagreb, Croatia
  - Expert in the field of accidents analysis
- 28. Mario Fiolić, Ph.D. Faculty of Transport and Traffic Sciences, University of Zagreb, Croatia
  - Expert in the field of traffic signalling
- 29. Marijan Jakovljević, Ph.D. Faculty of Transport and Traffic Sciences, University of Zagreb, Croatia
  - Expert in the field of road safety and road safety inspection
- **30. Juraj Leonard Vertlberg, MSc. Traff. Eng.** Expert in the field of road safety and road safety inspection
- 31. Marko Švajda, MSc. Traff. Eng.
  - Expert in the field of road safety and road safety inspection

# **SPONSORS**





# **NOTES AND CONTACTS**



















# Road Safety Summer SCHOOL





















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