UNIVERSITY OF EAST SARAJEVO
FACULTY OF TRANSPORT AND TRAFFIC ENGINEERING
DOBOJ

I CYCLE OF STUDY
STUDY PROGRAMME
TRANSPORT AND TRAFFIC

Doboj, 2021

CURRICULUM

FIRST CYCLE OF STUDY
(BACHELOR OF SCIENCE WITH HONOURS)

- TRANSPORT AND TRAFFIC-

The Faculty of Transport and Traffic Engineering is an educational – scientific institution that provides all levels of higher education 4+1+3 (four years of the first cycle of study, one year of the second cycle of study and three years of the third cycle of study), pursues knowledge innovations and invests constantly in professional development in the field of transport and traffic engineering and its applications in informatics and motor vehicles.

In the academic year 2005/06 students were enrolled at two out of five Departments: Road and Urban Transport and Traffic and Rail Transport and Traffic. After completing studies at these departments, students are awarded titles of Bachelor of Science in respective fields. Since the academic year 2006/07 students enrolled at the other three Departments as well: Postal Transport and Traffic, Telecommunications and Logistics.

In 2014 the Ministry od Education and Culture of the Republic of Srpska, by the Decision numbered 07.050/612-10-1-2/14 of 2 July 2014, approved the implementation of the innovated programme of the first and second cycle of studies in the study program Transport and Traffic. Thereby eight teaching modules were approved, six of them being active at the Faculty:

- Road Transport and Traffic
- Rail Transport and Traffic
- Logistics
- Telecommunications and Postal Transport and Traffic
- Informatics in Transport and Traffic
- Motor Vehicles

The main characteristics of the innovated curriculum was its harmonization with the Bologna process. It had been conducted together with other high education institutions in the country and the region. In comparison to the previous, the content of the new syllabi was optimized together with the number of courses thus achieving not only rationalisation but also the flexibility of the syllabi.

First and second year of the study consist of common subjects, mandatory for all students regardless the study module. Students gain general knowledge they need for further education. Third and fourth year of study is when students choose specific module. Students gain knowledge from the field they have chosen. Certain number of courses are mandatory but there are also elective courses which students choose based on their wishes and interests.

After eight semesters, students who pass all the exams proscribed in the curriculum at the study programme Transport and Traffic and successfully defend the B.Sc. thesis are awarded the title of Bachelor of Science in Transport and Traffic.

Together with the Degree certificate a Diploma supplement is also issued (in English at request) containing skills, competencies and knowledge of the degree bearer.

Vice Dean

Miroslav Kostadinović, PhD

Common courses – first and second year of study

UNIVERSITY OF EAST SARAJEVO
Faculty of Transport and Traffic Engineering

Study program: Traffic
Profile: Common Courses

Number	Code	Course title	Course status	Conditionality	Semester	Hours per semester			ECTS
						L	TE	LE	
I year of study									
1.	САФ11С307100116,0320	MATHEMATICS I	O		I	3	2	0	6.00
2.	САФ11С307100914,0211	INFORMATICS	O		I	2	1	1	4.00
3.	САФ11С307100316,0321	ELECTRICAL ENGINEERING	O		I	3	2	1	6.00
4.	САФ11С307100415,0220	NARRATIVE GEOMETRY WITH TECHNICAL DRAIN	O		I	2	2	0	5.00
5.	САФ11С307100516,0321	PHYSICS	O		I	3	2	1	6.00
6.	САФ11С307100613,0120	ENGLISH LANGUAGE I	O		I	1	2	0	3.00
7.	САФ11С307100713,0120	GERMAN LANGUAGE I	O						
8.	САФ11С307100826,0320	MATHEMATICS II	O	1	II	3	2	0	6.00
9.	САФ11С307133125,0211	INTRODUCTION TO TRAFFIC AND TRANSPORT	O		II	2	1	1	5.00
10.	САФ11С307101026,0220	MECHANICS	O		II	2	2	0	6.00
11.	САФ11С307101124,0210	TRANSPORT GOODS OF GOODS	O		II	2	1	0	4.00
12.	САФ11С307133226,0211	COMPUTER AIDED DESIGN IN ENGINEERING	O		II	2	1	1	6.00
13.	САФ11С307101323,0110	ENGLISH LANGUAGE II	O	6	II	1	1	0	3.00
14.	САФ11С307101423,0110	GERMAN LANGUAGE II	O	7					
					TOTAL	**26**	**19**	**5**	**60**
II year of study									
15.	САФ11С307133334,0210	TRANSPORTATION TRAFFIC LAW	O		III	2	1	0	4.00
16.	САФ11С307101636,0320	TECHNICAL ELEMENTS	O		III	3	2	0	6.00
17.	САФ11С307133536,0220	MATHEMATICS III	O		III	2	2	0	6.00
18.	САФ11С307133435,0220	ECONOMICS	O		III	2	2	0	5.00
19.	САФ11С307130136,0220	ANALYSIS OF TRANSPORT NETWORKS	O		III	2	2	0	6.00
20.	САФ11С307102033,0120	ENGLISH LANGUAGE III	O	13	III	1	2	0	3.00
21.	САФ11С307102133,0120	GERMAN LANGUAGE III	O	14					
22.	САФ11С30711746,0320	MATHEMATICAL STATISTICS	O		IV	3	2	0	6.00
23.	САФ11С307133645,0311	BASICS PROGRAMMING	O		IV	3	1	1	5.00
24.	САФ11С307102445,0220	LOGISTICS IN TRAFFIC	O		IV	2	2	0	5.00
25.	САФ11С307102645,0220	TRANSPORT MEANS AND DEVICES	O		IV	2	2	0	5.00
26.	САФ11С307102744,0220	TRAFFIC PSYCHOLOGY	O		IV	2	2	0	4.00
27.	САФ11С307233845,0320	DATABASES IN TRAFFIC ENGINEERING	I_1		IV	3	2	0	5.00
	САФ11С307202245,0320	OPERATIONS RESEARCH							
	САФ11С307233745,0320	MARKETING SERVICES							
					TOTAL:	**27**	**22**	**1**	**60**

- L - lectures
- TE - theoretical exercises
- LE - laboratory exercises

	UNIVERSITY OF EAST SARAJEVO Faculty of Transport and Traffic Engineering ***Study program: Traffic*** ***Profile: Common Courses*** I cycle / I year of study	

Course title	**MATHEMATICS I**
Department	

Code	**Course status**	**Semester**	**ECTS credits**
САФ11С307100116,0320	Mandatory	I	6,00

Professor/s	PhD Vesna Mišić
Associate/s	PhD Vesna Mišić

Weekly hours			**Individual student hours (per semester)**			**Student workload coefficient S_o**
L	**TE**	**LE**	**L**	**TE**	**LE**	**S_o**
3	2	0	60	45	0	1.33

Total teacher workload (hours, per semester) W= 3*15 + 3*15 + 0*15 =90 hours	Total student workload (hours, per semester) T= 3*15*S_o + 3*15*S_o + 0*15*S_o = 120 hours

Total workload: W+T=U_{opt}= 90 + 120 = 210 hours per semester

Course aims and learning outcomes	1. Adoption of mathematical concepts 2. Mastering Mathematical Techniques 3. Limit value of arrays and functions 4. Testing functions
Prerequisites	There are no conditions for listening and laying objects.
Teaching methods	Teaching process is realized mainly through the frontal form of work - lectures and interactive forms of work - auditory exercises.
Course content	1. Basic concepts from the theory of sets and mathematical logic 2. Binomial formula 3. Complex numbers and operations 4. Trigonometric form of a complex number 5. Exponential form of a complex number 6. Degree and root of a complex number 7. The term matrix. Determinants and their properties 8. Colloquium 1 9. Methods for solving a system of linear equations. Inverse matrix and matrix operations 10. Limit value of arrays. Convergent arrays. 11. Concept of vector and operation over vectors. Linear dependence and vector coordinates 12. Scalar, vector and mixed product of the vector. Equation level. A level equation through three points 13. Equations are real. The various forms of the equation are true 14. Distance of the point from the right and the plane. The cross is two real. The breakthrough is made through the plane 15. II colloquium 16. 17

Textbook (s)

Author/s	**Name of publication, publisher**	**Year**	**Pages (from-to)**
1. V. Mišić, R. Mišić	Matematika 1 Matematika 1 za inženjere, Đurđica Takači, Stojan Radenović		

Additional readings

Author/s	**Name of publication, editor**	**Year**	**Pages (from-to)**

Evaluation criteria	**Assesment methods**	**Points**	**Percentage**
	Pre-exam obligations		
	Presence and activity in teaching	10	10%
	And the colloquium	30	30%
	II colloquium	30	30%
	Final exam		
	final exam (oral / written)	30	30%
		100	100 %
Web sources	IN TOTAL		
Applicable from	16.06.2021 - 175 Session of the Councile, Faculty of Transport and Traffic engineering		

	UNIVERSITY OF EAST SARAJEVO Faculty of Transport and Traffic Engineering ***Study program: Traffic*** ***Profile: Common Courses***	
	I cycle / I year of study	

Course title	**INFORMATICS**
Department	Department for Computer and Information Sciences and Bioinformatics, Faculty of Electrical Engineering East Sarajevo

Code	**Course status**	**Semester**	**ECTS credits**
САФ11С307100914,0211	Mandatory	I	4.00

Professor/s	Željko Stjepanović, PhD, associate professor
Associate/s	Goran Kuzmić, MSc, senior assistant

Weekly hours			**Individual student hours (per semester)**			**Student workload coefficient S_o**
L	**TE**	**LE**	**L**	**TE**	**LE**	**S_o**
2	1	1	37.5	18.75	18.75	1.25

Total teacher workload (hours, per semester) W = 2*15 + 1*15 + 1*15 = 30 + 15 + 15 = 60	Total student workload (hours, per semester) T = 2*25*1.25 + 1*25*1.25 + 1*25*1.25 = 75
Total workload: $W+T=U_{opt}$= 60 + 75 = 135 hours per semester	

Course aims and learning outcomes	1. Students will acquire basic knowledge related to information systems 2. Students will acquire basic knowledge related to databases 3. Students will acquire basic knowledge related to application and systemic software 4. Students will acquire basic knowledge related to business intelligence systems 5. Students will be acquainted with computer architecture and computer networks
Prerequisites	No formal prerequisites
Teaching methods	Lectures, laboratory exercises, computer classroom exercises and tutorials. Studying and seminar papers.
Course content	1. Computer architecture 2. Programming methodology and development of programming languages 3. Structure and types of information systems 4. Design of information systems 5. An integral approach to the organization of information systems 6. Protection and security of data and information 7. Basic concepts of data organization 8. Colloquium I 9. Problems and Challenges in data management 10. Database structure 11. Basic trends in further development of computer networks 12. Basic components of computer networks 13. Development and connection to the Internet 14. Internet services 15. Colloquium II

Textbook (s)

Author/s	**Name of publication, publisher**	**Year**	**Pages (from-to)**
Dr Krstan Bošnjak	Informatics, National University Library Banja Luka	2004	

Additional readings

Author/s	**Name of publication, editor**	**Year**	**Pages (from-to)**
Željko Stjepanović	Teaching materials, Traffic Engineering Doboj	2014	1 - 149

Evaluation criteria	**Assessment methods**	**Points**	**Percentage**
	Pre-exam obligations		
	Attendance to lectures / exercises	5	5%
	Seminar paper / project / essay positively assessed	15	15%

	Test / colloquium	40	40%
	Final exam	40	40%
	TOTAL	100	100%
Web sources			
Applicable from	16.06.2021 - 175 Session of the Councile, Faculty of Transport and Traffic engineering		

	UNIVERSITY OF EAST SARAJEVO Faculty of Transport and Traffic Engineering ***Study program: Traffic*** ***Profile:***	
	I cycle / I year of study	

Course title	**ELECTRICAL ENGINEERING**
Department	Department of General Electrotechnics - Faculty of Electrical Engineering

Code	**Course status**	**Semester**	**ECTS credits**
САФ11С307100316,0321	required	I	6,00

Professor/s	PhD Miroslav Kostadinović, associate professor
Associate/s	

Weekly hours			**Individual student hours (per semester)**			**Student workload coefficient S_o**
L	**TE**	**LE**	**L**	**TE**	**LE**	**S_o**
3	2	1	$X*15*S_o$	$Y*15*S_o$	$Z*15*S_o$	1.5

Total teacher workload (hours, per semester) W = 2*15 + 1*15 + 1*15 =60 hours	Total student workload (hours, per semester) $T = 2*15*S_o + 2*15*S_o + 1*15*S_o = 90$ hours
Total workload: $W+T=U_{opt}= 60 +90 = 150$ hours per semester	

Course aims and learning outcomes	1. Explains the basic concepts and laws of electrostatics, time constant currents, basic concepts and laws of electromagnetism and time-varying currents. 2. 2. Calculates the electric force, field, pote33ntial, and potential difference of the voltage, flux and energy of the electric field, determines the expression for the capacitance of the different conductor bodies. 3. 3. Apply Om's law, Kirchhoff laws, and theorem of electrical networks to solve electric networks with time constant currents, with and without capacitors. 4. 4. Calculates the magnetic force, induction, flux, magnetic field and magnetic energy. 5. 5. It distinguishes the general equations of electric networks with time-varying currents and simple-current currents. 6. 6. Apply a phase and complex account for solving the circuit of simple-time current.
Prerequisites	There is no listening and laying requirements
Teaching methods	Lectures, seminar papers, auditory exercises and laboratory exercises
Course content	1. Introduction, Kulonov law, the concept of electrostatic field, potential, voltage 2. Capacitance 3. Power of the electric current, Omov and Julius Law, Kirchhoff's laws 4. Contour current method 5. Potential of knots 6. Tevenen's theorem 7. The magnetic field and the size that characterize *it* 8. I colloquium 9. Electromagnetic induction 10. Concept and representation of alternating sizes, circuits of alternating current with basic elements 11. Regular RLC connections, impedance, concept of resonance 12. Parallel RLC connection, admittance 13. Solving complex collisions with a complex method 14. Recessed circuits, transformers 15. II colloquium

Textbook (s)			
Author/s	**Name of publication, publisher**	**Year**	**Pages (from-to)**

Поповић Б.	Основи електротехнике 1, Грађевинска књига Београд	1989.	
Поповић Б.	Основи електротехнике 2, Грађевинска књига Београд	1990.	
М. Костадиновић	Практикум за аудиторне вјежбе из електротехнике, Саобраћајни факултет Добој	2012.	
Additional readings			
Author/s	**Name of publication, editor**	**Year**	**Pages (from-to)**
Божиловић Х., СпасојевићЖ., Божиловић Г.	Збирка задатака из основа електротехнике, електростатика, сталне једносмерне струје, Академска мисао Београд	1998.	
БожиловићХ., СпасојевићЖ., БожиловићГ.	Збирка задатака из основа електротехнике, магнетизам, наизменичне струје, Академска мисао Београд	1998.	

	Assesment methods	**Points**	**Percentage**
Evaluation criteria	Pre-exam obligations		
	attendance at lectures	5	5
	1st colloquium	25	25
	2nd colloquium	25	25
	laboratory exercises	15	15
	Final exam		
	oral or written	30	30
	IN TOTAL	100	100 %
Web sources			
Applicable from	16.06.2021 - 175 Session of the Councile, Faculty of Transport and Traffic engineering		

	UNIVERSITY OF EAST SARAJEVO Faculty of Transport and Traffic Engineering ***Study program: Traffic*** ***Profile:***	
	I cycle / I year of study	

Course title	**NARRATIVE GEOMETRY WITH TECHNICAL DRAIN**
Department	Chair of Mechanical Structures and Engineering Product Design - Faculty of Mechanical Engineering

Code	**Course status**	**Semester**	**ECTS credits**
САФ11С307100415,0220	required	I	5,0

Professor/s	PhD Perica Gojković, full professor
Associate/s	

Weekly hours			**Individual student hours (per semester)**			**Student workload coefficient S_o**
L	**TE**	**LE**	**L**	**TE**	**LE**	**S_o**
2	2	Z	X*15*S_o	Y*15*S_o	Z*15*S_o	

Total teacher workload (hours, per semester) W= 3*15 + 2*15 + 0*15 =75 hours	Total student workload (hours, per semester) T= 3*15*S_o + 2*15*S_o + 0*15*S_o = 105 hours

Total workload: $W+T=U_{opt}$= 75 + 105 = 180 hours per semester

Course aims and learning outcomes	1. Acquisition of engineering knowledge for the most rational graphic presentation of combined forms. 2. mastering the basic procedures, concepts and methods of forming technical drawings 3. Activities that are necessarily followed by the design process. 4. Training of students for independent production of technical drawings both by manual and by using computers
Prerequisites	There is no listening and laying requirements
Teaching methods	Lectures, seminar papers and auditory exercises
Course content	1. Display of the basic geometric elements of the space in a slit projection and a pair of orthogonal projections 2. Mutual spatial relationships of points, real and straight 3. Drawing new projections based on two known transformations 4. Rotation 5. Displaying some geometric bodies and surfaces 6. The quoted projection 7. I colloquium 8. Standardization and tolerance 9. Technical drawing 10. Automated drawing of technical drawings 11. Mechanical materials and operating voltages 12. Basic machine elements 13. Bearings 14. Couplings and brakes 15. II colloquium

Textbook (s)

Author/s	**Name of publication, publisher**	**Year**	**Pages (from-to)**
1. Сорак, М., Гојковић, П.	Нацртна геометрија и основи машинства, Технолошки факултет, Бањалука	2003	
2. Алексић, В., Коси, Ф., Нинчић, М.	Нацртна геометрија, Савремена администрација	1997	

Additional readings

Author/s	**Name of publication, editor**	**Year**	**Pages (from-to)**
3. Станковић, П.	Збирка решених задатака из нацртне геометрије, 1. део, Саобраћајни факултет	2002	

	Assesment methods	Points	Percentage
Evaluation criteria	Pre-exam obligations		
	presence in lectures / exercises	10	10 %
	graphic tasks	10	10 %
	And a colloquium	25	25 %
	II colloquium	25	25 %
	Final exam		
	final exam (oral)	30	30%
	IN TOTAL	100	100 %
Web sources			
Applicable from	16.06.2021 - 175 Session of the Councile, Faculty of Transport and Traffic engineering		

	UNIVERSITY OF EAST SARAJEVO Faculty of Transport and Traffic Engineering ***Study program: Traffic*** ***Profile: Common Courses*** I cycle / I year of study	

Course title	**PHYSICS**
Department	Department of Physics - Faculty of Philosophy Pale

Code	**Course status**	**Semester**	**ECTS credits**
САФ11С307100516,0321	required	I	6,00

Professor/s	Ph.D. Zoran Ćurguz, associate professor
Associate/s	Ph.D. Zoran Ćurguz, associate professor

Weekly hours			**Individual student hours (per semester)**			**Student workload coefficient S_o**
L	**TE**	**LE**	**L**	**TE**	**LE**	**S_o**
3	2	1	45	22,5	22,5	1,5

Total teacher workload (hours, per semester) 3*15 + 2*15 + 1*15 = 90 hours	Total student workload (hours, per semester) 3*15*So + 2*15*So + 1*15*So = 135 hours

Total workload: W+T=Uopt= 90 +135 = 225 hours per semester

Course aims and learning outcomes	1.Introduction to students with the basics of certain physics fields that are needed for students of traffic. 2.Introduce students to classical mechanics 3.Introduction to specific fields of thermodynamics and optics
Prerequisites	There are no conditions for listening and laying objects
Teaching methods	Lectures, auditory exercises, seminar papers, laboratory exercises
Course content	1.Introduction. Introduction to Newtonian mechanics. Kinematics. Translated movement of the material point. 2.Kinematics. Rotary motion of the material point 3.Dynamics of the material point 4.Work, power and energy 5.Dynamics of rotational motion of solid bodies 6.Oscillatory motion 7.Colloquium I 8.Mechanical waves 9.Elements of thermodynamics. Ideal gas 10.Work and heat. Laws of thermodynamics 11.Fundamentals of molecular-kinetic theory of gases 12.Optics 13.Electromagnetic radiation 14.Structure of atom and atomic nucleus 15.Colloquium II

Textbook (s)

Author/s	**Name of publication, publisher**	**Year**	**Pages (from-to)**
V.Vucic, D Ivanovic **J. Setrajcic, D. Mirjanic** **F. Adrovic, Z. Curguz**	**Physics I, II, III Scientific book Belgrade** **Biophysical basics of technique** **Physics I Traffic Faculty Doboj**	**1998** **2012** **2017**	

Additional readings

Author/s	**Name of publication, editor**	**Year**	**Pages (from-to)**
G. Dimic, M.Mitrinovic	Collection of phyics, Advanced Course D	1991	

Evaluation criteria	**Assesment methods**	**Points**	**Percentage**
	Pre-exam obligations		
	presence in lectures / exercises	5	5%
	Colloquium I	20	20%

	Colloquium I	20	20%
	Test and seminar work, laboratory exercises	15	15%
	Final exam	20	20%
Web sources			
Applicable from	16.06.2021 - 175 Session of the Councile, Faculty of Transport and Traffic engineering		

	UNIVERSITY OF EAST SARAJEVO Faculty of Transport and Traffic Engineering ***Study program: Traffic*** ***Profile: Common Courses*** I cycle | I year of study	

Course title	**English language I**
Department	

Code	**Course status**	**Semester**	**ECTS credits**
САФ11С307100613,0120	Mandatory	I	3.00

Professor/s	Tanja Petrović
Associate/s	

Weekly hours			**Individual student hours (per semester)**			**Student workload coefficient S_o**
L	**TE**	**LE**	**L**	**TE**	**LE**	**S_o**
1	2	0	21	42	0	1.4

Total teacher workload (hours, per semester) 45 hours	Total student workload (hours, per semester) 63 hours
Total workload: 108 hours per semester	

Course aims and learning outcomes	The aim of the language course is to enable students to improve both their ability to communicate and their linguistic competence in English language. A balance of receptive (reading, listening) and productive (speaking, writing) skills are developed through communicative classes and self-study. After completing the course students should be able to successfully read and understand English texts, understand and use grammatical concepts and give presentations in English.
Prerequisites	None
Teaching methods	Communicative, inductive, structural, TPR method

Course content		
	1	*Past and present verb forms*
	2	*Uses of auxiliary verbs*
	3	*Forming adjectives*
	4	*Forming nouns and gerunds*
	5	*Narrative tenses*
	6	*Continuous aspects in other tenses*
	7	*Midterm test*
	8	*Use and non-use of the passive*
	9	*Passive forms with have or get*
	10	*Review of future forms*
	11	*More complex questions forms*
	12	*Perfect tenses*
	13	*Present perfect simple and continuous*
	14	*Revision*
	15	*End of the term test*

Textbook (s)

Author/s	**Name of publication, publisher**	**Year**	**Pages (from-to)**
Sarah Cunningam, Peter Moor, Johnatan Bygrave	*Cutting Edge, third edition, upper intermediate, Pearson, Harlow Essex, England*	2015	1-66

Additional readings

Author/s	**Name of publication, editor**	**Year**	**Pages (from-to)**
Raymond Murphy	*English Grammar in Use*, CUP	2009	1-313

Evaluation criteria	**Assessment methods**	**Points**	**Percentage**
	Attendance	10	10%

	Midterm test	20	20%
	End of the term test	20	20%
	Final test	50	50%
Web sources			
Applicable from	16.06.2021 - 175 Session of the Councile, Faculty of Transport and Traffic engineering		

	UNIVERSITY OF EAST SARAJEVO Faculty of Transport and Traffic Engineering ***Study program: Traffic*** ***Profile: Common Courses***	
	I cycle / I year of study	

Course title	**GERMAN LANGUAGE I**
Department	

Code	**Course status**	**Semester**	**ECTS credits**
САФ11С307100713,0120	Mandatory	I	3.00
Professor/s			
Associate/s			

Weekly hours			**Individual student hours (per semester)**			**Student workload coefficient S_o**
L	**TE**	**LE**	**L**	**TE**	**LE**	**S_o**
1	2	0	21	42	0	1.4

Total teacher workload (hours, per semester) 45 hours	Total student workload (hours, per semester) 63 hours
Total workload: 108 hours per semester	

Course aims and learning outcomes	
Prerequisites	
Teaching methods	
Course content	

Textbook (s)

Author/s	**Name of publication, publisher**	**Year**	**Pages (from-to)**

Additional readings

Author/s	**Name of publication, editor**	**Year**	**Pages (from-to)**

	Assesment methods	**Points**	**Percentage**
Evaluation criteria			
Web sources			
Applicable from	16.06.2021 - 175 Session of the Councile, Faculty of Transport and Traffic engineering		

	UNIVERSITY OF EAST SARAJEVO Faculty of Transport and Traffic Engineering ***Study program:*** **Traffic** ***Profile:*** **Common course** I cycle | I year of study	

Course title	**MATHEMATICS II**
Department	

Code	**Course status**	**Semester**	**ECTS credits**
САФ11С307100826,0320	Mandatory	II	6,00

Professor/s	PhD Vesna Mišić
Associate/s	PhD Vesna Mišić

Weekly hours			**Individual student hours (per semester)**			**Student workload coefficient S_o**
L	**TE**	**LE**	**L**	**TE**	**LE**	**S_o**
3	2	0	60	45	0	1.33

Total teacher workload (hours, per semester) W = 3*15+3*15+0*15=90 hours	Total student workload (hours, per semester) $T=3*15*S_o + 3*15*S_o + 0*15*S_o$ = 120 hours
Total workload: $W+T=U_{opt}$=90+120= 210 hours per semester	

Course aims and learning outcomes	1. Acquiring knowledge from an integral account. 2. Acquiring knowledge from many rows. 3. Acquiring knowledge from the properties of a given integral. 4. Acquiring knowledge from differential equations.
Prerequisites	Mathematics I
Teaching methods	Teaching process is realized mainly through the frontal form of work - lectures and interactive forms of work - auditory exercises
Course content	1.Limit values and continuity of the function of two or more independently variable. Partial copies 2.Differentiability. Excerpt of the function in the given direction. Differentials of higher orders 3.Undetermined integral 4.The integration of shifts is variable. Partial integration 5. Integration of rational functions 6. Integration of trigonometric and some irrational functions 7. Definition and basic properties of a particular integral. Newton-Leibniz formula 8. I Colloquium 9. Calculating a given integral. Application of a specific integral 10. Non-integral integrals. 11. Differential equations of the first order 12. Differential equations of second order with constant coefficients 13. Definition of numerous order and its convergence. Rows with positive members. Comparative convergence criteria. Dalamber and Koši criteria 14. Alternative and stepped rows. MacLocation Order. Summing the ranges 15. II colloquium

Textbook (s)

Author/s	**Name of publication, publisher**	**Year**	**Pages (from-to)**
1. V. Mišić, R. Mišić	Matematika 2, Vesna Mišić, Zoran Mitrović Zadaci i riješeni primjeri iz više matematike s primjenom na tehničke nauke,B.P. Demidovič		

Additional readings

Author/s	**Name of publication, editor**	**Year**	**Pages (from-to)**

Evaluation criteria	**Assesment methods**	**Points**	**Percentage**
	Pre-exam obligations		

	Presence and activity in teaching	10	10%
	I colloquium	30	30%
	II colloquium	30	30%
	Final exam		
	final exam (oral / written)	30	30%
	IN TOTAL	100	100 %
Web sources			
Applicable from	16.06.2021 - 175 Session of the Councile, Faculty of Transport and Traffic engineering		

	UNIVERSITY OF EAST SARAJEVO Faculty of Transport and Traffic Engineering	
	Study program: **Traffic** ***Profile:*** **Common course**	
	I cycle / I year of study	

Course title	**INTRODUCTION TO TRAFFIC AND TRANSPORT**
Department	Faculty of Transport and Traffic Engineering

Code	**Course status**	**Semester**	**ECTS credits**
САФ11С307133125,0211	obligatory	II	5.00

Professor/s	Ph.D. Djordje Popovic, associate professor
Associate/s	

Weekly hours			**Individual student hours (per semester)**			**Student workload coefficient S_o**
L	**TE**	**LE**	**L**	**TE**	**LE**	**S_o**
2	1	1	45	22,5	22,5	1,5

Total teacher workload (hours, per semester) 2*15 + 1*15 + 1*15 = 60 h	Total student workload (hours, per semester) 2*15*1,5 + 1*15*1,5 + 1*15*1,5 = 90 hours

Total workload: $W+T=U_{opt}$ = 60 + 90 = 150 hours per semester

Course aims and learning outcomes	After attending classes and passing the exam, the student will be able to: ✓ describe the historical development of traffic and analyze the factors that caused the phenomenon and development of traffic; ✓ define the concept, features, and specifics of traffic services; ✓ describe the traffic system's multidimensional concept, elements, and subsystems; ✓ define and debate the basic traffic-geographical and exploitation-technical characteristics of the different types of traffic, as well as their placement in the traffic system and the market; ✓ compare types of transport and argument comparative analysis of characteristics/performance; ✓ describe and debate current trends in the development of transportation systems; ✓ describe and debate modern trends in the development of traffic systems.
Prerequisites	No conditions
Teaching methods	Lectures, auditory exercises, consultations
Course content	1. Introduction: An overview of the historical development of traffic 2. Division of traffic and transport 3. Multidisciplinary interpretation of traffic and transport 4. Transport requirements—factors of transformation and modeling 5. Elements of production in traffic 6. Traffic system infrastructure, means of transport, and selected characteristics 7. Transport integration: Concept and levels **(I colloquium)** 8. Transport market—basic terms and concepts 9. The concept and the specifics of transport services 10. The interaction of transport supply and demand 11. New concepts of traffic, transport, and communication 12. Transport, traffic, and the environment 13. Sustainable development of traffic and transport 14. Globalization, informational society, and the new concept of traffic and transport 15. Regulation of the traffic and transport market **(II colloquium)**

Textbook (s)

Author/s	**Name of publication, publisher**	**Year**	**Pages (from-to)**
Bojković, N. Petrović, M	"Introduction to Traffic and Transport", Belgrade: Faculty of Transportation and Traffic Engineering	2018	-
Adamović M.	"Introduction to Traffic", Faculty of Transport and Traffic Engineering, Belgrade	2003	-

Additional readings			
Author/s	**Name of publication, editor**	**Year**	**Pages (from-to)**
Rodrigue, J-P et al	The Geography of Transport Systems, Hofstra University, Department of Global Studies & Geography	2009	-
	Presentations from lectures		-

	Assesment methods	**Points**	**Percentage**
Evaluation criteria	pre-exam obligations		
	Attendance at lectures and exercises	5	5%
	Positively graded seminar paper	15	15%
	Colloquiums	2x20	40%
	Test		
	Final examination		
	Oral examination	40	40%
	TOTAL	100	100%
Web sources	--		
Applicable from	16.06.2021 - 175 Session of the Councile, Faculty of Transport and Traffic engineering		

	UNIVERSITY OF EAST SARAJEVO Faculty of Transport and Traffic Engineering ***Study program:*** **Traffic** ***Profile:*** **Common course** I cycle / I year of study	

Course title	**MECHANICS**
Department	Department of Physics - Faculty of Philosophy, Pale

Code	**Course status**	**Semester**	**ECTS credits**
САФ11С307101026,0220	Obligatory	II	6.0

Professor/s	PhD Zoran Ćurguz, associate professor
Associate/s	PhD Zoran Ristikić, assistant professors

Weekly hours			**Individual student hours (per semester)**			**Student workload coefficient S_o**
L	**TE**	**LE**	**L**	**TE**	**LE**	**S_o**
2	2	0	30	30	0	1.33

Total teacher workload (hours, per semester) W= 2*15 + 2*15 + 0*15 =60 hours	Total student workload (hours, per semester) T=,2*15*So + 2*15*So + 0*15*So = 80 hours

Total workload: $W+T=U_{opt}$= 90 + 80 = 170 hours per semester

Course aims and learning outcomes	1. The student is able to independently formulate and solve professional tasks. 2. Students will be able to recognize important laws and methods of mechanics - Statics, Kinematics and Dynamics. 3. Proper approaches to solving problems in practice. 4. Able to independently improve their knowledge in this area
Prerequisites	There are no conditions for listening and taking the course
Teaching methods	Lectures, auditory exercises, seminar papers.
Course content	1. Statics, introduction - basic concepts of theoretical mechanics and definitions, axioms of statics. 2. Interface system of forces. Moment of force in relation to a point, Varignon's theorem (moment rule). 3. Parallel forces in the plane. Stacking forces. 4. Coupling force. System of couplings of forces in the plane. 5. Arbitrary plane system of forces. Examples of body balance under the action of a plane system of forces. Flat girders. Solid beam girders differently supported and differently loaded. 6. Sliding and rolling friction. 7. Center of gravity of a rigid and homogeneous body. Determination of the center of gravity of complex surfaces from known geometric surfaces. 8. I colloquium 9. Kinematics. Number of degrees of freedom of movement. Point kinematics. Position, velocity and acceleration vector. Cartesian, polar and natural coordinate system. 9. Translational motion. Rotation of the body about a fixed axis, angular velocity and angular acceleration. Speed and acceleration of the body. 10. Plane body motion. Relationship of velocities of body points. Properties of angular velocity and angular acceleration. Current pole speed. Acceleration point connection. Current pole acceleration. 11. Complex point movement. Absolute velocity of a point. Absolute acceleration point. 12. Dynamics. Material point dynamics. Newton's laws of dynamics. Inertial coordinate system. Types of forces. Two dynamics tasks. Differential equations of point motion. The first integrals. 13. Measures of mechanical movement. Measures of mechanical action. General laws of material point dynamics. Oblique shot and special cases of oblique shot. Impact of a material point. Relative motion of a material point. The effect of a blow on the plane motion of a rigid body. 14. Dynamics of the system of material points. Rigid body dynamics. Analytical dynamics.

	Lagrange-Dalambert principle. Lagrangian equations of the second kind. 15. II colloquium

Textbook (s)			
Author/s	**Name of publication, publisher**	**Year**	**Pages (from-to)**
Rusov, L.:	Mehanika – Statika, Naučna knjiga, Beograd	1992.	
Rusov, L.:	Kinematika, Dinamika, Naučna knjiga, Beograd	1992.	
Mišić,B.;Ćurguz,Z.;Milotić,M:	Mehanika –Statika, Kinematika, Dinamika, Tehnička knjiga-udžbenik,UIS, S-TF, Doboj	2010.	
Additional readings			
Author/s	**Name of publication, editor**	**Year**	**Pages (from-to)**
T.P.Anđelić	Teorija vektora, Građevinska knjiga, Beograd	1959.	
Blagojević,D;Babić,Ž.:	Statika-repitorijum i riješeni zadaci, UuBL, MF	2000.	

	Assesment methods	**Points**	**Percentage**
Evaluation criteria	Pre-examination obligations		
	e.g. attendance at lectures / exercises	10	10%
	e.g. positively evaluated seminar paper / project / essay	10	10%
	e.g. test / colloquia	25x25	50%
	e.g. integral written exam (for students who do not pass the test / colloquia)	(50)	(50%)
	Final test		
	orally or in writing	30	30%
	TOTAL	100	100%
Web sources			
Applicable from	16.06.2021 - 175 Session of the Councile, Faculty of Transport and Traffic engineering		

	UNIVERSITY OF EAST SARAJEVO Faculty of Transport and Traffic Engineering ***Study program:*** **Traffic** ***Profile:*** **Common course** I cycle / I year of study	

Course title	**TRANSPORT GOODS OF GOODS**
Department	Department of Transportation Engeneering - Faculty of Transport and Traffic Engineering

Code	**Course status**	**Semester**	**ECTS credits**
САФ11С307101124,0210	required	II	4,0

Professor/s	PhD Perica Gojković, full professor
Associate/s	

Weekly hours			**Individual student hours (per semester)**			**Student workload coefficient S_o**
L	**TE**	**LE**	**L**	**TE**	**LE**	**S_o**
2	1	0	$X*15*S_o$	$Y*15*S_o$	$Z*15*S_o$	

Total teacher workload (hours, per semester) W = 2*15 + 1*15 +0*15=45 hours	Total student workload (hours, per semester) T = $2*15*S_o$+ $1*15*S_o$ +$0*15*S_o$ = 75 hours
Total workload: 45 + 75= 120 hours per semester	

Course aims and learning outcomes	1. To analyze the division and classification of goods from the point of view of transport, as well as the characteristics of goods; 2. To get acquainted with the packaging and packaging of goods, as well as transit funds; 3. Engage actively in transport in terms of safety; 4. To get acquainted with international and national regulations as well as to acquire acquired knowledge in practice.
Prerequisites	There are no conditions for listening and laying objects.
Teaching methods	Lectures, auditory exercises, seminar papers.
Course content	1. Division and classification of goods from the point of view of transport 2. Quality of goods and its control in the transport process 3. Properties of goods 4. Quality of service quality in the transport of goods. Stability of service 5. Packaging and packaging of goods from the aspect of the transport process 6. Properties of transport means from the aspect of transport of goods 7. I colloquium 8. Division and classification of means of transport 9. Safety aspects of transport 10. Marking of goods 11. Types of labels on the goods 12. Division and classification of means of transport 13. International and national regulations related to the transport of goods and dangerous goods 14. Standardization and standards 15. II colloquium

Textbook (s)

Author/s	**Name of publication, publisher**	**Year**	**Pages (from-to)**
Гојковић, П.	*Транспортне особине робе*, Саобраћајни факултет Добој	2012	

Additional readings

Author/s	**Name of publication, editor**	**Year**	**Pages (from-to)**

	Assesment methods	**Points**	**Percentage**
Evaluation criteria	Pre-exam obligations		
	for example. presence in lectures / exercises		

	colloquium		
	tests		
	Final exam		
	final exam (oral)		
	IN TOTAL		
Web sources			
Applicable from	16.06.2021 - 175 Session of the Councile, Faculty of Transport and Traffic engineering		

	UNIVERSITY OF EAST SARAJEVO Faculty of Transport and Traffic Engineering ***Study program:*** **Traffic** ***Profile:*** **Common course** I cycle | I year of study	

Course title	**Computer Aided Design in Engineering**
Department	Department of computers, information technologies and biotechnology, ETF, University of East Sarajevo

Code	**Course status**	**Semester**	**ECTS credits**
САФ11С307133226,0211	mandatory	II	6,00

Professor/s	Assistent Proffesor Goran Jauševac
Associate/s	Assistent Proffesor Goran Jauševac

Weekly hours			**Individual student hours (per semester)**			**Student workload coefficient S_o**
L	**TE**	**LE**	**L**	**TE**	**LE**	**S_o**
2	1	1	37,5	18,75	18,75	1,25

Total teacher workload (hours, per semester) 2*15 + 1*15 + 1*15 = 30 + 15 + 15 = 60 hours	Total student workload (hours, per semester) 2*15*1,25 + 1*15*1,25 + 1*15*1,25 = 75 hours

Total workload: $W+T=U_{opt}$= 60 + 75 = 135 hours per semester

Course aims and learning outcomes	By mastering this course the student will be able to: 1. properly displays and dimensionally defines objects by standards in electronic form using computer CAD programs. 2. compares solutions to traffic problems in the form of CAD programs. 3. analyzes and displays reconstructions in traffic design using CAD programs. 4. shows the image in CAD program form of comparative characteristics of vehicles. 5. geometrically models and presents conceptual solutions. 6. creates and geometrically models solutions to transport problems in the form of CAD programs. 7. tell apart comparative advantages of individual application CAD programs.
Prerequisites	No
Teaching methods	Lectures and laboratory exercises
Course content	1. Introduction. Graphic communication in technical applications. Significance and concept of engineering drawing and its application. 2. Vector graphics. Programs for working with vector graphics. Raster graphics. Programs for working with raster graphics. Graphic systems architecture. Demonstration technologies. 3. Introduction to existing user CAD computer programs for design. 4. Basics of use, possibilities, and way of the practical application of available versions for engineering drawing by the needs of study and research programs. 5. Proper display and dimensional definition of objects by the standards. **6. I colloquium** 7. Visual perception of traffic signals. 8. Display in CAD program form of vehicles. 9. Appearances and cross-sections of traffic facilities. 10. Elements of geometric modeling. 11. Engineering drawing, creation, and geometric modeling. 12. Analysis and presentation of reconstructions. 13. Geometric models and conceptual solutions in traffic. 14. Use applied CAD programs for geometric modeling in traffic and pointing out comparative advantages. **15. II colloquium**

Textbook (s)			
Author/s	**Name of publication, publisher**	**Year**	**Pages (from-to)**

Z. Božičković	Osnove AutoCAD-a, Sobraćajni fakultet Doboj	2012	
Additional readings			
Author/s	**Name of publication, editor**	**Year**	**Pages (from-to)**
M. Živanović	Inženjersko crtanje primenom računara (praktikum za vežbe),Saobraćajni fakultet, Beograd.	2012	

Evaluation criteria	**Assesment methods**	**Points**	**Percentage**
	Pre-exam obligations		
	attendance at lectures	5	5%
	Seminary paper	15	15%
	I Colloquium	20	20%
	II Colloquium	20	20%
	Final exam		
	Writing exam	40	40%
	TOTAL	100	100%
Web sources			
Applicable from	16.06.2021 - 175 Session of the Councile, Faculty of Transport and Traffic engineering		

	UNIVERSITY OF EAST SARAJEVO Faculty of Transport and Traffic Engineering ***Study program:*** **Traffic** ***Profile:*** **Common course** I cycle | I year of study	

Course title	**English language II**
Department	

Code	**Course status**	**Semester**	**ECTS credits**
САФ11С307101323,0110	Mandatory	II	3.00

Professor/s	Tanja Petrović
Associate/s	

Weekly hours			**Individual student hours (per semester)**			**Student workload coefficient S_o**
L	**TE**	**LE**	**L**	**TE**	**LE**	**S_o**
1	1	0	21	1	0	1.4

Total teacher workload (hours, per semester) 30 hours	Total student workload (hours, per semester) 42 hours
Total workload: 72 hours per semester	

Course aims and learning outcomes	The aim of the language course is to enable students to improve both their ability to communicate and their linguistic competence in English language. A balance of receptive (reading, listening) and productive (speaking, writing) skills are developed through communicative classes and self-study. After completing the course students should be able to successfully read and understand English texts, understand and use grammatical concepts and give presentations in English.
Prerequisites	Successfully completed course English Language I
Teaching methods	Communicative, inductive, structural, TPR method

Course content

1	Relative clauses
2	Quantifiers
3	Modal verbs
4	Past modals
5	Use and non-use of articles
6	Phrasal verbs
7	***Midterm test***
8	Reporting people's exact words
9	Hypotetical situations in the present
10	Hypotetical situations in the past
11	Use of gerunds and infinitives
12	Different infinitive and gerund forms
13	Word stress and sentence stress
14	Revision
15	***End of the term test***

Textbook (s)

Author/s	**Name of publication, publisher**	**Year**	**Pages (from-to)**
Sarah Cunningam, Peter Moor, Johnatan Bygrave	*Cutting Edge, third edition, upper intermediate, Pearson, Harlow Essex, England*	2015	67-179

Additional readings

Author/s	**Name of publication, editor**	**Year**	**Pages (from-to)**
Raymond Murphy	*English Grammar in Use*, CUP	2009	1-313

	Assessment methods	**Points**	**Percentage**
Evaluation criteria			
	Attendance	10	10%

	Midterm test	20	20%
	End of the term test	20	20%
	Final test	50	50%
Web sources			
Applicable from	16.06.2021 - 175 Session of the Councile, Faculty of Transport and Traffic engineering		

	UNIVERSITY OF EAST SARAJEVO Faculty of Transport and Traffic Engineering ***Study program: Traffic*** ***Profile: Common Courses*** I cycle / I year of study	

Course title	**GERMAN LANGUAGE II**
Department	

Code	**Course status**	**Semester**	**ECTS credits**
САФ11С307101423,0110	Mandatory	II	3.00

Professor/s	
Associate/s	

Weekly hours			**Individual student hours (per semester)**			**Student workload coefficient S_o**
L	**TE**	**LE**	**L**	**TE**	**LE**	**S_o**
1	1	0	21	1	0	1.4

Total teacher workload (hours, per semester) 30 hours	Total student workload (hours, per semester) 42 hours
Total workload: 72 hours per semester	

Course aims and learning outcomes	
Prerequisites	
Teaching methods	
Course content	

Textbook (s)

Author/s	**Name of publication, publisher**	**Year**	**Pages (from-to)**

Additional readings

Author/s	**Name of publication, editor**	**Year**	**Pages (from-to)**

	Assesment methods	**Points**	**Percentage**
Evaluation criteria			

Web sources	
Applicable from	16.06.2021 - 175 Session of the Councile, Faculty of Transport and Traffic engineering

	UNIVERSITY OF EAST SARAJEVO Faculty of Transport and Traffic Engineering ***Study program:*** **Traffic** ***Profile:*** **Common course** I study cycle | II study year	

Full name of the item	**TRANSPORTATION TRAFFIC LAW**
Desk	Department of Transportation Engineering - Faculty of Transportation Doboj

Item code	**Course status**	**Semester**	**ECTS**
САФ11С307133334,0210	bound	III	4,0

Teacher	Dr. Tihomir Djuric, Associate Professor
Contributor	Dr. Tihomir Djuric, Associate Professor

Fund hours / teaching load (weekly)			**Individual student workload (semester hours)**			**Student load coefficient S_o**
L	**TE**	**LE**	**L**	**TE**	**LE**	**S_o**
2	1	0	45	45	0	1,5

total teaching load (in hours, semester) W= 2*15 + 2*15 + 0*15 =60 hours	**total student workload (in hours, semester)** T= $2*15*S_o + 2*15*S_o + 0*15*S_o$ = 90 hours

Total course load (teaching + student): $W+T=U_{opt}$= 60 + 90 = 150 semester hours

Learning outcomes	1. Acquiring knowledge about the basics of rights and legal norms, as a prerequisite for a fuller understanding of those legal norms that regulate interpersonal relations, conditions and behavior in traffic. 2. The study of legal norms as limiting factors. 3. The influence of factors on the behavior of traffic participants. 4. Application of national and international regulations in the function of planning, organization, regulation and safety of traffic.
Prerequisites	There are no listening and passing conditions
Teaching methods	The teaching process is realized mainly through the frontal form of work - lectures and the interactive form of work - classroom exercises

Course content per week	1. The subject of traffic law, The similarity and differences of the traffic branches of law and Sources of traffic law. 2. Traffic Organization, Traffic Roads, Traffic Safety and Vehicles. 3. Railway traffic law and the concept and subject of the study of railway traffic law. 4. Contract for the Carriage of Goods by Rail, Term of Contract, Obligations of the Railway from the Contract for Carriage of Goods, Liability of the Railway and Right of Railway. 5. Rail Passenger Agreement, Rail Baggage Agreement and Unification of Rail Transport Rights. 6. Road Traffic Law, Rights and Obligations of the Contracting Parties and the Convention on Road Transport. 7. Customs relief and Customs Convention on the temporary importation of commercial road vehicles (I colloquium). 8. Air Traffic Law and Air Transport Contract, Successive International Transport, Combined International Transport. 9. International air carrier responsibility and Air waybill. 10. Maritime Transport Law, Participants in the Navigation and the Contract on Carriage of Goods by Ship. 11. Shippers' liability for cargo, General notion of liability and Unification of liability rules. 12. Contract for Carriage of Passengers and Baggage, Concept of Contract, Types of Carriage of Passengers and Rights and Obligations of the Parties. 13. The towing contract, the concept of the towing contract, the rights and obligations of the parties, and the maritime insurance contract. 14. International Multimodal Transport Agreement, FBL - FIATA Combined Transport Bill of Lading. 15. Freight Forwarding, Importance and Development of Freight Forwarding, Features of Contemporary Forwarding, and Economic Functions of Forwarding (II Colloquium)

Required literature

Author (s)	Name of the publication, publisher	Year	Pages (from-to)
1. Djuric, T., Kasagic, R.	Traffic Law, University of East Sarajevo, Faculty of Transportation Doboj	2019.	1-265

Supplementary literature

Author (s)	Name of the publication, publishe	Year	Pages (from-to)
1. Inic, M., Jovanovic, D.	Traffic Regulations, Faculty of Technical Sciences, Novi Sad	2009.	1-184
Law on Basics of Road Traffic Safety in BiH (Official Gazette of BiH, No. 6/06, 75/06, 44/07, 84/09, 48/10, 18/13, 8/17, 89/17 and 9/18)		2018.	
Law on Road Safety, (Official Gazette of the Republika Srpska, No. 41/09, 53/10, 101/11, 32/13 -US, 55/14).		2014.	

	Type of student work evaluation	Points	Percentage
Obligations, forms of assessment and assessment	**Pre-exam obligations**		
	Class attendance and activity	10	10%
	I colloquium	30	30%
	II colloquium	30	30%
	Final exam		
	final exam (oral / written)	30	30%
	IN TOTAL	**100**	**100 %**
Date of certification	16.06.2021 - 175 Session of the Councile, Faculty of Transport and Traffic engineering		

	UNIVERSITY OF EAST SARAJEVO Faculty of Transport and Traffic Engineering ***Study program:*** **Traffic** ***Profile:*** **Common course** I cycle | I year of study	

Course title	**TECHNICAL ELEMENTS**
Department	Department of Mechanical Structures and Engineering Product Design - Faculty of Mechanical Engineering

Code	**Course status**	**Semester**	**ECTS credits**
САФ11С307101636,0320			6.00

Professor/s	PhD Milan Milotić, associate profesor
Associate/s	Milan Eremija assistent

Weekly hours			**Individual student hours (per semester)**			**Student workload coefficient S_o**
L	**TE**	**LE**	**L**	**TE**	**LE**	**S_o**
3	2	0	63	42	0	1,4

Total teacher workload (hours, per semester) W= 3*15 + 2*15 + 0*15 =75 h	Total student workload (hours, per semester) T= 3*15*So + 2*15*So + 0*15*So = 105 h

Total subject load (teaching + student): W + T = Uopt = 75 + 105 = 180 hours per semester

Course aims and learning outcomes	1. To acquaint students with technical elements, standards and tolerances. 2. Friction, sliding, rolling. 3. Reliability and wear of mechanical systems and mechanisms. 4. Gears, springs and suspensions
Prerequisites	Does not have
Teaching methods	Lectures, auditory exercises, seminar paper
Course content	1. Basic concepts of technical elements 2. Standardization and tolerances 3. Sliding friction and rolling friction 4. Reliability and wear 5. Materials for making technical elements 6. Screws, mechanisms and power transmissions 7. Friction gears (I colloquium) 8. Gears 9. Chain gears 10. Gearboxes, reducers and manipulators 11. Shafts and shafts 12. Welding procedures and methods 13. Couplings 14. Bearings - sliding and rolling 15. Springs and vehicle suspension (II colloquium)

Required literature

Author/s	**Name of publication, publisher**	**Year**	**Pages (from-to)**
1.Vitac, D. Trbojevic, M.	Mechanical elements I, II, III, Scientific book, Belgrade.	2002	1-317

Additional readings

Author/s	**Name of publication, editor**	**Year**	**Pages (from-to)**
1.Misic, B.	Technical elements, script, SF, Doboj	1997	1-135

	Assesment methods	**Points**	**Percentage**
Evaluation criteria			
	Pre-exam obligations		
	Attendance and activity in classes	10	10%
	I colloquium	30	30%

	II colloquium	30	30%
	Final exam		
	final exam (oral / written)	30	30%
	IN TOTAL	100	100%
Web sources			
Applicable from	16.06.2021 - 175 Session of the Councile, Faculty of Transport and Traffic engineering		

	UNIVERSITY OF EAST SARAJEVO Faculty of Transport and Traffic Engineering ***Study program:*** **Traffic** ***Profile:*** **Common course** I cycle / II year of study	

Course title	**MATHEMATICS III**
Department	Mathematics Department- Faculty of Philosophy Pale

Code	**Course status**	**Semester**	**ECTS credits**
САФ11С307133536,0220	Mandatory	III	6,0

Professor/s	Dragana Nedić, PhD
Associate/s	

Weekly hours			**Individual student hours (per semester)**			**Student workload coefficient S_o**
L	**TE**	**LE**	**L**	**TE**	**LE**	**S_o**
2	2	0	63	42	0	1.4

Total teacher workload (hours, per semester) W=3*15 + 2*15 + 0*15 = 75 hours	Total student workload (hours, per semester) $T=X*15*S_o + Y*15*S_o + Z*15*S_o$ = 105 hours
Total workload: $W+T=U_{opt}$= 75 + 105 = 180 hours per semester	

Course aims and learning outcomes	
Prerequisites	None.
Teaching methods	Lectures, exercises.
Course content	

Textbook (s)

Author/s	**Name of publication, publisher**	**Year**	**Pages (from-to)**

Additional readings

Author/s	**Name of publication, editor**	**Year**	**Pages (from-to)**

	Assessment methods	**Points**	**Percentage**
Evaluation criteria	Pre-exam obligations		
	Attendance	10	10%
	Midterm test	20	20%
	End of the term test	20	20%
	Final exam		
	(oral part/written part)	50	50%
	TOTAL	100	100 %

Web sources	
Applicable from	16.06.2021 - 175 Session of the Councile, Faculty of Transport and Traffic engineering

	UNIVERSITY OF EAST SARAJEVO Faculty of Transport and Traffic Engineering	
	Study program: **Traffic** ***Profile:*** **Common course**	
	I cycle / II year of study	

Course title	**ECONOMICS**
Department	Department of Marketing and Management, Faculty of Economics in Brčko

Code	**Course status**	**Semester**	**ECTS credits**
САФ11С307133435,0220	obligatory	III	5,0

Professor/s	Assist. professor Živko Erceg
Associate/s	Siniša Božičković, MBA

Weekly hours			**Individual student hours (per semester)**			**Student workload coefficient S_o**
L	**TE**	**LE**	**L**	**TE**	**LE**	**S_o**
2	2	0	45	45	0	1,5

Total teacher workload (hours, per semester) W=2*15 + 2*15 + 0*15 = 60 hours	Total student workload (hours, per semester) T=2*15*So + 2*15*So + 0*15*So = 90 hours
Total workload: W+T=Uopt= 60 + 90 = 150 hours per semester	

Course aims and learning outcomes	1. Acquiring basic knowledge about facts, principles, processes and general concepts in the economy of traffic. 2. Ability to find optimal solutions in the management of companies, using basic knowledge about economic theory and decision science. 3. Mastering of the costs of infrastructure and elements of production, price calculations and general measures of economic quality.
Prerequisites	No prerequisites
Teaching methods	Lectures, auditory exercises, seminar work
Course content	1. Introduction 2. Economic structure of the traffic enterprise 3. Elements of the economy of the traffic enterprise 4. Capital circulation in reproduction 5. The concept of market and market players 6. Business cost theory 7. First colloquium 8. Types and specifics of cost behavior 9. Cost price 10. The principle of productivity in traffic 11. The principle of economy in traffic 12. Principle of rentability in traffic 13. Business results of traffic enterprises 14. Development policy of traffic enterprises 15. Second colloquium

Textbook (s)

Author/s	**Name of publication, publisher**	**Year**	**Pages (from-to)**
Stavrić Božidar, Jovičić Miladin	Business Economics, Faculty of Business Economics Bijeljina	2012	
Berberović Šefkija, Živko Erceg	Theory Business Economics, High business and technical school Doboj	2012	

Additional readings

Author/s	**Name of publication, editor**	**Year**	**Pages (from-to)**
Berberović Šefkija, Todorović Zdravko	Business Economics, Faculty of economics Banja Luka	2009	
L. Blank, A. Tarquin	Basics Of Engineering Economy McGraw-Hill,	2008	

	Higher Education, New York		

Evaluation criteria	**Assesment methods**	**Points**	**Percentage**
	Pre-exam obligations		
	Presence of lectures / exercises	10	10%
	Colloquium	40	40%
	Final exam		
	Final exam (oral / written)	50	50%
	TOTAL	100	100 %
Web sources			
Applicable from	16.06.2021 - 175 Session of the Councile, Faculty of Transport and Traffic engineering		

	UNIVERSITY OF EAST SARAJEVO Faculty of Transport and Traffic Engineering	
	Study program: **Traffic** ***Profile:*** **Common course**	
	I cycle / II year of study	

Course title	**ANALYSIS OF TRANSPORT NETWORKS**
Department	Department of Information - Communication Systems in Traffic, Faculty of Transport and Traffic Engineering in Doboj

Code	**Course status**	**Semester**	**ECTS credits**
САФ11С307130136,0220	required	III	6.0

Professor/s	Prof. dr Aleksandar Stjepanovic
Associate/s	Prof. dr Aleksandar Stjepanovic

Weekly hours			**Individual student hours (per semester)**			**Student workload coefficient S_o**
L	**TE**	**LE**	**L**	**TE**	**LE**	**S_o**
2	2	0	63	42	0	1,4

Total teacher workload (hours, per semester) 3*15 + 2*15 +0*15 = 75 hours	Total student workload (hours, per semester) $3*15*S_o + 2*15*S_o + 0*15*S_o$ =105 hours

Total workload: $W+T=U_{opt}=$ 75 +75 = 150 hours per semester

Course aims and learning outcomes	By mastering this course the student will be able to: 1. Acquiring knowledge of the basic principles of traffic planning and design in communication networks and postal systems 2. Mathematical methods for traffic analysis 3. Routing systems 4. Introduction to location problems and methods of solving
Prerequisites	there are no special conditions
Teaching methods	lectures, auditory exercises, laboratory exercises, consultations
Course content	1. Introduction. Basic concepts of transport and communication networks 2. Algorithms for crucifixion construction 3. Finding optimal paths in networks. Variants of the shortest path problem 4. Algorithms for finding the shortest paths from one to all other nodes in the network 5. Algorithms for finding the second shortest path in the network 6. Algorithms for finding the shortest paths between all pairs of nodes in the network 7. The problem of the Chinese postman: on the non-oriented and oriented network (I colloquium) 8. The problem of the traveling salesman - mathematical formulation and computational complexity of the algorithm 9. Heuristic algorithms for solving the problem of a traveling salesman 10. Problems of routing and dispatching of means of transport 11. Routing of vehicles in case of multiple bases 12. Routing traffic flows on networks 13. Location problems - basic assumptions of location theory. Classification of location problems 14. Median and network center problems 15. Application of artificial neural networks in traffic routing problems in networks

Textbook (s)

Author/s	**Name of publication, publisher**	**Year**	**Pages (from-to)**
Teodorovic D.	**Transport Networks, Faculty of Transport and Traffic Engineering, Belgrade,**	**2007**	

Additional readings

Author/s	**Name of publication, editor**	**Year**	**Pages (from-to)**

	Assesment methods	Points	Percentage
Evaluation criteria	Pre-exam obligations		
	attendance at lectures / exercises	5	5%
	I am positively assessed. paper / project / essay	15	15%
	colloquium	30	30%
	Final exam		
	oral	50	50%
	SUM	100	100%
Web sources			
Applicable from	16.06.2021 - 175 Session of the Councile, Faculty of Transport and Traffic engineering		

	UNIVERSITY OF EAST SARAJEVO Faculty of Transport and Traffic Engineering ***Study program:*** **Traffic** ***Profile:*** **Common course** I cycle / II year of study	

Course title	**English language III**
Department	

Code	**Course status**	**Semester**	**ECTS credits**
САФ11С307102033,0120	Mandatory	III	3.00

Professor/s	Tanja Petrović
Associate/s	

Weekly hours			**Individual student hours (per semester)**			**Student workload coefficient S_o**
L	**TE**	**LE**	**L**	**TE**	**LE**	**S_o**
1	2	0	21	42	0	1.4

Total teacher workload (hours, per semester) 45 hours	Total student workload (hours, per semester) 63 hours
Total workload: 108 hours per semester	

Course aims and learning outcomes	After completing this course, students should be able to: 1. Understand professional texts in English. 2. Successfully use language of the traffic profession genre. 3. Identify key words and sentences in professional English. 4. Translate professional / scientific texts from English to Serbian and vice versa. 6. Describe traffic activities / parts of traffic. 7. Write e-mails and CVs 8. Describe their future jobs in English.
Prerequisites	Successfully completed courses English Language I and English language II
Teaching methods	Communicative, inductive, structural, TPR method

Course content		
	1	Types of Roads, Parts of Roads
	2	*Types of Intersections*
	3	*Materials, Measurements*
	4	*Tools, Safety Equipment*
	5	*Basic Actions, Machines*
	6	*Soil, Describing Landscapes*
	7	***Midterm test***
	8	*Surveying, Surveying Equipment*
	9	*Earthworks*
	10	*Pipes, Drains*
	11	*Flexible Pavement, Rigid Pavement*
	12	*Traffic Control*
	13	*Signage*
	14	*Bridge Maintenance, Road Maintenance*
	15	***End of the term test***

Textbook (s)

Author/s	**Name of publication, publisher**	**Year**	**Pages (from-to)**
Virginia Evans, Jenny Dooley, Mark Chavez	*Roads & Highways*, Express Publishing, Newbury, Berkshire *(selected topics)*	2013	1-40x3

Additional readings

Author/s	**Name of publication, editor**	**Year**	**Pages (from-to)**
Raymond Murphy	*English Grammar in Use*, CUP	2009	1-313

Evaluation criteria	**Assessment methods**	**Points**	**Percentage**

	Attendance	10	10%
	Midterm test	20	20%
	End of the term test	20	20%
	Final test	50	50%
Web sources			
Applicable from	16.06.2021 - 175 Session of the Councile, Faculty of Transport and Traffic engineering		

	UNIVERSITY OF EAST SARAJEVO Faculty of Transport and Traffic Engineering ***Study program: Traffic*** ***Profile: Common Courses***	
	I cycle / II year of study	

Course title	**GERMAN LANGUAGE III**
Department	

Code	**Course status**	**Semester**	**ECTS credits**
САФ11С307102133,0120	Mandatory	III	3.00

Professor/s	
Associate/s	

Weekly hours			**Individual student hours (per semester)**			**Student workload coefficient S_o**
L	**TE**	**LE**	**L**	**TE**	**LE**	**S_o**
1	2	0	21	42	0	1.4

Total teacher workload (hours, per semester) 45 hours	Total student workload (hours, per semester) 63 hours
Total workload: 108 hours per semester	

Course aims and learning outcomes	
Prerequisites	
Teaching methods	
Course content	

Textbook (s)

Author/s	**Name of publication, publisher**	**Year**	**Pages (from-to)**

Additional readings

Author/s	**Name of publication, editor**	**Year**	**Pages (from-to)**

	Assesment methods	**Points**	**Percentage**
Evaluation criteria			

Web sources	
Applicable from	16.06.2021 - 175 Session of the Councile, Faculty of Transport and Traffic engineering

	UNIVERSITY OF EAST SARAJEVO Faculty of Transport and Traffic Engineering ***Study program:*** **Traffic** ***Profile:*** **Common course** I cycle / II year of study	

Course title	**MATHEMATICAL STATISTICS**
Department	Mathematics Department- Faculty of Philosophy Pale

Code	**Course status**	**Semester**	**ECTS credits**
САФ11С30711746,0320	Mandatory	III	6,0

Professor/s	Dragana Nedić, PhD
Associate/s	

Weekly hours			**Individual student hours (per semester)**			**Student workload coefficient S_o**
L	**TE**	**LE**	**L**	**TE**	**LE**	**S_o**
3	2	0	63	42	0	1.4

Total teacher workload (hours, per semester) W=3*15 + 2*15 + 0*15 = 75 hours	Total student workload (hours, per semester) T=X*15*S_o + Y*15*S_o + Z*15*S_o = 105 hours
Total workload: W+T=U_{opt}= 75 + 105 = 180 hours per semester	

Course aims and learning outcomes	1. To gain fundamental knowledge in probability theory. 2. To gain fundamental knowledge in mathematical statistics necessary for understanding other courses. 3. Nonparametric tests. 4. Application in transport and traffic.
Prerequisites	None.
Teaching methods	Lectures, exercises.
Course content	1. Introduction to course content, teaching and assessment methods. 2. Statistical experiment. Random events. Operations with events. Definition of probability. 3. Theorem of probability of two events. Conditional probability. Bayes' theorem. 4. Random variable and its probability distributions. Discrete random variables. 5. Models of exchangeable random variable and its distribution. Binominal, Poisson, and hypergeometric distributions. 6. Continuous random variable. Functions, distributions and parameters. 7. Normal distribution. Standard normal distribution and its parameters. 8. Mid-term test. (I colloquium) 9. Population, character and pattern. Simple random sample. Sampling statistics. 10. Sampling distribution. 11. Central limit theorem. Normal approximations. Student's distribution. Chi-squared distribution. 12. Parameter set estimation based on a sample. Point and interval estimation. 13. Statistical hypothesis testing about set parameters based on a sample. 14. Nonparametric tests. Chi-squared test. 15. End of the term test (II colloquium)

Textbook (s)

Author/s	**Name of publication, publisher**	**Year**	**Pages (from-to)**
Vukadinović,S., Popović, J.	Matematička statistika, Saobraćajni fakultet Beograd	2008.	
Merkle, M.	Verovatnoća i statistika za inžinjere i studente tehnike, Akademska misao, Beograd	2002.	

Additional readings

Author/s	**Name of publication, editor**	**Year**	**Pages (from-to)**
Vukadinović,S., Popović, J.	Zbirka rešenih zadataka iz matematičke statistike, Saobraćajni fakultet Beograd	2008.	

	Assessment methods	Points	Percentage
Evaluation criteria	Pre-exam obligations		
	Attendance	10	10%
	Midterm test	20	20%
	End of the term test	20	20%
	Final exam		
	(oral part/written part)	50	50%
	TOTAL	100	100 %
Web sources			
Applicable from	16.06.2021 - 175 Session of the Councile, Faculty of Transport and Traffic engineering		

	UNIVERSITY OF EAST SARAJEVO Faculty of Transport and Traffic Engineering ***Study program:*** **Traffic** ***Profile:*** **Common course** I cycle | II year of study	

Course title	**BASICS PROGRAMMING**
Department	Department of computers, information technologies and biotechnology, ETF, University of East Sarajevo

Code	**Course status**	**Semester**	**ECTS credits**
САФ11С307133645,0311	mandatory	IV	5,00

Professor/s	Ph.D. Gordana Jotanovic, Assistant Professor
Associate/s	

Weekly hours			**Individual student hours (per semester)**			**Student workload coefficient S_o**
L	**TE**	**LE**	**L**	**TE**	**LE**	**S_o**
3	1	1	X*15*S_o	Y*15*S_o	Z*15*S_o	

Total teacher workload (hours, per semester) X*15 + Y*15 + Z*15 = W hours	Total student workload (hours, per semester) X*15*S_o + Y*15*S_o + Z*15*S_o = T hours

Total workload: W+T=U_{opt}= + = hours per semester

Course aims and learning outcomes	1. Students should acquire basic knowledge related to programming languages and programming. 2. The student should define the basic concepts of programming: algorithm, program, compiler, syntax, semantics. 3. It is expected that the student can independently implement all phases of the programming process in a visual programming language environment for known algorithms. 4. Students should acquire basic knowledge about the types of programming languages and ways of programming that we can apply in traffic. 5. Students should get acquainted with the JAVA program environment. 6. Students should acquire basic knowledge and skills (competencies) from programming in the JAVA programming language.
Prerequisites	No
Teaching methods	Lectures. Laboratory exercises.
Course content	1. The importance of programming in the field of transport. 2. Programming languages. Higher and lower level programming languages. Procedural programming languages. 3. Programming languages independent of computer and operating system (JAVA, HTML). 4. Programs and programming. Structural programming (modular programming). Object Oriented Programming. 5. Programming phases. 6. Algorithms and algorithmic structures. 7. Writing program code. **8. Colloquium 1** 9. Java programming language. 10. Objects, methods and statements in the Java programming language. 11. Data types. Arrays. 12. Variables. Assignment of values. 13. Read input data. Object (System.in). 14. Classes in Java programming language. **15. Colloquium 2**

Textbook (s)

Author/s	**Name of publication, publisher**	**Year**	**Pages (from-to)**
Ivor Horton	Beginning Java 2, SDK 1.4 Edition by, ISBN:0764543652, Wrox Press.	2002	

Y. Daniel Liang	JAVA programming, Inc., publishing as Prentice Hall, ISBN 13: 978-0-13-376131-3.	2015	
Yakov Fain	Јава 8 програмирање. Компјутер библиотека. Београд. Србија.	2015	

Additional readings			
Author/s	**Name of publication, editor**	**Year**	**Pages (from-to)**
R. Kulkarni	Java EE Development with Eclipse. 2nd edition. Packt Publishing. Birmingham, UK.	2015	

	Assesment methods	**Points**	**Percentage**
Evaluation criteria	Pre-exam		
	lectures/ exercises attendance	10	10%
	Colloquium 1	15	15%
	Colloquium 2	15	15%
	laboratory exercises	10	10%
	Final exam		
	oral exam	50	50%
	TOTAL	100	100%
Web sources			
Applicable from	16.06.2021 - 175 Session of the Councile, Faculty of Transport and Traffic engineering		

	UNIVERSITY OF EAST SARAJEVO Faculty of Transport and Traffic Engineering ***Study program:*** **Traffic** ***Profile:*** **Common course** I cycle | II year of study	

Course title	**Logistics in traffic**
Department	Transport Engineering

Code	**Course status**	**Semester**	**ECTS credits**
САФ11С307102445,0220	mandatory	IV	5.00
Professor/s	PhD Marko Vasiljević, Associate professor		
Associate/s			

Weekly hours			**Individual student hours (per semester)**			**Student workload coefficient S_o**
L	**TE**	**LE**	**L**	**TE**	**LE**	**S_o**
2	2		$X*15*S_o$	$Y*15*S_o$	$Z*15*S_o$	

Total teacher workload (hours, per semester) 2*15 + 2*15 + 0*15 = 60 hours	Total student workload (hours, per semester) 2*15*1,4+ 2*15*1,4+ 0*15*1,4 = 84 hours
Total workload: $W+T=U_{opt}=$ 60 + 84 = 144 hours per semester	

Course aims and learning outcomes	After this course students will be able to: 1. recognizes significance of procurement, production, distribution, transport and logistics controlling; 2. creates solutions for different logistics requirements; 3. apply and use logistics in traffic and transport; 4. determine the place, directions and strategy of planning and optimization of logistics systems.
Prerequisites	no special conditions
Teaching methods	Lectures, theoretical exercises, consultation
Course content	1. The goals of the business logistics 2. Tasks of business logistics 3. Enterprise logistics system 4. Logistics strategy and enterprise concept 5. Logistics of transport 6. Logistics of warehouses and commissioning 7. I colloquium 8. Procurement Logistics 9. Production logistics 10. Distribution Logistics 11. Logistics of removing the rest of the parts of production 12. Organizational structure of logistics enterprises 13. Information flows in logistics and information systems in logistics 14. Logistics controlling 15. II colloquium

Textbook (s)

Author/s	**Name of publication, publisher**	**Year**	**Pages (from-to)**
Marko Vasiljević	Logistics in traffic, University of East Sarajevo, Faculty of Transport and Traffic Engineering	2015	

Additional readings

Author/s	**Name of publication, editor**	**Year**	**Pages (from-to)**
Ž. Stević, I. Tanackov, M. Vasiljević, K. Dimanoski	Modelling of procurement processes using multicriteria analysis", First International Conference: Transport for today's society, Bitola, Macedonia	2016.	

Evaluation criteria	**Assesment methods**	**Points**	**Percentage**

	Preexamination obligations		
	attendance during lectures	5	5
	attendance during exercise	5	5
	Seminar work	10	10
	colloquiums	2x25	50
	Final examination		
	written examination (2 colloquiums)	50	50
	oral examination	30	30
	Overall	100	100
Web sources			
Applicable from	16.06.2021 - 175 Session of the Councile, Faculty of Transport and Traffic engineering		

	UNIVERSITY OF EAST SARAJEVO Faculty of Transport and Traffic Engineering ***Study program:*** **Traffic** ***Profile:*** **Common course** I cycle | 2nd year of study	

Course title	**Transport means and devices**
Department	Department for motor vehicles, exploitation, maintenance and diagnostics of vehicles – Faculty of Transport and Traffic Engineering Doboj

Code	**Course status**	**Semester**	**ECTS credits**
САФ11С307102645,0220	compulsory	IV	5.00

Professor/s	Zdravko Nunić, PhD, asociate professor
Associate/s	

Weekly hours			**Individual student hours (per semester)**			**Student workload coefficient S_o**
L	**TE**	**LE**	**L**	**TE**	**LE**	**S_o**
2	2	0	67.5	45	0	1.5

Total teacher workload (hours, per semester) 3*15 + 2*15 + 0*15 = W 45 + 30 + 0 = 75 hours	Total student workload (hours, per semester) 3*15*1.5 + 2*15*1.5 + 0*15*1.5 = T 67.5 + 45 + 0 = 112.5 hours

Total workload: $W+T=U_{opt}$= 75 + 112.5 = 187.5 hours per semester

Course aims and learning outcomes	After successfully completing this course, a student will be able to: 1. define the theory of movement of motor vehicles, 2. define the forces that act on a motor vehicle in motion, 3. recognize basic drives applied on motor vehicles, 4. recognize the concept of construction and structure of motor vehicles, 5. define basic elements of control system, braking system, gear system, motion system, and other accompanying devices on motor vehicles.
Prerequisites	--
Teaching methods	Lecturers, theoretical exercises, seminar paper
Course content	1. Historical development of land vehicles 2. Mechanical drives of vehicles 3. Theory of motion of motor vehicles 4. Forces acting on a motor vehicle 5. Motor vehicle drive 6. Power transfer from engines to gears and gearboxes 7. **Colloquium I** 8. Traction and dynamic characteristics of transport means 9. Power balance 10. Classification, categorization and standardization of vehicles 11. Concept of construction and structure of motor vehicles 12. Bearing construction and vehicle supports 13. Control system, braking system, gear system and motion system 14. Other devices on a vehicle 15. **Colloquium II**

Textbook (s)

Author/s	**Name of publication, publisher**	**Year**	**Pages (from-to)**
1. Mišić, B.	Transportna sredstva i uređaji, (short version)	2006	1-142
2. Nunić, Z., Stević, Ž.	Transportna sredstva i uređaji Zbirka riješenih zadataka	2019	1-114

Additional readings

Author/s	**Name of publication, editor**	**Year**	**Pages (from-to)**

Lenasi, J., Žeželj, S., Danon, G.	Motorna vozila	1995	1-375
Ivković, I. Spasić, M.	Zbirka rešenih zadataka	2007	1-142
Bukumirović, M.	Zbirka rešenih zadataka iz elemenata transportnih sredstava i uređaja II	2003	1-190
Janković, D.	Rešeni zadaci iz motornih vozila	1991	1-261

	s	Points	Percentage
Evaluation criteria	Pre-exam obligations		
	e.g. attendance to lectures / exercises	10	10%
	e.g. seminar paper/ project/ essay positively assessed	20	20%
	e.g. case study – group work	/	/
	e.g. test / colloquium	70	70%
	e.g. laboratory work / laboratory exercises	/	/
	e.g. practical work	/	/
	Final exam		
	e.g. final exam (oral / written)	70	70%
	TOTAL	100	100%
Web sources			
Applicable from	16.06.2021 - 175 Session of the Councile, Faculty of Transport and Traffic engineering		

	UNIVERSITY OF EAST SARAJEVO Faculty of Transport and Traffic Engineering	
	Study program: **Traffic** ***Profile:*** **Common course**	
	I study cycle / II study year	

Full name of the item	**TRAFFIC PSYCHOLOGY**
Desk	Department of Psychology, Faculty of Humanities and Social Sciences, Pale

Item code	**Course status**	**Semester**	**ECTS**
САФ11С307102744,0220	bound	IV	4,0

Teacher (s)	Dr Tihomir Djuric, Associate Professor
Contributor/s	

Fund hours / teaching load (weekly)			**Individual student workload (semester hours)**			**Student load coefficient S_o**
L	**TE**	**LE**	**L**	**TE**	**LE**	**S_o**
2	2	0	45	45	0	1,0

total teaching load (in hours, semester) W=2*15 + 1*15 + 0*15 = 45 hours	**total student workload (in hours, semester)** T= 2*15*S_o + 1*15*S_o + 0*15*S_o = 45 hours

Total course load (teaching + student): W + T = U_{opt}= 45 + 45 = 90 semester hours

Learning outcomes	1. Familiarity with cognitive performance models. 2. Predicting driver behavior aimed at a more stable and efficient traffic flow. 3. Improving driver comfort. 4. Increasing traffic safety.
Prerequisites	There are no conditions for listening and taking the course.
Teaching methods	Lectures, tutorials, seminar work
Course content per week	1. Basic concepts of psychic processes - stimulation, feelings, sensory organs, nerve impulses. 2. Perception - general determinants, constancy, perception of objects, space and movement, disorders. 3. Attention - nature, characteristics, scope, test methods, disorders. 4. Opinion - definition, characteristics, reasoning, types, disorders. 5. Learning, memory and forgetting - types of learning, theory, transfer, performances, disorders. Emotions, urges, willpower, self awareness. 6. Personality - definition, theory, structure, development, identity, integrity, maturity, dynamics, personalities. **7. I colloquium** 8. Social behavior. 9. The etiology of traffic traumatism - phenomenon and indicators of traffic vulnerability. 10. Theoretical foundations of traffic traumatism of recidivism. 11. Psycho-medical contraindications to driving. 12. Basic psycho-medical expertise. 13. Complementing skills in driver training. 14. Traffic culture - the concept of a behavioral approach to the development of traffic culture. **15. II colloquium**

Required literature

Author (s)	**Name of the publication, publisher**	**Year**	**Pages (from-to)**
1. Milic, A.	*Traffic Psychology,* Faculty of Transportation Doboj	2007.	1-391

Supplementary literature

Author (s)	**Name of the publication, publishe**	**Year**	**Pages (from-to)**
1. Milosevic, S.	*Traffic Psychology,* Scientific Book, Belgrade	1977.	1-262

2. Milosevic, S.	*Perception, attentive motor activity,* Institute for Textbooks and Teaching Aids, Belgrade	2002.	1-220

Obligations, forms of assessment and assessment	**Type of student work evaluation**	**Points**	**Percentage**
	Pre-exam obligations		
	Class attendance and activity	10	10%
	I colloquium	30	30%
	II colloquium	30	30%
	Final exam		
	written exam (2 colloquiums)	50	50 %
	oral exam	30	30 %
	IN TOTAL	**100**	**100 %**
Web sources			
Applicable from	16.06.2021 - 175 Session of the Councile, Faculty of Transport and Traffic engineering		

	UNIVERSITY OF EAST SARAJEVO Faculty of Transport and Traffic Engineering	
	Study program: **Traffic** ***Profile:*** **Common course**	
	I cycle / II year of study	

Course title	**DATABASES IN TRAFFIC ENGINEERING**
Department	Department of Information and Communication Systems, Faculty of Transport and Traffic Engineering in Doboj

Code	**Course status**	**Semester**	**ECTS credits**
САФ11С307233845,0320	elective	IV	5,00

Professor/s	Ph.D. Gordana Jotanovic, Assistant Professor
Associate/s	

Weekly hours			**Individual student hours (per semester)**			**Student workload coefficient S_o**
L	**TE**	**LE**	**L**	**TE**	**LE**	**S_o**
3	2	0	30	30	0	1,2

Total teacher workload (hours, per semester) W = 3*15 + 2*15 + 0*15 = 45 + 30 = 75 hours	Total student workload (hours, per semester) T =3*15*1,5 + 2*15*1,5 + 0*15*1,5 = 45 + 30 + 0 = 75
Total workload: W + T = U_{opt} = 60 + 90 = 150 hours per semester	

Course aims and learning outcomes	At the end of the course the student will be able to understand the essence of working with databases: 1. to understand and know how to use data in traffic engineering 2. to form its reference databases in an adequate environment 3. to connect various databases and practically use them in traffic engineering 4. to develop databases
Prerequisites	No
Teaching methods	Oral presentation. Laboratory exercises.
Course content	1. Basic concepts of databases. 2. Database structure. 3. Basic elements of the database. 4. Collection of data from traffic engineering. 5. Big Data. 6. Modeling of data from traffic engineering. 7. Database creation languages. 8. Colloquium 1 9. Data Base Management System (DBMS). 10.Databases in traffic engineering. 11.User base management. 12.Databases in traffic safety. 13.Storage - archiving of data / information from traffic engineering. 14.Security of databases from traffic engineering. 15.Colloquium 2

Textbook (s)

Author/s	**Name of publication, publ isher**	**Year**	**Pages (from-to)**
G Jotanovic G., Jausevac G.	*Information systems and Database, University of East Sarajevo,* Faculty of Transport and Traffic Engineering	2012	
Henry A. S., Korth F., Sudarshan S.	Database System Concepts, Fourth Edition, McGraw-Hill	2001	
Ramakrishnan R., Gehrke J.	Database Management Systems, Third Edition, McGraw-Hill	2005	

Additional readings

Author/s	**Name of publication, editor**	**Year**	**Pages (from-to)**

A.Silberschatz, H. Korth, S Sudarshan,	Database System Concepts, McGraw Hill, International Edition.	2005	

	Assesment methods	Points	Percentage
Evaluation criteria	Pre-exam		
	lectures / exercises attendance	10	10%
	Colloquium 1	15	15%
	Colloquium 2	15	15%
	project task	10	10%
	Final exam		
	oral exam	50	50%
	TOTAL	100	100%
Web sources			
Applicable from	16.06.2021 - 175 Session of the Councile, Faculty of Transport and Traffic engineering		

	UNIVERSITY OF EAST SARAJEVO Faculty of Transport and Traffic Engineering ***Study program: Traffic*** ***Profile: Common course***	
	I cycle / II year of study	

Course title	**Operations Research**
Department	

Code	**Course status**	**Semester**	**ECTS credits**
САФ11С307202245,0320	elective	IV	5,00
Professor/s			
Associate/s			

Weekly hours			**Individual student hours (per semester)**			**Student workload coefficient S_o**
L	**TE**	**LE**	**L**	**TE**	**LE**	**S_o**
3	2	0	3*15*1,4	2*15*1,4	0*15*1,4	1,4

Total teacher workload (hours, per semester) 3*15 + 2*15 + 0*15 = 75 hours	Total student workload (hours, per semester) 3*15*1,4 + 2*15*1,4 + 0*15*1,4 = 105 hours
Total workload: $W+T=U_{opt}$= 75 + 105 = 180 hours per semester	

Course aims and learning outcomes	Students should be able to: 1. Optimize engineering problems using linear and integer programming 2. Solve transportation problems 3. Solve location problems 4. Understand the network planning technique 5. Understand the queueing theory and its application in transportation engineering 6. Calculate the parameters of appropriate queuing system models 7. Apply basic models to real problems
Prerequisites	None
Teaching methods	Lectures, theoretical exercises, debates, seminars
Course content	1. Linear programming 2. Duality problem 3. Integer Linear Programming 4. Transportation problem 5. Location optimization problems 6. Network planning technique (CPM, PERT, PERT/COST methods) 7. I partial examination and test 8. Game theory 9. Matrix games (graphical and analytical method, linear programming in game theory) 10. Queueing theory and its application in transportation engineering 11. Queuing systems without waiting lines 12. Queuing systems with waiting lines 13. Simulation (Monte Carlo method) 14. Appropriate software application 15. II partial examination and test

Textbook (s)

Author/s	**Name of publication, publisher**	**Year**	**Pages (from-to)**
M. Čupić, M. Suknović, G. Radojević, V. Jovanović	Special chapters in decision theory: quantitative analysis, Faculty of Technical Sciences, Novi Sad	2004	1-370

Additional readings

Author/s	**Name of publication, editor**	**Year**	**Pages (from-to)**
D. Teodorović	Transportation networks, Faculty of Transport and Traffic Engineering, Belgrade	2007	1-428
R. Božičković, I. Nikolić	Optimization methods in transportation	2007	1-228

	problems, Faculty of Transport and Traffic Engineering, Doboj		
F.S. Hillier, G.J. Lieberman	Introduction to Operations Research, McGraw-Hill Series, Seventh Edition	2001	1-1240
W.L.Winston, M. Venkataramanan	Introduction to Mathematical Programming: Operations Research, Vol. 1, 4th Edition, Thompson Learning	2002	1-1348

Evaluation criteria	**Assesment methods**	**Points**	**Percentage**
	Preexamination obligations		
	Tests (2)	40	40 %
	Partial examinations (2)	40	40 %
	Final examination		
	Oral examination	20	20 %
	Total	100	100 %
Web sources			
Applicable from	16.06.2021 - 175 Session of the Councile, Faculty of Transport and Traffic engineering		

	UNIVERSITY OF EAST SARAJEVO Faculty of Transport and Traffic Engineering ***Study program:*** **Traffic** ***Profile:*** **Common course** I cycle / II year of study	

Course title	**MARKETING SERVICES**
Department	Department of Marketing and Management, Faculty of Economics in Brčko

Code	**Course status**	**Semester**	**ECTS credits**
САФ11С307233745,0320	electoral	IV	5,0

Professor/s	Associate Professor Svetlana Terzić
Associate/s	Associate Professor Svetlana Terzić

Weekly hours			**Individual student hours (per semester)**			**Student workload coefficient S_o**
L	**TE**	**LE**	**L**	**TE**	**LE**	**S_o**
3	2	0	45	45	0	1,5

Total teacher workload (hours, per semester) W=2*15 + 2*15 + 0*15 = 60 hours	Total student workload (hours, per semester) T=2*15*So + 2*15*So + 0*15*So = 90 hours
Total workload: W+T=Uopt= 60 + 90 = 150 hours per semester	

Course aims and learning outcomes	1. Introducing students to key concepts in the field of marketing. 2. Necessary knowledge and skills for defining marketing goals and strategies. 3. Basics of marketing management. 4. Internet marketing.
Prerequisites	No prerequisites
Teaching methods	Lectures, auditory exercises, seminar work
Course content	1. Concept and characteristics of services. 2. Development of service marketing. 3. Basic differences between products and services. 4. The process of deciding to purchase services. 5. Consumer behavior in the process of purchasing services. 6. Service organization market research. 7. Service company strategies 8. First colloquium. 9. Pricing of services. 10. Human resource management in the service sector. 11. Service product management. 12. Service distribution channels. 13. Service quality and measuring customer satisfaction. 14. Service company control. 15. Second colloquium.

Textbook (s)

Author/s	**Name of publication, publisher**	**Year**	**Pages (from-to)**
Kancir, R.	Marketing services, Business School, Belgrade	2012.	
Veljkovic, S.	Marketing services, Faculty of Economics, Beograd	2009.	

Additional readings

Author/s	**Name of publication, editor**	**Year**	**Pages (from-to)**
Milisavljevic, M. & Maricici, B.	Basics of marketing, Faculty of Economics, Beograd	2004.	

Evaluation criteria	**Assesment methods**	**Points**	**Percentage**
	Pre-exam obligations		
	Presence of lectures / exercises	10	10%
	Seminar work	10	10

	Colloquium	50	50%
	Final exam		
	Final exam (oral / written)	30	30%
	TOTAL	100	100 %
Web sources			
Applicable from	16.06.2021 - 175 Session of the Councile, Faculty of Transport and Traffic engineering		

The road transport and traffic

UNIVERSITY OF EAST SARAJEVO
Faculty of Transport and Traffic Engineering

Study program: Traffic
Profile: The road transport and traffic

Number	Code	Course title	Course status	Conditionality	Semester	Hours per semester			ECTS
						L	TE	LE	
III year of study									
28.	САФ11СД07134056,0230	The theory of traffic flow	O		V	2	3	0	6.00
29.	САФ11СД07102956,0221	Urbanism	O		V	2	2	1	6.00
30.	САФ11СД07103356,0320	Roads	O		V	3	2	0	6.00
31.	САФ11СД07103155,0220	Ecology in traffic	O		V	2	2	0	5.00
32.	САФ11СД07103257,0330	Transhipment mechanization and technology	O		V	3	3	0	7.00
33.	САФ11СД07103566,0321	Regulation of traffic flows	O	28	VI	3	2	1	6.00
34.	САФ11СД07134266,0330	Public transport of passengers	O		VI	3	3	0	6.00
35.	САФ11СД07133966,0230	Road capacity and Level of Service (LOS)	O	28	VI	2	3	0	6.00
36.	САФ11СД07203065,0220	Road vehicle dynamics	I_2		VI	2	2	0	5.00
	САФ11СД07203865,0220	Management in traffic			VI				
37.	САФ11СД07203465,0220	Vehicle operation and maintenance	I_3		VI	2	2	0	5.00
	САФ11СД07203965,0220	Motors SUS			VI				
38.	САФ11СД07132962,0000	Professional practice	O		VI	0	0	0	2.00
					TOTAL:	**24**	**24**	**2**	**60**
IV year of study									
39.	САФ11СД07104375,5220	Training education	O		VII	2	2	0	5.50
40.	САФ11СД07104177,0330	Traffic terminals	O		VII	3	3	0	7.00
41.	САФ11СД07104276,0220	Evaluation in traffic	O	35	VII	2	2	0	6.00
42.	САФ11СД07104575,5220	Organization of traffic companies	O		VII	2	2	0	5.50
43.	САФ11СД07134176,0230	Road freight transport technology and organisation	O	34	VII	2	3	0	6.00
44.	САФ11СД07104885,0311	Traffic accidents investigation	O		VIII	3	1	1	5.00
45.	САФ11СД07104786,0330	Traffic safety	O		VIII	3	3	0	6.00
46.	САФ11СД07104085,0211	Transportation planning	O		VIII	2	1	1	5.00
47.	САФ11СД07219385,0220	Expertise of traffic accidents	I_4		VIII	2	2	0	5.00
	САФ11СД07205085,0220	Traffic design							
48.	САФ11СД07203685,0220	1. Intermodal transport	I_5		VIII	2	2	0	5.00
	САФ11СД07204985,0220	2. Freight forwarding							
49.	САФ11СД07105284,0030	Graduate thesis	O		VIII	0	3	0	4.00
					TOTAL:	**24**	**24**	**2**	**60**

- L - lectures
- TE - theoretical exercises
- LE - laboratory exercises

	UNIVERSITY OF EAST SARAJEVO Faculty of Transport and Traffic Engineering ***Study program: Traffic*** ***Profile: The road transport and traffic*** I cycle / III year of study	

Course title	**The theory of traffic flow**
Department	Department of Road Traffic and Transport- Faculty of Transport and Traffic Engineering

Code	**Course status**	**Semester**	**ECTS credits**
САФ11СД07134056,0230	Compulsory	V	6,0

Professor/s	Marko M. Subotić
Associate/s	Dunja Radović Stojčić

Weekly hours			**Individual student hours (per semester)**			**Student workload coefficient S_o**
L	**TE**	**LE**	**L**	**TE**	**LE**	**S_o**
2	3	0	42	63	0	1,4

Total teacher workload (hours, per semester) 2*15 + 3*15 + 0*15 = 75 hours	Total student workload (hours, per semester) 2*15*1,4 + 3*15*1,4 + 0*15*1,4 = 105 hours

Total workload: $W+T=U_{opt}$= 75 + 105 = 180 hours per semester

Course aims and learning outcomes	By mastering this course students will be able to: 1. be familiar with the basic parameters of traffic flow, the basic diagram and characteristics of the traffic flow 2. get acquainted with the empirical and mathematical models used to describe the traffic flow 3. obtains reliable theoretical foundations for professional and research work in the fields of traffic engineering 4. simulate and approximate real and ideal traffic flows
Prerequisites	None
Teaching methods	Lectures, exercises, seminars
Course content	1. Subject and tasks of traffic flow theory 2. Movement of a single vehicle 3. Basic traffic flow parameters (flow rate, density, vehicle speed) 4. Basic traffic flow parameters (spatial and temporal flow speed, travel time,...) 5. Procedures for determining the mean spatial speed and moving observer method 6. Specific features of the traffic flow **7. The First colloquium** 8. Temporal variation of traffic flow, design traffic flow for dimensioning the road cross-section 9. Basic traffic flow diagram 10 Empirical models 11. Empirical models of dependence between the flow rate, density and medium spatial speed 12. Mathematical models for describing conditions in the traffic flow 13. Macroscopic models- wave theory and stochastic mathematical models 14. Basic parameters for describing pedestrian and bicycle traffic flow **15. The Second colloquium**

Textbook (s)

Author/s	**Name of publication, publisher**	**Year**	**Pages (from-to)**
Ljubiša Kuzović	Teorija saobraćajnog toka, IRO Građevinska knjiga Beograd	1987	1-221
Љубиша Кузовић, Вук Богдановић	Теорија саобраћајног тока, ФТН Нови Сад	2010	1-337

Additional readings

Author/s	**Name of publication, editor**	**Year**	**Pages (from-to)**
Lily Elefteriadou	An Introduction to Traffic Flow Theory	2014	1-262
TRB (FHWA)	MONOGRAPH ON TRAFFIC FLOW THEORY	2000	Charper 1-10

	Assesment methods	Points	Percentage
Evaluation criteria			
	The regular attendance of the classes	10	10 %
	Semestral work	20	20 %
	Colloquiums/tests	70	70%
	The final exam	70	70 %
	Total	100	100 %
Web sources			
Applicable from	16.06.2021. – 175th Session of the Council of the Faculty of Transport and Traffic Engineering		

	UNIVERSITY OF EAST SARAJEVO Faculty of Transport and Traffic Engineering ***Study program: Traffic*** ***Profile: The road transport and traffic*** I cycle / III year of study	

Course title	**URBANISM**
Department	Department of Traffic Engineering

Code	**Course status**	**Semester**	**ECTS credits**
САФ11СД07102956,0221	Mandatory	V	6,0

Professor/s	Dr Milenko Stankovic, full-professor
Associate/s	Dr Milenko Stankovic, full-professor

Weekly hours			**Individual student hours (per semester)**			**Student workload coefficient S_o**
L	**TE**	**LE**	**L**	**TE**	**LE**	**S_o**
2	2	1	42	63	0	1,4

Total teacher workload (hours, per semester) 2*15 + 3*15 +0*15 = W hours 30+45+0=75 hours	Total student workload (hours, per semester) $X*15*S_o + Y*15*S_o + Z*15*S_o$ = T hours 42+63+0= 105 hours

Total workload: $W+T=U_{opt}$= + = hours per semester
75+105=180 hours = U_{opt}

Course aims and learning outcomes	By mastering this course, student will be able to: 1. acquire a basic knowledge of urbanism; 2. get to know with urbanism institutions; 3. analyse dwelling problems that depend on dwelling place; 4. apply acquired knowledge in practice.
Prerequisites	-
Teaching methods	Lectures, Exercises, Concultations
Course content	1. Urbanism - content and course objectives 2. City as a spatial phenomenon 3. Movement in urban theory and practice - methods and techniques 4. Local self-government and urban planning 5. Urbanism institutions 6. Sustainable human settlement development and environmental protection 7. Urban infrastructures and equipment (I colloquium) 8. City architecture - city as a culture object 9. Urban symbols, visual communication and urban traffic network signalizations 10. Urban morphology 11. Urban life problems and dwelling place 12. Village urbanization - the relationship between village and city 13. Dwelling, work, sport and recreation in the city 14. New Athens Charter 15. City traffic and public transportation modes (II colloquium)

Textbook (s)

Author/s	**Name of publication, publisher**	**Year**	**Pages (from-to)**
Tošković, D.	*Uvod u prostorno i urbanističko planiranje,* Akademska misao Beograd	2006	
Stanković, M.	*Harmonija i konflikt u prostor,* Arhitektonski fakultet Beograd	2007	

Additional readings

Author/s	**Name of publication, editor**	**Year**	**Pages (from-to)**
Stanković, M.	*Prostorno-teritorijalno održiv razvoj u LEAP*, Književna zadruga RS, Banjaluka	2004.	

Evaluation criteria	**Assesment methods**	**Points**	**Percentage**
	Pre-exam obligations		
	e.g. lecture/exercise attendence	10	10 %
	a term paper	60	60%
	e.g. a case study - group working	/	/
	e.g. tests /colloqiums	2x15	30%
	e.g. labaratory exercises	/	/
	e.g. a practial work	/	/
	Exam		
	e.g. an oral/written exam		
	TOTAL	100	100 %
Web sources			
Applicable from	16.06.2021. – 175. sessions of Teaching-Scientific Council of the Faculty of Transport and Traffic Engineering		

	UNIVERSITY OF EAST SARAJEVO Faculty of Transport and Traffic Engineering ***Study program: Traffic*** ***Profile: The road transport and traffic*** I cycle / I year of study	

Course title	**ROADS**
Department	Department of Road Traffic and Transport - Faculty of Transportation Doboj

Code	**Course status**	**Semester**	**ECTS credits**
САФ11СД07103356,0320	required	VI	6,00

Professor/s	Prof. Radovan Viskovic, Ph.D. Eng. traffic
Associate/s	Mr Radenka Bjelosevic, Senior Assistant

Weekly hours			**Individual student hours (per semester)**			**Student workload coefficient S_o**
L	**TE**	**LE**	**L**	**TE**	**LE**	**S_o**
X	Y	Z	$X*15*S_o$	$Y*15*S_o$	$Z*15*S_o$	

Total teacher workload (hours, per semester) X*15 + Y*15 + Z*15 = W hours	Total student workload (hours, per semester) $X*15*S_o + Y*15*S_o + Z*15*S_o$ = T hours

Total workload: $W+T=U_{opt}$= + = hours per semester

Course aims and learning outcomes	By mastering this course the student will be able to: 1. Get acquainted with the classifications of roads and city roads; 2. Calculate the elements of the route in the transverse and longitudinal profile; 3. Independently design intersections and participate in road construction;
Prerequisites	No special conditions
Teaching methods	Lectures, auditory exercises, seminar work, fieldwork
Course content	1. Classification of roads and city roads 2. Road and surroundings 3. Design methodology. Operational and technical indicators 4. Relevant design factors 5. Elements of project geometry. Route in space 6. Track elements in the longitudinal profile. Elements of transparency 7. Normal geometric and constructive cross-section (I colloquium) 8. Design of road junctions - intersections 9. Influence of road elements on driving safety. Lower road machine 10. Road construction 11. Facilities on the road 12. Road construction. Road equipment 13. Traffic at rest. City roads 14. Road maintenance 15. Road management (II colloquium)

Textbook (s)

Author/s	**Name of publication, publisher**	**Year**	**Pages (from-to)**
Mihajlovic, D.	Written lectures and presentations, Banja Luka	2007/2008.	

Additional readings

Author/s	**Name of publication, editor**	**Year**	**Pages (from-to)**

	Assesment methods	**Points**	**Percentage**
Evaluation criteria	Pre-exam obligations		
	attendance at lectures / exercises	10	10%
	annual assignment	20	20%
	test / colloquium	2x25	50%
	Final exam		
	final exam (oral / written)	20	20%
	IN TOTAL	100	100%

Web sources	
Applicable from	16/6/2021 - 175th session of the Council of the Traffic Faculty

	UNIVERSITY OF EAST SARAJEVO Faculty of Transport and Traffic Engineering ***Study program: Traffic*** ***Profile: The road transport and traffic*** I cycle / I year of study	

Course title	**ECOLOGY IN TRAFFIC**
Department	Department of Road Traffic and Transport- Faculty of Transport and Traffic Engineering

Code	**Course status**	**Semester**	**ECTS credits**
САФ11СД07103155,0220	mandatory	V	5.00

Professor/s	Milan Milotić, Associate Professor
Associate/s	Milan Milotić, Associate Professor

Weekly hours			**Individual student hours (per semester)**			**Student workload coefficient S_o**
L	**TE**	**LE**	**L**	**TE**	**LE**	**S_o**
2	2	0	2*15*1,5=45	2*15*1,5=45	2*15*1,4=0	1,5

Total teacher workload (hours, per semester) 2*15 + 2*15 + 0*15 = 60 hours	Total student workload (hours, per semester) 2*15*1,5 + 2*15*1,5+ 0*15*1,5 = 90 hours

Total workload: $W+T=U_{opt}$= 60 + 90 = 150 hours per semester

Course aims and learning outcomes	By mastering this course students will be able to: 1. analyze the problems of environmental pollution; 2. get acquainted with normative and legal regulations related to environmental protection; 3. get acquainted with the global effects of pollution; 4. get acquainted with the tendencies of future development of motor vehicle propulsion as well as to apply the acquired knowledge in practice.
Prerequisites	none
Teaching methods	Lectures, auditory exercises, consultations
Course content	1. Biosphere and ecology 2. Problems of environmental pollution 3. Normative and legal regulations 4. Maximum allowable concentrations 5. Air pollution and protection 6. Normative and legal regulations on air quality 7. I colloquium 8. Flue gas purification 9. Global effects of pollution 10. Traffic and environmental pollution 11. Impact of traffic on the environment 12. Normative and legal regulations for exhaust gas emissions 13. Methods of analysis of exhaust gas composition in motor vehicles 14. Tendencies of future development of motor vehicle propulsion 15. II colloquium

Textbook (s)

Author/s	**Name of publication, publisher**	**Year**	**Pages (from-to)**
Đurić, S., Stanojević, P., Milotić, M.	**Ekologija u saobraćaju, Saobraćajni fakultet Doboj**	**2016**	

Additional readings

Author/s	**Name of publication, editor**	**Year**	**Pages (from-to)**

	Assesment methods	**Points**	**Percentage**
Evaluation criteria	Pre-exam obligations		
	attendance at lectures / exercises	10	10%
	colloquium	2x25	50%
	term paper	10	10%

	Final exam		
	Oral exam	30	30%
	TOTAL	100	100%
Web sources			
Applicable from	16.06.2021 - 175 Session of the Councile, Faculty of Transport and Traffic engineering		

	UNIVERSITY OF EAST SARAJEVO Faculty of Transport and Traffic Engineering ***Study program: Traffic*** ***Profile: The road transport and traffic*** I cycle / III year of study	

Course title	**TRANSHIPMENT MECHANIZATION AND TECHNOLOGY**
Department	Department of Transport Engineering - Faculty of Transport and Traffic Engineering Doboj

Code	**Course status**	**Semester**	**ECTS credits**
САФ11СД07103257,0330	mandatory	V	7.00

Professor/s	PhD Ratko Đuričić, full professor
Associate/s	Sanja Simić, senior assistant

Weekly hours			**Individual student hours (per semester)**			**Student workload coefficient S_o**
L	**TE**	**LE**	**L**	**TE**	**LE**	**S_o**
3	3	0	3*15*1,4=63	2*15*1,4=42	0*15*1,4=0	1,4

Total teacher workload (hours, per semester) 3*15 + 2*15 + 0*15 = 75 hours	Total student workload (hours, per semester) $3*15*S_o + 2*15*S_o + 0*15*S_o$ = 105 hours

Total workload: $W+T=U_{opt}$= 75 + 105 = 180 hours per semester

Course aims and learning outcomes	By mastering this course, students will be able to: 1. Understand the basic principles of the place, role and importance of transhipment processes in reproduction, will be able to understand the cause-and-effect relationships of commodity flows in the process of reproduction and time-out of synchronization. 2. They will be able to analyze the parameters that affect transhipment, learn the division of means of mechanization as well as their good and bad properties 3. They will be able to use methods for calculating capacity and required power for continuous and cyclical transhipment facilities, 4. Will be able to demonstrate the establishment of transhipment systems with transhipment effects. 5. Manage transhipment processes, and that, after gaining practical experience in logistics centers, they manage certain sectors or organizations that are responsible for transhipment processes.
Prerequisites	None
Teaching methods	Lectures, auditory exercises, consultations
Course content	1. Introduction to the subject. Basic concepts of mechanization and transhipment technology. The role of the transhipment process 2. Transhipment task and realization of transhipment process 3. CONTINUOUS MEANS - Belt conveyor. 4. Articulated conveyor. Conveyor scraper. 5. Elevators. Redlers. Hanging conveyor 6. Worm screw conveyor. Rotary excavator. Pneumatic conveyors (Preparation for the first colloquium) 7. Feeders. Gravity conveyors (I colloquium) 8. (Analysis of the first colloquium) CYCLIC MEANS - Transport-handling vehicles 9. Forklift - classification, elements, stability, application 10. Forklift - handling cycle. Determination of power for vehicle movement 11. Transport-handling vehicles for handling containers. Shelves lifts 12. Cranes - classification, elements, application, loading cycle, power determination 13. Automatically guided vehicles. Design of transhipment processes (Preparation for the II colloquium) 14. II colloquium 15. (Analysis of the II Colloquium) Closing remarks and signature of the index

Textbook (s)			
Author/s	**Name of publication, publisher**	**Year**	**Pages (from-to)**

	Transhipment mechanization, scripts, Doboj Faculty of Transport and Traffic Engineering	2006.	
	Mechanization of transshipment, transshipment machines and design of transshipment processes, Belgrade	1996.	
	Internal transport, warehouses and transhipment, Faculty of Transport and Traffic Engineering, Belgrade	2001.	

Additional readings			
Author/s	**Name of publication, editor**	**Year**	**Pages (from-to)**

	Assesment methods	**Points**	**Percentage**
Evaluation criteria	Pre-exam obligations		
	attendance at lectures / exercises	10	10%
	teaching activity	5	5%
	passed colloquia (assignments)	35	35%
	passed colloquia (theory)	50	50%
	Final exam		
	for example. final exam (oral / written)		
	IN TOTAL	100	100%
Web sources			
Applicable from	16.06.2021 - 175 Session of the Councile, Faculty of Transport and Traffic engineering		

	UNIVERSITY OF EAST SARAJEVO Faculty of Transport and Traffic Engineering ***Study program: Traffic*** ***Profile: The road transport and traffic*** I cycle / III year of study	

Course title	Regulation of traffic flows
Department	Department of Transportation Engeneering - Faculty of Transport and Traffic Engineering

Code	**Course status**	**Semester**	**ECTS credits**
САФ11СД07103566,0321	Compulsory	VI	6,0

Professor/s	Marko M. Subotić
Associate/s	Marko M. Subotić

Weekly hours			**Individual student hours (per semester)**			**Student workload coefficient S_o**
L	**TE**	**LE**	**L**	**TE**	**LE**	**S_o**
2	3	0	42	63	0	1,4

Total teacher workload (hours, per semester) 2*15 + 3*15 + 0*15 = 75 hours	Total student workload (hours, per semester) 2*15*1,4 + 3*15*1,4 + 0*15*1,4 = 105 hours

Total workload: $W+T=U_{opt}$= 75 + 105 = 180 hours per semester

Course aims and learning outcomes	By mastering this course students will be able to: 1. Understand regulation of traffic flows and design elements of traffic signaling on road networks 2. Acquire and competence skills for traffic desing and regulaton 3. Acquire and competences for traffic management at intersections and traffic networks 4. Acquire basic knowledge about the application of ITS
Prerequisites	None
Teaching methods	Lectures, exercises, seminars, Field work
Course content	1. Introduction to the traffic regulation technique 2. Components of the traffic system. Traffic signalization 3. Network. Streets. Traffic mode. Traffic calming. Speed control 4. Crossroads and complex crossroads 5. Traffic regulation by light signalling 6. Signalization of crossroads 7. The First colloquium 8. Light signals for regulating intersections 9. Phase plan of the signaled intersection. Calculation methods of control parameter 10. Coordinated signaling 11. Adaptable traffic management systems. Priorities of the PUPT vehicle 12. Strategies for solving congestion on the city network 13. Regulating and managing traffic on the road and street network. Application of ITS 14. Maintenance of traffic signalization. Specific cases. Final speech 15. The Second colloquium

Textbook (s)

Author/s	**Name of publication, publisher**	**Year**	**Pages (from-to)**
Smiljan Vukanović	Regulisanje saobraćajnih tokova, CD izdanje, SF Doboj	2012	All
Marko Subotić	Zbirka rešenih zadataka iz projektovanja i regulisanja saobraćaja- Saobraćajni fakultet Beograd	2012	1-96

Additional readings

Author/s	**Name of publication, editor**	**Year**	**Pages (from-to)**
Osoba Miroslav, Vukanović Smiljan, Stanić Branko	Upravljanje saobraćajem pomoću svetlosnih signala, Saobraćajni fakultet Beograd	1999	1-153

Evaluation criteria	**Assesment methods**	**Points**	**Percentage**

	The regular attendance of the classes	10	10 %
	Semestral work	20	20 %
	Colloquiums/tests	70	70%
	The final exam	70	70 %
	Total	100	100 %
Web sources			
Applicable from	16.06.2021. – 175th Session of the Council of the Faculty of Transport and Traffic Engineering		

	UNIVERSITY OF EAST SARAJEVO Faculty of Transport and Traffic Engineering ***Study program: Traffic*** ***Profile: The road transport and traffic*** I cycle / I year of study	

Course title	**PUBLIC TRANSPORT OF PASSENGERS**
Department	Department of Road Traffic and Transport - Faculty of Transportation Doboj

Code	**Course status**	**Semester**	**ECTS credits**
САФ11СД07134266,0330	required	VI	6,00

Professor/s	Prof. Slaven M. Tica, Ph.D. Eng. traffic
Associate/s	Mr Radenka Bjelosevic, Senior Assistant

Weekly hours			**Individual student hours (per semester)**			**Student workload coefficient S_o**
L	**TE**	**LE**	**L**	**TE**	**LE**	**S_o**
X	Y	Z	$X*15*S_o$	$Y*15*S_o$	$Z*15*S_o$	

Total teacher workload (hours, per semester) X*15 + Y*15 + Z*15 = W hours	Total student workload (hours, per semester) $X*15*S_o + Y*15*S_o + Z*15*S_o$ = T hours

Total workload: $W+T=U_{opt}$= + = hours per semester

Course aims and learning outcomes	By mastering this course the student will be able to: 1. to define problems related to passenger transport in cities 2. to define the basic terms and conditions in JMTP 3. to describe and quantify the basic characteristics of public mass passenger transport (JMTP) technology so that they can perform a comparative analysis of the performance of the JMTP system.
Prerequisites	No special conditions
Teaching methods	Lectures, auditory exercises, seminar work, fieldwork
Course content	1. Cities and passenger transport systems. 2. Transport systems and subsystems in passenger transport in cities 3. Types of services in JMTP 4. Transport process - quality loop 5. Transport needs and requirements, Transport offer 6. JMTP transport networks 7. Static and dynamic characteristics of TM JMTP (I colloquium) 8. JMTP line. Functioning of JMTP 9. Timetables 10. Tariff systems, ticket systems and billing 11. Results of work in passenger transport 12. Quality of systems and services in JMTP 13. JMTP system planning. 14. Objectives of the system. Condition analysis and condition assessment 15. Improvement and development of JMTP system (II colloquium)

Textbook (s)

Author/s	**Name of publication, publisher**	**Year**	**Pages (from-to)**
Slaven Tica	Public passenger transport systems: Elements of technology, organization and management, Faculty of Transport and Traffic Engineering, Belgrade	2019	all
Radovan Bankovic	Organization and technology of public urban passenger transport, Faculty of Transport and Traffic Engineering, Belgrade	1995	all
Snezana M. Filipovic	Optimizations in the public urban passenger transport system	1995	all

Additional readings

Author/s	**Name of publication, editor**	**Year**	**Pages (from-to)**

Vukan Vuchic	Urban Transit Operation, Planning and Economics	2005	all

	Assesment methods	Points	Percentage
Evaluation criteria	Pre-exam obligations		
	attendance at lectures / exercises	10	10%
	positively evaluated seminar paper / project / essay	20	20%
	test / colloquium	70	70%
	Final exam		
	final exam (oral / written)		
	IN TOTAL	100	100%
Web sources			
Applicable from	16/6/2021 - 175th session of the Council of the Traffic Faculty		

	UNIVERSITY OF EAST SARAJEVO Faculty of Transport and Traffic Engineering ***Study program: Traffic*** ***Profile: The road transport and traffic*** I cycle / III year of study	

Course title	**Road capacity and Level of Service (LOS)**
Department	Department of Road Traffic and Transport- Faculty of Transport and Traffic Engineering

Code	**Course status**	**Semester**	**ECTS credits**
САФ11СД07133966,0230	Compulsory	VI	6,0

Professor/s	Marko M. Subotić
Associate/s	Dunja Radović Stojčić

Weekly hours			**Individual student hours (per semester)**			**Student workload coefficient S_o**
L	**TE**	**LE**	**L**	**TE**	**LE**	**S_o**
2	3	0	30	30	0	1,5

Total teacher workload (hours, per semester) 2*15 + 2*15 + 0*15 = W 30+ 30+ 0= 60 h	Total student workload (hours, per semester) 2*15*1,5 + 2*15*1,5 + 0*15*1,5 = T 45 + 45 + 0 = 90 h
Total workload: U_{opt} = 60 + 90 = 150 hours per semester	

Course aims and learning outcomes	By mastering this course students will be able to: 1. Analyzes and practically applies capacity analyzes 2. Performs detailed analyzes of the Service Level for all functional parts of the network 3. Identify network bottlenecks and propose adequate technical measures to eliminate them 4. Performs sizing of the cross profile of roads 5. Conducts functional evaluation procedures for real problems 6. Functionally evaluates the proposed project solutions 7. For planning, design and operational capacitive analysis of all functional parts of the road and street network
Prerequisites	Passed exam: The theory of traffic flow
Teaching methods	Lectures, exercises, seminars
Course content	1. Basic characteristics of traffic flows and road elements significant for Capacity and Level of Service analysis 2. Basic characteristics of traffic flows and road elements significant for Capacity and Level of Service analysis 3. Primary levels of Capacity and Level of Serivce analysis 4. General methodological approach in Capacity and Level of Service analysis of urban and rural roads 5. Capacity and Level of Service analysis of Basic Freeway Segments 6. Capacity and Level of Service analysis of Freeway Weaving Segments and Freeway Merge and Deverge segments **7.** Capacity and Level of Service analysis of Freeway Facilities: operational, design and planning analysis procedures **(The First colloquium)** 8. Capacity and Level of Service analysis of Two-Lane Highways 9. Capacity and Level of Service analysis of Multilane Highways 10. Capacity and Level of Service analysis of Signalized Intersections 11. Capacity and Level of Service analysis of Urban Street Segments 12. Capacity analysis methods of Bus Lanes on Arterials 13. Capacity and Level of Servise analysis of Pedestrian Facilities 14. Capacity and Level of Servise analysis of Bicycle Facilities **15. The Second colloquium**

Textbook (s)

Author/s	**Name of publication, publisher**	**Year**	**Pages (from-to)**
Ljubiša Kuzović	KAPACITET I NIVO USLUGE DRUMSKIH SAOBRAĆAJNICA, Saobraćajni fakultet Beograd	2000	all
	HIGHWAY CAPACITY MANUAL ,Transportation	2016	all

	Research Board, National Research Council		
	HIGHWAY CAPACITY MANUAL ,Transportation Research Board, National Research Council	2020	all
Vladan Tubić	KAPACITET I NIVO USLUGE DENIVELISANIH RASKRSNICA	2016	all
Additional readings			
Author/s	**Name of publication, editor**	**Year**	**Pages (from-to)**
Vladan Tubić	ZBIRKA REŠENIH ZADATAKA I KAPACITETA I NIVOA USLUGE DRUMSKIH SAOBRAĆAJNICA, Saobraćajni fakultet Beograd	2000	all
	HANDBUCH FUR DIE BEMESSUNG VON STRABENKVERKEHRSANLAGE, Forchungsgesellschaft fur Strassen – und Verkehrswesen	2001	all

	Assesment methods	**Points**	**Percentage**
Evaluation criteria			
	The regular attendance of the classes	10	10 %
	Semestral work	20	20 %
	Colloquiums/tests	70	70%
	The final exam	70	70 %
	Total	100	100 %
Web sources			
Applicable from	16.06.2021. – 175th Session of the Council of the Faculty of Transport and Traffic Engineering		

	UNIVERSITY OF EAST SARAJEVO Faculty of Transport and Traffic Engineering ***Study program: Traffic*** ***Profile: The road transport and traffic*** I cycle / I year of study	

Course title	**ROAD VEHICLE DYNAMICS**
Department	Department of Road Traffic and Transport- Faculty of Transport and Traffic Engineering

Code	**Course status**	**Semester**	**ECTS credits**
САФ11СД07203065,0220	elective	VI	5,00

Professor/s	PhD Mesud Ajanović
Associate/s	PhD Mesud Ajanović

Weekly hours			**Individual student hours (per semester)**			**Student workload coefficient S_o**
L	**TE**	**LE**	**L**	**TE**	**LE**	**S_o**
X	Y	Z	$X*15*S_o$	$Y*15*S_o$	$Z*15*S_o$	

Total teacher workload (hours, per semester) X*15 + Y*15 + Z*15 = W hours	Total student workload (hours, per semester) $X*15*S_o + Y*15*S_o + Z*15*S_o$ = T hours
Total workload: $W+T=U_{opt}$= 90 + 120 = 210 hours per semester	

Course aims and learning outcomes	By mastering this course the student will be able to: 1. Control modes, kinematics, dynamics and stability of control 2. Stability of the vehicle on a sloping road in a curve 3. Collision theory of motor vehicles 4. Maintenance and overhaul procedures
Prerequisites	/
Teaching methods	Lectures, theoretical exercises, consultations
Course content	1. Movement of vehicles with elastic wheels on a hard surface - wheel rolling mechanics 2. Vehicle motion resistance, traction-dynamic and braking characteristics 3. Control modes, kinematics, dynamics and stability of control 4. Vehicle stability on a sloping road in a curve 5. Definition, classification and typical constructive solutions of vehicle systems and assemblies 6. Safety, economy and environmental problems of vehicles 7. I colloquium 8. Theory of motor vehicle collisions 9. Basics of tribology 10. Lubricants, oils, greases 11. Technical fluids 12. Wear 13. Maintenance and overhaul procedures 14. Organization of service and repair workshops 15. II colloquium

Textbook (s)

Author/s	**Name of publication, publisher**	**Year**	**Pages (from-to)**
Мишић Б.	*.Друмска возила са динамиком*, скрипта, Саобраћајнифакултет Добој,.	2009.	
Јанковић Д., С. Тодоровић Ј.	*Теорија кретања моторних возила*, Машински факултет Београд,	1990.	

Additional readings

Author/s	**Name of publication, editor**	**Year**	**Pages (from-to)**
Дедовић В.	Динамика возила, Саобраћајни факултет Београд ,	2004.	

	Assesment methods	**Points**	**Percentage**
Evaluation criteria	Pre-examination obligations		
	Activity during lectures-tests	10	10%

	colloquiums	2x20	40%
	positively evaluated term paper		
	Final exam		
	Final exam – oral examination	50	50
	Total	100	100%
Web sources			
Applicable from	16.06.2021. – 175th Session of the Council of the Faculty of Transport and Traffic Engineering		

	UNIVERSITY OF EAST SARAJEVO Faculty of Transport and Traffic Engineering ***Study program: Traffic*** ***Profile: The road transport and traffic*** I cycle / III year of study	

Course title	**MANAGEMENT IN TRAFFIC**
Department	Department of Marketing and Management, Faculty of Economics in Brčko

Code	**Course status**	**Semester**	**ECTS credits**
САФ11СД07203865,0220	electoral	VI	5,0

Professor/s	Assist. professor Živko Erceg
Associate/s	Siniša Božičković, MBA

Weekly hours			**Individual student hours (per semester)**			**Student workload coefficient S_o**
L	**TE**	**LE**	**L**	**TE**	**LE**	**S_o**
2	2	0	60	60	0	1,33

Total teacher workload (hours, per semester) 3*15 + 3*15 + 0*15 = 90	Total student workload (hours, per semester) 3*15*1,33 + 3*15*1,33 + 0*15*1,33 = 120
Total workload: 90 + 120 = 210 h =U_{opt}	

Course aims and learning outcomes	Completing this course students will be able to: 1. Learn the fundamentals of management as well as the principles and definitions of management; 2. Fundamentals of planning 3. Leadership and coordination 4. Delegating traffic tasks
Prerequisites	No prerequisites
Teaching methods	Lectures, auditory exercises, seminar work, fieldwork
Course content	1. Fundamentals of management, definition and principles 2. Organization of the traffic company 3. Fundamentals of planning 4. Communication in the traffic 5. Fundamentals of tendencies of human resource management 6. Leadership and coordination 7. Management Systems in traffic 8. I Colloquium 9. Concept and importance of control 10. Process and methods of traffic control 11. Information systems, information and management 12. Transformation processes of management of companies 13. New concepts and approaches to management 14. Traffic management in the future 15. II colloquium

Textbook (s)

Author/s	**Name of publication, publisher**	**Year**	**Pages (from-to)**
Vešović, V.	Traffic Management, Faculty of Transport and Traffic Engineering, Belgrade	1996.	1-284
Lončarević, R.	Management, Singidunum University, Belgrade	2007.	1-417
Stavrić, B. i Erceg, Ž.	Business Systems Management, Kiz Center Belgrade	2020.	

Additional readings

Author/s	**Name of publication, editor**	**Year**	**Pages (from-to)**

Evaluation criteria	**Assesment methods**	**Points**	**Percentage**
	Pre-exam obligations		
	Presence of lectures / exercises	10	10%

	Colloquium	2x20	40%
	Final exam		
	Final exam (oral / written)	50	50%
	TOTAL	100	100 %
Applicable from	16.06.2021. – 175. session of the Teaching-Scientific Council of the Faculty of Transport and Traffic Engineering		

	UNIVERSITY OF EAST SARAJEVO Faculty of Transport and Traffic Engineering ***Study program: Traffic*** ***Profile: The road transport and traffic*** I cycle / I year of study	

Course title	**VEHICLE OPERATION AND MAINTENANCE**
Department	Department of Motor Vehicles, Operation, Maintenance and Diagnostics of Vehicles

Code	**Course status**	**Semester**	**ECTS credits**
САФ11СД07203465,0220	elective	VI	5.0

Professor/s	Mesud Ajanović
Associate/s	Dunja Radović Stojčić

Weekly hours			**Individual student hours (per semester)**			**Student workload coefficient S_o**
L	**TE**	**LE**	**L**	**TE**	**LE**	**S_o**
2	2	0	2	2	0	1,5

Total teacher workload (hours, per semester) 2*15 + 2*15 + 0*15 = W 30+ 30+ 0= 60 h	Total student workload (hours, per semester) 2*15*1,5 + 2*15*1,5 + 0*15*1,5 = T 45 + 45 + 0 = 90 h
Total workload: 60 + 90 = 150 h	

Course aims and learning outcomes	By mastering this course the student will be able to: Using known methods of monitoring the operation and maintenance of vehicles, with the establishment of failure diagnostics
Prerequisites	Does not have
Teaching methods	Lectures, auditory exercises, seminar paper
Course content	1. Defining the concept of maintenance. Process approach to maintenance 2. Basic ways of realization of maintenance 3. Determining the condition of the vehicle - diagnostics 4. Set a maintenance goal 5. Vehicle performance 6. Measurement of performance characteristics 7. I colloquium 8. Conditions for realization of maintenance 9. Plant maintenance support functions 10. Requirements in relation to the protection of humans and the environment 11. Quality of maintenance 12. Identification of users and specification of their requirements 13. Defining requirements for suppliers and subcontractors 14. Improving maintenance 15. II colloquium

Textbook (s)

Author/s	**Name of publication, publisher**	**Year**	**Pages (from-to)**
Ranko Bozickovic	Operation and maintenance of vehicles	2011	1-317

Additional readings

Author/s	**Name of publication, editor**	**Year**	**Pages (from-to)**
Ranko Bozickovic	Collection of tasks from the reliability of technical systems	2009	1-135

Evaluation criteria	**Assesment methods**	**Points**	**Percentage**
	Pre-exam obligations		
	for example. attendance at lectures / exercises	10	10%
	for example. I am positively assessed. paper / project / essay	20	20%
	for example. case study - group work	/	/
	for example. test / colloquium	70	70%

	for example. laboratory work / lab. exercises	/	/
	for example. practical work	/	/
	Final exam		
	for example. final exam (oral / written)	70	70%
	IN TOTAL	100	100%
Web sources			
Applicable from	16.06.2021 - 175 Session of the Councile, Faculty of Transport and Traffic engineering		

	UNIVERSITY OF EAST SARAJEVO Faculty of Transport and Traffic Engineering ***Study program: Traffic*** ***Profile: The road transport and traffic*** I cycle / I year of study	

Course title	**MOTORS SUS**
Department	Department of Motor Vehicles, Operation, Maintenance and Diagnostics of Vehicles

Code	**Course status**	**Semester**	**ECTS credits**
САФ11СД07203965,0220			

Professor/s	Zoran Ristikić
Associate/s	Milan Eremija

Weekly hours			**Individual student hours (per semester)**			**Student workload coefficient S_o**
L	**TE**	**LE**	**L**	**TE**	**LE**	**S_o**
3	3	0	3	3	0	1

Total teacher workload (hours, per semester) 3*15 + 3*15 + 0*15 = 90	Total student workload (hours, per semester) 3*15*1,33 + 3*15*1,33 + 0*15*1,33 = 90
Total workload: 90 + 90 = 180 h	

Course aims and learning outcomes	By mastering this course the student will be able to: 1. to learn about the division of SUS engines, their characteristics and basic elements; 2. to get acquainted with the principles of operation of two-stroke and four-stroke SUS engines; 3. to analyze the basic systems of SUS engines as well as the processes in SUS and other engines; 4. acquired knowledge applied in practice.
Prerequisites	Does not have
Teaching methods	Lectures, auditory exercises, seminar paper
Course content	1. Engine definition. History of SUS engine development 2. SUS engine division 3. Geometric parameters of the SUS engine. Basic elements, mechanisms and systems of SUS engines 4. Principle of operation of four-stroke and two-stroke SUS engines 5. Piston mechanism 6. Crankshaft and engine flywheel 7. Mechanism for changing the working material (I colloquium) 8. Basic SUS engine systems 9. Theoretical cycles of SUS engines 10. Thermal - physical properties of fuels, mixtures and combustion products 11. Actual SUS engine cycles 12. Processes of changing the working substance in SUS engines 13. The process of compression, combustion and expansion in oto engines 14. Compression, combustion and expansion process in diesel engines 15. Indicator and effective indicators of SUS engines (II colloquium)

Textbook (s)

Author/s	**Name of publication, publisher**	**Year**	**Pages (from-to)**
Todorovic, T., Antonic Z.	Fundamentals of SUS engines, Faculty of Technical Sciences Novi Sad, Novi Sad,	1997	
Klinar, I.	SUS engines, auxiliary textbook, FTN, Novi Sad,	2008	

Additional readings

Author/s	**Name of publication, editor**	**Year**	**Pages (from-to)**
Todorovic, T., Antonic Z.	Basics of SUS engines, Faculty of Transportation Doboj,	2009	
Tomic, M., Petrovic, S.	Internal combustion engines, Faculty of	2000	

	Mechanical Engineering, Belgrade		

	Assesment methods	Points	Percentage
Evaluation criteria	Pre-exam obligations		
	attendance at lectures / exercises	10	10%
	I am positively assessed. paper / project / essay	10	10%
	case study - group work		
	test / colloquium	2x10	20%
	Final exam		
	oral	60	60%
	IN TOTAL	100	100%
Web sources			
Applicable from	16.06.2021 - 175 Session of the Councile, Faculty of Transport and Traffic engineering		

	UNIVERSITY OF EAST SARAJEVO Faculty of Transport and Traffic Engineering	
	Study program: Traffic ***Profile: The road transport and traffic***	
	I study cycle / IV year of study	

Course title	**TRAINING EDUCATION**
Department	Chair of Transportation Engineering - Faculty of Transportation Doboj

Code	**Course status**	**Semester**	**ECTS credits**
САФ11СД07104375,5220	Required (road and city traffic)	VII	5,5
Professor/s	Dr Tihomir Djuric, Associate Professor		
Associate/s	Dr Tihomir Djuric, Associate Professor		

Weekly hours			**Individual student hours (per semester)**			**Student workload coefficient S_o**
L	**TE**	**LE**	**L**	**TE**	**LE**	**S_o**
2	2	0	2*15*0,2=6	2*15*0,2=6	0*15*0.2=0	0,2

Total teacher workload (hours, per semester) 2*15 + 2*15 + 0*15 =60 hours	Total student workload (hours, per semester) 2*15*0.2 + 2*15*0.2+ 0*15*0.2= 12 hours
Total workload: W+T=U_{opt}= **60 + 12 = 72** hours per semester	

Course aims and learning outcomes	By mastering this course the student will be able to: 1. understand what traffic ethics is, traffic culture, traffic psychology; 2. to define the basics of preschool education programs for children aged three to seven years; 3. to explain the safe, ethical and risky behavior of road users; 4. to explain what is prevention and models of improving traffic safety; 5. to define models, measures and programs for working with high-risk drivers; 6. to explain the mutual relations between traffic participants; 7. The concept and consequences of traffic accidents.
Prerequisites	no conditions
Teaching methods	ex-chair lectures, discussions, focus groups, individual and group work
Course content	1. Ethics, Traffic Ethics, Basic Ethical Principles for Traffic Participants. 2. Traffic culture, Ethical culture and traffic safety culture and Models. 3. Traffic Psychology, Emotions and Motivations, Personality Psychology. 4. Aims, tasks and content of pre-school education, Program principles. 5. Education on traffic safety in primary school, What are the goals of safety education. saob. 6. Children as road users, Suffering of children and young people under 18 in SN in RS and in EU. 7. Traffic Safety, Risky Traffic, High Risk Drivers. 8. Interactions between traffic participants, Forms of aggressive behavior. 9. The concept and behavior of the driver in the event of a traffic accident, Errors of the driver in the detection phase infor. 10. Prevention and models of improving traffic safety. 11. Coercion as a factor in traffic safety, Ergonomics as a preventive measure. 12. Methods and procedures for identifying and handling high-risk drivers. 13. Defining and applying models for the identification and classification of high-risk drivers. 14. Description and content of models, methods and objectives for high-risk driver education. 15. Topics covered at the High Risk Driver Rehabilitation Seminar.

Textbook (s)

Author (s)	**Name of the publication, publisher**	**Year**	**Pages (from-to)**
1. Djuric, T., and Popović Dj	Traffic Education, Faculty of Transport, Doboj	2021	1-226
2. Djuric, T., Popović Dj and	Traffic Education, Faculty of Transport, Doboj	2016	1-338

Boskovic M.			
Additional readings			
Author (s)	**Name of the publication, publisher**	**Year**	**Pages (from-to)**
Law on Basics of Road Traffic Safety in BiH, (BiH Official Gazette, No. 6/06, 75/06, 44/07, 84/09, 48/10, 18/13, 8/17, 89/17, 9/18, and)		2018	
Law on Road Safety, (Official Gazette of the Republika Srpska, No. 41/09, 53/10, 101/11, 32/13 -US, 55/14).		2014	

Evaluation criteria	**Assesment methods**	**Points**	**Percentage**
	Pre-exam obligations		
	activity during class - tests	10	10
	colloquiums	15	15
	positively evaluated seminar paper	20	20
	Final exam		
	written part of the exam	35	35
	final exam - oral	20	20
	IN TOTAL	**100**	**100%**
Web sources			
Applicable from	16.06.2021 - 175 Session of the Councile, Faculty of Transport and Traffic engineering		

	UNIVERSITY OF EAST SARAJEVO Faculty of Transport and Traffic Engineering ***Study program: Traffic*** ***Profile: The road transport and traffic*** I cycle / IV year of study	

Course title	**TRAFFIC TERMINALS**
Department	Department for road traffic and transport

Code	**Course status**	**Semester**	**ECTS credits**
САФ11СД07104177,0330	compulsory	VII	7,00

Professor/s	PhD Bojan MARIĆ
Associate/s	MSc Dunja RADOVIĆ STOJČIĆ

Weekly hours			**Individual student hours (per semester)**			**Student workload coefficient S_o**
L	**TE**	**LE**	**L**	**TE**	**LE**	**S_o**
X	Y	Z	$X*15*S_o$	$Y*15*S_o$	$Z*15*S_o$	

Total teacher workload (hours, per semester) X*15 + Y*15 + Z*15 = W hours	Total student workload (hours, per semester) $X*15*S_o + Y*15*S_o + Z*15*S_o$ = T hours
Total workload: $W+T=U_{opt}$= + = hours per semester	

Course aims and learning outcomes	After this course the student will be able to: 1. quantifies the requirements of terminal users by categories, 2. optimizes the conceptual and technological solution of the terminal depending on the technological process that takes place in the terminal, 3. defines the criteria for the selection of the location of the terminal depending on the condition of the city transport system, 4. quantifies the requirements for parking in a certain zone or city depending on the degree of attractiveness, 5. defines the strategy of parking management in a city, populated place or city zone.
Prerequisites	none
Teaching methods	lectures, theoretical exercises, consultations
Course content	1. Significance and role of traffic terminals for accommodation, storage, supply, care, technical maintenance and repairs 2. Stationary traffic, parking problems 3. Planning and estimate of parking needs 4. Garage parking - types, basic types and characteristics of garages 5. Service stations and motor depots - types and characteristics 6. Criteria for arrangement of objects 7. I colloquium 8. Bus stations - planning, estimate and design 9. Mathematical models for passenger number calculation 10. Organization of reception and departure of buses 11. Guidance systems 12. Stations for supply, transport and storage of liquid fuels - types and basic types 13. Stations in urban and suburban areas 14. Truck stations and motels 15. II colloquium

Textbook (s)

Author/s	**Name of publication, publisher**	**Year**	**Pages (from-to)**
Marko Subotić, Edis Softić, Bojan Marić	Saobraćajni terminali	2017	
Svetozar Kostić, Branko Davidović, Zoran Papić	Drumski saobraćajni terminali, FTN Novi Sad	2013	1-214
Nada Milosavljević	Parkiranje, Saobraćajni fakultet Beograd	2010	1-165
Nikola Putnik	Autobaze i autostanice	2007	2-340
Nada Milosavljević	Elementi za tehnološko projektovanje objekata u drumskom saobraćaju, Saobraćajni fakultet	2007	1-127

	Beograd		
Additional readings			
Author/s	**Name of publication, editor**	**Year**	**Pages (from-to)**

Evaluation criteria	**Assesment methods**	**Points**	**Percentage**
	Pre-examination obligations		
	presence in lectures/ theoretical exercises	10	10%
	positively evaluated term paper	10	10%
	test 1	30	30%
	test 2	30	30%
	Final exam (oral examination)	20	20%
	TOTAL	100	100%
Web sources			
Applicable from	16.06.2021 - 175 Session of the Councile, Faculty of Transport and Traffic engineering		

	UNIVERSITY OF EAST SARAJEVO Faculty of Transport and Traffic Engineering ***Study program: Traffic*** ***Profile: The road transport and traffic*** I cycle / IV year of study	

Course title	**EVALUATION IN TRAFFIC**
Department	Department for Transport Engineering - Faculty of Transport and Traffic Engineering

Code	**Course status**	**Semester**	**ECTS credits**
САФ11СД07104276,0220	compulsory	VII	6,00

Professor/s	PhD Marko Subotić, Traffic Engineer
Associate/s	MSc Dunja Radović Stojčić, Traffic Engineer

Weekly hours			**Individual student hours (per semester)**			**Student workload coefficient S_o**
L	**TE**	**LE**	**L**	**TE**	**LE**	**S_o**
2	2	0	2*15*2=60	2*15*2=60	0*15*2=0	2

Total teacher workload (hours, per semester) 2*15 + 2*15 + 0*15 = 60	Total student workload (hours, per semester) 2*15*2 + 2*15*2 + 0*15*2 = T

Total workload: $W+T=U_{opt}$= 60 + 120 = 180 hours per semester

Course aims and learning outcomes	1 acquisition of essential knowledge about basic indicators and criteria of evaluation in traffic 2. training students to implement the functional, environmental, investment and economic evaluation 3. implementation of multi-criteria evaluation 4. students will acquire the basic knowledge for engineering application of methods and procedures in traffic evaluation on rural road network 5. independent creation of term paper
Prerequisites	none
Teaching methods	lectures, theoretical exercises, consultations
Course content	1. Objectives, position, function and tasks of evaluation in traffic 2. Functional evaluation of road sections 3. Functional evaluation of road sections 4. Functional evaluation of intersections and road objects 5. Functional evaluation of intersections and road objects 6. Environmental evaluation 7. CBA and CEA analysis (I test) 8. Cost models 9. Cost models 10. Economic evaluation 11. Economic evaluation 12. Procedures for analysis of indicators on which is based economic evaluation 13. Sensitivity test 14. Investment evaluation 15. Multi-criteria evaluation (II test)

Textbook (s)

Author/s	**Name of publication, publisher**	**Year**	**Pages (from-to)**
Kuzović Lj.:	Vrednovanje u upravljanju razvojem i eksploatacijom putne mreže, Saobraćajni fakultet Beograd	1994.	-
Kuzović Lj.:	Utvrđivanje potreba i opravdanosti izdvajanja tranzitnog saobraćaja sa gradskih arterija izgradnjom obilaznica, Saobraćajni fakultet Beograd	1997.	-
Transport Innovation Deployment for Europe	Impact Assessment Handbook	2013	

Evaluation criteria	**Assesment methods**	**Points**	**Percentage**
	Pre-examination obligations		

	presence in lectures/ theoretical exercises	10	10 %
	positively evaluated term paper	20	20 %
	test 1	20	20 %
	test 2	20	20 %
	Students who pass all tests are released of written part, final exam		
	Final exam		
	oral examination	30	30 %
	TOTAL	100	100 %
Applicable from	16.06.2021 - 175 Session of the Councile, Faculty of Transport and Traffic engineering		

	UNIVERSITY OF EAST SARAJEVO Faculty of Transport and Traffic Engineering ***Study program: Traffic*** ***Profile: The road transport and traffic*** I cycle / IV year of study	

Course title	**ORGANIZATION OF TRAFFIC COMPANIES**
Department	Department for Transport Engineering – Faculty of Traffic Engineering Doboj

Code	**Course status**	**Semester**	**ECTS credits**
САФ11СД07104575,5220	mandatory	VII	6,00

Professor/s	PhD Perica Gojković, full professor
Associate/s	Sanja SIMIĆ, senior assistant

Weekly hours			**Individual student hours (per semester)**			**Student workload coefficient S_o**
L	**TE**	**LE**	**L**	**TE**	**LE**	**S_o**
3	2	0	3*15*1,4=63	2*15*1,4=42	0*15*1,4=0	1,4

Total teacher workload (hours, per semester) 3*15 + 2*15 + 0*15 = 75	Total student workload (hours, per semester) 3*15*1,4 + 2*15*1,4+ 0*15*1,4 = 105

Total workload: $W+T=U_{opt}$= 75 + 105 = 180 hours per semester

Course aims and learning outcomes	By mastering this course, students will be able to: 1. learn the basic concepts of organization, as well as types and organizational models of enterprises; 2. will be able to analyze the organization of large business systems, business and development policy and development factors; 3. independently organize and lead a meeting according to defined rules; 4. acquired knowledge in practice to apply and establish their own company as well as to give instructions to others how to do it
Prerequisites	None.
Teaching methods	lectures, auditory and computational exercises, consultations
Course content	1. The concept and development of the organization 2. Types of organizational structure 3. Organizational models of the company 4. Organizing large business systems 5. Organizational models of transport companies 6. Business and development policy 7. Characteristic business factors (I colloquium) 8. Basic methods and techniques for optimization 9. Organizational culture 10. Organization of business functions 11. Business information systems 12. Organization control. Organizing a meeting 13. Organization and management of investments 14. Organization design. Organizational transformation of the company 15. II colloquium

Textbook (s)

Author/s	**Name of publication, publisher**	**Year**	**Pages (from-to)**
Vešović, B. V., Bojović, J. N., Knežević, Lj. N.	Organization of transport companies, Faculty of Transport and Traffic Engineering, Belgrade,	2007.	

Additional readings

Author/s	**Name of publication, editor**	**Year**	**Pages (from-to)**

Evaluation criteria	**Assesment methods**	**Points**	**Percentage**
	Preexamination obligations		
	Presence during lectures	10	10 %

	Colloquium 1	10	10 %
	Colloquium 2	40	40 %
	passed colloquia (theory)	20	20 %
	Final examination		
	Oral examination	10	10 %
	Total	100	100 %
Applicable from	16.06.2021 - 175 Session of the Councile, Faculty of Transport and Traffic engineering		

	UNIVERSITY OF EAST SARAJEVO Faculty of Transport and Traffic Engineering ***Study program: Traffic*** ***Profile: The road transport and traffic*** I cycle / I year of study	

Course title	**ROAD FREIGHT TRANSPORT TECHNOLOGY AND ORGANISATION**
Department	

Code	**Course status**	**Semester**	**ECTS credits**
САФ11СД07134176,0230			

Professor/s	PhD Olivera Medar
Associate/s	Mr Radenka Bjelošević

Weekly hours			**Individual student hours (per semester)**			**Student workload coefficient S_o**
L	**TE**	**LE**	**L**	**TE**	**LE**	**S_o**
X	Y	Z	$X*15*S_o$	$Y*15*S_o$	$Z*15*S_o$	

Total teacher workload (hours, per semester) X*15 + Y*15 + Z*15 = W hours	Total student workload (hours, per semester) $X*15*S_o + Y*15*S_o + Z*15*S_o$ = T hours
Total workload: $W+T=U_{opt}$= + = hours per semester	

Course aims and learning outcomes	Each student will be able to: 1. know basics characteristics and role of road freight transport 2. distinguish characteristics of road freight services and define the conditions for their execution 3. describe the technology of a transport process, define the characteristics of the vehicles and the conditions for the enactment of specific transportation demands 4. learn the basic indicators and performance measures of an vehicle fleet (KPI)
Prerequisites	
Teaching methods	
Course content	1. Road freight transport: basic concepts and characteristics 2. Access to the road haulage market and to the occupation of road transport operator 3. Basic regulatory framework 4. Road transport services types' and characteristics', and preconditions for their operation 5. Road freight transport market 6. Transport demand characteristics 7. The basic processes and subprocesses in the freight transport services 8. Main activities of transport services execution processes 9. I colloquium 10. Essentials for some types of services 11. Vehicle fleets' key performance indicators 12. Tone-km and productivity 13. Performance analysis and benchmarking 14. Defining criteria for sustainable transport and their application in the enterprise 15. Information systems 16. II colloquium and test

Textbook (s)

Author/s	**Name of publication, publisher**	**Year**	**Pages (from-to)**
M. Marković	Optimizacija prevoznog procesa u automobilskom transportu, Univerzitet u Beogradu, Saobraćajni fakultet (in Serbian)	2003.	-
I. Jovanović	Modeliranje transportnih kapaciteta teretnog autotransporta, Univerzitet u Beogradu, Saobraćajni fakultet (in Serbian)	2005.	-
D. Lowe	The Transport Manager's & Operator's handbook 2006, 36th edition, Kogan Page, London, UK	2006.	-

Additional readings

Author/s	Name of publication, editor	Year	Pages (from-to)
A. Manojlović, O. Medar	Zbirka zadataka iz tehnologije transporta robe, Univerzitet u Beogradu, Saobraćajni fakultet (in Serbian)	2018.	-

	Assesment methods	Points	Percentage
Evaluation criteria			
Web sources			
Applicable from	16.06.2021 - 175 Session of the Councile, Faculty of Transport and Traffic engineering		

	UNIVERSITY OF EAST SARAJEVO Faculty of Transport and Traffic Engineering ***Study program: Traffic*** ***Profile: The road transport and traffic*** I cycle / IV year of study	

Course title	**TRAFFIC ACCIDENTS INVESTIGATION**
Department	Department for road traffic and transport

Code	**Course status**	**Semester**	**ECTS credits**
САФ11СД07104885,0311	compulsory	VII	5,00

Professor/s	PhD Bojan MARIĆ
Associate/s	PhD Bojan MARIĆ

Weekly hours			**Individual student hours (per semester)**			**Student workload coefficient S_o**
L	**TE**	**LE**	**L**	**TE**	**LE**	**S_o**
X	Y	Z	$X*15*S_o$	$Y*15*S_o$	$Z*15*S_o$	

Total teacher workload (hours, per semester) X*15 + Y*15 + Z*15 = W hours	Total student workload (hours, per semester) $X*15*S_o + Y*15*S_o + Z*15*S_o$ = T hours

Total workload: $W+T=U_{opt}$= + = hours per semester

Course aims and learning outcomes	After this course the student will be able to: 1. to understand what is the phenomenology and etiology of traffic accidents; 2. to define the concept and theories of traffic accidents, as well as models of traffic safety; 3. to explain the monitoring of traffic accidents; 4. to define the concept and significance of traces of traffic accidents; 5. to define the elements of the investigation documentation and their specifics; 6. to find, secure and mark traces of traffic accidents; 7. understand the investigation and analysis of traffic accidents.
Prerequisites	none
Teaching methods	lectures, theoretical exercises, consultations, individual and group work
Course content	1. The concept and significance of traffic accident investigation (TAI). Accident Theories and Model of traffic safety 2. Legal basis for performing TAI. Specifics of the TAI in relation to other investigations 3. Methods of fixing the place of a traffic accident (TA) 4. Elements of the investigation documentation. Technical principles for the preparation of investigation documentation 5. Practical actions in the investigation of traffic accidents 6. Elements of traffic trasology. The concept and significance of traces of a traffic accident 7. Classification of traces of a traffic accident. 8. Specific traces of TA (Traces of vehicle movement, braking traces, vehicle damage, traces on light bulbs, tire tracks, tachograph record, injuries of participants SN). 9. Processing of traces of traffic accidents. Finding, Securing and Marking Traces of TA. 10. Photographing a traffic accident. 11. Temporal-spatial analysis of the process of the accident 12. Making sketches and situational plans of the scene of the accident 13. Multimedia investigation documentation 14. Methods of preparing reports on traffic accident expertise 15. Application of computers in analyzes and expertise of traffic accidents

Textbook (s)

Author/s	**Name of publication, publisher**	**Year**	**Pages (from-to)**
Krsto Lipovac	*Uviđaj saobraćajnih nezgoda - izrada skica i situacionih planova,* Viša škola unutrašnjih poslova, Beograd	1994	
Krsto Lipovac	*Uviđaj saobraćajnih nezgoda - elementi saobraćajne trasologije,* Viša škola unutrašnjih poslova, Beograd	2000	
Krsto Lipovac	*Bezbednost saobraćaja*, Službeni list SRJ, Beograd	2008	

Additional readings			
Author/s	**Name of publication, editor**	**Year**	**Pages (from-to)**

	Assesment methods	**Points**	**Percentage**
Evaluation criteria	Pre-examination obligations		
	presence in lectures/ theoretical exercises	10	10%
	positively evaluated term paper	10	10%
	test 1	30	30%
	test 2	30	30%
	Final exam (oral examination)	20	20%
	TOTAL	100	100%
Web sources			
Applicable from	16.06.2021. – 175.сједница Наставно-научног вијећа Саобраћајног факултета		

	UNIVERSITY OF EAST SARAJEVO Faculty of Transport and Traffic Engineering	
	Study program: Traffic ***Profile: The road transport and traffic***	
	I cycle / IV year of study	

Course title	**TRAFFIC SAFETY**
Department	Chair of Transportation Engineering - Faculty of Transportation Doboj

Code	**Course status**	**Semester**	**ECTS credits**
САФ11СД07104786,0330	Required (road and city traffic)	VIII	6,0

Professor/s	Dr Tihomir Djuric, Associate Professor
Associate/s	Dr Tihomir Djuric, Associate Professor

Weekly hours			**Individual student hours (per semester)**			**Student workload coefficient S_o**
L	**TE**	**LE**	**L**	**TE**	**LE**	**S_o**
3	3	0	3*15*0,2=9	3*15*0,2=9	0*15*0.2=0	0,2

Total teacher workload (hours, per semester) 3*15 + 3*15 + 0*15 =90 hours	Total student workload (hours, per semester) 3*15*0.2 + 3*15*0.2+ 0*15*0.2= 18 hours

Total workload: $W+T=U_{opt}$= **90 + 18 = 108** hours per semester

Course aims and learning outcomes	By mastering this course the student will be able to: 1. understands the situation and tendencies in traffic safety in the region and in the world, 2. Explain the concept and elements of the traffic safety management process, 3. Explain traffic safety factors, 4. Measures traffic safety performance indicators, 5. Understands the incident and analysis of traffic accidents.
Prerequisites	no conditions
Teaching methods	ex-chair lectures, workshops, discussions, focus groups, individual and group work
Course content	1. Introduction, subject and method of study. Traffic Safety Methods 2. Scientific discipline basics traffic safety 3. Traffic safety situation and tendencies 4. Traffic safety factors 5. Protective system and responsibilities in traffic safety 6. Traffic safety regulations 7. Measurement in traffic safety 8. Traffic safety indicators 9. Traffic safety management 10. Traffic safety measures 11. Traffic accidents, Traffic accident investigation 12. Traffic-technical analysis of traffic accidents 13. Modern procedures for improving road safety 14. Speed control 15. Databases of importance for traffic safety

Textbook (s)

Author/s	**Name of publication, publisher**	**Year**	**Pages (from-to)**
1. Lipovac K., Jovanovic D. and Vujanić M.	Fundamentals of Traffic Safety,, Criminal Police Academy, Belgrade	2014.	1-388
2. Lipovac K.	Traffic Safety, (Official Gazette SRJ), Belgrade	2008.	1-398
3. Lipovac K.	Traffic Safety, Higher School of Internal Affairs, Banja Luka	2007.	1-387

Additional readings			
Author/s	**Author/s**	**Author/s**	**Author/s**
Law on Basics of Road Traffic Safety in BiH, (BiH Official Gazette, No. 6/06, 75/06, 44/07, 84/09, 48/10, 18/13, 8/17, 89/17 and 9/18)		2018.	
Law on Road Safety, (Official Gazette of the Republika Srpska, No. 41/09, 53/10, 101/11, 32/13 -US, 55/14).		2014.	

	Assesment methods	**Points**	**Percentage**
Evaluation criteria	**Pre-exam obligations**		
	activity during class - tests	10	10
	colloquiums	15	15
	positive evaluation of the seminar paper	20	20
	Final exam		
	written part of the exam	35	35
	final exam - oral	20	20
	IN TOTAL	**100**	**100 %**
Web sources			
Applicable from	16.06.2021 - 175 Session of the Councile, Faculty of Transport and Traffic engineering		

	UNIVERSITY OF EAST SARAJEVO Faculty of Transport and Traffic Engineering ***Study program: Traffic*** ***Profile: The road transport and traffic*** I cycle / IV year of study	

Course title	**TRANSPORTATION PLANNING**
Department	Chair of Transport Engineering

Code	**Course status**	**Semester**	**ECTS credits**
САФ11СД07104085,0211	obligatory	VII	5,5

Professor/s	Prof. Valentina Mirović, Ph.D. Eng. traffic
Associate/s	Prof. Valentina Mirović, Ph.D. Eng. traffic

Weekly hours			**Individual student hours (per semester)**			**Student workload coefficient S_o**
L	**TE**	**LE**	**L**	**TE**	**LE**	**S_o**
2	1	1	2*15*1,75=52,5	1*15*1,75=26,25	1*15*1,75=26,25	1,75

Total teacher workload (hours, per semester) 2*15 + 1*15 + 1*15 = 60 hours	Total student workload (hours, per semester) 2*15*1,75 + 1*15*1,75 + 1*15*1,75 = 105 hours
Total workload: W + T = U_{opt} = 60 + 105 = 165 hours per semester	

Course aims and learning outcomes	1. aquire basic procedures in the preparation of study and planning documents 2. conducting a method of research in traffic, modeling, procedure 3. conducting analyzes and forecasts of transport tasks and offers 4. Independent assignment annual task
Prerequisites	No special conditions
Teaching methods	Lectures, debates, annual assignment
Course content	1. Subject introduction - planning process, history, system approach, general procedure 2. Information base - research areas, methods and techniques of research 3. Generating trips - factors, analysis and travel forecast 4. Spatial distribution of travel - factors and models 5. Visual distribution of travel 6. Network load 7. Road and street network - categorization, types (I colloquium) 8. Transport work and time 9. Public passenger transport - role, systems 10. Basic exploitation characteristics, criteria for choosing the type of transport 11. Maintenance quality 12. Method selection 13. Evaluation of variant solutions 14. Planning of traffic and other spatial planning areas 15. Concluding considerations (II colloquium)

Textbook (s)

Author/s	**Name of publication, publisher**	**Year**	**Pages (from-to)**
Đorić V., Petrović D., Ivanović I., Jović J..	**ПЛАНИРАЊЕ САОБРАЋАЈА Анализа транспортних захтева, Саобраћајни факултет, Београд**	**2018.**	**-**
Vračarević R., Mirović V:	**Основе планирања саобраћаја, писана предавања, Нови Сад - скрипта**	**2014.**	**-**
Mirović V:	**Збирка задатака из модела у планирању саобраћаја, Факултет техничких наука, Нови Сад**	**2015.**	**-**
Jadranka Jović:	Basics of Traffic Planning, Written Lectures, Belgrade	2012.	

Jović J., Ivanović I.:	Collection of tasks from traffic planning, Faculty of Traffic, Belgrade	2011.	
Jadranka Jović:	Traffic Planning in Towns - Practicum, Faculty of Traffic, Belgrade	1996.	
Cambridge Systematic, Inc.:	Travel Survey Manual, US DoT and US EPA	1996.	
L.H. Immers, J.E. Stada.:	Traffic Demand Modelling, Katholieke Universiteit Leuven	1998.	
GTZ.:	Land use planning and urban transport	2004.	

	Assesment methods	Points	Percentage
Evaluation criteria	Pre-exam obligations		
	presence in lectures / exercises	10	10 %
	Positively evaluated annual assignment	20	20 %
	Final exam		
	final exam (written)	70	70 %
	IN TOTAL	100	100 %
Web sources			
Applicable from	16.06.2021 - 175 Session of the Councile, Faculty of Transport and Traffic engineering		

	UNIVERSITY OF EAST SARAJEVO Faculty of Transport and Traffic Engineering ***Study program: Traffic*** ***Profile: The road transport and traffic*** I cycle of study | IV years of study	

Course title	**EXPERTISE OF TRAFFIC ACCIDENTS**
Department	Chair of Transportation Engineering

Code	**Course status**	**Semester**	**ECTS credits**
САФ11СД07219385,0220	Electoral	II	6,0

Professor/s	Dr. Tihomir Djuric, Associate Professor
Associate/s	Dr. Tihomir Djuric, Associate Professor

Weekly hours			**Individual student hours (per semester)**			**Student workload coefficient S_o**
L	**TE**	**LE**	**L**	**TE**	**LE**	**S_o**
3	1	1	3*15*0,2=9	1*15*0,2=3	1*15*0.2= 3	0,2

Total teacher workload (hours, per semester) 3*15 + 1*15 + 1*15 =75 hours	Total student workload (hours, per semester) 3*15*0.2 + 1*15*0.2+ 1*15*0.2= 15 hours

Total workload: $W+T=U_{opt}$= **75 + 15 = 90** hours per semester

Course aims and learning outcomes	By mastering this course the student will be able to: 1. Understands the concept and importance of traffic accident expertise 2. correctly interprets the traffic accident traces 3. the application of the scientific method in the process of traffic accident analysis 4.for simpler traffic accident analysis
Prerequisites	student may take the exam if he or she has passed the traffic safety exam
Teaching methods	ex-chair lectures, workshops, discussions, focus groups, individual and group work
Course content	1. Introduction, subject and method of study. 2. Legal basis of expert evaluation, place and role of traffic and technical expertise in judicial process 3. Methodology of traffic-technical analysis of traffic accidents 4. Ways to express the views of experts 5. Content of expert findings and opinions: Background 6. Classification of traffic accident traces 7. Contents of the expert's findings and opinions: Expert's finding - analysis of injuries and damage to the vehicle 8. Content of expert findings and opinions: Expert Findings - analysis of vehicle traces 9. Content of expert findings and opinions: Expert finding - lamp trace analysis 10. Calculation of vehicle speeds involved in a traffic accident 11. Determining the location of the collision 12. Defining a traffic accident omission 13. Use of computers and specialized software in traffic accident expertise 14. Specificity of expertise of particular traffic accidents 15. Specificity of expertise of particular traffic accidents

Textbook (s)

Author/s	**Name of publication, publisher**	**Year**	**Pages (from-to)**
1. Dragac R.	Road Traffic Accident Investigation and Expertise, (J.P. SRJ Official Gazette), Belgrade	2007.	1-560
2. Dragac R. i Vujanic M.	Traffic Safety Part II, Faculty of Transportation, Belgrade	2002.	79-220
3. Vujanic M., Antic B., Pesic D. i Lipovac K.	Collection of tasks in traffic safety, with practicum, Faculty of Transport and Traffic Engineering, Belgrade	2015.	1-240

Additional readings			
Author/s	**Name of publication, editor**	**Year**	**Pages (from-to)**
1. Lipovac K.	Traffic Accident Inspection - Elements of Traffic Tracology, College of Internal Affairs, Belgrade	2000.	1-208

	Assesment methods	**Points**	**Percentage**
Evaluation criteria	**Pre-exam obligations**		
	activity during class - tests	10	10
	colloquiums	15	15
	positively evaluated seminar paper	20	20
	Final exam		
	written part of the exam	35	35
	final exam - oral	20	20
	IN TOTAL	**100**	**100 %**
Web sources			
Applicable from	16.06.2021 - 175 Session of the Councile, Faculty of Transport and Traffic engineering		

	UNIVERSITY OF EAST SARAJEVO Faculty of Transport and Traffic Engineering ***Study program: Traffic*** ***Profile: The road transport and traffic*** I cycle / I year of study	

Course title	**TRAFFIC DESIGN**
Department	Department of Road Traffic and Transport- Faculty of Transport and Traffic Engineering

Code	**Course status**	**Semester**	**ECTS credits**
САФ11СД07205085,0220	elective	VIII	5,00

Professor/s	PhD Vuk Bogdanović
Associate/s	MSc Bojana Ristić

Weekly hours			**Individual student hours (per semester)**			**Student workload coefficient S_o**
L	**TE**	**LE**	**L**	**TE**	**LE**	**S_o**
X	Y	Z	$X*15*S_o$	$Y*15*S_o$	$Z*15*S_o$	

Total teacher workload (hours, per semester) X*15 + Y*15 + Z*15 = W hours	Total student workload (hours, per semester) $X*15*S_o + Y*15*S_o + Z*15*S_o$ = T hours
Total workload: $W+T=U_{opt}$= 60 + 90 = 150 hours per semester	

Course aims and learning outcomes	1. knowledge of the theoretical basics of urban planning, traffic networks, design theory 2. reading, understanding and using legal regulations and standards, traffic engineering 3. independent preparation of technical project documentation (projects) for intersections 4. independent work on calculations and optimization of light signals
Prerequisites	Passed exam: The theory of traffic flow
Teaching methods	Lectures, debate work, graphic exercises, annual assignment
Course content	1. Introduction 2. Basic terms and definitions 3. Examples from good practice, design schools 4. The term «engineering», ordinary and mega engineering 5. Spatial program elements for traffic design 6. Types and typology of projects, classification of design 7. Stages of project implementation 8. Legal bases (of development of) projects (project documentation) 9. Driving speed management, traffic calming techniques and methods 10. WOONERF concept of city planning, pedestrian zone, SHARED SPASE concept 11. Bicycle traffic, design, safety, info-systems 12. NEW CONCEPTS: Human engineering in cities 13. Traffic design and «design for all» 14. Light signals, calculations, systems, engineering, design 15. Closing lectures

Textbook (s)

Author/s	**Name of publication, publisher**	**Year**	**Pages (from-to)**
Станић, Б., Вујин, Д., Радованац, М.:	*"Елементи саобраћајног пројектовања – БИЦИКЛИСТИЧКИ САОБРАЋАЈ – стазе, сигнализација, опрема", издавач: Саобраћајни факултет, Београд, YU 86-7395-204-2, CD-ROM;*	2006.	-
Здравковић, П., Станић, Б., Вукановић, С., Милосављевић, С.:	*"Елементи саобраћајног пројектовања – ВЕРТИКАЛНА СИГНАЛИЗАЦИЈА", издавач: Саобраћајни факултет, Београд, YU 86-7395-148-8, CD-ROM;*	2003.	-
Станић, Б., Здравковић, П., Вукановић, С., Милосављевић, С.:	*"Елементи саобраћајног пројектовања - ХОРИЗОНТАЛНА СИГНАЛИЗАЦИЈА", издавач: Саобраћајни факултет, Београд, YU ISBN 86-7395-147-X, CD-ROM;*	2003.	-
Станић, Б., Особа, М.,	"Елементи саобраћајног пројектовања - ЗОНЕ	2006.	-

Вукановић, С.:	30", издавач: Саобраћајни факултет, Београд, YU 86-7395-205-0, CD-ROM.		
Additional readings			
Author/s	**Name of publication, editor**	**Year**	**Pages (from-to)**
БИХ	ЗАКОН О ОСНОВАМА БЕЗБЈЕДНОСТИ САОБРАЋАЈА НА ПУТЕВИМА У БОСНИ И ХЕРЦЕГОВИНИ	2006.	-
БИХ	ПРАВИЛНИК О САОБРАЋАЈНИМ ЗНАКОВИМА И СИГНАЛИЗАЦИЈИ НА ПУТЕВИМА, НАЧИНУ ОБИЉЕЖАВАЊА РАДОВА И ПРЕПРЕКА НА ПУТУ И ЗНАКОВИМА КОЈЕ УЧЕСНИЦИМА У САОБРАЋАЈУ ДАЈЕ ОВЛАШТЕНО ЛИЦЕ	2007.	-

Evaluation criteria	**Assesment methods**	**Points**	**Percentage**
	Pre-examination obligations		
	presence in lectures/ theoretical exercises	10	10%
	positively evaluated term paper	20	20%
	Final exam		
	Final exam (written examination)	70	70%
	TOTAL	100	100%
Web sources			
Applicable from	16.06.2021. – 175. sessions of Teaching-Scientific Council of the Faculty of Transport and Traffic Engineering		

	UNIVERSITY OF EAST SARAJEVO Faculty of Transport and Traffic Engineering ***Study program: Traffic*** ***Profile: The road transport and traffic*** I cycle / III year of study	

Course title	**INTERMODAL TRANSPORT**
Department	Department for Transport Engineering – Faculty of Traffic Engineering Doboj

Code	**Course status**	**Semester**	**ECTS credits**
САФ11СД07203685,0220	optional	VI	5.00

Professor/s	Dr Slobodan Zečević
Associates/s	Dr Snežana Tadić

Weekly hours			**Individual student hours (per semester)**			**Student workload coefficient S_o**
L	**TE**	**LE**	**L**	**TE**	**LE**	**S_o**
2	2	0	2*15*1,4=42	2*15*1,4=42	0*15*1,4=0	1,4

Total teacher workload (hours, per semester) 2*15 + 2*15 + 0*15 = 60 hours	Total student workload (hours, per semester) $3*15*S_o + 3*15*S_o + 0*15*S_o = T$

Total workload: $W+T=U_{opt}$= 60 + 84 = 144 hours per semester

Course aims and learning outcomes	1. Recognizes and defines the role and place of intermodal transport for different participants and users; 2. Defines the structure of the intermodal system and determines the advantages and disadvantages of each element of the system in a particular intermodal transport chain; 3. Compare classical and intermodal transport chain technologies; 4. Assess the basic performance of the intermodal transport chain.
Prerequisites	No special conditions
Teaching methods	lectures, tutorials, case studies, debate classes
Course content	1. Intermodalism, definition and delimitation of basic concepts in intermodal transport. 2. Intermodal Transport (IT) system. 3. Intermodal transport units (types, modular chain alignment). 5. Optimization models of packaging, enlargement of intermodal units in the transport chain. 6. Means of transport in IT. Standardization and codification in IT. 7. Terminals and network of intermodal transport terminals. 8. Transport and traffic infrastructure, organization and telematics systems in IT (Colloquium I). 9. Container transport system technologies. 10. Container terminals. 11. Vehicle-to-vehicle transport technologies. 12. Vehicle-vehicle road-rail transport technologies. 13. Vehicle-vehicle rail-road transport technologies. 14. Technologies of land-river-sea and river-sea transport vehicle-vehicle. 15. Methodology of intermodal transport chain optimization. 16. European IT system. Legislation, international associations, policy and promotion (Colloquium II).

Textbook (s)

Author/s	**Name of publication, publisher**	**Year**	**Pages (from-to)**
Zečević S., Tadić S.	Intermodalni transport, autorizovana skripta	2016.	

Additional readings

Author/s	**Name of publication, publisher**	**Year**	**Pages (from-to)**
Lowe D.	Intermodal freight transport, Elsevier	2005.	
Priemus H., Nijkamp P., Konings R.	The Future of Intermodal Freight Transport: Operations, Design and Policy, Edward Elgar Pub.	2008.	

Kim K.H., Günther H.O.	Container Terminals and Cargo Systems: Design, Operations Management, and Logistics Control Issues, Springer	2007.	

	Assesment methods	Points	Percentage
Obligations, evaluation criteria	Preexamination obligations		
	attendance during lectures/exercise	5	5%
	activity during classes	5	5%
	tests	20	20%
	colloqium 1	20	20%
	Colloqium 2	20	20%
	Students who pass the colloquia are released written part, final exam		
	Final examination		
	Oral examination	30	30%
	Overall	100	100%
Applicable from	16.06.2021 - 175 Session of the Councile, Faculty of Transport and Traffic engineering		

	UNIVERSITY OF EAST SARAJEVO Faculty of Transport and Traffic Engineering ***Study program: Traffic*** ***Profile: The road transport and traffic*** I cycle / IV year of study	

Course title	**FREIGHT FORWARDING**
Department	Department of Transport Engineering - Faculty of Transport and Traffic Engineering Doboj

Code	**Course status**	**Semester**	**ECTS credits**
САФ11СД07204985,0220	Electoral	VIII	5

Professor/s	Assistant Professor Slobodan Subotić
Associate/s	Assistant Professor Slobodan Subotić

Weekly hours			**Individual student hours (per semester)**			**Student workload coefficient S_o**
L	**TE**	**LE**	**L**	**TE**	**LE**	**S_o**
2	2	0	45	45	0	1,5

Total teacher workload (hours, per semester) 2*15 + 2*15 + 0*15 = 60 hours	Total student workload (hours, per semester) 2*15*1,5 + 2*15*1,5+ 0*15*1,5 = 90 hours

Total workload: $W+T=U_{opt}$= 60 + 90 = 150 hours per semester

Course aims and learning outcomes	Completing this course students will be able to: 1. performs basic tasks in freight forwarding, 2. prepare the structure and elements of the supply of freight forwarding activities, 3. performs tasks related to the installation, 4. participates in customs representation and implementation of customs procedures, 5. participates in insurance business in transport.
Prerequisites	No prerequisites
Teaching methods	Lectures, auditory exercises, seminar work
Course content	1. Basic concepts, development and development of forwarding activities 2. Structure of freight forwarding functions and jobs 3. Internal organization of freight forwarding 4. Associations for the promotion and development of forwarding activities 5. Commercial operations in freight forwarding and creation of forwarding offers 6. Documents in international commodity flows 7. I colloquium 8 International Delivery Conditions - INCOTERMS 2010 9. Technology of organization of forwarding operations in export and import flows 10. Technology of organization of collective transport and transit flows 11. TIR system, ATA carnet, freight forwarding 12. Freight forwarding activities in customs representation, implementation of customs procedures 13. Conditions and procedures in international freight forwarding and road transport of goods 14. Insurance of goods in transport, with particular reference to road transport 15. II colloquium

Textbook (s)

Author/s	**Name of publication, publisher**	**Year**	**Pages (from-to)**
1. Kilibarda, M. 2. Gajić, V., Cakić, Đ. 3. Stojanović, Đ.	1. Freight forwarding, authorized script, Faculty of Transport and Traffic Engineering Beograd 2. Freight forwarding, practicum, Faculty of Technical Sciences, University of Novi Sad 3. Freight forwarding, script, Department of Traffic Engineering, Faculty of Technical Sciences, University of Novi Sad	2008. 2013. 2015.	1-154 1-143 1-189

Additional readings

Author/s	**Name of publication, editor**	**Year**	**Pages (from-to)**
Zelenika, R.	Foundations of Logistics Freight Forwarding,	2005.	1-672

	University of Rijeka		
Evaluation criteria	**Assesment methods**	**Points**	**Percentage**
	Pre-exam obligations		
	Presence of lectures / exercises	10	10 %
	Seminar work	20	20 %
	Colloquium	2x35	70 %
	Final exam		
	Final exam (oral / written)		
	TOTAL	100	100 %
Web sources			
Applicable from	16.06.2021 - 175 Session of the Councile, Faculty of Transport and Traffic engineering		

RAILWAY TRAFFIC

UNIVERSITY OF EAST SARAJEVO
Faculty of Transport and Traffic Engineering

Study program: Traffic
Profile: Railway traffic

Number	Code	Course title	Course status	Conditionality	Semester	Hours per semester			ECTS
						L	TE	LE	
III year of study									
28.	САФ11СЖ07105356,0320	Railway Tracks	O		V	3	2	0	6.00
29.	САФ11СЖ07105457,0330	Railway vehicles	O		V	3	3	0	7.00
30.	САФ11СЖ07105556,0320	Exploatation of railroad wagons	O		V	3	2	0	6.00
31.	САФ11СЖ07103155,0220	Ecology in traffic	O		V	2	2	0	5.00
32.	САФ11СЖ07103256,0320	Mechanization and tehnology of transhipment	O		V	3	2	0	6.00
33.	САФ11СЖ07105866,0330	Railway stations and nodes	O		VI	3	3	0	6.00
34.	САФ11СЖ07106566,0320	Train traction	O		VI	3	2	0	6.00
35.	САФ11СЖ07134466,0330	Railway signaling and safety devices and electric power plants	O		VI	3	3	0	6.00
36.	САФ11СЖ07203665,0220	1. Intermodal transport	I_2		VI	2	2	0	5.00
	САФ11СЖ07204965,0220	2. Shipping			VI				
37.	САФ11СЖ07234365,0220	1. Maintenance of railway infrastructure	I_3		VI	2	2	0	5.00
	САФ11СЖ07207065,0220	2. Maintenance of railway wagons			VI				
38.	САФ11СЖ07132962,0000	Graduate thesis	O		VI	0	0	0	2.00
					TOTAL:	**27**	**23**	**0**	**60**
IV year of study									
39.	САФ11СЖ07106276,0321	Freight transport technology and organization	O		VII	3	2	1	6.00
40.	САФ11СЖ07106376,0311	Passenger transport tehnology and organization	O		VII	3	1	1	6.00
41.	САФ11СЖ07106676,0311	Railway traffic technology	O		VII	3	1	1	6.00
42.	САФ11СЖ07106775,0220	Regulatory system of railway transport	O		VII	2	2	0	5.00
43.	САФ11СЖ07120577,0330	Modeling in railway transport	O		VII	3	3	0	7.00
44.	САФ11СЖ07104586,0320	Organization of traffic companies	O		VIII	3	2	0	6.00
45.	САФ11СЖ07104685,0220	Quality management	O		VIII	2	2	0	5.00
46.	САФ11СЖ07105785,0220	Safety of railway traffic	O		VIII	2	2	0	5.00
47.	САФ11СЖ07234585,0220	1. Railway marketing and marketing operations	I_4		VIII	2	2	0	5.00
	САФ11СЖ07234685,0220	2. Engineering economics in railway traffic and transport							
48.	САФ11СЖ07234785,0220	1. Analysis of emergency events on the railway	I_5		VIII	2	2	0	5.00
	САФ11СЖ07206485,0220	2. Testing of railways and vehicles							
49.	САФ11СЖ07105284,0030	Professional practice	O		VIII	0	3	0	4.00
					TOTAL:	**25**	**22**	**3**	**60.0**

- L - lectures
- TE - theoretical exercises
- LE - laboratory exercises

	UNIVERSITY OF EAST SARAJEVO Faculty of Transport and Traffic Engineering ***Study program: Traffic*** ***Profile: Railway traffic*** I cycle / III year of study	

Course title	**RAILWAY TRACKS**
Department	Department for Transport Engineering – Faculty of Traffic Engineering Doboj

Code	**Course status**	**Semester**	**ECTS credits**
САФ11СЖ07105356,0320	compulsory	V	6,00

Professor/s	PhD Miloš IVIĆ
Associate/s	MSc Vladimir MALČIĆ

Weekly hours			**Individual student hours (per semester)**			**Student workload coefficient S_o**
L	**TE**	**LE**	**L**	**TE**	**LE**	**S_o**
3	2	0	3*15*1,4	2*15*1,4	0*15*1,4	1,4

Total teacher workload (hours, per semester) 3*15 + 2*15 + 0*15 = 75 hours	Total student workload (hours, per semester) 3*15*1,4 + 2*15*1,4 + 0*15*1,4 =105 hours
Total workload: $W+T=U_{opt}$ = 75 + 105 = 180 hours per semester	

Course aims and learning outcomes	By mastering this course students will be able to: 1. Knowing the complex problem of technical means for regulating and securing railway traffic. 2. Knowing modern rail transport systems. 3. It possesses wide knowledge in the field of railway signaling and safety devices and means of connection on the railway, which is the most important precondition for operation on the railway. 4. Follow the world trends in this area and is qualified to propose applications with us.
Prerequisites	The conditions for passing the course are: 1. regular attendance (lectures and exercises), 2. completed and defended elaborate, 3. all colloquiums passed, 4. all test passed.
Teaching methods	Lectures, auditory and computational exercises, consultations
Course content	1. The concept, characteristics, development and future of railways and railway lines 2. Track constructive elements. Elements of the superstructure 3. Elements of the substructure 4. Track geometry 5. Horizontal alignment design- tangents and courves 6. Vertical alignment design. Resistances and gradients (**1st colloquium**) 7. Track connections: Crossings 8. Track connections: Traversers and turntables 9. Track connections: Switches - components and classification (**2nd colloquium**) 10. The operation of railroad switches 11. The horizontal and vertical configuration requirements for sets of switches 12. Special railway tracks 13. Basic track characteristics for metro and tram lines 14. Basic track characteristics for high speed railway lines 15. Planning and design methodology for railway lines (**3rd colloquium**)

Textbook (s)

Author/s	**Name of publication, publisher**	**Year**	**Pages (from-to)**
Ivić M.	*Railway tracks,* Faculty of Transport and Traffic Engineering, Belgrade	2005.	---
Ivić M.	*Railway tracks - switches and crossings*, Faculty of Transport and Traffic Engineering, Belgrade	2005.	---
Ivić M., Kosijer M.	*Railway tracks -workbook* Faculty of Transport	1998.	---

	and Traffic Engineering, Belgrade		
Additional readings			
Author/s	**Name of publication, editor**	**Year**	**Pages (from-to)**
Ivić M.	*Railway tracks*, Lectures in the form of PP presentations		

Evaluation criteria	**Assesment methods**	**Points**	**Percentage**
	Preexamination obligations		
	The student's activity during lectures	5	5 %
	Elaborate	20	20 %
	Tests	10	10 %
	Colloquiums	45	45 %
	Final examination		
	Oral examination	20	20 %
	Total	100	100 %
Applicable from	16.06.2021 - 175 Session of the Councile, Faculty of Transport and Traffic engineering		

	UNIVERSITY OF EAST SARAJEVO Faculty of Transport and Traffic Engineering ***Study program: Traffic*** ***Profile: Railway traffic*** I cycle / III year of study	

Course title	**RAILWAY VEHICLES**
Department	Department for Transport Engineering – Faculty of Traffic Engineering Doboj

Code	**Course status**	**Semester**	**ECTS credits**
САФ11СЖ07105457,0330	compulsory	V	7,00

Professor/s	
Associate/s	MSc Sanja SIMIĆ

Weekly hours			**Individual student hours (per semester)**			**Student workload coefficient S_o**
L	**TE**	**LE**	**L**	**TE**	**LE**	**S_o**
3	3	0	3*15*1,33	3*15*1,33	0*15*1,33	1,33

Total teacher workload (hours, per semester) 3*15 + 3*15 + 0*15 = 90 hours	Total student workload (hours, per semester) 3*15*1,33 + 3*15*1,33 + 0*15*1,33 = 120 hours
Total workload: $W+T=U_{opt}$= 90 + 120 = 210 hours per semester	

Course aims and learning outcomes	Adopting basic knowledge in the field of technical characteristics and construction of diesel towing and towing vehicles. Defining and analyzing the main subsystems of the vehicle. Defining the performance of diesel locomotives and diesel motor sets. Studying with technical parameters of electric towing vehicles as a necessary condition for the technology of their practical application in railway traffic.
Prerequisites	Students are obliged to attend classes, do seminar work, take colloquiums, and attend consultations.
Teaching methods	lectures, auditory and computational exercises, consultations
Course content	1. Marking, comparative characteristics and block diagrams of diesel towing vehicles 2. Diesel engine. Characteristics and working principles of two and four stroke diesel engines. 3. Task, selection and division of power transmission of diesel towing vehicles 4. Main subsystem and construction of mechanic and hydrodynamic power transducers 5. Turbo locomotives. Motorcycles. Motor trains. 6. Passenger wagons and freight wagons classification and parameters. Box wagons 7. Concept of construction, characteristic and types of high speed classics and diesel motor sets 8. Crankshafts of traction and towing vehicles. Towing and reflection equipment (**I colloquium**) 9. Railway vehicles brakes 10. Electric locomotives, electric motors and diesel electric locomotives - general characteristics and connection schemes 11. Electric traction motors. Locomotives and electric motors for direct current systems 12. Multisystem towing vehicles. Locomotives and electric motors for a single-phase system 13. Automatic control, controls and controls for electric towing vehicles 14. Safety and protective electric circuits on electric vehicles 15. Contemporary trends in the development of railway vehicles (**II colloquium**)

Textbook (s)

Author/s	**Name of publication, publisher**	**Year**	**Pages (from-to)**
Pajić D.	Towing vehicles, machine parts Institute for News publishing and Propaganda	1981	
Dinić D.	Railway Electric Vehicles, Traffic Engineering, Belgrade	1995	

Additional readings

Author/s	**Name of publication, editor**	**Year**	**Pages (from-to)**

	Assesment methods	Points	Percentage
Evaluation criteria	Preexamination obligations		
	Presence during lectures	10	10 %
	Seminary work	2x5	10 %
	Colloquium	2x25	50 %
	Final examination		
	Oral examination	30	30 %
	Total	100	100 %
Applicable from	16.06.2021 - 175 Session of the Councile, Faculty of Transport and Traffic engineering		

	UNIVERSITY OF EAST SARAJEVO Faculty of Transport and Traffic Engineering ***Study program: Traffic*** ***Profile: Railway traffic*** I cycle / III year of study	

Course title	**EXPLOATATION OF RAILROAD WAGONS**
Department	Department for Transport Engineering – Faculty of Traffic Engineering Doboj

Code	**Course status**	**Semester**	**ECTS credits**
САФ11СЖ07105556,0320	compulsory	V	6,00

Professor/s	PhD Branislav Bošković
Associate/s	MSc Vladimir MALČIĆ

Weekly hours			**Individual student hours (per semester)**			**Student workload coefficient S_o**
L	**TE**	**LE**	**L**	**TE**	**LE**	**S_o**
3	2	0	3*15*1,4	2*15*1,4	0*15*1,4	1,4

Total teacher workload (hours, per semester) 3*15 + 2*15 + 0*15 = 75 hours	Total student workload (hours, per semester) 3*15*1,4 + 2*15*1,4 + 0*15*1,4 =105 hours
Total workload: $W+T=U_{opt}$ = 75 + 105 = 180 hours per semester	

Course aims and learning outcomes	Meet students with characteristics of freight and passengers rail wagons and basic knowlegde needed for their rational use and management.
Prerequisites	Students are obliged to attend classes, attend practical exercises at the ŽRS, make seminar papers, hold colloquiums, and attend consultations.
Teaching methods	Lectures, auritory and computational exercises, consultation.
Course content	1. Concept and classification of cars. Marking cars and markings that define the technological and exploitation characteristics of the wagon 2. The basic concepts of correct loading of freight wagons, limitations in terms of carriage capacity and schedule of shipment and vehicle insurance for wagon shipment 3. Review of vehicle records and reasons for the existence of records and regulations 4. Codification of railway wagons. Examples of wagons registrations (I colloquium) 5. Indicators of the use of freight wagons - basic concepts, work of wagons, indicators of wagons according to load capacity 6. Indicators of the use of freight wagons - turnover of wagons, indicators of productivity of wagons 7. Regulation in the field of use and use of wagons. Agreements RIV, RIC and COTIF 8. Optimizing the distribution of empty wagons 9. Place and role of freight wagons as the main asset of the railway carrier and its position in the transport market (II colloquium) 10. Position and importance of the problem of planning the development and optimization of the structure of the freight park 11. Dimensioning and development of the size and structure of the park 12. Maintenance of passenger and freight wagons 13. Information systems for monitoring freight wagons - requirements to respond 14. Information systems for monitoring freight wagons – examples 15. III colloquium

Textbook (s)

Author/s	**Name of publication, publisher**	**Year**	**Pages (from-to)**
Aleksandrov V.	*Railway Towed Vehicles, Želnid, Belgrade*	2000	--
Bošković B.	*Written material and presentations in the form PP*		-

Additional readings

Author/s	**Name of publication, editor**	**Year**	**Pages (from-to)**
	Regulation 241 - on the maintenance of railway vehicles in the Republic of Srpska		

Evaluation criteria	**Assesment methods**	**Points**	**Percentage**

	pre-exam obligations		
	Presence during lectures	10	10%
	Seminar papers	20	20%
	Colloquium	3x10	30%
	Final examination		
	Oral examination	40	40%
	TOTAL	100	100%
Applicable from	16.06.2021 - 175 Session of the Councile, Faculty of Transport and Traffic engineering		

	UNIVERSITY OF EAST SARAJEVO Faculty of Transport and Traffic Engineering ***Study program: Traffic*** ***Profile: Railway traffic*** I cycle / I year of study	

Course title	**ECOLOGY IN TRAFFIC**
Department	Department of Road Traffic and Transport- Faculty of Transport and Traffic Engineering

Code	**Course status**	**Semester**	**ECTS credits**
САФ11СЖ07103155,0220	compulsory	V	5,00

Professor/s	Milan Milotić, Associate Professor
Associate/s	Milan Milotić, Associate Professor

Weekly hours			**Individual student hours (per semester)**			**Student workload coefficient S_o**
L	**TE**	**LE**	**L**	**TE**	**LE**	**S_o**
2	2	0	2*15*1,5=45	2*15*1,5=45	2*15*1,4=0	1,5

Total teacher workload (hours, per semester) 2*15 + 2*15 + 0*15 = 60 hours	Total student workload (hours, per semester) 2*15*1,5 + 2*15*1,5+ 0*15*1,5 = 90 hours

Total workload: $W+T=U_{opt}$= 60 + 90 = 150 hours per semester

Course aims and learning outcomes	By mastering this course students will be able to: 1. analyze the problems of environmental pollution; 2. get acquainted with normative and legal regulations related to environmental protection; 3. get acquainted with the global effects of pollution; 4. get acquainted with the tendencies of future development of motor vehicle propulsion as well as to apply the acquired knowledge in practice.
Prerequisites	none
Teaching methods	Lectures, auditory exercises, consultations
Course content	1. Biosphere and ecology 2. Problems of environmental pollution 3. Normative and legal regulations 4. Maximum allowable concentrations 5. Air pollution and protection 6. Normative and legal regulations on air quality 7. I colloquium 8. Flue gas purification 9. Global effects of pollution 10. Traffic and environmental pollution 11. Impact of traffic on the environment 12. Normative and legal regulations for exhaust gas emissions 13. Methods of analysis of exhaust gas composition in motor vehicles 14. Tendencies of future development of motor vehicle propulsion 15. II colloquium

Textbook (s)

Author/s	**Name of publication, publisher**	**Year**	**Pages (from-to)**
Đurić, S., Stanojević, P., Milotić, M.	**Ekologija u saobraćaju, Saobraćajni fakultet Doboj**	**2016**	

Additional readings

Author/s	**Name of publication, editor**	**Year**	**Pages (from-to)**

Evaluation criteria	**Assesment methods**	**Points**	**Percentage**
	Pre-exam obligations		
	attendance at lectures / exercises	10	10%
	colloquium	2x25	50%

	term paper	10	10%
	Final exam		
	Oral exam	30	30%
	TOTAL	100	100%
Web sources			
Applicable from	16/6/2021 - 175th session of the Council of the Traffic Faculty		

	UNIVERSITY OF EAST SARAJEVO Faculty of Transport and Traffic Engineering ***Study program: Traffic*** ***Profile: Railway traffic***	
	I cycle / III year of study	

Course title	**MECHANIZATION AND TEHNOLOGY OF TRANSHIPMENT**
Department	Department for Transport Engineering – Faculty of Traffic Engineering Doboj

Code	**Course status**	**Semester**	**ECTS credits**
САФ11СЖ07103256,0320	compulsory	V	6,00

Professor/s	PhD Ratko ĐURIČIĆ
Associate/s	MSc Sanja SIMIĆ

Weekly hours			**Individual student hours (per semester)**			**Student workload coefficient S_o**
L	**TE**	**LE**	**L**	**TE**	**LE**	**S_o**
3	2	0	3*15*1,4=63	2*15*1,4=42	0*15*1,4=0	1,4

Total teacher workload (hours, per semester) 3*15 + 2*15 + 0*15 =75 hours	Total student workload (hours, per semester) 3*15*1,4 + 2*15*1,4 + 0*15*1,4 = 105 hours

Total workload: $W+T=U_{opt}$= 75 + 105 = 180 hours per semester

Course aims and learning outcomes	By mastering this course, students will be able to: 1. To understand the basic principles of the place, role and significance of the reprocessing processes in reproduction, will be able to understand the cause-effect links of starting commodity flows in the process of reproduction and time-non-synchronized production. 2. They will be able to analyze the parameters that influence the overload, learn the division of mechanization assets as well as their good and bad traits 3. Continuous and cyclic actuators will be able to use methods for calculating capacities and required power. 4. It will be able to demonstrate the establishment of a transhipment system with transhipment effects 5. They manage transhipment processes, and that, after gaining practical experience in logistics centers, they manage individual sectors or organizations that are responsible for transhipment processes.
Prerequisites	None.
Teaching methods	Lectures, auditory exercises, consultation.
Course content	1. Introduction to the subject. The basic concepts of mechanization and technology transhipment. The role of the process is changing 2. Transaction task and realization of the transhipment process 3. CONTINUOUS ASSETS - Belt conveyor. 4. A clustered conveyor. Transporter scraper. 5. Elevators. Redlers. Hanging conveyor 6. Worm conveyor. Rotary excavator. Pneumatic Conveyors (Preparation for I Colloquium) 7. Adders. Gravity conveyors (I colloquium) 8. (Analysis of Colloquiums) CYCLICAL MEANS - Transport and handling vehicles 9. Forklift - classification, elements, stability, application 10. Forklift - Transhipment cycle. Determining the power to move the vehicle 11. Transport and handling vehicles for containers handling. Regal lifts 12. Cranes - classification, elements, application, transhipment cycle, power determination 13. Automatically driven vehicles. Designing of the transhipment process (Preparation for the II colloquium) 14. II colloquium 15. (Analysis of the II colloquium) The closing word and the signature of the index.

Textbook (s)

Author/s	**Name of publication, publisher**	**Year**	**Pages (from-to)**
Đuričić R.	Mechanization of traffic, script,Faculty of	2006	--

	Transport and Traffic enginnering, Doboj		
Sretenović M.	Mechanization of transhipment,transhipment machine and dessigne of transhipment processes, Belgrade	1996	--
Milorad V.	Internal transportation, Warehousing and Transhipment,Faculty of Transport and Traffic engineering, Belgrade	2001	--
Additional readings			
Author/s	**Name of publication, editor**	**Year**	**Pages (from-to)**

Evaluation criteria	**Assesment methods**	**Points**	**Percentage**
	Pre-exam obligation		
	Presence during lectures	10	10%
	Activity during lectures	5	5%
	Completed colloquiums-tasks	35	35%
	Completed colloquiums-theory	50	50%
	Final exam		
	Final exam(tasks-theory)		
	IN TOTAL	100	100%
Applicable from	16.06.2021 - 175 Session of the Councile, Faculty of Transport and Traffic engineering		

	UNIVERSITY OF EAST SARAJEVO Faculty of Transport and Traffic Engineering ***Study program: Traffic*** ***Profile: Railway traffic*** I cycle / III year of study	

Course title	**RAILWAY STATIONS AND NODES**
Department	Department for Transport Engineering – Faculty of Traffic Engineering Doboj

Code	**Course status**	**Semester**	**ECTS credits**
САФ11СЖ07105866,0330	compulsory	VI	6,00

Professor/s	PhD Miloš IVIĆ
Associate/s	MSc Vladimir MALČIĆ

Weekly hours			**Individual student hours (per semester)**			**Student workload coefficient S_o**
L	**TE**	**LE**	**L**	**TE**	**LE**	**S_o**
3	3	0	3*15*1	2*15*1	0*15*1	1

Total teacher workload (hours, per semester) 3*15 + 3*15 + 0*15 = 90 hours	Total student workload (hours, per semester) 3*15*1 + 3*15*1 + 0*15*1 =90 hours

Total workload: $W+T=U_{opt}$ = 90 + 90 = 180 hours per semester

Course aims and learning outcomes	Compiting this course, the student will be enabled to: 1. identify and classificate railway stations: basic content and functionality, 2. identify and selects the necessary facilities / elements in the railway stations according to needs, 3. define and size the the necessary facilities / elements in the railway stations, 4. to participate in making project proposals and project documentation.
Prerequisites	Admission reguirements: previously attended course: Planning and design of railway tracks The conditions for passing the course are: 1. regular attendance (lectures and exercises), 2. completed and defended elaborate, 3. all colloquiums passed, 4. all test passed.
Teaching methods	Lectures, auditory and computational exercises, consultations
Course content	1. The concept, characteristics, development and future of railway stations and nodes 2. Constructive elements of railway stations and nodes 3. Station tracks, sidings and yards 4. Classification and basic components of railway stations 5. Railway station operations (1st colloquium) 6. The basic elements and methods for dimensioning station facilities 7. The basic components of fraight stations and terminals – classifcation, characteristics and dimensioning 8. The basic components of passenger stations– classifcation, characteristics and dimensioning 9. The basic components of marshalling yards– classifcation, characteristics and dimensioning (2nd colloquium) 10. Evaluation of hamp and flat marshaling yards (3rd colloquium) 11. Service facilities - task, classification, characteristics and dimensioning 12. Railway port yards, terminals – task, classification and dimensioning 13. Traffic and railway nodes: The concept, classification and characteristics 14. Railway nodes: The basic elements. The conditions for rational composition of railroad nodes 15. Planning and design methodology for railway stations and nodes (4th colloquium)

Textbook (s)

Author/s	**Name of publication, publisher**	**Year**	**Pages (from-to)**
Ivić M.	*Railway tracks - switches and crossings*, Faculty of Transport and Traffic Engineering, Belgrade	2005.	---

Milošević B.	*Railway station facilities,* Faculty of Transport and Traffic Engineering, Belgrade	1978.	---
Milošević B.	*Railway stations and nodes – Dimenzioning station facilities*, Faculty of Transport and Traffic Engineering, Belgrade	1980.	---
Additional readings			
Author/s	**Name of publication, editor**	**Year**	**Pages (from-to)**
Ivić M.	*Railway stations and nodes*, Lectures in the form of PP presentations		

Evaluation criteria	**Assesment methods**	**Points**	**Percentage**
	Preexamination obligations		
	The student's activity during lectures	10	10%
	Elaborate	20	20%
	Tests	10	10%
	Colloquiums	40	40%
	Final examination		
	Oral examination	20	20%
	Total	100	100%
Applicable from	16.06.2021 - 175 Session of the Councile, Faculty of Transport and Traffic engineering		

	UNIVERSITY OF EAST SARAJEVO Faculty of Transport and Traffic Engineering ***Study program: Traffic*** ***Profile: Railway traffic*** I cycle / III year of study	

Course title	**TRAIN TRACTION**
Department	Department for Transport Engineering – Faculty of Traffic Engineering Doboj

Code	**Course status**	**Semester**	**ECTS credits**
САФ11СЖ07106566,0320	compulsory	VI	6.00

Professor/s	PhD Predrag JOVANOVIĆ
Associate/s	MSc Vladimir MALČIĆ

Weekly hours			**Individual student hours (per semester)**			**Student workload coefficient S_o**
L	**TE**	**LE**	**L**	**TE**	**LE**	**S_o**
3	2	0	3*15*1,4	2*15*1,4	0*15*1,4	1,4

Total teacher workload (hours, per semester) 3*15 + 2*15 + 0*15 =75 hours	Total student workload (hours, per semester) 3*15*1,4 + 2*15*1,4 + 0*15*1,4 = 105 hours
Total workload: 75 + 105 = 180 hours per semester	

Course aims and learning outcomes	1. By finishing this course, students will understand the basic principles of train traction and will get the ability to independently determine running diagrams. 2. Students will also be able to calculate train running times as well as other parameters essential for train traffic (braking percentages, maximal speeds, maximal permissible weight of trains, etc.), and will be able to independently solve problems of train traction of different rail undertakings. 3. Based on the learned principles of train traction management, after graduation students will be able to manage train traction, optimize the work of locomotives, optimize personnel turnovers and define required locomotive fleet. Also, they will be trained to monitor and manage the maintenance of traction vehicles. 4. By applying knowledge of principles of traction theory and manaegement, graduated students will be trained to make practical decisions about traction processes.
Prerequisites	It is necessary for students to have examined (and possibly passed exams) from general courses, in particular physics, organization of work, management. Also, attendance to classes is mandatory.
Teaching methods	Lectures, auditory and numerical exercises, consultations.
Course content	1. Active forces, basic equations of train motion. Movement resistances. 2. Athesion of rail vehicles and criteria for working points selection. “Traction passport“ and power of the locomotive. 3. Comparation of traction characteristics of different vehicle types. (**I colloquium**). 4. Braking of the train and braking diagrams. 5. Determination of running diagrams and running times. (**II colloquium**). 6. Electric traction dimensions. Procedures and methodes for train traction energy consumption calculation. 7. Modelling the traction processes and simulation of train traction. (**III colloquium**). 8. Optimizing of the electric train traction system. 9. Basic tasks of traction department. Locomotive rolling stock. (**IV colloquium**). 10. Indicators of running and utilization of locomotive rolling stock. 11. Locomotive turnover – a simple complete turnover. (**V colloquium**). 12. A complex complete turnover. Section turnover. Circular runnings. 13. Production of locomotive turnus. (**VI colloquium**). 14. A traction personnel. Personnel turnover. 15. Maintenance of railway vehicles. Traction costs. (**VII colloquium**).

Textbook (s)

Author/s	**Name of publication, publisher**	**Year**	**Pages (from-to)**
Dinić D.	Vuča vozova (Train Traction), ŽELNID, Belgrade	1983	--

Mandić D.	*Organizacija vuče vozova (Train Traction Organization)*, Faculty of Traffic and Transport Engineering, Belgrade	2002	--
Mandić D., Jovanović P., Bugarinović M.	*Zbirka zadataka iz teorije vuče vozova (Workbook of Train Traction Theory)*, Faculty of Traffic and Transport Engineering, Belgrade	2013	--
Mandić D., Bugarinović M., Jovanović P.	*Zbirka zadataka iz organizacije vuče vozova (Workbook of Train Traction Organization)*, Faculty of Traffic and Transport Engineering, Belgrade	2015	--
Additional readings			
Author/s	**Name of publication, editor**	**Year**	**Pages (from-to)**
Mandić D., Jovanović P.	*Teorija vuče vozova – praktikum (Train Traction Theory – practicum)*, Faculty of Traffic and Transport Engineering, Belgrade	2017	--

Evaluation criteria	**Assesment methods**	**Points**	**Percentage**
	pre-exam obligations		
	attendance to lectures and exercises	10	10%
	positivly evaluated project assignments	2x10	20%
	passed all tests and passed all colloquiums (numerical tests)	7x10	70%
	final exam		
	final exam (oral / written)		
	TOTAL	100	100%
Applicable from	16.06.2021 - 175 Session of the Councile, Faculty of Transport and Traffic engineering		

	UNIVERSITY OF EAST SARAJEVO Faculty of Transport and Traffic Engineering ***Study program: Traffic*** ***Profile: Railway traffic***	
	I cycle	III year of study

Course title	**RAILWAY SIGNALING AND SAFETY DEVICES AND ELECTRIC POWER PLANTS**
Department	Department for Transport Engineering – Faculty of Traffic Engineering Doboj

Code	**Course status**	**Semester**	**ECTS credits**
САФ11СЖ07134466,0330	compulsory	VI	6.00

Professor/s	PhD Ratko ĐURIČIĆ
Associate/s	MSc Vladimir MALČIĆ

Weekly hours			**Individual student hours (per semester)**			**Student workload coefficient S_o**
L	**TE**	**LE**	**L**	**TE**	**LE**	**S_o**
3	3	0	3*15*1,4	2*15*1,4	0*15*1,4	1,4

Total teacher workload (hours, per semester) 3*15 + 3*15 + 0*15 =90 hours	Total student workload (hours, per semester) 3*15*1,4 + 3*15*1,4 + 0*15*1,4 = 126 hours
Total workload: 90 + 126 = 216 hours per semester	

Course aims and learning outcomes	By mastering this course the student will be able / able to: 2. Knows the complex issues of technical means for the regulation and provision of railway traffic. 3. He has a good knowledge of modern railway traffic insurance systems. 4. Has extensive knowledge in the field of railway signaling and safety devices and means of communication on the railway, which is the most important prerequisite for work on the railway. 5. Follows world trends in this field and is qualified to propose applications in our country. 6. Independently formulates, analyzes and solves multidisciplinary problems of traffic engineering with the possibility of complex traffic management on electrified railways with rational use of electricity for towing trains.
Prerequisites	No conditions.
Teaching methods	Lectures, auditory and numerical exercises, consultations.
Course content	1. Introduction. Power supply systems for electric traction vehicles. 2. Contact network, composition and execution, types and equipment; 3. Electric traction substations; 4. Protection and safety in high voltage plants; 7. Load of the contact network in the function of traffic intensity; 8. Classification of railway traffic management systems; 9. Securing switches and slides. Technical means for controlling the occupancy of tracks and switches; 10. Rail current circuit; Signals and signaling technique. Cellular signaling and safety devices; (I colloquium) 11. Regulation and provision of traffic at the inter-station distance; 12. Regulation and provision of traffic at road crossings; 13. Automation of railway traffic management; 14. Dispatch centralization systems - telecommand. Train transmission systems - hitchhiking devices; 15. Automatic train guidance. Automatic train protection. 16. Security analysis (II colloquium)

Textbook (s)

Author/s	**Name of publication, publisher**	**Year**	**Pages (from-to)**
Zoran Avramović	*Modeling and microcomputer control of marshalling yards (monograph), Želnid, Belgrade, Serbia*	1995	
Zoran Avramović	Design of relay station signaling-	2015	

	of Security Devices, Faculty of Transport, Communications and Logistics, Berane, Montenegro		
Additional readings			
Author/s	**Name of publication, editor**	**Year**	**Pages (from-to)**

Evaluation criteria	**Assesment methods**	**Points**	**Percentage**
	pre-exam obligations		
	Presence during lectures	10	10%
	Positively evaluated seminary work	20	20%
	Passed all colloquiums	2x20	40%
	final exam		
	final exam (oral / written)	30	30%
	TOTAL	100	100%
Applicable from	16.06.2021 - 175 Session of the Councile, Faculty of Transport and Traffic engineering		

	UNIVERSITY OF EAST SARAJEVO Faculty of Transport and Traffic Engineering	
	Study program: Traffic ***Profile: Railway traffic***	
	I cycle / III year of study	

Course title	**INTERMODAL TRANSPORT**
Department	Department for Transport Engineering – Faculty of Traffic Engineering Doboj

Code	**Course status**	**Semester**	**ECTS credits**
САФ11СЖ07203665,0220	optional	VI	5.00

Professor/s	PhD Slobodan ZEČEVIĆ
Associates/s	PhD Snežana TADIĆ

Weekly hours			**Individual student hours (per semester)**			**Student workload coefficient S_o**
L	**TE**	**LE**	**L**	**TE**	**LE**	**S_o**
2	2	0	2*15*1,4	2*15*1,4	0*15*1,4	1,4

Total teacher workload (hours, per semester) 2*15 + 2*15 + 0*15 = 60 hours	Total student workload (hours, per semester) 2*15*1,4 + 2*15*1,4 + 0*15*1,4 = 84

Total workload: $W+T=U_{opt}$= 60 + 84 = 144 hours per semester

Course aims and learning outcomes	1. Recognizes and defines the role and place of intermodal transport for different participants and users; 2. Defines the structure of the intermodal system and determines the advantages and disadvantages of each element of the system in a particular intermodal transport chain; 3. Compare classical and intermodal transport chain technologies; 4. Assess the basic performance of the intermodal transport chain.
Prerequisites	No special conditions
Teaching methods	lectures, tutorials, case studies, debate classes
Course content	1. Intermodalism, definition and delimitation of basic concepts in intermodal transport. 2. Intermodal Transport (IT) system. 3. Intermodal transport units (types, modular chain alignment). 4. Optimization models of packaging, enlargement of intermodal units in the transport chain. 5. Means of transport in IT. Standardization and codification in IT. 6. Terminals and network of intermodal transport terminals. 7. Transport and traffic infrastructure, organization and telematics systems in IT (Colloquium I). 8. Container transport system technologies. 9. Container terminals. 10. Vehicle-to-vehicle transport technologies. 11. Vehicle-vehicle road-rail transport technologies. 12. Vehicle-vehicle rail-road transport technologies. 13. Technologies of land-river-sea and river-sea transport vehicle-vehicle. 14. Methodology of intermodal transport chain optimization. 15. European IT system. Legislation, international associations, policy and promotion (Colloquium II).

Textbook (s)

Author/s	**Name of publication, publisher**	**Year**	**Pages (from-to)**
Zečević S., Tadić S.	Intermodalni transport, autorizovana skripta	2016	

Additional readings

Author/s	**Name of publication, publisher**	**Year**	**Pages (from-to)**
Lowe D.	Intermodal freight transport, Elsevier	2005	
Priemus H., Nijkamp P., Konings R.	The Future of Intermodal Freight Transport: Operations, Design and Policy, Edward Elgar Pub.	2008	

Kim K.H., Günther H.O.	Container Terminals and Cargo Systems: Design, Operations Management, and Logistics Control Issues, Springer	2007	

	Assesment methods	Points	Percentage
Obligations, evaluation criteria	Preexamination obligations		
	attendance during lectures/exercise	5	5%
	activity during classes	5	5%
	tests	20	20%
	colloqium 1	20	20%
	Colloqium 2	20	20%
	Students who pass the colloquia are released written part, final exam		
	Final examination		
	Oral examination	30	30%
	Overall	100	100%
Applicable from	16.06.2021 - 175 Session of the Councile, Faculty of Transport and Traffic engineering		

	UNIVERSITY OF EAST SARAJEVO Faculty of Transport and Traffic Engineering ***Study program: Traffic*** ***Profile: Railway traffic*** I cycle / III year of study	

Course title	**SHIPPING**
Department	Department for Transport Engineering – Faculty of Traffic Engineering Doboj

Code	**Course status**	**Semester**	**ECTS credits**
САФ11СЖ07204965,0220	compulsory	VI	5,00

Professor/s	
Associate/s	

Weekly hours			**Individual student hours (per semester)**			**Student workload coefficient S_o**
L	**TE**	**LE**	**L**	**TE**	**LE**	**S_o**
2	2	0	$X*15*S_o$	$Y*15*S_o$	$Z*15*S_o$	

Total teacher workload (hours, per semester) X*15 + Y*15 + Z*15 = W hours	Total student workload (hours, per semester) $X*15*S_o + Y*15*S_o + Z*15*S_o$ = T hours

Total workload: $W+T=U_{opt}$= + = hours per semester

Course aims and learning outcomes	
Prerequisites	
Teaching methods	
Course content	

Textbook (s)

Author/s	**Name of publication, publisher**	**Year**	**Pages (from-to)**

Additional readings

Author/s	**Name of publication, editor**	**Year**	**Pages (from-to)**

	Assesment methods	**Points**	**Percentage**
Evaluation criteria			
Web sources			
Applicable from			

	UNIVERSITY OF EAST SARAJEVO Faculty of Transport and Traffic Engineering ***Study program: Traffic*** ***Profile: Railway traffic*** I cycle / III year of study	

Course title	**MAINTENANCE OF RAILWAY INFRASTRUCTURE**
Department	Department for Transport Engineering – Faculty of Traffic Engineering Doboj

Code	**Course status**	**Semester**	**ECTS credits**
САФ11СЖ07234365,0220	optional	VI	5,00

Professor/s	PhD Miloš IVIĆ
Associate/s	MSc Vladimir MALČIĆ

Weekly hours			**Individual student hours (per semester)**			**Student workload coefficient S_o**
L	**TE**	**LE**	**L**	**TE**	**LE**	**S_o**
2	2	0	2*15*1,5	2*15*1,5	0*15*1,5	1,5

Total teacher workload (hours, per semester) 2*15 + 2*15 + 0*15 = 60 hours	Total student workload (hours, per semester) 2*15*1,5 + 2*15*1,5 + 0*15*1,5 =90 hours

Total workload: $W+T=U_{opt}$ = 60 + 90 = 150 hours per semester

Course aims and learning outcomes	By mastering this course students will be able to: 1. Knowing the complex problem of technical means for regulating and securing railway traffic. 2. Knowing modern rail transport systems. 3. It possesses wide knowledge in the field of railway signaling and safety devices and means of connection on the railway, which is the most important precondition for operation on the railway. 4. Follow the world trends in this area and is qualified to propose applications with us.
Prerequisites	Admission reguirements: previously attended courses: Railway tracks и Railway stations and nodes. The conditions for passing the course are: 1. regular attendance (lectures and exercises), 2. completed and defended elaborate, 3. all colloquiums passed, 4. all test passed.
Teaching methods	Lectures, auditory and computational exercises, consultations
Course content	1. Introduction 2. General concepts and settings for maintenance of railway infrastructure 3. Classification of maintenance activities 4. Methods for realizing maintenance activities 5. Maintenance machinery 6. Devices, equipment and means of transport 7. Measurement technique (1st colloquium) 8. Track maintenance trains 9. Efficient maintenance of the railway infrastructure 10. Track reconstruction 11. Regeneration of the track material 12. Organization and technology of maintenance activities 13. Maintenance on high speed lines 14. Rail traffic organization under maintenance activities 15. Planning maintanace activities (2nd colloquium)

Textbook (s)

Author/s	**Name of publication, publisher**	**Year**	**Pages (from-to)**
Ivić M.	*Railway tracks,* Faculty of Transport and Traffic Engineering, Belgrade	2005	---
Milošević B.	*Railway track maintenance,* Railway high school,	1980	---

	Belgrade		
Tomčić M.	*Railway track maintenance*, Faculty of Civil Engineering, Belgrade	1998	---
Additional readings			
Author/s	**Name of publication, editor**	**Year**	**Pages (from-to)**
Ivić M.	*Railway track maintenance*, Lectures in the form of PP presentations		

Evaluation criteria	**Assesment methods**	**Points**	**Percentage**
	Preexamination obligations		
	The student's activity during lectures	5	5%
	Elaborate	35	35%
	Tests	10	10%
	Colloquiums	30	30%
	Final examination		
	Oral examination	20	20%
	Total	100	100%
Applicable from	16.06.2021 - 175 Session of the Councile, Faculty of Transport and Traffic engineering		

	UNIVERSITY OF EAST SARAJEVO Faculty of Transport and Traffic Engineering ***Study program: Traffic*** ***Profile: Railway traffic*** I cycle / III year of study	

Course title	**MAINTENANCE OF RAILWAY WAGONS**
Department	Department for Transport Engineering – Faculty of Traffic Engineering Doboj

Code	**Course status**	**Semester**	**ECTS credits**
САФ11СЖ07207065,0220	optional	VI	5,00

Professor/s	PhD Ratko ĐURIČIĆ
Associate/s	MSc Vladimir MALČIĆ

Weekly hours			**Individual student hours (per semester)**			**Student workload coefficient S_o**
L	**TE**	**LE**	**L**	**TE**	**LE**	**S_o**
2	2	0	2*15*1,5	2*15*1,5	2*15*1,5	1,5

Total teacher workload (hours, per semester) 2*15 + 2*15 + 0*15 = 60 hours	Total student workload (hours, per semester) 2*15*1,5 + 2*15*1,5 + 0*15*1,5 = 90 hours
Total workload: $W+T=U_{opt}$ = 60 + 90 = 150 hours per semester	

Course aims and learning outcomes	To familiarize students with basic concepts, characteristics and procedures in maintenace proces of railway vehicles, types, cycles and maintenance periods, with particular refference to modern maintenace methods and to enable them to apply knowledge in the maintenance of railway vehicle.
Prerequisites	Students are obliged to attend classes, attend practical exercises at the ŽRS, conduct seminar work, take colloquiums, and attend consultations.
Teaching methods	Lectures, auditory and computational exercises, consultations.
Course content	1. General concept and basic principles of organization of maintenance of railway vehicles 2. Types of maintenance of railway vehicles 3. Determination of cycles and deadlines for regular maintenance of railway vehicles 4. Division of work on maintenance work 5. Modifications and reconstructions of vehicles 6. Technical documentation for vehicle maintenance 7. Maintenance workshops (I colloquium) 8. Training of staff for maintenance of railway vehicles 9. Maintenance of braking devices for railway vehicles 10. Maintenance of towing vehicles, diesel and electric locomotives 11. Maintenance of towed vehicles - passenger and freight cars 12. Maintenance of vehicles for railway purposes - testing wheels, special-purpose vehicles, railway vehicles, special vehicles 13. Vehicle procedures after an emergency 14. Modern maintenance of railway vehicles 15. II colloquium

Textbook (s)

Author/s	**Name of publication, publisher**	**Year**	**Pages (from-to)**
Gojković, B., Đuričić, R., Malčić, V.	*Maintenance of railway vehicles, Faculty of Traffic Engineering Doboj*	2014	Whole Book
Gojković, B., Đuričić, R., Malčić, V., Čabrić, N.	*Maintenance of railway vehicles - updated edition, Faculty of Traffic Engineering Doboj*	2021	Whole Book

Additional readings

Author/s	**Name of publication, editor**	**Year**	**Pages (from-to)**

Evaluation criteria	**Assesment methods**	**Points**	**Percentage**
	Preexamination obligations		
	Presence during lectures	10	10%

	Seminary work	10	10%
	Colloquium I and II	2x30	60%
	Final examination		
	Oral examination	20	20%
	Total	100	100%
Applicable from	16.06.2021 - 175 Session of the Councile, Faculty of Transport and Traffic engineering		

	UNIVERSITY OF EAST SARAJEVO Faculty of Transport and Traffic Engineering ***Study program: Traffic*** ***Profile: Railway traffic*** I cycle / IV year of study	

Course title	**FREIGHT TRANSPORT TECHNOLOGY AND ORGANIZATION**
Department	Department for Transport Engineering – Faculty of Traffic Engineering Doboj

Code	**Course status**	**Semester**	**ECTS credits**
САФ11СЖ07106276,0321	compulsory	VII	6.00

Professor/s	PhD Branislav BOŠKOVIĆ
Associate/s	MSc Vladimir MALČIĆ

Weekly hours			**Individual student hours (per semester)**			**Student workload coefficient S_o**
L	**TE**	**LE**	**L**	**TE**	**LE**	**S_o**
3	2	1	3*15*1,4	2*15*1,4	1*15*1,4	1,4

Total teacher workload (hours, per semester) 3*15 + 2*15 + 1*15 = 75 hours	Total student workload (hours, per semester) 3*15*1,4 + 2*15*1,4 + 1*15*1,4 = 105 hours
Total workload: $W+T=U_{opt}$ = 75 + 105 = 180 hours per semester	

Course aims and learning outcomes	Upon the successful completion of the course each student will:: 1. Know the basic characteristics and role of the railway freight transport system; 2. Describe and understand the current systems and processes of the railway freight transport for wagon-load and parcel consignments and define technology processes for the transport implementation; 3. Analyze and design technology to processing shipments and freight wagons in the loading/unloading stations, including administrative procedures; 4. Quickly engage into a very complex process, organization and management of the railway freight transport.
Prerequisites	No conditions.
Teaching methods	Lectures ex-cathedra, exercises, one study project work, railway station visit or loading/unloading terminal, case studies
Course content	1. Basic concepts of the railway freight transport: terminology, the system and its features. 2. Technology of work with freight wagons, commodity and its documents in the loading/unloading terminals 3. Industrial branches: the concept, significance and structure of commodity and problems. Organization of railway work in industrial complexes and ports 4. Technology of forming trains in marshaling yards (pick-up trains, block trains) 5. Management of wagon streams on network 6. Technology and models of unit trains on the network 7. New technological concepts in the railway freight transport. 8. Technology of intermodal transport of goods 9. Transport technology of exceptional consignments and dangerous goods. 10. Modern tariffs theory, tariff systems and tariff principles in railway freight transport. 11. Train costs in freight transport 12. Indicators of quality in the railway freight transport

Textbook (s)

Author/s	**Name of publication, publisher**	**Year**	**Pages (from-to)**
Bošković B.	Written materials and presentations in the form of PP	2015	--
Čičak M., Vesković S.	Organization of Railway Traffic II, Faculty of Transport and Traffic engineering, Belgrade	2006	Čičak M., Vesković S.

Additional readings

Author/s	**Name of publication, editor**	**Year**	**Pages (from-to)**

	Assesment methods	Points	Percentage
Evaluation criteria	Pre-exam obligation		
	Presence during lectures	6	6%
	Positively evaluated project work	10	10%
	Solved all colloquiums (theory)	24	24%
	Solved all colloquiums (tasks)		
	Final exam		
	Final exam(verbally)	60	60%
	In total	100	100%
Applicable from	16.06.2021 - 175 Session of the Councile, Faculty of Transport and Traffic engineering		

	UNIVERSITY OF EAST SARAJEVO Faculty of Transport and Traffic Engineering ***Study program: Traffic*** ***Profile: Railway traffic*** I cycle / IV year of study	

Course title	**PASSENGER TRANSPORT TEHNOLOGY AND ORGANIZATION**
Department	Department for Transport Engineering – Faculty of Traffic Engineering Doboj

Code	**Course status**	**Semester**	**ECTS credits**
САФ11СЖ07106376,0311	compulsory	VII	6,00

Professor/s	PhD Ratko ĐURIČIĆ
Associate/s	MSc Vladimir MALČIĆ

Weekly hours			**Individual student hours (per semester)**			**Student workload coefficient S_o**
L	**TE**	**LE**	**L**	**TE**	**LE**	**S_o**
3	1	1	3*15*1,4=63	1*15*1,4=21	1*15*1,4=21	1,4

Total teacher workload (hours, per semester) 3*15 + 1*15 + 1*15 = 75 hours	Total student workload (hours, per semester) 3*15*1,4 + 2*15*1,4 +0*15*1,4 = 105 hours

Total workload: $W+T=U_{opt}$ = 75 + 105 = 180 hours per semester

Course aims and learning outcomes	1. The student will be able to understand the basic principles of passenger transport technology in rail traffic. Recognizing the basic quantitative and qualitative indicators of work in passenger rail transport, they will be able to understand the cause-effect links between the performance of passenger traffic and the results that are achieved. 2. It will be able to analyze, harmonize and optimize the operation of individual subsystems that are busy in passenger traffic. 3. Students will be trained in ordering trains and tracking their execution. It will be trained to calculate the cost of the train and create a tariff for passenger transport. 4. It will be able to operate operational services for the carriage of passengers on the railways, and that, after gaining practical experience on the railways, they manage individual sectors or railway organizations.
Prerequisites	None.
Teaching methods	Lectures, auditory, calculus and laboratory exercises, consultations
Course content	1. Basics of passenger traffic organization 2. Basics of passenger transport planning 3. Transport offer. Types and characteristics of passenger cars 4. Technical-exploitation characteristics of electro-motor and diesel-motor trains 5. Use of passenger cars in domestic and international traffic (**I colloquium**) 6. Passenger transport systems 7. Technical standards of work in passenger traffic 8. Travel flows and unevenness 9. Technology of work of passenger stations 10. Timetable for passenger trains (**II colloquium**) 11. Organization of remote passenger traffic 12. Organization of suburban passenger traffic 13. Quality of service in the carriage of passengers 14. Train costs 15. Tariffs in passenger transport (**III colloquium**)

Textbook (s)

Author/s	**Name of publication, publisher**	**Year**	**Pages (from-to)**
Čičak M., Vesković S.	*Organization of Railway Traffic II, Faculty of Transport and Traffic engineering, Belgrade*	2006	--
Čičak M., Vesković S.	*Organization of Railway Traffic II,workbooko of solved tasks,Želnid,Belgrade*	1999	--

Additional readings			
Author/s	**Name of publication, editor**	**Year**	**Pages (from-to)**

Evaluation criteria	**Assesment methods**	**Points**	**Percentage**
	Pre-exam obligation		
	Presence during lectures	10	10%
	Positively evaluated project work	20	20%
	Solved all colloquiums(tasks)	20	20%
	Solved all colloquiums(theory)	20	20%
	Final exam		
	Final exam(verbally)	30	30%
	In total	100	100%
Applicable from	16.06.2021 - 175 Session of the Councile, Faculty of Transport and Traffic engineering		

	UNIVERSITY OF EAST SARAJEVO Faculty of Transport and Traffic Engineering	
	Study program: Traffic ***Profile: Railway traffic***	
	I cycle / IV year of study	

Course title	**RAILWAY TRAFFIC TECHNOLOGY**
Department	Department for Transport Engineering – Faculty of Traffic Engineering Doboj

Code	**Course status**	**Semester**	**ECTS credits**
САФ11СЖ07106676,0311	compulsory	VII	6.00

Professor/s	PhD Ratko Đuričić
Associate/s	MSc Sanja SIMIĆ

Weekly hours			**Individual student hours (per semester)**			**Student workload coefficient S_o**
L	**TE**	**LE**	**L**	**TE**	**LE**	**S_o**
3	1	1	3*15*1,14	1*15*1,14	1*15*1,14	1,14

Total teacher workload (hours, per semester) 3*15 + 1*15 + 1*15 =75 hours	Total student workload (hours, per semester) 3*15*1,14 + 1*15*1,14 + 1*15*1,14 = 85,5 hours
Total workload: 75 + 85,5 = 160,5 hours per semester	

Course aims and learning outcomes	1. By mastering this course, students will understand the basic principles of organization of rail transport. Recognizing the basic quantitative and qualitative indicators of work in rail transport, they will be able to understand the cause-effect links of traffic performance and the results achieved. 2. After graduation, students will be able to analyze, harmonize and optimize the operations of railway subsystems. 3. Students will be trained to construct train timetable and to monitor its' performance. 4. After graduation, students will be able to manage the work of the dispatching and operational services on the railway, as well as to manage work of certain departments or railway enterprises, after they acquire some practical experience.
Prerequisites	It is necessary for students to have examined (and possibly passed exams) from general courses, in particular physics, organization of work, management. Also, attendance to classes is mandatory.
Teaching methods	Lectures, auditory and numerical exercises, consultations.
Course content	1. Basic concepts and principles of railway transport organization. 2. Basic principles and indicators of operations in railway transport. 3. Basic indicators of wagon flows organization, timetable and work planning. (**I colloquium**). 4. Quantitative and qualitative indicators of the operation and utilization of freight and passenger wagons. 5. Standardization of the activities. 6. Wagon and locomotive rolling stocks. (**II colloquium**). 7. Harmonization of certain indicators and railway subsystems. 8. Information systems on railways. 9. Importance and main tasks of the timetable. (**III colloquium**). 10. Basic elements and indicators of timetable graph. 11. Timing and securing the necessary data for timetable construction. 12. Ensuring timetable implementation. 13. The concept of railway line capacity and measurements for its' increase. (**IV colloquium**). 14. Operational service and dispatching of railway traffic. 15. Operational work planning. Execution of technical standards. (**V colloquium**).

Textbook (s)

Author/s	**Name of publication, publisher**	**Year**	**Pages (from-to)**
Eror S.	*Organizacija železničkog saobraćaja (Organization of Railway Traffic)*, Faculty of Traffic and Transport Engineering, Belgrade	1988	--

Kovačević P.	Eksploatacija železnica knjiga I (Exploitation of Railways – book I), ŽELNID, Beograd	1988	--
Kovačević P.	Eksploatacija železnica knjiga II (Exploitation of Railways – book I), ŽELNID, Beograd	1988	--

Additional readings			
Author/s	**Name of publication, editor**	**Year**	**Pages (from-to)**
Hansen I., Pachl J.	*Railway Timetable & Traffic*, EURailpress, Hamburg, Germany	2008	--
Eror S.	*Optimizacija razvoja kapaciteta železničkih pruga (Optimization of capacity development of the railway lines)*, ŽELNID, Beograd	1982	--

	Assesment methods	**Points**	**Percentage**
Evaluation criteria	pre-exam obligations		
	attendance to lectures and exercises	10	10%
	positivly evaluated project assignments	15	15%
	passed all tests and passed all colloquiums (numerical tests)	5x15	75%
	final exam		
	final exam (oral / written)		
	TOTAL	100	100%
Applicable from	16.06.2021 - 175 Session of the Councile, Faculty of Transport and Traffic engineering		

	UNIVERSITY OF EAST SARAJEVO Faculty of Transport and Traffic Engineering ***Study program: Traffic*** ***Profile: Railway traffic*** I cycle / IV year of study	

Course title	**REGULATORY SYSTEM OF RAILWAY TRANSPORT**
Department	Department for Transport Engineering – Faculty of Traffic Engineering Doboj

Code	**Course status**	**Semester**	**ECTS credits**
САФ11СЖ07106775,0220	compulsory	VII	5.00

Professor/s	PhD Branislav BOŠKOVIĆ
Associate/s	PhD Branislav BOŠKOVIĆ

Weekly hours			**Individual student hours (per semester)**			**Student workload coefficient S_o**
L	**TE**	**LE**	**L**	**TE**	**LE**	**S_o**
2	2	0	2*15*1,5	2*15*1,5	0*15*1,5	1,5

Total teacher workload (hours, per semester) 2*15 + 2*15 + 0*15 = 60 hours	Total student workload (hours, per semester) 2*15*1,5 + 2*15*1,5 + 0*15*1,5 = 90 hours

Total workload: $W+T=U_{opt}$ = 60 + 90 = 150 hours per semester

Course aims and learning outcomes	Introducing the environment and conditions of a rail company. Acquiring the basic knowledge about the concepts and fundamentals of the regulatory system of the EU and Serbia. Particulary, the attention will be on institutions and regulations as well as the content and meaning of the certain regulations. Upon the successful completion of the course each student will be able to: - Describe the of the rail sector in terms of economic and institutions arrangement; - Distinguish and interpret the meaning of the legislation (laws and bylaws) that is regulating the railway transport; - Recognize the procedure for the preparation, adoption and amendment the regulations; - How to find international and local regulations for particulary aspects of the railways; - Distinguish international inter-governmental and other organizations and their responsibilities; - Describe the procedures for processing the request for allocation of infrastructure capacity; - Compare and distinguish between regulatory systems in the railway sector.
Prerequisites	NO
Teaching methods	Lectures ex-cathedra, exercises, seminar that is devoted to analysis of laws and by-laws, interactive workshops, case studies, team presentations
Course content	1. Content and basic concepts of transport policy; 2. New European Transport System 3. Introduction in the railway regulatory system. 4. Basic concepts of regulation: laws, by-laws and other legislative and regulatory instruments; 5. Structure of the EU legislative; 6. Legislative acts of EU; 7. The institutions of the EU and Serbia in the railway sector (**I colloquium**); 8. Licenses and Certificates for railway operators and infrastructure managers; 9. The allocation of railway infrastructure capacity and supporting contracts; 10. The contracts between the state and infrastructure managers and transport operators; 11. The Public Service Obligations (PSO); 12. International sources of law on rail transport; 13. Duties and responsibilities of Railway undertakings and rail transport customers; 14. International railway organizations; 15. (**II colloquium**).
Textbook (s)	

Author/s	Name of publication, publisher	Year	Pages (from-to)
Bošković B.	REGULATORY SYSTEM OF RAILWAY TRANSPORT, Faculty of Transport and Traffic engineering, Belgrade, CD edition	2014	--
Additional readings			
Author/s	**Name of publication, editor**	**Year**	**Pages (from-to)**

	Assesment methods	Points	Percentage
Evaluation criteria	Pre-exam obligation		
	Presence during lectures	6	6%
	Positively evaluated project work	10	10%
	Solved all colloquiums	24	24%
	Final exam		
	Final exam(verbally)	60	60%
	In total	100	100%
Applicable from	16.06.2021 - 175 Session of the Councile, Faculty of Transport and Traffic engineering		

	UNIVERSITY OF EAST SARAJEVO Faculty of Transport and Traffic Engineering ***Study program: Traffic*** ***Profile: Railway traffic*** I cycle / IV year of study	

Course title	**MODELING IN RAILWAY TRANSPORT**
Department	Department for Transport Engineering – Faculty of Traffic Engineering Doboj

Code	**Course status**	**Semester**	**ECTS credits**
САФ11СЖ07120577,0330	compulsory	VII	7,00

Professor/s	PhD Predrag JOVANOVIĆ
Associate/s	MSc Vladimir MALČIĆ

Weekly hours			**Individual student hours (per semester)**			**Student workload coefficient S_o**
L	**TE**	**LE**	**L**	**TE**	**LE**	**S_o**
3	3	0	3*15*1,4	3*15*1,4	0*15*1,4	1,73

Total teacher workload (hours, per semester) 3*15 + 3*15 + 0*15 = 90 hours	Total student workload (hours, per semester) 3*15*1,73 + 3*15*1,73 + 0*15*1,73 = 155,7 hours

Total workload: $W+T=U_{opt}$ = 90 + 155,7 = 245,7 hours per semester

Course aims and learning outcomes	Basic aim of the subject is to enable students to apply different models for railway transport and traffic optimization of organization, technology, and capacity. After the course each student should be able to understand and describe basic methods for solving the problems of railway organization and technology and to apply specific optimization model. Also, student should be able to understand and use specific software applications related to operations research and statistics. The best students will be able to define a problem and solve it by contemporary software tools and methods.
Prerequisites	NO
Teaching methods	Course involves the use of computer applications. Students recognize and define the problems, and solve them by selected software apps and tools. In addition to computer and laboratory work, there is a semestral assignment where students apply selected mathematical method on railway case study.
Course content	1. Generally about Modeling 2. Generally about Prediction *and selecting factors,* 3. Methods and Models of Prediction 4. Phase in process of prediction and application methods and models 5. Optimization of Capacity 6. Method “Monte Carlo” 7. Problems of Capacity Allocation and Assignment 8. **I colloquium** 9. Basic in Decision Theory 10. Decision in Risk Condition 11. Multi-Criteria Decision Making (MCDM) 12. Examples of MCDM 13. Methods of multicriteria analysis 14. Applications of Multi-Criteria Analysis in Railway Transport 15. **II colloquium**

Textbook (s)

Author/s	**Name of publication, publisher**	**Year**	**Pages (from-to)**
Mirko J. Čičak:	Modeling in rail traffic (Modeliranje u železničkom saobraćaju), Faculty of Transport and Traffic engineering and ŽELNID, Belgrade	2003	11-28; 31-75; 463-502
Čupić M., Rao Tumala V.M.	Contemporary decision making - methods and application (Savremeno odlučivanje – metode i primena), III edition, FON, 1997, Belgrade	1997	1-57; 271-288

Additional readings

Author/s	Name of publication, editor	Year	Pages (from-to)

	Assesment methods	Points	Percentage
Evaluation criteria	Pre-exam obligation		
	Presence during lectures	10	10%
	Positively evaluated project work	20	20%
	Solved all colloquiums(tasks)	20	20%
	Solved all colloquiums(theory)	20	20%
	Final exam		
	Final exam(verbally)	30	30%
	In total	100	100%
Applicable from	16.06.2021 - 175 Session of the Councile, Faculty of Transport and Traffic engineering		

	UNIVERSITY OF EAST SARAJEVO Faculty of Transport and Traffic Engineering ***Study program: Traffic*** ***Profile: Railway traffic*** I cycle / IV year of study	

Course title	**ORGANIZATION OF TRAFFIC COMPANIES**
Department	Department for Transport Engineering – Faculty of Traffic Engineering Doboj

Code	**Course status**	**Semester**	**ECTS credits**
САФ11СЖ07104586,0320	compulsory	VII	6,00

Professor/s	PhD Perica Gojković
Associate/s	MSc Sanja SIMIĆ

Weekly hours			**Individual student hours (per semester)**			**Student workload coefficient S_o**
L	**TE**	**LE**	**L**	**TE**	**LE**	**S_o**
3	2	0	3*15*1,4=63	2*15*1,4=42	0*15*1,4=0	1,4

Total teacher workload (hours, per semester) 3*15 + 2*15 + 0*15 = 75	Total student workload (hours, per semester) 3*15*1,4 + 2*15*1,4+ 0*15*1,4 = 105

Total workload: $W+T=U_{opt}$= 75 + 105 = 180 hours per semester

Course aims and learning outcomes	By mastering this course, students will be able to: 1. learn the basic concepts of organization, as well as types and organizational models of enterprises; 2. will be able to analyze the organization of large business systems, business and development policy and development factors; 3. independently organize and lead a meeting according to defined rules; 4. acquired knowledge in practice to apply and establish their own company as well as to give instructions to others how to do it.
Prerequisites	None.
Teaching methods	lectures, auditory and computational exercises, consultations
Course content	1. The concept and development of the organization 2. Types of organizational structure 3. Organizational models of the company 4. Organizing large business systems 5. Organizational models of transport companies 6. Business and development policy 7. Characteristic business factors (I colloquium) 8. Basic methods and techniques for optimization 9. Organizational culture 10. Organization of business functions 11. Business information systems 12. Organization control. Organizing a meeting 13. Organization and management of investments 14. Organization design. Organizational transformation of the company 15. II colloquium

Textbook (s)

Author/s	**Name of publication, publisher**	**Year**	**Pages (from-to)**
Vešović, B. V., Bojović, J. N., Knežević, Lj. N.	*Organization of transport companies, Faculty of Transport and Traffic Engineering, Belgrade*	2007.	

Additional readings

Author/s	**Name of publication, editor**	**Year**	**Pages (from-to)**

Evaluation criteria	**Assesment methods**	**Points**	**Percentage**
	Preexamination obligations		

	Presence during lectures	10	10%
	Colloquium 1	10	10%
	Colloquium 2	40	40%
	passed colloquia (theory)	20	20%
	Final examination		
	Oral examination	10	10%
	Total	100	100%
Applicable from	16.06.2021 - 175 Session of the Councile, Faculty of Transport and Traffic engineering		

	UNIVERSITY OF EAST SARAJEVO Faculty of Transport and Traffic Engineering ***Study program: Traffic*** ***Profile: Railway traffic*** I cycle / IV year of study	

Course title	**QUALITY MANAGEMENT**
Department	Department of Transport Engineering - Faculty of Transport and Traffic Engineering

Code	**Course status**	**Semester**	**ECTS credits**
САФ11СЖ07104685,0220	Mandatory	VIII	5,00

Professor/s	Dr Đorđe Popović, assistant professor
Associate/s	

Weekly hours			**Individual student hours (per semester)**			**Student workload coefficient S_o**
L	**TE**	**LE**	**L**	**TE**	**LE**	**S_o**
2	2	0	45	45	0	1,5

Total teacher workload (hours, per semester) 2*15 + 2*15 + 0*15 = 60 hours	Total student workload (hours, per semester) 2*15*1,5 + 2*15*1,5 + 0*15*1,5 = 90 hours
Total workload: 60+90=150 hours per semester	

Course aims and learning outcomes	By mastering this course students will be able to: 1. Understand the requirements of users of products and services in the context of the needs imposed by the modern market, 2. use and apply different approaches, models and methods of measurement and quality improvement, 3. develop and apply specific models of quality management in real business conditions, 4. manage the resources more effectively in his / her authority in real business conditions, 5. achieves a more successful communication (internal and external).
Prerequisites	Does not have
Teaching methods	Lectures, auditory exercises, seminar work
Course content	1. History of quality management development 2. Quality and standardization. Model of quality management system 3. Understanding quality. The term and definitions of quality 4. Qualitative, qualitative and quality management 5. Understand the context of an organization. Deming's key to understanding the organization 6. Quality management systems **7. I colloquium** 8. Total Quality Management (TQM). Models of excellence 9. Integrated Management Systems 10. Quality system according to ISO 9000: 2015 11. Process model of the organization 12. Risk analysis. Methods of risk assessment 13. Methods and tools of quality 14. Methods of measuring customer satisfaction **15. II colloquium**

Textbook (s)

Author/s	**Name of publication, publisher**	**Year**	**Pages (from-to)**
Bobrek, M., Milekić, M., Macanović, K.	Upravljanje kvalitetom – integrisani sistemi upravljanja prema ISO 9001:2015, Faculty of Transport and Traffic Engineering	2014	1-284

Additional readings

Author/s	**Name of publication, editor**	**Year**	**Pages (from-to)**
Đorđević, D., Vasiljević, M.	Upravljanje kvalitetom u saobraćaju, Faculty of Transport and Traffic Engineering	2009	1-251

Evaluation criteria	**Assesment methods**	**Points**	**Percentage**

	Pre-exam obligations		
	Presence of lectures / exercises	10	10%
	Seminary work	20	20%
	Colloquium	2x35	70%
	Final exam		
	Final exam (oral / written)		
	TOTAL	100	100%
Applicable from	16.06.2021 - 175 Session of the Councile, Faculty of Transport and Traffic engineering		

	UNIVERSITY OF EAST SARAJEVO Faculty of Transport and Traffic Engineering ***Study program: Traffic*** ***Profile: Railway traffic*** I cycle / IV year of study	

Course title	**SAFETY OF RAILWAY TRAFFIC**
Department	Department for Transport Engineering – Faculty of Traffic Engineering Doboj

Code	**Course status**	**Semester**	**ECTS credits**
САФ11СЖ07105785,0220	compulsory	VIII	5,0

Professor/s	PhD Ratko Đuričić
Associate/s	MSc Vladimir MALČIĆ

Weekly hours			**Individual student hours (per semester)**			**Student workload coefficient S_o**
L	**TE**	**LE**	**L**	**TE**	**LE**	**S_o**
2	2	0	2*15*1,5	2*15*1,5	0*15*1,5	1,5

Total teacher workload (hours, per semester) 2*15 + 2*15 + 0*15 = 60 hours	Total student workload (hours, per semester) 3*15*1,5 + 2*15*1,5 + 0*15*1,5 =90 hours

Total workload: $W+T=U_{opt}$= 60 + 90 = 150 hours per semester

Course aims and learning outcomes	1. By mastering this course, students will understand the basic principles of safety in railway traffic. Being familiar with the principles of interoperability, will be able to understand causally-related links of interoperability and safety of the rail system. 2. It will be able to analyze parameters that affect the safety of rail transport 3. They will be qualified to use methods for assessment and assessment of risks in railway traffic 4. It will be able to demonstrate the establishment of safety management systems for railway companies and infrastructure managers. 5. They will be able to manage the safety management system, and that, after gaining practical experience on the railway, they manage individual sectors or railway organizations responsible for the safety of railway transport and traffic.
Prerequisites	Regulation in railway traffic
Teaching methods	Lectures, auditory exercises, consultation
Course content	1. Basic concepts on the safety of railway traffic, 2. Indicators on safety of railway traffic, 3. Criteria for determining the level of safety, 4. Extraordinary events on the railway, 5. The expertise of extraordinary events in railway, 6. Examples of extraordinary events analysis, 7. I colloquium; 8. Transportability of a railway as a safety factor, 9. Tehnical ability of a railway as a safety factor, 10. The effects of the human factor on a safety of a rail traffic, 11. The effects of the technical factor on a safety of a rail traffic, 12. Normative acts regulating the safety of railway traffic, 13. Training and health conditions that workers need to fulfill in order to increase safety, 14. Safety exploitation characteristics and the use of some devices; 15. II colloquium.

Textbook (s)

Author/s	**Name of publication, publisher**	**Year**	**Pages (from-to)**
Đuričić R., Bošković B., Rosić S.	European concept od safety railway	2016	220

Additional readings

Author/s	**Name of publication, editor**	**Year**	**Pages (from-to)**

	Assesment methods	Points	Percentage
Evaluation criteria	Pre-exam obligations		
	Presence during lectures	10	10%
	Positively evaluated seminary work	20	20%
	Passed all colloquiums	30	30%
	Final exam		
	Final exam(verbally)	40	40
		100	100%
Applicable from	16.06.2021 - 175 Session of the Councile, Faculty of Transport and Traffic engineering		

	UNIVERSITY OF EAST SARAJEVO Faculty of Transport and Traffic Engineering ***Study program: Traffic*** ***Profile: Railway traffic*** I cycle / IV year of study	

Course title	**RAILWAY MARKETING AND MARKETING OPERATIONS**
Department	Department for Transport Engineering – Faculty of Traffic Engineering Doboj

Code	**Course status**	**Semester**	**ECTS credits**
САФ11СЖ07234585,0220	optional	VIII	5,00

Professor/s	PhD Svetlana TERZIĆ
Associate/s	PhD Svetlana TERZIĆ

Weekly hours			**Individual student hours (per semester)**			**Student workload coefficient S_o**
L	**TE**	**LE**	**L**	**TE**	**LE**	**S_o**
2	2	0	2*15*1,5	2*15*1,5	0*15*1,5	1,5

Total teacher workload (hours, per semester) 2*15 + 2*15 + 0*15 = 60 hours	Total student workload (hours, per semester) 2*15*1,5 + 2*15*1,5 + 0*15*1,5 =90 hours
Total workload: $W+T=U_{opt}$ = 60 + 90 = 150 hours per semester	

Course aims and learning outcomes	Getting acquainted with current changes in the railway transport market, the causes and consequences of current changes, and gaining knowledge in the field of market and marketing operations on the railway. Every student should be able to: 1. analyze the transport services market; 2. understands the current changes in the railway transport market, and the need and inevitability for the host railway company to adjust its business in order to (p) remain competitive in the market; 3. to understand significant marketing activities and business strategies of customer relationship management, in order to maintain current users of railway services and influence their loyalty.
Prerequisites	No conditions
Teaching methods	Lectures, auditory and computational exercises, consultations
Course content	1. Basic characteristics and specifics of railway traffic; 2. Current problems in railway traffic; opportunities to solve problems and increase the share of railways in the transport market; 3. Defining the market of transport services. Elements of the transport services market; 4. Marketing in railway traffic; 5. Railway marketing management. Marketing planning; 6. Analysis as a basis for marketing planning; 7. Marketing strategy in railway companies; 8. I colloquium 9. Marketing organization. Organizing cellular marketing; 10. Control of marketing activities; 11. Price management and the impact of prices on the volume of transport; 12. Benchmarking in railway traffic; 13. Railway reform in Europe; 14. Analysis of market adaptability and profitability of railways; 15. II colloquium

Textbook (s)

Author/s	**Name of publication, publisher**	**Year**	**Pages (from-to)**
N. J. Bojović	*Authorized script from the subject "Market and marketing operations of the railway", Belgrade, Serbia*	2006	
S. Vasiljevic	*"Railway Marketing", Higher Railway School, Belgrade, Serbia*	2003	

Additional readings

Author/s	Name of publication, editor	Year	Pages (from-to)

	Assesment methods	Points	Percentage
Evaluation criteria	Preexamination obligations		
	The student's activity during lectures	10	10%
	Positively evaluated seminary work	20	20%
	Colloquiums	2x20	40%
	Final examination		
	Oral examination	30	30%
	Total	100	100%
Applicable from	16.06.2021 - 175 Session of the Councile, Faculty of Transport and Traffic engineering		

	UNIVERSITY OF EAST SARAJEVO Faculty of Transport and Traffic Engineering ***Study program: Traffic*** ***Profile: Railway traffic*** I cycle / IV year of study	

Course title	**ENGINEERING ECONOMICS IN RAILWAY TRAFFIC AND TRANSPORT**
Department	Department for Transport Engineering – Faculty of Traffic Engineering Doboj

Code	**Course status**	**Semester**	**ECTS credits**
САФ11СЖ07234685,0220	optional	VIII	5,00

Professor/s	PhD Živko ERCEG
Associate/s	PhD Živko ERCEG

Weekly hours			**Individual student hours (per semester)**			**Student workload coefficient S_o**
L	**TE**	**LE**	**L**	**TE**	**LE**	**S_o**
2	2	0	2*15*1,5	2*15*1,5	0*15*1,5	1,5

Total teacher workload (hours, per semester) 2*15 + 2*15 + 0*15 = 60 hours	Total student workload (hours, per semester) 2*15*1,5 + 2*15*1,5 + 0*15*1,5 =90 hours
Total workload: $W+T=U_{opt}$ = 60 + 90 = 150 hours per semester	

Course aims and learning outcomes	The course aims to acquire the latest knowledge in the field of engineering economics with a special focus on railway traffic and transport. Upon completion of the course the student will be able to: - to combine engineering knowledge with an understanding of the principles of economics in railway transport and transportation
Prerequisites	No conditions
Teaching methods	Lectures, auditory and computational exercises, consultations
Course content	1. The role of railways in economic development; 2. Railway markets; 3. Economic characteristics of the railway; 4. Pricing of railways; 5. Financial sustainability of the railway; 6. Creating a commercial railway structure; 7. Commercial management; 8. I colloquium; 9. Commercial strategy; 10. Basic techniques for economic evaluation of investment alternatives; 11. Present value method; 12. Economic analysis - Structural analysis of alternatives; 13. Financial analysis; 14. Substitution analysis; 15. II colloquium.

Textbook (s)

Author/s	**Name of publication, publisher**	**Year**	**Pages (from-to)**
Cowie, J.	*The Economics of Transport - A Theoretical and Applied Perspective. Routledge, London.*	2009	

Additional readings

Author/s	**Name of publication, editor**	**Year**	**Pages (from-to)**
Blank, L., Targuin, A.	*Basics of Engineering Economy. McGraw-Hill*	2008	

Evaluation criteria	**Assesment methods**	**Points**	**Percentage**
	Preexamination obligations		
	The student's activity during lectures	10	10%
	Positively evaluated seminary work	20	20%
	Colloquiums	2x20	40%
	Final examination		

	Oral examination	30	30%
	Total	100	100%
Applicable from	16.06.2021 - 175 Session of the Councile, Faculty of Transport and Traffic engineering		

	UNIVERSITY OF EAST SARAJEVO Faculty of Transport and Traffic Engineering	
	Study program: Traffic ***Profile: Railway traffic***	
	I cycle / IV year of study	

Course title	**ANALYSIS OF EMERGENCY EVENTS ON THE RAILWAY**
Department	Department for Transport Engineering – Faculty of Traffic Engineering Doboj

Code	**Course status**	**Semester**	**ECTS credits**
САФ11СЖ07234785,0220	optional	VIII	5.00

Professor/s	
Associate/s	MSc Sanja SIMIĆ

Weekly hours			**Individual student hours (per semester)**			**Student workload coefficient S_o**
L	**TE**	**LE**	**L**	**TE**	**LE**	**S_o**
2	2	0	2*15*1,5	2*15*1,5	0*15*1,5=0	1,5

Total teacher workload (hours, per semester) 2*15 + 2*15 + 0*15 = 60 h	Total student workload (hours, per semester) 2*15*1,5 + 2*15*1,5 + 0*15*1,5 = 90 h
Total workload: 60 + 90 = 150 hours per semester	

Course aims and learning outcomes	Training of students for research activities related to railway traffic safety, which are carried out in order to propose organizational and technical measures relevant to raising safety levels, drafting laws and other acts, traffic planning, drafting a strategy for traffic development, etc. and training students to develop expertise in the field of railway safety. During the lectures and exercises, students will be introduced to mathematical and statistical models applied in research related to railway safety, preparation of temporal and spatial analysis of emergencies, analysis of emergencies at level crossings and the impact of railways on the environment.
Prerequisites	None
Teaching methods	Lectures, auditory and numerical exercises, consultations.
Course content	1. Measurement in traffic safety; 2. Assessment of railway traffic safety; 3. The influence of the human factor. 4. Comparison of railway traffic safety levels; 5. Mathematical-statistical models in research of safety characteristics of railway railway system; 6. Temporal-spatial analysis of extraordinary events; 7. Safety requirements in the design and operation of stations; 8. Selected chapters from collision theory; 9. I colloquium; 10. Safety at road-rail crossings; 11. Investigation and expertise of extraordinary events; 12. Emergency databases; 13. Benchmarking in railway safety; 14. Modern procedures for improving railway safety; 15. II colloquium.

Textbook (s)

Author/s	**Name of publication, publisher**	**Year**	**Pages (from-to)**
Marković M.	*Railway safety*		--

Additional readings

Author/s	**Name of publication, editor**	**Year**	**Pages (from-to)**
	Regulations, instructions and valid laws and other acts regulating the field of railway traffic		--

Evaluation criteria	**Assesment methods**	**Points**	**Percentage**
	pre-exam obligations		

	attendance to lectures and exercises	10	10%
	positively evaluated project assignment (seminar paper)	20	20%
	colloquia (tests)	2x20	40%
	final exam		
	final exam (oral / written)	30	30%
	TOTAL	100	100%
Applicable from	16.06.2021 - 175 Session of the Councile, Faculty of Transport and Traffic engineering		

	UNIVERSITY OF EAST SARAJEVO Faculty of Transport and Traffic Engineering ***Study program: Traffic*** ***Profile: Railway traffic*** I cycle / III year of study	

Course title	**TESTING OF RAILWAYS AND VEHICLES**
Department	Department for Transport Engineering – Faculty of Traffic Engineering Doboj

Code	**Course status**	**Semester**	**ECTS credits**
САФ11СЖ07206485,0220	optional	VIII	5,00

Professor/s	
Associate/s	MSc Sanja SIMIĆ

Weekly hours			**Individual student hours (per semester)**			**Student workload coefficient S_o**
L	**TE**	**LE**	**L**	**TE**	**LE**	**S_o**
2	2	0	2*15*1,5	2*15*1,5	0*15*1,5	1,5

Total teacher workload (hours, per semester) 2*15 + 2*15 + 0*15 = 60	Total student workload (hours, per semester) 2*15*1,5 + 2*15*1,5+ 0*15*0 = 90
Total workload: $W+T=U_{opt}$= 60 + 90 = 150 hours per semester	

Course aims and learning outcomes	By mastering this course, students will be able to: 1. get acquainted with the norms and regulations for the production of prototype rail vehicles, 2. perform static and dynamic tests of rail vehicles; 3. calculate the braking mass and braking of the train; 4. get acquainted with measuring cars and train for analysis of diagrams of performed measuring runs; 5. acquired knowledge applied in practice.
Prerequisites	None
Teaching methods	lectures, auditory and computational exercises, consultations
Course content	1. Rail vehicle - division, prototype; 2. Putting rail vehicles into traffic; 3. Standards and regulations for the construction and production of rail vehicles; 4. Technical-technological procedures for prototyping; 5. Regulations and norms of putting the vehicle into use; 6. Static-dynamic tests - UIC and JUS standards; 7. Vehicle as a dynamic system, basic concepts. Railway vehicle testing. Braking power test. Braking mass and braking test (**I colloquium**); 8. Railway and its elements as a basis for dynamic assessment of vehicles and tracks; 9. Assessment of the track, new, repaired and during operation, safety assessment; 10. Measuring circuit – description; 11. Operation and use of measuring circuits for track evaluation – description; 12. Defectoscopy, control and evaluation of rails, axles and wheels on railways; 13. Noise and vibration as concepts; 14. Generating noise and vibration; 15. Estimates of noise and vibration levels from the aspect of fatigue and safety in railway transport (**II colloquium**).

Textbook (s)

Author/s	**Name of publication, publisher**	**Year**	**Pages (from-to)**
Jovanović R., Vasiljević M.	*Testing of railways and vehicles, Faculty of Transportation and Traffic Engineering Doboj*	2008.	1-90

Additional readings

Author/s	**Name of publication, editor**	**Year**	**Pages (from-to)**

Evaluation criteria	**Assesment methods**	**Points**	**Percentage**

	Preexamination obligations		
	attendance to lectures and exercises	10	10%
	positively graded seminar paper	10	10%
	test / colloquium	2x25	50%
	Final examination		
	Oral examination	30	30%
	Total	100	100%
Applicable from	16.06.2021 - 175 Session of the Councile, Faculty of Transport and Traffic engineering		

LOGISTICS

UNIVERSITY OF EAST SARAJEVO
Faculty of Transport and Traffic Engineering

Study program: Traffic
Profile: Logistics

Number	Code	Course title	Course status	Conditionality	Semester	Hours per semester			ECTS
						L	TE	LE	
III year of study									
28.	САФ11СЛ07107156,0320	Basic forms of transport I	O		V	3	2	0	6.00
29.	САФ11СЛ07107256,0230	Shipping and agency business	O		V	2	3	0	6.00
30.	САФ11СЛ07103657,0330	Intermodal transport	O		V	3	3	0	7.00
31.	САФ11СЛ07103155,0220	Ecology in traffic	O		V	2	2	0	5.00
32.	САФ11СЛ07103256,0320	Mechanization and tehnology of transhipment	O		V	3	2	0	6.00
33.	САФ11СЛ07107365,0320	Basic types of transport II	O	28	VI	3	2	0	5.00
34.	САФ11СЛ07107466,0311	Logistics centers	O	30	VI	3	1	1	6.00
35.	САФ11СЛ07107565,0320	Warehouse system	O		VI	3	2	0	5.00
36.	САФ11СЛ07203765,0220	1. Vertical transport	I_2		VI	2	2	0	5.00
	САФ11СЛ07234865,0220	2. Transport of dangerous goods			VI				
37.	САФ11СЛ07234967,0330	1. Logistics marketing	I_3		VI	3	3	0	7.00
	САФ11СЛ07203867,0330	2. Management in Traffic			VI				
38.	САФ11СЛ07132962,0000	Professional practice	O		VI	0	0	0	2.00
					TOTAL:	**27**	**22**	**1**	**60**
IV year of study									
39.	САФ11СЛ07107776,0320	Logistics controlling	O		VII	3	2	0	6.00
40.	САФ11СЛ07107875,0220	Return logistics	O		VII	2	2	0	5.00
41.	САФ11СЛ07107976,0320	Special areas of logistic	O		VII	3	2	0	6.00
42.	САФ11СЛ07108076,0320	Industrial logistics	O	35	VII	3	2	0	6.00
43.	САФ11СЛ07108177,0330	City logistics	O	34	VII	3	3	0	7.00
44.	САФ11СЛ07104585,0220	Organization of traffic companies	O		VIII	2	2	0	5.00
45.	САФ11СЛ07104685,0220	Quality management	O		VIII	2	2	0	5.00
46.	САФ11СЛ07108287,0330	Information management in logistics	O		VIII	3	3	0	7.00
47.	САФ11СЛ07208385,0220	1. Internet marketing	I_4		VIII	2	2	0	5.00
	САФ11СЛ07235085,0220	2. Logistics providers							
48.	САФ11СЛ07208584,0211	1. Project management in communications	I_5		VIII	2	1	1	4.00
	САФ11СЛ07208684,0211	2. Design in information system							
49.	САФ11СЛ07105284,0030	Graduate thesis	O		VIII	0	3	0	4.00
					TOTAL:	**25**	**24**	**1**	**60.0**

- L - lectures
- TE - theoretical exercises
- LE - laboratory exercises

	UNIVERSITY OF EAST SARAJEVO Faculty of Transport and Traffic Engineering	
	Study program: Traffic ***Profile: Logistics***	
	I cycle / III year of study	

Course title	**BASIC FORMS OF TRANSPORT I**
Department	Department for Transport Engineering – Faculty of Traffic Engineering Doboj

Code	**Course status**	**Semester**	**ECTS credits**
САФ11СЛ07107156,0320	compulsory	V	6,0

Professor/s	PhD Željko Stević,
Associates/s	MSc Eldina Huskanović

Weekly hours			**Individual student hours (per semester)**			**Student workload coefficient S_o**
L	**TE**	**LE**	**L**	**TE**	**LE**	**S_o**
3	2	0	3*15*1,4=63	2*15*1,4=42	0*15*1,4	1,4

Total teacher workload (hours, per semester) 3*15 + 2*15 + 0*15 = W hours	Total student workload (hours, per semester) 3*15*1,4 + 2*15*1,4 + 0*15*1,4= T hours
Total workload: W+T=U_{opt}= 75 + 105 = 180 hours per semester	

Course aims and learning outcomes	1. Gain knowledge of basic modes of transport 2. Acquire knowledge for each mode of transport, 3. Calculate the economic profitability of the use of each type and select the most favorable 4. Acquire knowledge about transport subsystems
Prerequisites	No special conditions
Teaching methods	Lectures, theoretical exercises, consultation
Course content	1. Historical overview of transport of goods 2. The role and significant traffic in modern society 3. Freight transport market 4. Market access and activity access 5. Division and basic modes of transport 6. Basic regulations 7. I colloquium 8. Characteristics of modes of transport 9. Transport subsystems 10. Types and characteristics of transport services 11. Transport services: basic processes and processes 12. Analysis of work and benchmarking 13. Transport subsystems 14. Quality of service 15. II colloquium

Textbook (s)

Author/s	**Name of publication, publisher**	**Year**	**Pages (from-to)**
Risto Perišić	Savremene tehnologije transporta	1999.	1-317

Additional readings

Author/s	**Name of publication, publisher**	**Year**	**Pages (from-to)**
R. Božičković, M.Ajanović	Eksploatacija i održavanje vozila	2011.	1-278

Obligations, evaluation criteria	**Assesment methods**	**Points**	**Percentage**
	Preexamination obligations		
	attendance during lectures/exercise	10	10%
	seminar work	20	20%
	colloquiums	70	70%
	Final examination		
	written examination/oral examionation	70	70%

	Overall	100	100%
Applicable from	16.06.2021. – 175 session of the Teaching-Scientific Council of the Faculty of Transport and Traffic Engineering		

	UNIVERSITY OF EAST SARAJEVO Faculty of Transport and Traffic Engineering	
	Study program: Traffic ***Profile: Logistics***	
	I cycle / III year of study	

Course title	**SHIPPING AND AGENCY BUSINESS**
Department	Department for Transport Engineering – Faculty of Traffic Engineering Doboj

Code	**Course status**	**Semester**	**ECTS credits**
САФ11СЛ07107256,0230	compulsory	V	6,0

Professor/s	PhD Slobodan Subotić
Associates/s	MSc Eldina Huskanović

Weekly hours			**Individual student hours (per semester)**			**Student workload coefficient S_o**
L	**TE**	**LE**	**L**	**TE**	**LE**	**S_o**
2	3	0	42	63	0	1,4

Total teacher workload (hours, per semester) 2*15 + 3*15 + 0*15 = 75 hours	Total student workload (hours, per semester) 2*15*1,4 + 3*15*1,4 + 0*15*1,4 = 42+63+0=105 hours

Total workload: $W+T=U_{opt}$= 75 + 105 = 180 hours per semester

Course aims and learning outcomes	1. performs basic tasks in freight forwarding and agency activities, 2. prepare the structure and elements of the supply of jobs in the freight forwarding and agency activities, 3. performs activities related to extradition, 4. participates in customs representation and implementation of customs procedures, 5. participates in insurance business in transport.
Prerequisites	No special conditions
Teaching methods	Lectures, theoretical exercises, consultation
Course content	1. Basic concepts, origin and development of freight forwarding and transport agents 2. Structure of functions and tasks of freight forwarding, transport agents and logistics providers 3. Trends in the development of modern logistics providers and logistics partnerships 4. Marketing, supply, sales and prices of logistics services 5. Contracting and organization of freight forwarding, agency and logistics operations 6. Documents in international trade flows 7. I colloquium 8. International Terms of Delivery - INCOTERMS 2010. Institutional frameworks for performing freight forwarding and agency work. 9. Organization of international import and export flows of goods. Collective organization Transport 10. Organization of transit flows of goods - application of TIR carnet. Organization flows of temporary import of goods, ATA carnet, fair affairs in freight forwarding 11. Customs brokerage and implementation of customs procedures, customs valuation of goods 12. Insurance of goods in transport. International payment 13. Application of information technologies and electronic business in freight forwarding and agency business, freight forwarding, transport and customs procedures in European Union 14. New strategies and technologies for performing freight forwarding, agency and logistics business 15. II colloquium

Textbook (s)

Author/s	**Name of publication, publisher**	**Year**	**Pages (from-to)**
Kalibarda, M.	Špedicija i agencijsko poslovanje, autorizovana skripta, Saobraćajni fakultet Beograd	2008.	1-207

Additional readings			
Author/s	**Name of publication, publisher**	**Year**	**Pages (from-to)**
Zelenika, R.	Temelji logističke špedicije, Sveučilište u Rijeci	2005.	1-672

	Assesment methods	**Points**	**Percentage**
Obligations, evaluation criteria	Preexamination obligations		
	attendance during lectures/exercise	10	10%
	seminar work	20	20%
	colloquiums	2x35	30%
	Final examination		
	Overall	100	100%
Applicable from	16.06.2021 - 175 Session of the Councile, Faculty of Transport and Traffic engineering		

	UNIVERSITY OF EAST SARAJEVO Faculty of Transport and Traffic Engineering	
	Study program: Traffic ***Profile: Logistics***	
	I cycle / III year of study	

Course title	**INTERMODAL TRANSPORT**
Department	Department for Transport Engineering – Faculty of Traffic Engineering Doboj

Code	**Course status**	**Semester**	**ECTS credits**
САФ11СЛ07103657,0330	compulsory	V	7,0

Professor/s	PhD Slobodan Zečević
Associates/s	

Weekly hours			**Individual student hours (per semester)**			**Student workload coefficient S_o**
L	**TE**	**LE**	**L**	**TE**	**LE**	**S_o**
3	3	0	3*15*1,33=59,85	3*15*1,33=59,85	0*15*1,33=0	1,33

Total teacher workload (hours, per semester) 3*15 + 3*15 + 0*15 = 90 hours	Total student workload (hours, per semester) $3*15*S_o + 3*15*S_o + 0*15*S_o = T$
Total workload: $W+T=U_{opt}$= 90 + 120 = 210 hours per semester	

Course aims and learning outcomes	1. Recognizes and defines the role and place of intermodal transport for different participants and users; 2. Defines the structure of the intermodal system and determines the advantages and disadvantages of each element of the system in a particular intermodal transport chain; 3. Compare classical and intermodal transport chain technologies; 4. Assess the basic performance of the intermodal transport chain.
Prerequisites	No special conditions
Teaching methods	lectures, tutorials, case studies, debate classes
Course content	1. Intermodalism, definition and delimitation of basic concepts in intermodal transport. 2. Intermodal Transport (IT) system. 3. Intermodal transport units (types, modular chain alignment). 4. Optimization models of packaging, enlargement of intermodal units in the transport chain. 5. Means of transport in IT. Standardization and codification in IT. 6. Terminals and network of intermodal transport terminals. 7. Transport and traffic infrastructure, operators, organization and telematics systems in IT (Colloquium 1). 8. Container transport system technologies. 9. Container terminals. 10. Vehicle-to-vehicle transport technologies. 11. Vehicle-vehicle road-rail transport technologies. 12. Vehicle-vehicle rail-road transport technologies. 13. Technologies of land-river-sea and river-sea transport vehicle-vehicle. 14. Methodology of intermodal transport chain optimization. 15. European IT system. Legislation, international associations, policy and promotion of IT (Colloquium 2).

Textbook (s)

Author/s	**Name of publication, publisher**	**Year**	**Pages (from-to)**
Zečević S., Tadić S.	Intermodalni transport, autorizovana skripta	2016.	

Additional readings

Author/s	**Name of publication, publisher**	**Year**	**Pages (from-to)**
Lowe D.	Intermodal freight transport, Elsevier	2005.	
Priemus H., Nijkamp P.,	The Future of Intermodal Freight Transport:	2008.	

Konings R.	Operations, Design and Policy, Edward Elgar Pub.		
Kim K.H., Günther H.O.	Container Terminals and Cargo Systems: Design, Operations Management, and Logistics Control Issues, Springer	2007.	

	Assesment methods	Points	Percentage
Obligations, evaluation criteria	Preexamination obligations		
	attendance during lectures/exercise	5	5%
	activity during classes	5	5%
	tests	20	20%
	colloqium 1	20	20%
	Colloqium 2	20	20%
	Students who pass the colloquia are released written part, final exam		
	Final examination		
	Oral examination	30	30%
	Overall	100	100%
Applicable from	16.06.2021 - 175 Session of the Councile, Faculty of Transport and Traffic engineering		

	UNIVERSITY OF EAST SARAJEVO Faculty of Transport and Traffic Engineering ***Study program: Traffic*** ***Profile: Logistics*** I cycle / I year of study	

Course title	**ECOLOGY IN TRAFFIC**
Department	Department of Road Traffic and Transport- Faculty of Transport and Traffic Engineering

Code	**Course status**	**Semester**	**ECTS credits**
САФ11СЛ07103155,0220	compulsory	V	5,00

Professor/s	Milan Milotić, Associate Professor
Associate/s	Milan Milotić, Associate Professor

Weekly hours			**Individual student hours (per semester)**			**Student workload coefficient S_o**
L	**TE**	**LE**	**L**	**TE**	**LE**	**S_o**
2	2	0	2*15*1,5=45	2*15*1,5=45	2*15*1,4=0	1,5

Total teacher workload (hours, per semester) 2*15 + 2*15 + 0*15 = 60 hours	Total student workload (hours, per semester) 2*15*1,5 + 2*15*1,5+ 0*15*1,5 = 90 hours

Total workload: $W+T=U_{opt}$= 60 + 90 = 150 hours per semester

Course aims and learning outcomes	By mastering this course students will be able to: 1. analyze the problems of environmental pollution; 2. get acquainted with normative and legal regulations related to environmental protection; 3. get acquainted with the global effects of pollution; 4. get acquainted with the tendencies of future development of motor vehicle propulsion as well as to apply the acquired knowledge in practice.
Prerequisites	none
Teaching methods	Lectures, auditory exercises, consultations
Course content	1. Biosphere and ecology 2. Problems of environmental pollution 3. Normative and legal regulations 4. Maximum allowable concentrations 5. Air pollution and protection 6. Normative and legal regulations on air quality 7. I colloquium 8. Flue gas purification 9. Global effects of pollution 10. Traffic and environmental pollution 11. Impact of traffic on the environment 12. Normative and legal regulations for exhaust gas emissions 13. Methods of analysis of exhaust gas composition in motor vehicles 14. Tendencies of future development of motor vehicle propulsion 15. II colloquium

Textbook (s)

Author/s	**Name of publication, publisher**	**Year**	**Pages (from-to)**
Đurić, S., Stanojević, P., Milotić, M.	**Ekologija u saobraćaju, Saobraćajni fakultet Doboj**	**2016**	

Additional readings

Author/s	**Name of publication, editor**	**Year**	**Pages (from-to)**

Evaluation criteria	**Assesment methods**	**Points**	**Percentage**
	Pre-exam obligations		
	attendance at lectures / exercises	10	10%
	colloquium	2x25	50%

	term paper	10	10%
	Final exam		
	Oral exam	30	30%
	TOTAL	100	100%
Web sources			
Applicable from	16/6/2021 - 175th session of the Council of the Traffic Faculty		

	UNIVERSITY OF EAST SARAJEVO Faculty of Transport and Traffic Engineering ***Study program: Traffic*** ***Profile: Logistics***	
	I cycle / III year of study	

Course title	**MECHANIZATION AND TEHNOLOGY OF TRANSHIPMENT**
Department	Department for Transport Engineering – Faculty of Traffic Engineering Doboj

Code	**Course status**	**Semester**	**ECTS credits**
САФ11СЛ07103256,0320	compulsory	V	6,00

Professor/s	PhD Ratko ĐURIČIĆ
Associate/s	MSc Sanja SIMIĆ

Weekly hours			**Individual student hours (per semester)**			**Student workload coefficient S_o**
L	**TE**	**LE**	**L**	**TE**	**LE**	**S_o**
3	2	0	3*15*1,4=63	2*15*1,4=42	0*15*1,4=0	1,4

Total teacher workload (hours, per semester) 3*15 + 2*15 + 0*15 =75 hours	Total student workload (hours, per semester) 3*15*1,4 + 2*15*1,4 + 0*15*1,4 = 105 hours

Total workload: $W+T=U_{opt}$= 75 + 105 = 180 hours per semester

Course aims and learning outcomes	By mastering this course, students will be able to: 1. To understand the basic principles of the place, role and significance of the reprocessing processes in reproduction, will be able to understand the cause-effect links of starting commodity flows in the process of reproduction and time-non-synchronized production. 2. They will be able to analyze the parameters that influence the overload, learn the division of mechanization assets as well as their good and bad traits 3. Continuous and cyclic actuators will be able to use methods for calculating capacities and required power. 4. It will be able to demonstrate the establishment of a transhipment system with transhipment effects 5. They manage transhipment processes, and that, after gaining practical experience in logistics centers, they manage individual sectors or organizations that are responsible for transhipment processes.
Prerequisites	None.
Teaching methods	Lectures, auditory exercises, consultation.
Course content	1. Introduction to the subject. The basic concepts of mechanization and technology transhipment. The role of the process is changing 2. Transaction task and realization of the transhipment process 3. CONTINUOUS ASSETS - Belt conveyor. 4. A clustered conveyor. Transporter scraper. 5. Elevators. Redlers. Hanging conveyor 6. Worm conveyor. Rotary excavator. Pneumatic Conveyors (Preparation for I Colloquium) 7. Adders. Gravity conveyors (I colloquium) 8. (Analysis of Colloquiums) CYCLICAL MEANS - Transport and handling vehicles 9. Forklift - classification, elements, stability, application 10. Forklift - Transhipment cycle. Determining the power to move the vehicle 11. Transport and handling vehicles for containers handling. Regal lifts 12. Cranes - classification, elements, application, transhipment cycle, power determination 13. Automatically driven vehicles. Designing of the transhipment process (Preparation for the II colloquium) 14. II colloquium 15. (Analysis of the II colloquium) The closing word and the signature of the index.

Textbook (s)

Author/s	**Name of publication, publisher**	**Year**	**Pages (from-to)**
Đuričić R.	Mechanization of traffic, script,Faculty of	2006	--

	Transport and Traffic enginnering, Doboj		
Sretenović M.	Mechanization of transhipment,transhipment machine and dessigne of transhipment processes, Belgrade	1996	--
Milorad V.	Internal transportation, Warehousing and Transhipment,Faculty of Transport and Traffic engineering, Belgrade	2001	--
Additional readings			
Author/s	**Name of publication, editor**	**Year**	**Pages (from-to)**

Evaluation criteria	**Assesment methods**	**Points**	**Percentage**
	Pre-exam obligation		
	Presence during lectures	10	10%
	Activity during lectures	5	5%
	Completed colloquiums-tasks	35	35%
	Completed colloquiums-theory	50	50%
	Final exam		
	Final exam(tasks-theory)		
	IN TOTAL	100	100%
Applicable from	16.06.2021 - 175 Session of the Councile, Faculty of Transport and Traffic engineering		

	UNIVERSITY OF EAST SARAJEVO Faculty of Transport and Traffic Engineering ***Study program: Traffic*** ***Profile: Logistics*** I cycle | 3rd year of study	

Course title	**Basic types of transport II**
Department	Department for transport engineering – Faculty of Transport and Traffic Engineering Doboj

Code	**Course status**	**Semester**	**ECTS credits**
САФ11СЛ07107365,0320	compulsory	VI	5.0

Professor/s	Zdravko Nunić, PhD, associate professor
Associate/s	Zdravko Nunić, PhD, associate professor

Weekly hours			**Individual student hours (per semester)**			**Student workload coefficient S_o**
L	**TE**	**LE**	**L**	**TE**	**LE**	**S_o**
3	2	0	67.5	45	0	1.5

Total teacher workload (hours, per semester) 3*15 + 2*15 + 0*15 = W 45 + 30 + 0 = 75 hours	Total student workload (hours, per semester) 3*15*1.5 + 2*15*1.5 + 0*15*1.5 = T 67.5 + 45 + 0 = 112.5 hours
Total workload: $W+T=U_{opt}$= 75 + 112.5 = 187.5 hours per semester	

Course aims and learning outcomes	After successfully completing this course, a student will be able to: 1. recognize and qualify motor vehicles by categories and their marking, 2. define the criteria for the selection of optimal technological solutions for the transport of goods, 3. define necessary conditions and documents required for carrying out transport, 4. organize the process of realization of transport service and evaluate the results of work, 5. make an optimal choice of ensuring the safety of vehicles and cargo in transport
Prerequisites	Basic types of transport I exam passed
Teaching methods	Lectures, theoretical exercises, seminar paper
Course content	1. Vehicles: classification 2. Exploitation and technical characteristics of vehicles 3. Necessary conditions and documents for carrying out transport 4. Vehicle marking 5. Vehicle and cargo safety 6. Combined transport 7. **Colloquium I and test** 8. Control of vehicles in traffic 9. Process of service realization 10. Realization of specific types of services, procedures and basic documents 11. International transport of goods 12. Transport of live animals and easily perishable foods 13. Work results 14. Transport costs and methods of their calculation 15. **Colloquium II and test**

Textbook (s)

Author/s	**Name of publication, publisher**	**Year**	**Pages (from-to)**
1. Nunić, Z., Mičić, B.	Osnovni vidovi transporta II	2015	1-229

Additional readings

Author/s	**Name of publication, editor**	**Year**	**Pages (from-to)**
Perišić, P.	Savremene tehnologije transporta II	1995	1-375

Evaluation criteria	**Assessment methods**	**Points**	**Percentage**
	Pre-exam obligations		

	e.g. attendance to lectures / exercises	10	10%
	e.g. seminar paper/ project/ essay positively assessed	20	20%
	e.g. case study – group work	/	/
	e.g. test / colloquium	70	70%
	e.g. laboratory work / laboratory exercises	/	/
	e.g. practical work	/	/
	Final exam		
	e.g. final exam (oral /written)	70	70%
	TOTAL	100	100%
Web sources			
Applicable from	16.06.2021 - 175 Session of the Councile, Faculty of Transport and Traffic engineering		

	UNIVERSITY OF EAST SARAJEVO Faculty of Transport and Traffic Engineering	
	Study program: Traffic ***Profile: Logistics***	
	I cycle / III year of study	

Course title	**LOGISTICS CENTERS**
Department	Department for Transport Engineering – Faculty of Traffic Engineering Doboj

Code	**Course status**	**Semester**	**ECTS credits**
САФ11СЛ07107466,0311	compulsory	VI	6,0

Professor/s	
Associates/s	MSc Eldina Huskanović

Weekly hours			**Individual student hours (per semester)**			**Student workload coefficient S_o**
L	**TE**	**LE**	**L**	**TE**	**LE**	**S_o**
3	1	1	3*15*1,4=63	1*15*1,4=21	1*15*1,4=21	1,4

Total teacher workload (hours, per semester) 3*15 + 1*15 + 1*15 = 75 h	Total student workload (hours, per semester) 2*15*1,4+ 1*15*1,4+ 1*15*1,4 = 105 h
Total workload: $W+T=U_{opt}$= 75 + 105 = 180 hours per semester	

Course aims and learning outcomes	1. recognize different types and structures of logistics flows and logistics centers; 2. get acquainted with a wide range of services and subsystems of logistics centers; 3. recognizes and defines the role and place of different logistics centers; 4. correctly approach the sizing and technological spatial design of the logistics center.
Prerequisites	Intermodal transport
Teaching methods	lectures, auditory exercises, laboratory exercises, consultations
Course content	1. Terminal and RTC location selection models 2. Types of services within logistics centers 3. Logistics center planning and design methodology 4. Characteristics of macro and micro distribution flows 5. Technical and technological characteristics of transport flows 6. Modeling and quantification of goods and transport flows 7. I colloquium 8. Technology of goods terminals 9. Sizing the capacity of the terminal subsystem 10. Modeling the layout plan 11. Freight terminal design methodology 12. RTC design methodology 13. Economic assessment of the justification of the construction of the terminal 14. Model of interactive optimization of logistics chains in order to improve the business of the compan 15. II colloquium

Textbook (s)

Author/s	**Name of publication, publisher**	**Year**	**Pages (from-to)**
Slobodan Zečević	Robni terminali i robno-transportni centri, Saobraćajni fakultet Beograd	2006	

Additional readings

Author/s	**Name of publication, publisher**	**Year**	**Pages (from-to)**
Ž. Stević, S. Vesković, M. Vasiljević, G. Tepić	The selection of the logistics center location using AHP method " University of Belgrade, Faculty of Transport and Traffic Engineering, LOGIC 2015	2015	86-91
M. Vasiljević, Ž. Stević, I.	Combined Fuzzy AHP and TOPSIS method for	2016	

Ćosić, D. Mirčetić	solving location problem, First International Conference: Transport for today's society, Bitola, Macedonia		
Ž. Stević	Significance logistics centers, their role and task with review situation in the Republic of Srpska“ International May Conference on Strategic Management – IMKSM 2015	2015	80-90

	Assesment methods	Points	Percentage
Obligations, evaluation criteria	Preexamination obligations		
	attendance during lectures	5	5%
	attendance during exercise	5	5%
	Seminar work	10	10%
	colloquiums	2x25	50%
	Final examination		
	Oral examination	100	100%
	Overall	100	100%
Applicable from	16.06.2021 - 175 Session of the Councile, Faculty of Transport and Traffic engineering		

	UNIVERSITY OF EAST SARAJEVO Faculty of Transport and Traffic Engineering	
	Study program: Traffic ***Profile: Logistics***	
	I cycle / III year of study	

Course title	**WAREHOUSE SYSTEM**
Department	Department for Transport Engineering – Faculty of Traffic Engineering Doboj

Code	**Course status**	**Semester**	**ECTS credits**
САФ11СЛ07107565,0320	compulsory	VI	6,0

Professor/s	PhD Željko Stević
Associates/s	MSc Eldina Huskanović

Weekly hours			**Individual student hours (per semester)**			**Student workload coefficient S_o**
L	**TE**	**LE**	**L**	**TE**	**LE**	**S_o**
3	2	0	3*15*1,4=63	2*15*1,4=42	0*15*1,4=0	1,4

Total teacher workload (hours, per semester) 3*15 + 2*15 + 0*15 = 75 h	Total student workload (hours, per semester) 3*15*1,4+ 2*15*1,4+ 0*15*1,4 = 105 h

Total workload: $W+T=U_{opt}$= 75 + 105 = 120 hours per semester

Course aims and learning outcomes	1. determine: the place, role and function of the warehouse in the logistics system; 2. recognizes the importance of the location of the warehouse; 3. recognizes different types of inventory and apply models for their optimization; 4. to recognize the basic characteristics and legality related to processes that are being implemented in warehouses.
Prerequisites	Intermodal transport
Teaching methods	lectures, auditory exercises, laboratory exercises, consultations
Course content	1. The place and role of the warehouse in characteristic logistics processes 2. Warehouse systems 3. Identification and analysis of the basic subsystems of the warehouse and processes in them 4. Analysis of warehouse systems performance 5. Inventories 6. warehouse of piece load 7. I colloquium 8. Warehouse of scattered load 9. Warehouse of liquid load 10. Dimensioning the storage system elements 11. Information system in warehouse systems 12. Safety in storage systems 13. Material handling and inventory in production 14. Warehouse location 15. II colloquium

Textbook (s)

Author/s	**Name of publication, publisher**	**Year**	**Pages (from-to)**
Ilija Ćosić, Željko Stević	Skladišni sistemi, skripta Saobraćajni fakultet Doboj	2016	

Additional readings

Author/s	**Name of publication, publisher**	**Year**	**Pages (from-to)**
Ranko Božičković i dr.	*Integration of Simulation and Lean Tools in Effective Production Systems – Case Study, Strojniški vestnik-Journal of Mechanical Engineering 58.11*	2012	642-652
Ranko Božičković	*Mathematical model formulation in optimal*	2007	423-426

	program planning of individual and lean production, 11th International Research/Expert Conference "Trends in the Development of machinery and Associated technology" TMT 2007, Hammamet, Tunisia,		
Ž. Stević	*Izbor i merenje ključnih indikatora performansi u skladišnom sistemu" XIX Internacionalni naučni skup SM 2015 Strategijski menadžment i sistemi podrške odlučivanju u strategijskom menadžmentu, Subotica-Palić*	2015	931-938

	Assesment methods	**Points**	**Percentage**
Obligations, evaluation criteria	Preexamination obligations		
	attendance during lectures	5	5%
	attendance during exercise	5	5%
	colloquiums	2x30	60%
	Final examination		
	written examination (2 colloquiums)	60	60%
	oral examination	30	30%
	Overall	100	100%
Applicable from	16.06.2021 - 175 Session of the Councile, Faculty of Transport and Traffic engineering		

	UNIVERSITY OF EAST SARAJEVO Faculty of Transport and Traffic Engineering ***Study program: Traffic*** ***Profile: Logistics*** I cycle / III year of study	

Course title	**VERTICAL TRANSPORT**
Department	Department for Transport Engineering – Faculty of Traffic Engineering Doboj

Code	**Course status**	**Semester**	**ECTS credits**
САФ11СЛ07203765,0220	optional	VI	5,0

Professor/s	
Associates/s	MSc Eldina Huskanović

Weekly hours			**Individual student hours (per semester)**			**Student workload coefficient S_o**
L	**TE**	**LE**	**L**	**TE**	**LE**	**S_o**
2	2	0	2*15*1,5=45	2*15*1,5=45	0*15*1,5=0	1,5

Total teacher workload (hours, per semester) 2*15 + 2*15 + 0*15 = 60 h	Total student workload (hours, per semester) 2*15*1,5+ 2*15*1,5+ 0*15*1,5 = 105 h
Total workload: $W+T=U_{opt}$= 60 + 90 = 150 hours per semester	

Course aims and learning outcomes	1. recognizes and defines the role and place of vertical transport in transport engineering; 2. creates solutions for different conditions of application of vertical transport; 3. application of certain optimization methods in vertical transport; 4. select and improve performance in certain forms of vertical transport.
Prerequisites	No special conditions
Teaching methods	Lectures, theoretical exercises, consultation
Course content	1. Goals and tasks of vertical transport 2. Historical development and types of vertical transport 3. Application and importance of vertical transport 4. Kinematic schemes of elevators. Requirements and characteristics of the lifting mechanism 5. Cab lifting mechanisms. Construction and calculation of lifting mechanism and brakes 6. Driving window. Machine room. Cabin - construction and basics of calculation 7. I colloquium 8. Guide and balance of the elevator car - counterweights and guides 9. Grasping devices. Supports and bumpers 10. Quality, reliability, testing and attestation of elevators 11. Hydraulic lifts 12. Escalators. Ski lifts 13. Cable cars 14. Basics of designing vertical transport systems in buildings 15. II colloquium

Textbook (s)

Author/s	**Name of publication, publisher**	**Year**	**Pages (from-to)**
Asib Alihodžić	Vertikalni transportt, Saobraćajni fakultet Doboj	2014	

Additional readings

Author/s	**Name of publication, publisher**	**Year**	**Pages (from-to)**
Ahmić, A.	Vertikalni transport, Saobraćajni fakultet Sarajevo	2009	

	Assesment methods	**Points**	**Percentage**
Obligations, evaluation criteria	Preexamination obligations		
	attendance during lectures/exercise	10	10%
	activity during classes	5	5%
	Seminar work	15	15%

	colloqiums	2x25	
	Final examination		
	Oral examination	20	20%
	Overall	100	100%
Applicable from	16.06.2021 - 175 Session of the Councile, Faculty of Transport and Traffic engineering		

	UNIVERSITY OF EAST SARAJEVO Faculty of Transport and Traffic Engineering	
	Study program: Traffic ***Profile: Logistics***	
	I cycle / III year of study	

Course title	**TRANSPORT OF DANGEROUS GOODS**
Department	Department for Transport Engineering – Faculty of Traffic Engineering Doboj

Code	**Course status**	**Semester**	**ECTS credits**
САФ11СЛ07234865,0220	optional	VI	5,0

Professor/s	
Associates/s	

Weekly hours			**Individual student hours (per semester)**			**Student workload coefficient S_o**
L	**TE**	**LE**	**L**	**TE**	**LE**	**S_o**
2	2	0	45	45	0	1,5

Total teacher workload (hours, per semester) W = 2*15 + 2*15 + 0*15 =60	Total student workload (hours, per semester) T = 2*15*1,5 + 2*15*1,5 + 0*15*1,5 = 90
Total workload: W+T=U_{opt}= 60 +90 = 150 hours per semester	

Course aims and learning outcomes	1. Organizes the transport of dangerous goods according to the regulations in force in the transport of dangerous goods 2. Classifies dangerous goods, ensures the safety of all participants in transport and monitors all additional requirements for the transport of dangerous goods and equipment
Prerequisites	No special condition
Teaching methods	Lectures, theoretical exercises, consultation
Course content	1. Regulations on the transport of dangerous goods 2. Exemptions in the transport of dangerous goods 3. Classification of hazardous substances 4. Security obligations in the transport of dangerous goods 5. Packaging and packaging of dangerous goods 6. Tanks for transport of dangerous goods 7. I Colloquium 8. Marking and marking of vehicles with dangerous goods 9. Organization of transport of dangerous goods 10. Loading, unloading and handling of dangerous goods 11. Tank vehicles with modern equipment for the transport of dangerous goods 12. Additional requirements for the transport of dangerous goods by rail 13. Additional requirements for the transport of dangerous goods by water transport 14. Risks in the transport of dangerous goods 15. II Colloquium

Textbook (s)

Author/s	**Name of publication, publisher**	**Year**	**Pages (from-to)**
Sremac S, Matijević M.	Transport of dangerous goods, Faculty of Technical Sciences, Novi Sad	2021	
	Material from lectures and exercises		

Additional readings

Author/s	**Name of publication, publisher**	**Year**	**Pages (from-to)**
Pamučar, D., Sremac, S., Stević, Ž., Ćirović, G., & Tomić, D.	New multi-criteria LNN WASPAS model for evaluating the work of advisors in the transport of hazardous goods. *Neural Computing and Applications*, *31*(9), 5045-5068.	2019	
Tanackov, I., Janković, Z.,	Risk distribution of dangerous goods in logistics	2018	

Sremac, S., Miličić, M., Vasiljević, M., Mihaljev-Martinov, J., & Škiljaica, I.	subsystems. Journal of Loss Prevention in the Process Industries, 54, 373-383.		
Tepić, G., Sremac, S., Morača, S., Lalić, B., Kostelac, M., & Stojković, V.	Accidents in facilities for storing hazardous materials. Operational Research in Engineering Sciences: Theory and Applications, 2(2), 24-39.	2019	

	Assesment methods	Points	Percentage
Obligations, evaluation criteria	Preexamination obligations		
	attendance during lectures	5	5%
	Attendance during exercise	5	5%
	Seminar work	10	10%
	colloqiums	2x25	50%
	Final examination		
	Oral examination	30	30%
	Overall	100	100%
Applicable from	16.06.2021 - 175 Session of the Councile, Faculty of Transport and Traffic engineering		

	UNIVERSITY OF EAST SARAJEVO Faculty of Transport and Traffic Engineering ***Study program: Traffic*** ***Profile: Logistics*** I cycle / III year of study	

Course title	**LOGISTICS MARKETING**
Department	

Code	**Course status**	**Semester**	**ECTS credits**
САФ11СЛ07234967,0330	optional	VI	7,00

Professor/s	
Associate/s	

Weekly hours			**Individual student hours (per semester)**			**Student workload coefficient S_o**
L	**TE**	**LE**	**L**	**TE**	**LE**	**S_o**
3	3	0	$X*15*S_o$	$Y*15*S_o$	$Z*15*S_o$	

Total teacher workload (hours, per semester) X*15 + Y*15 + Z*15 = W hours	Total student workload (hours, per semester) $X*15*S_o + Y*15*S_o + Z*15*S_o$ = T hours

Total workload: $W+T=U_{opt}$= + = hours per semester

Course aims and learning outcomes	
Prerequisites	
Teaching methods	
Course content	

Textbook (s)

Author/s	**Name of publication, publisher**	**Year**	**Pages (from-to)**

Additional readings

Author/s	**Name of publication, editor**	**Year**	**Pages (from-to)**

	Assesment methods	**Points**	**Percentage**
Evaluation criteria			
Web sources			
Applicable from	16.06.2021 - 175 Session of the Councile, Faculty of Transport and Traffic engineering		

	UNIVERSITY OF EAST SARAJEVO Faculty of Transport and Traffic Engineering ***Study program: Traffic*** ***Profile: Logistics*** I cycle / III year of study	

Course title	**MANAGEMENT IN TRAFFIC**
Department	

Code	**Course status**	**Semester**	**ECTS credits**
САФ11СЛ07203867,0330	electoral	VI	7,0

Professor/s	Assist. professor Živko Erceg
Associate/s	Siniša Božičković, MBA

Weekly hours			**Individual student hours (per semester)**			**Student workload coefficient S_o**
L	**TE**	**LE**	**L**	**TE**	**LE**	**S_o**
3	3	0	60	60	0	1,33

Total teacher workload (hours, per semester) 3*15 + 3*15 + 0*15 = 90 hours	Total student workload (hours, per semester) 3*15*1,33 + 3*15*1,33 + 0*15*1,33 = 120 hours

Total workload: $W+T=U_{opt}$ = 90 + 120 = 210 hours per semester

Course aims and learning outcomes	Completing this course students will be able to: 1. To learn the fundamentals of management as well as the principles and definitions of management; 2. Fundamentals of planning 3. Leadership and coordination 4. Delegating traffic tasks
Prerequisites	No prerequisites
Teaching methods	Lectures, auditory exercises, seminar work, fieldwork
Course content	1. Fundamentals of management, definition and principles 2. Organization of the company in the traffic 3. Fundamentals of planning 4. Communication in the traffic 5. Fundamentals of tendencies of human resource management 6. Leadership and coordination 7. Management Systems in traffic (I Colloquium) 8. Concept and importance of control 9. Process and methods of traffic control 10. Expected trends in economic development with a focus on the development of transport 11. The basic directions of the development of traffic management 12. The role of managers in the management of transport companies. Skills of traffic managers 13. Delegating tasks in traffic 14. Traffic management in the future 15. II colloquium

Textbook (s)

Author/s	**Name of publication, publisher**	**Year**	**Pages (from-to)**
Vešović, V.	Traffic Management, Faculty of Transport and Traffic Engineering, Belgrade	1996.	
Đuranović, D.	Strategic Management, Faculty of Transport and Traffic Engineering, Doboj,	2007.	

Additional readings

Author/s	**Name of publication, editor**	**Year**	**Pages (from-to)**
Jovičić, M.	Management - principles and functions	2012.	

Evaluation criteria	**Assesment methods**	**Points**	**Percentage**
	Pre-exam obligations		

	Presence of lectures / exercises	10	10%
	Seminar work	10	10%
	Colloquium	30	30%
	Final exam		
	Final exam (oral / written)	40	40%
	TOTAL	100	100 %
Web sources			
Applicable from	16.06.2021 - 175 Session of the Councile, Faculty of Transport and Traffic engineering		

	UNIVERSITY OF EAST SARAJEVO Faculty of Transport and Traffic Engineering ***Study program: Traffic*** ***Profile: Logistics*** I cycle / IV year of study	

Course title	**LOGISTICS CONTROLLING**
Department	Department for Transport Engineering – Faculty of Traffic Engineering Doboj

Code	**Course status**	**Semester**	**ECTS credits**
САФ11СЛ07107776,0320	compulsory	VII	6,0

Professor/s	
Associates/s	MSc Eldina Huskanović

Weekly hours			**Individual student hours (per semester)**			**Student workload coefficient S_o**
L	**TE**	**LE**	**L**	**TE**	**LE**	**S_o**
3	2	0	3*15*1,4=63	2*15*1,4=42	0*15*1,4=0	1,4

Total teacher workload (hours, per semester) 3*15 + 2*15 + 0*15 = 75 h	Total student workload (hours, per semester) 3*15*1,4+ 2*15*1,4+ 0*15*1,4 = 105 h

Total workload: $W+T=U_{opt}$= 75 + 105 = 180 hours per semester

Course aims and learning outcomes	1. defines logistical performance in specific tasks, performs their measurement and monitoring; 2. defines key performance indicators in individual logistic processes and supply chains; 3. manages of logistic costs as one of the main logistics performance; 4. adequately perform a comparison of the performance obtained with benchmark values and defines the potential directions of action for the improvement of the logistics processes
Prerequisites	No special conditions
Teaching methods	Lectures, theoretical exercises, consultation
Course content	1. Basic concepts and meanings of logistics controlling 2. Logistics performance 3. Measuring and monitoring of performance 4. Logistics costs 5. Level of service 6. Techno-exploitation performance 7. Safety of logistics processes and activities 8. I colloquium 9. Performance in logistics subsystems 10. Quality of logistics services 11. Models of customer satisfaction measurement 12. Key Performance Indicators 13. Human Resources and Enterprise Architecture 14. Benchmarking 15. II colloquium

Textbook (s)

Author/s	**Name of publication, publisher**	**Year**	**Pages (from-to)**
Radivojević, G., Miljuš, M., Vidović, M.	*Logistic Controlling and Performance, Faculty of Transport and Traffic Engineering, Belgrade*	2007	

Additional readings

Author/s	**Name of publication, publisher**	**Year**	**Pages (from-to)**
Ž. Stević, G. Stojić, M. Vasiljević, S. Vesković	*Safety at work in the field of logistics" International conference for regional collaboration OSH BON TON Ohrid, Macedonia*	2015	266-271

Obligations,	**Assesment methods**	**Points**	**Percentage**

evaluation criteria	Preexamination obligations		
	attendance during lectures	5	5
	attendance during exercise	5	5
	Seminar work	10	10
	colloquiums	2x25	50
	Final examination		
	written examination (2 colloquiums)	50	50
	oral examination	30	30
	Overall	100	100
Applicable from	16.06.2021 - 175 Session of the Councile, Faculty of Transport and Traffic engineering		

	UNIVERSITY OF EAST SARAJEVO Faculty of Transport and Traffic Engineering ***Study program: Traffic*** ***Profile: Logistics*** I cycle / IV year of study	

Course title	**RETURN LOGISTICS**
Department	Department for Transport Engineering – Faculty of Traffic Engineering Doboj

Code	**Course status**	**Semester**	**ECTS credits**
САФ11СЛ07107875,0220	compulsory	VII	5,0

Professor/s	PhD Radovan Višković
Associates/s	Mr Radenka Bjelošević

Weekly hours			**Individual student hours (per semester)**			**Student workload coefficient S_o**
L	**TE**	**LE**	**L**	**TE**	**LE**	**S_o**
2	2	0	2*15*1,5=45	2*15*1,5=45	0*15*1,45=0	1,5

Total teacher workload (hours, per semester) 2*15 + 2*15 + 0*15 = 60	Total student workload (hours, per semester) 2*15*1,5+ 2*15*1,5 + 0*15*1,5 = 90

Total workload: $W+T=U_{opt}$= 60 + 90 = 150 hours per semester

Course aims and learning outcomes	1. Introducing students to the basic areas of return logistics from various aspects related to distribution, production 2. mastering inventory management 3. Students will acquire basic knowledge of roundabout supply chain management 4. independent preparation of seminar paper
Prerequisites	No special conditions
Teaching methods	Lectures, theoretical exercises, consultation
Course content	1. The concept and subject of return logistics 2. Areas of return logistics 3. Types and characteristics of waste materials and returnables 4. Modeling of waste material and return flows 5. Recycling - the role and importance of material recycling. Packing 6. Product recyclability analysis 7. Recycling of construction, metal and plastic materials and return flows (I colloquium) 8. Recycling of electrical, electronic and hazardous waste and return flows 9. Inventory management in the presence of return flows 10. Return of new, used and used products 11. Requirements for logistical cooperation of return 12. Designing an efficient return logistics system 13. Defining transport and locations in the return logistics system 14. Structure of return logistics networks - scope, characteristics, classification 15. Possible directions of return logistics development (II colloquium)

Textbook (s)

Author/s	**Name of publication, publisher**	**Year**	**Pages (from-to)**
Regodić D.	Logistika, US Beograd	2010	-
Stanivuković D.	Logisttika, FTN, Novi Sad	2003	-
Giuntini R., Andel T.:	Reverse logistics role models, "T&D"	1995	-

Additional readings

Author/s	**Name of publication, publisher**	**Year**	**Pages (from-to)**

Obligations, evaluation criteria	**Assesment methods**	**Points**	**Percentage**
	Preexamination obligations		
	attendance during lectures	10	10%
	attendance during exercise	10	10%

	Seminar work	30	30%
	colloquiums	30	30%
	Final examination		
	oral examination	20	20%
	Overall	100	100%
Applicable from	16.06.2021 - 175 Session of the Councile, Faculty of Transport and Traffic engineering		

	UNIVERSITY OF EAST SARAJEVO Faculty of Transport and Traffic Engineering	
	Study program: Traffic ***Profile: Logistics***	
	I cycle / IV year of study	

Course title	**SPECIAL AREAS OF LOGISTIC**
Department	Department for Transport Engineering – Faculty of Traffic Engineering Doboj

Code	**Course status**	**Semester**	**ECTS credits**
САФ11СЛ07107976,0320	compulsory	VII	6,0

Professor/s	PhD Željko Stević
Associates/s	

Weekly hours			**Individual student hours (per semester)**			**Student workload coefficient S_o**
L	**TE**	**LE**	**L**	**TE**	**LE**	**S_o**
3	2	0	3*15*1,4=63	2*15*1,4=42	0*15*1,4=0	1,4

Total teacher workload (hours, per semester) 3*15 + 2*15 + 0*15 = 75 h	Total student workload (hours, per semester) 3*15*1,4+ 2*15*1,4+ 0*15*1,4 = 105 h

Total workload: $W+T=U_{opt}$= 75 + 105 = 180 hours per semester

Course aims and learning outcomes	1. recognizes and defines the role and place of scientific disciplines of logistics in the economic system; 2. to creates solutions for different logistics requirements in logistics areas; 3. apply certain optimization methods in basic logistic subsystems; 4. to select and improve performance in certain business systems.
Prerequisites	No special conditions
Teaching methods	Lectures, theoretical exercises, consultation
Course content	1. Historical development of logistics 2. Scientific disciplines used in logistics 3. Division and content of logistics in the areas in which it is used 4. Securing transport and traffic 5. Strategy for the development of logistics and intermodal transport 6. Logistics Strategies and Logistics Providers 7. Logistics partnership 8. I colloquium 9. Logistics controlling, logistics technologies 10. Education in logistics 11. Procurement Logistics 12. Suppliers selection 13. Basics of planning in logistics 14. Physical distribution structure, warehouse replenishment, transport planning 15. II colloquium

Textbook (s)

Author/s	**Name of publication, publisher**	**Year**	**Pages (from-to)**
Alihodžić A., Stević Ž.	Special areas of logistics, University of East Sarajevo, Faculty of Transport and Traffic Engineering	2014	

Additional readings

Author/s	**Name of publication, publisher**	**Year**	**Pages (from-to)**
Stević Ž., Alihodžić A., S. Knežević, Ž. Stjepanović	Management of medical logistics - the situation in Bosnia and Herzegovina, International May Conference on Strategic Management – IMKSM	2016.	154-162
Stević Ž., M. Vasiljević, S. Sremac	Fuzzy AHP and ARAS model for decision making in logistics, 6th International Conference	2016.	34-43

	"Economics and Management-Based on New Technologies" EMoNT- Vrnjačka Banja, Serbia		
Stević Ž., Alihodžić A., S. Knežević, Ž. Stjepanović	Management of medical logistics - the situation in Bosnia and Herzegovina, International May Conference on Strategic Management – IMKSM	2016.	154-162

	Assesment methods	Points	Percentage
Obligations, evaluation criteria	Preexamination obligations		
	attendance during lectures	5	5%
	attendance during exercise	5	5%
	Seminar work	10	10%
	colloquiums	2x25	50%
	Filan examination		
	written examination (2 colloquiums)	50	50%
	oral examination	30	30%
	Overall	100	100%
Applicable from	16.06.2021 - 175 Session of the Councile, Faculty of Transport and Traffic engineering		

	UNIVERSITY OF EAST SARAJEVO Faculty of Transport and Traffic Engineering	
	Study program: Traffic ***Profile: Logistics***	
	I cycle / IV year of study	

Course title	**INDUSTRIAL LOGISTICS**
Department	Department for Transport Engineering – Faculty of Traffic Engineering Doboj

Code	**Course status**	**Semester**	**ECTS credits**
САФ11СЛ07108076,0320	compulsory	VII	6,0

Professor/s	PhD Željko Stević
Associates/s	MSc Eldina Huskanović

Weekly hours			**Individual student hours (per semester)**			**Student workload coefficient S_o**
L	**TE**	**LE**	**L**	**TE**	**LE**	**S_o**
3	2	-	3*15*1,4=63	2*15*1,4=42	0*15*1,4=0	1,4

Total teacher workload (hours, per semester) 3*15 + 2*15 + 0*15 = 75 h	Total student workload (hours, per semester) 3*15*1,4+ 2*15*1,4+ 0*15*1,4 = 105 h
Total workload: $W+T=U_{opt}$= 75 + 105 = 180 hours per semester	

Course aims and learning outcomes	1. planning and organizing manufacturing organizations, 2. basics of industrial systems and industrial logistics, 3. motivation, communication and team work.
Prerequisites	No special conditions
Teaching methods	Lectures, theoretical exercises, consultation
Course content	1. Characteristics of manufacturing plans and programs 2. Technologies of basic manufacturing 3. Logistic systems in manufacturing business systems 4. Securing materials 5. Models for optimizing the orders of materials 6. Interoperable transport 7. **Colloquium I** 8. Distribution of raw materials and material flow 9. Management forms of realization of industrial transport process 10. Selection methods of technological solutions within industrial transport 11. Transport means in an industrial logistic system 12. Information systems in a logistic chain activity 13. Logistic support for flexible manufacturing 14. Logistic activities in mass services 15. **Colloquium II**

Textbook (s)

Author/s	**Name of publication, publisher**	**Year**	**Pages (from-to)**
Tihomir Pantelić	Industrijska logistika	2006	1-213

Additional readings

Author/s	**Name of publication, publisher**	**Year**	**Pages (from-to)**
Tihomir Pantelić	Zbirka riješenih zadataka sa izvodima iz teorije	2006	1-174

Obligations, evaluation criteria	**Assesment methods**	**Points**	**Percentage**
	Preexamination obligations		
	attendance during lectures/exercise	10	10%
	Seminar work	20	20%
	Colloquium I	10	10%
	Colloquium II	10	10%
	Final exam		
	final exam (oral / written)	50	50%

	Overall	100	100%
Applicable from	16.06.2021 - 175 Session of the Councile, Faculty of Transport and Traffic engineering		

	UNIVERSITY OF EAST SARAJEVO Faculty of Transport and Traffic Engineering	
	Study program: Traffic ***Profile: Logistics***	
	I cycle / IV year of study	

Course title	**CITY LOGISTICS**
Department	Department for Transport Engineering – Faculty of Traffic Engineering Doboj

Code	**Course status**	**Semester**	**ECTS credits**
САФ11СЛ07108177,0330	compulsory	VII	7,0

Professor/s	PhD Snežana Tadić
Associates/s	PhD Snežana Tadić

Weekly hours			**Individual student hours (per semester)**			**Student workload coefficient S_o**
L	**TE**	**LE**	**L**	**TE**	**LE**	**S_o**
3	3	0	3*15*1,33=59,85	3*15*1,33=59,85	0*15*1,33=0	1,33

Total teacher workload (hours, per semester) 3*15 + 3*15 + 0*15 = 90	Total student workload (hours, per semester) 3*15*1,33+ 3*15*1,33 + 0*15*1,33 =120

Total workload: $W+T=U_{opt}$= 90 + 120 = 210 hours per semester

Course aims and learning outcomes	1. Delimit the basic settings of city logistics; 2. Defines the basic groups of generators, identifies and quantifies the parameters of logistics; 3. Defines the basic concepts for solving the problem of city logistics; 4. Explain the advantages and disadvantages of different logistics solutions of the city; 5. Recognize the role of intermodal transport and logistics centers in the function of city logistics.
Prerequisites	No special conditions
Teaching methods	Lectures, theoretical exercises, consultation
Course content	1. City logistics - concept, tasks, goals and constraints 2. World experiences - problems of logistics in cities 3. The structure of the city logistics system. Generators of city logistics flows 4. Logistics units. Logistics centers and terminals in cities 5. Urban transport systems, organization and service providers 6. Telematics systems in city logistics 7. Structure of city logistics flows in cities (I colloquium) 8. Parameters of city logistics. Levels of research of city logistics parameters 9. Concepts of city logistics. City logistics initiatives 10. Cooperative city logistics systems 11. The concept of concentration of information flows. The concept of flow consolidation 12. The concept of control of the degree of utilization of cargo space 13. Regulatory concepts. City logistics policy 14. Modeling of city logistics flows 15. Effects of consolidation of logistics flows in the city area (II colloquium)

Textbook (s)

Author/s	**Name of publication, publisher**	**Year**	**Pages (from-to)**
Zečević S., Tadić S.	City logistika, Saobraćajni fakultet Beograd	2013	

Additional readings

Author/s	**Name of publication, publisher**	**Year**	**Pages (from-to)**
Taniguchi E., Thompson R.G.:	Innovations in freight transport, WIT Press	2003	-
Taniguchi E., Thompson R.G.:	City Logistics I, Institute for City Logistics	1999	-

	Assesment methods	Points	Percentage
Obligations, evaluation criteria	Preexamination obligations		
	attendance during lectures/exercise	5	5%
	activity during classes	5	5%
	tests	20	20%
	colloqium 1	20	20%
	colloqium 2	20	20%
	Students who pass the colloquia are releasedwritten part, final exam		
	Final examination		
	Oral examination	30	30%
	Overall	100	100%
Applicable from	16.06.2021 - 175 Session of the Councile, Faculty of Transport and Traffic engineering		

	UNIVERSITY OF EAST SARAJEVO Faculty of Transport and Traffic Engineering ***Study program: Traffic*** ***Profile: Logistics*** I cycle / IV year of study	

Course title	**ORGANIZATION OF TRAFFIC COMPANIES**
Department	Department for Transport Engineering – Faculty of Traffic Engineering Doboj

Code	**Course status**	**Semester**	**ECTS credits**
САФ11СЛ07104585,0220	compulsory	VII	6,00

Professor/s	PhD Perica Gojković
Associate/s	MSc Sanja SIMIĆ

Weekly hours			**Individual student hours (per semester)**			**Student workload coefficient S_o**
L	**TE**	**LE**	**L**	**TE**	**LE**	**S_o**
3	2	0	3*15*1,4	2*15*1,4	0*15*1,4	1,4

Total teacher workload (hours, per semester) 3*15 + 2*15 + 0*15 = 75	Total student workload (hours, per semester) 3*15*1,4 + 2*15*1,4+ 0*15*1,4 = 105

Total workload: $W+T=U_{opt}$= 75 + 105 = 180 hours per semester

Course aims and learning outcomes	By mastering this course, students will be able to: 1. learn the basic concepts of organization, as well as types and organizational models of enterprises; 2. will be able to analyze the organization of large business systems, business and development policy and development factors; 3. independently organize and lead a meeting according to defined rules; 4. acquired knowledge in practice to apply and establish their own company as well as to give instructions to others how to do it.
Prerequisites	None.
Teaching methods	lectures, auditory and computational exercises, consultations
Course content	1. The concept and development of the organization 2. Types of organizational structure 3. Organizational models of the company 4. Organizing large business systems 5. Organizational models of transport companies 6. Business and development policy 7. Characteristic business factors (I colloquium) 8. Basic methods and techniques for optimization 9. Organizational culture 10. Organization of business functions 11. Business information systems 12. Organization control. Organizing a meeting 13. Organization and management of investments 14. Organization design. Organizational transformation of the company 15. II colloquium

Textbook (s)

Author/s	**Name of publication, publisher**	**Year**	**Pages (from-to)**
Vešović, B. V., Bojović, J. N., Knežević, Lj. N.	*Organization of transport companies, Faculty of Transport and Traffic Engineering, Belgrade*	2007	

Additional readings

Author/s	**Name of publication, editor**	**Year**	**Pages (from-to)**

	Assesment methods	**Points**	**Percentage**
Evaluation criteria	Preexamination obligations		
	Presence during lectures	10	10%

	Colloquium 1	10	10%
	Colloquium 2	40	40%
	passed colloquia (theory)	20	20%
	Final examination		
	Oral examination	10	10%
	Total	100	100%
Applicable from	16.06.2021 - 175 Session of the Councile, Faculty of Transport and Traffic engineering		

	UNIVERSITY OF EAST SARAJEVO Faculty of Transport and Traffic Engineering ***Study program: Traffic*** ***Profile: Logistics*** I cycle / IV year of study	

Course title	**QUALITY MANAGEMENT**
Department	Department of Transport Engineering - Faculty of Transport and Traffic Engineering

Code	**Course status**	**Semester**	**ECTS credits**
САФ11СЛ07104685,0220	Mandatory	VIII	5,00

Professor/s	Dr Đorđe Popović, assistant professor
Associate/s	

Weekly hours			**Individual student hours (per semester)**			**Student workload coefficient S_o**
L	**TE**	**LE**	**L**	**TE**	**LE**	**S_o**
2	2	0	45	45	0	1,5

Total teacher workload (hours, per semester) 2*15 + 2*15 + 0*15 = 60 hours	Total student workload (hours, per semester) 2*15*1,5 + 2*15*1,5 + 0*15*1,5 = 90 hours
Total workload: 60+90=150 hours per semester	

Course aims and learning outcomes	By mastering this course students will be able to: 1. Understand the requirements of users of products and services in the context of the needs imposed by the modern market, 2. use and apply different approaches, models and methods of measurement and quality improvement, 3. develop and apply specific models of quality management in real business conditions, 4. manage the resources more effectively in his / her authority in real business conditions, 5. achieves a more successful communication (internal and external).
Prerequisites	Does not have
Teaching methods	Lectures, auditory exercises, seminar work
Course content	1. History of quality management development 2. Quality and standardization. Model of quality management system 3. Understanding quality. The term and definitions of quality 4. Qualitative, qualitative and quality management 5. Understand the context of an organization. Deming's key to understanding the organization 6. Quality management systems **7. I colloquium** 8. Total Quality Management (TQM). Models of excellence 9. Integrated Management Systems 10. Quality system according to ISO 9000: 2015 11. Process model of the organization 12. Risk analysis. Methods of risk assessment 13. Methods and tools of quality 14. Methods of measuring customer satisfaction **15. II colloquium**

Textbook (s)

Author/s	**Name of publication, publisher**	**Year**	**Pages (from-to)**
Bobrek, M., Milekić, M., Macanović, K.	Upravljanje kvalitetom – integrisani sistemi upravljanja prema ISO 9001:2015, Faculty of Transport and Traffic Engineering	2014	1-284

Additional readings

Author/s	**Name of publication, editor**	**Year**	**Pages (from-to)**
Đorđević, D., Vasiljević, M.	Upravljanje kvalitetom u saobraćaju, Faculty of Transport and Traffic Engineering	2009	1-251

	Assesment methods	Points	Percentage
Evaluation criteria	Pre-exam obligations		
	Presence of lectures / exercises	10	10%
	Seminary work	20	20%
	Colloquium	2x35	70%
	Final exam		
	Final exam (oral / written)		
	TOTAL	100	100%
Applicable from	16.06.2021 - 175 Session of the Councile, Faculty of Transport and Traffic engineering		

	UNIVERSITY OF EAST SARAJEVO Faculty of Transport and Traffic Engineering ***Study program: Traffic*** ***Profile: Logistics*** I cycle / IV year of study	

Course title	**INFORMATION MANAGEMENT IN LOGISTICS**
Department	Department for information and communication systems in traffic, Faculty of Transport and Traffic Engineering Doboj

Code	**Course status**	**Semester**	**ECTS credits**
САФ11СЛ07108287,0330	compulsory	VIII	7.00

Professor/s	Željko Stjepanović, PhD, associate professor
Associate/s	Željko Stjepanović, PhD, associate professor

Weekly hours			**Individual student hours (per semester)**			**Student workload coefficient S_o**
L	**TE**	**LE**	**L**	**TE**	**LE**	**S_o**
3	3	0	60	60	0	1.33

Total teacher workload (hours, per semester) W =3*15 + 3*15 + 0*15 = 45 + 45 = 90	Total student workload (hours, per semester) T = 3*15*1.33 + 3*15*1.33 + 0*15*1.33 = 60 + 60 + 0 = 120

Total workload: $W+T=U_{opt}$= 90 + 120 = 210 hours per semester

Course aims and learning outcomes	1. Students will acquire basic knowledge related to the impact of information technologies on development of information systems in logistics 2. Students will be acquainted with the role of electronic data exchange in business operations 3. Students will acquire necessary knowledge related to a procurement process 4. Students will be able to select the best supplier based on the acquired knowledge
Prerequisites	No formal prerequisites
Teaching methods	Lectures, classroom exercises, tutorials. Studying and individual seminar papers related to information management in logistics
Course content	1. Information importance in logistics 2. Information systems in logistics 3. Design of information systems in logistics 4. Information in a logistic chain 5. Electronic data exchange in logistics 6. Electronic business in logistics 7. Information systems in a function of decision-making system development 8. Colloquium I 9. Customer's order processing in an information system 10. Basic logistic concepts 11. Enterprise resource management. ERP system development 12. ERP life cycle. Reasons for ERP acceptance 13. Identification systems 14. Application of RFID technology. Significance and application of GPD technology 15. Colloquium II

Textbook (s)

Author/s	**Name of publication, publisher**	**Year**	**Pages (from-to)**
Zdravko Božičković Željko Stjepanović	Information management in logistics, Traffic Engineering Doboj	2013	9 - 214

Additional readings

Author/s	**Name of publication, editor**	**Year**	**Pages (from-to)**

Evaluation criteria	**Assessment methods**	**Points**	**Percentage**

	Pre-exam obligations		
	attendance to lectures and theoretical exercises	5	5%
	seminar paper / project / essay positively assessed	15	15%
	test / colloquium	40	40%
	final exam	40	40%
	TOTAL	100	100%
Web sources			
Applicable from	16.06.2021 - 175 Session of the Councile, Faculty of Transport and Traffic engineering		

	UNIVERSITY OF EAST SARAJEVO Faculty of Transport and Traffic Engineering ***Study program: TRAFFIC*** ***Profile: logistics*** I cycle / IV year of study	

Course title	**INTERNET MARKETING**
Department	Department for Business Informatics – Faculty of Business Ecnomics Bijeljina

Code	**Course status**	**Semester**	**ECTS credits**
САФ11СЛ07208385,0220	elective	VIII	5.00

Professor/s	Željko Stjepanović, PhD, associate professor
Associate/s	Željko Stjepanović, PhD, associate professor

Weekly hours			**Individual student hours (per semester)**			**Student workload coefficient S_o**
L	**TE**	**LE**	**L**	**TE**	**LE**	**S_o**
2	2	0	45	45	0	1.5

Total teacher workload (hours, per semester) W =2*15 + 2*15 + 0*15 = 30 + 30 + 0 = 60	Total student workload (hours, per semester) T = 2*15*1,5 + 2*15*1,5 + 0*15*1,5 = 45 + 45 + 0 = 90
Total workload: $W+T=U_{opt}$= 60 + 90 = 150 hours per semester	

Course aims and learning outcomes	1. Students will acquire basic knowledge of electronic marketing techniques 2. Students will acquire knowledge related to Internet marketing plan development 3. Stundets will be able to apply the acquired knowledge in their practical work in enterprises 4. Students will be able to create basic elements of Internet presentations
Prerequisites	No formal prerequisites
Teaching methods	Lectures, classroom exercises, laboratory exercises and tutorials. Studying and individual seminar papers related to Internet marketing
Course content	1. The role and importance of information in marketing 2. Internet and globalization of business processes 3. Functions and characteristics of Internet marketing 4. Development phases of Internet presence 5. Internet media plan 6. Models of business appearance on the Internet 7. Mobile advertising 8. Colloquium I 9. Web marketing 10. E-mail marketing 11. Goals and advantages of e-mail marketing 12. E-mail marketing rules 13. Other electronic marketing techniques 14. Defining an Internet marketing plan 15. Colloquium II

Textbook (s)

Author/s	**Name of publication, publisher**	**Year**	**Pages (from-to)**
Marko Šarac Aleksandar Jevremović	Internet marketing to University Singidunum Beograd	2015	1 - 197

Additional readings

Author/s	**Name of publication, editor**	**Year**	**Pages (from-to)**
Željko Stjepanović	Teaching materials, Traffic Engineering Doboj	2013	1 - 71

	Assesment methods	**Points**	**Percentage**
Evaluation criteria	Pre-exam obligations		
	attendance to lectures / exercises	5	5%
	seminar paper positively assessed	15	15%
	colloquiums	40	40%
	final exam	40	40%

	TOTAL	100	100%
Web sources			
Applicable from	16.06.2021 - 175 Session of the Councile, Faculty of Transport and Traffic engineering		

	UNIVERSITY OF EAST SARAJEVO Faculty of Transport and Traffic Engineering	
	Study program: Traffic ***Profile: Logistics***	
	I cycle / IV year of study	

Course title	**LOGISTICS PROVIDERS**
Department	Department for Transport Engineering – Faculty of Traffic Engineering Doboj

Code	**Course status**	**Semester**	**ECTS credits**
САФ11СЛ07235085,0220	optional	VIII	5,0

Professor/s	
Associates/s	

Weekly hours			**Individual student hours (per semester)**			**Student workload coefficient S_o**
L	**TE**	**LE**	**L**	**TE**	**LE**	**S_o**
2	2	0	45	45	0	1,5

Total teacher workload (hours, per semester) W = 2*15 + 2*15 + 0*15 = 30 + 30 + 0 = 60	Total student workload (hours, per semester) T = 2*15*1,5 + 2*15*1,5 + 0*15*1,5 = 45 + 45 + 0 = 90
Total workload: $W+T=U_{opt}$= 60 + 90 = 150 hours per semester	

Course aims and learning outcomes	1. Research and anticipate the requirements of logistics markets and anticipate the demand for logistics services, create different offers and modalities of service provision, establish and develop a logistics partnership with customers 2. Manage logistics flows and processes, manage risk and improve standards in logistics systems and processes.
Prerequisites	No special conditions
Teaching methods	Lectures, theoretical exercises, consultation
Course content	1. Evolutionary development of logistics providers 2. Different strategies and models of providing logistics services 3. Marketing research and forecasting the demand for logistics services 4. Logistics market segmentation and selection 5. Management of logistics flows and processes; logistics processes in import and export flows; 6. Risk management and transport insurance of goods 7. I Colloquium 8. Modeling of cold chain logistics processes in the export and import of food, pharmaceutical and medical products 9. Organization of logistic processes in the flows of import and export of live animals 10. Design of international express shipments 11. Organization of import and export flows of specific shipments (artistic values, high-value goods, oversized and special cargoes) 12. Management of logistics processes in humanitarian and emergency logistics 13. Design of flows of import and export of goods for the needs of organization of sports, tourist and artistic events 14. Application and improvement of standards in logistics processes and flows. 15. II Colloquium

Textbook (s)

Author/s	**Name of publication, publisher**	**Year**	**Pages (from-to)**
	Materials from lectures, exercises and papers by selected authors		

Additional readings

Author/s	**Name of publication, publisher**	**Year**	**Pages (from-to)**
Килибарда М.	Шпедиција и агенцијско пословање, Саобраћајни факултет, Београд, Србија	2013	

Burke R. (2011)	International logistics and freight forwarding manual, Burke, Russell John	2011	
Sremac, S., Stević, Ž., Pamučar, D., Arsić, M., & Matić, B.	Evaluation of a third-party logistics (3PL) provider using a rough SWARA–WASPAS model based on a new rough dombi aggregator. Symmetry, 10(8), 305.	2018	

	Assesment methods	Points	Percentage
Obligations, evaluation criteria	Preexamination obligations		
	attendance during lectures/exercise	5	5%
	attendance during lexercise	5	5%
	Seminar work	10	10%
	colloqiums	2x25	50%
	Final examination		
	Oral examination	30	30%
	Overall	100	100%
Applicable from	16.06.2021 - 175 Session of the Councile, Faculty of Transport and Traffic engineering		

	UNIVERSITY OF EAST SARAJEVO Faculty of Transport and Traffic Engineering ***Study program: Traffic*** ***Profile: Logistics*** I cycle / IV year of study	

Course title	**PROJECT MANAGEMENT IN COMMUNICATIONS**
Department	

Code	**Course status**	**Semester**	**ECTS credits**
САФ11СЛ07208584,0211	optional	VIII	4,00

Professor/s	
Associate/s	

Weekly hours			**Individual student hours (per semester)**			**Student workload coefficient S_o**
L	**TE**	**LE**	**L**	**TE**	**LE**	**S_o**
2	1	1	$X*15*S_o$	$Y*15*S_o$	$Z*15*S_o$	

Total teacher workload (hours, per semester) X*15 + Y*15 + Z*15 = W hours	Total student workload (hours, per semester) $X*15*S_o + Y*15*S_o + Z*15*S_o$ = T hours

Total workload: $W+T=U_{opt}$= + = hours per semester

Course aims and learning outcomes	
Prerequisites	
Teaching methods	
Course content	

Textbook (s)

Author/s	**Name of publication, publisher**	**Year**	**Pages (from-to)**

Additional readings

Author/s	**Name of publication, editor**	**Year**	**Pages (from-to)**

	Assesment methods	**Points**	**Percentage**
Evaluation criteria			
Web sources			
Applicable from	16.06.2021 - 175 Session of the Councile, Faculty of Transport and Traffic engineering		

	UNIVERSITY OF EAST SARAJEVO Faculty of Transport and Traffic Engineering ***Study program: TRAFFIC*** ***Profile: logistics*** I cycle / IV year of study	

Course title	**DESIGN OF INFORMATION SYSTEMS**
Department	Department for Computer and Information Sciences and Bioinformatics, Faculty of Electrical Engineering East Sarajevo

Code	**Course status**	**Semester**	**ECTS credits**
САФ11СЛ07208584,0211	compulsory	VIII	4.00

Professor/s	Željko Stjepanović, PhD, associate professor
Associate/s	

Weekly hours			**Individual student hours (per semester)**			**Student workload coefficient S_o**
L	**TE**	**LE**	**L**	**TE**	**LE**	**S_o**
2	1	1	30	15	15	1

Total teacher workload (hours, per semester) W = 2*15 + 1*15 + 1*15 = 30 + 15 + 15 = 60	Total student workload (hours, per semester) T = 2*15*1 + 2*15*1 + 1*15*1 = 30 + 15 + 15 = 60

Total workload: $W+T=U_{opt}$= 90 + 60 = 120 hours per semester

Course aims and learning outcomes	1. Students will acquire knowledge related to development and structure of information system 2. Students will be acquainted with the methodology of information system development 3. Students will be able to define project requirements related to business operations in an enterprise 4. During teaching activities, students will also be acquainted with certain examples related to information system design 5. Students will be acquainted with the methodology of project task development related to business operations in an enterprise
Prerequisites	No formal prerequisites
Teaching methods	Lectures, classroom exercises, laboratory exercises and tutorials. Studying and individual seminar papers related to information system design
Course content	1. Introduction to information systems 2. Information and business systems. Types of information systems 3.An integral approach to the organization of information systems 4. Protection and security of data in modern business 5. Standardization and information systems. Personnel resources 6. Modalities of information system development. Analysis of feasibility, costs and project effects 7. Methodology of information system development 8. Colloquium I 9. System analysis. Function and process modeling 10. Event and data modeling 11. An engineering approach to information system construction 12. Database design and software support 13. Implementation and maintenance of an information system 14. Programming and programming languages 15. Colloquium II

Textbook (s)

Author/s	**Name of publication, publisher**	**Year**	**Pages (from-to)**
Rade Stankić	Design of Information Systems, Faculty of Economics in Belgrade	2013	1-318

Additional readings

Author/s	**Name of publication, editor**	**Year**	**Pages (from-to)**

Željko Stjepanović	Teaching materials, Traffic Engineering Doboj	2014	1-145

	Assessment methods	Points	Percentage
Evaluation criteria	Pre-exam obligations		
	attendance to lectures / exercises	5	5%
	seminar paper positively assessed	15	15%
	colloquiums	40	40%
	final exam	40	40%
	TOTAL	100	100%
Web sources			
Applicable from	16.06.2021 - 175 Session of the Councile, Faculty of Transport and Traffic engineering		

TELECOMMUNICATIONS AND POSTAL TRAFFIC

UNIVERSITY OF EAST SARAJEVO
Faculty of Transport and Traffic Engineering

Study program: Traffic
Profile: Telecommunications and postal traffic

Ordinal	Code	Course title	Course status	Prerequisites	Semester	Fund of classes			ECTS
						L	TE	LE	
III year of study									
28.	CAΦ11CT07108757,0321	Digital Techniques	O		V	3	2	1	7.00
29.	CAΦ11CT07135156,0311	Planning and design of telecommunication networks and traffic in networks	O		V	3	1	1	6.00
30.	CAΦ11CT07108955,0211	Fundamentals of communication	O		V	2	1	1	5.00
31.	CAΦ11CT07121956,0311	Telematic systems	O		V	3	1	1	6.00
32.	CAΦ11CT07109156,0320	Postal traffic	O		V	3	2	0	6.00
33.	CAΦ11CT07115367,0321	Computer networks and internet protocols	O		VI	3	2	1	7.00
34.	CAΦ11CT07102565,0320	Basics of marketing	O		VI	3	2	0	5.00
35.	CAΦ11CT07109466,0320	Exploitation in postal traffic	O		VI	3	2	0	6.00
36.	CAΦ11CT07209565,0211	1. Optical communications	I_2		VI	2	1	1	5.00
	CAΦ11CT07209765,0211	2. Radio communication systems			VI				
37.	CAΦ11CT07235265,0211	1. Introduction to information theory	I_3		VI	2	1	1	5.00
	CAΦ11CT07235365,0211	2. Statistical theory in communications			VI				
38.	CAΦ11CT07132962,0000	Professional practice	O		VI	0	0	0	2.00
					TOTAL:	**27**	**15**	**7**	**60**
IV year of study									
39.	CAΦ11CT07135475,0220	Financial operations	O		VII	2	2	0	5.00
40.	CAΦ11CT07104675,0220	Quality management	O		VII	2	2	0	5.00
41.	CAΦ11CT07110077,0321	Theory of automatic control	O		VII	3	2	1	7.00
42.	CAΦ11CT07110177,0321	Mobile communications	O		VII	3	2	1	7.00
43.	CAΦ11CT07135576,0311	Artificial intelligence	O		VII	3	1	1	6.00
44.	CAΦ11CT07104585,0220	Organization of traffic companies	O		VIII	2	2	0	5.00
45.	CAΦ11CT07109985,0311	Internet technologies	O		VIII	3	1	1	5.00
46.	CAΦ11CT07135686,0311	Real-time computer systems	O		VIII	3	1	1	6.00
47.	CAΦ11CT07210585,0211	1. Multimedia communications	I_4		VIII	2	1	1	5.00
	CAΦ11CT07235785,0211	2. Distributed multimedia systems							
48.	CAΦ11CT07208685,0211	1. Design of information systems	I_5		VIII	2	1	1	5.00
	CAΦ11CT07203885,0211	2. Management in traffic							
49.	CAΦ11CT07105284,0030	Graduate thesis	O		VIII	0	3	0	4.00
					TOTAL:	**25**	**18**	**7**	**60.0**

- L - lectures
- TE - theoretical exercises
- LE - laboratory exercises

	UNIVERSITY OF EAST SARAJEVO Faculty of Transport and Traffic Engineering ***Study program: Traffic*** ***Profile: Telecommunications and postal traffic***	
	I cycle / III year of study	

Course title	**DIGITAL TECHNIQUE**
Department	Departments for electronics and electronic systems - ETF East Sarajevo

Code	**Course status**	**Semester**	**ECTS credits**
САФ11СТ07108757,0321	Obligatory	V	7,00

Professor/s	PhD Miroslav Kostadinović, associate professor
Associate/s	

Weekly hours			**Individual student hours (per semester)**			**Student workload coefficient S_o**
L	**TE**	**LE**	**L**	**TE**	**LE**	**S_o**
3	2	1	60	40	20	1,33

Total teacher workload (hours, per semester) W = 3*15 + 2*15 + 1*15 = 45 + 30 + 15 = 90	Total student workload (hours, per semester) T = 3*15*1,33 + 2*15*1,33 + 1*15*1,33 = 60 + 40 + 20 = 120
Total workload: W + T = Uopt = 90 + 120 = 210 hours per semester	

Course aims and learning outcomes	By mastering this course students should acquire knowledge in: 1. Basics of logic circuits and logic operations. 2. Standard combination networks. 3. Arithmetic Circuits. 4. Programmable logic structures
Prerequisites	There is no prior conditionality
Teaching methods	Lectures, theoretical exercises, laboratory exercises
Course content	1. Introduction. Switching algebra 2. Basic logic circuits and logic operations 3. Switch Functions and Switch Networks 4. Standard combination networks: encoder, decoder, code converter 5. Standard combination networks: multiplexer, demultiplexer, commutator 6. Memory circuits. Flip flops (I colloquium) 7. Standard sequential networks: registers 8. Standard sequential networks: counters 9. Arithmetic circuits: comparators, complementers, adder, subtractors, multiplication and division circuits 10. Programmable logic structures. Semiconductor memory 11. ROM, PROM, and RePROM memories. RAM type memories 12. Static and dynamic RAM type memory 13. Surface magnetic memories 14. A/D and D/A conversion principles 15. II colloquium

Textbook (s)

Author/s	**Name of publication, publisher**	**Year**	**Pages (from-to)**
Tešić, S.	Integrated digital electronics, Scientific book, Belgrade	1990.	
Živković, D., Popović, M.	Pulse and Digital Electronics, Academic Thought, Belgrade	2004.	
Bundalo, D.	Digital techniques, Faculty of Transport and Traffic Engineering Doboj, course materials	2015.	
Kostadinović, M., Bundalo, D.	Practicum for Digital Techniques Auditory Exercises, Faculty of Transport and Traffic Engineering Doboj	2012.	

Additional readings

Author/s	Name of publication, editor	Year	Pages (from-to)

	Assesment methods	Points	Percentage
Evaluation criteria	Pre-exam obligations		
	Attending lectures / exercises	5	5%
	Positive evaluation of the seminar paper	15	15%
	Colloquium 1	15	15%
	Colloquium 2	15	15%
	Laboratory exercises	10	10%
	Final exam		
	Oral exam	40	40%
	TOTAL	100	100%
Web sources			
Applicable from	16.06.2021. - 175th session of the Teaching-Scientific Council of the Faculty of Transport and Traffic Engineering		

	UNIVERSITY OF EAST SARAJEVO Faculty of Transport and Traffic Engineering ***Study program: Traffic*** ***Profile: Telecommunications and postal traffic*** I cycle / III year of study	

Course title	**PLANNING AND DESIGN OF TELECOMMUNICATION NETWORKS AND TRAFFIC IN NETWORKS**
Department	Department of Information - Communication Systems in Traffic, Faculty of Transport and Traffic Engineering in Doboj

Code	**Course status**	**Semester**	**ECTS credits**
САФ11СТ07135156,0311	obligatory	V	6.00

Professor/s	PhD Mirko Stojčić, assistant professor
Associate/s	

Weekly hours			**Individual student hours (per semester)**			**Student workload coefficient S_o**
L	**TE**	**LE**	**L**	**TE**	**LE**	**S_o**
3	1	1	45	15	15	1.2

Total teacher workload (hours, per semester) W = 3*15 + 1*15 + 1*15= 45 + 15 + 15 =75	Total student workload (hours, per semester) T = 3*15*So + 1*15*So + 1*15*So = 75 So=90

Total workload: W + T = U_{opt}= 75 + 75 = 150 hours per semester

Course aims and learning outcomes	1. Basic concepts in the field of planning and design of transport networks, traffic units in telecommunications 2. Methods and tools for the analysis of telecommunication traffic, Erlang's formula 3. Introduction to mathematical tools for modeling of telecommunication and postal systems and analysis of traffic flows 4. Acquiring knowledge of the basic principles of traffic planning and design in communication networks and postal systems
Prerequisites	There are no special conditions
Teaching methods	Lectures, auditory exercises, laboratory exercises and consultations
Course content	1. Introduction to the planning and construction of telecommunications facilities 2. Choice of network technologies and protocols. 3. Network management architecture. Redundancy of network elements and traffic restoration. 4. Techno-economic aspects. Validation of the telecommunication network project. 5. Traffic in postal and telecommunication systems / networks 6. Basic characteristics of telecommunication traffic - traffic unit, notion of losses / delays, main traffic hour, dimensioning of network capacity, notion of network congestion 7. Traffic engineering and its role in the process of planning and designing networks 8. Characterization of traffic flows. Distributions of request and service flows 9. Mathematical modeling and traffic engineering in postal and telecommunication systems based on queuing theory 10. Characteristics and performance analysis of lossy systems. Erlang's loss formula 11. Serving requests from a limited traffic source. Internal traffic. Incoming traffic 12. Classification and performance of communication networks. Multiphase service in fault systems. Arranged service systems (I colloquium) 13. Application of order theory in engineering of postal and telecommunication systems. General models of standby systems. Erlang's waiting system 14. Traffic measurement and statistical analysis of measurement results 15. Traffic forecasting in postal and telecommunication systems (II colloquium)

Textbook (s)

Author/s	**Name of publication, publisher**	**Year**	**Pages (from-to)**
Sučević, D.	Primeri primene matematičkih metoda u PTT saobraćaju	1996	

	Teletraffic Engineering Handbook, ITU-D.	2006	
Additional readings			
Author/s	**Name of publication, editor**	**Year**	**Pages (from-to)**

Evaluation criteria	**Assesment methods**	**Points**	**Percentage**
	Pre-exam obligations		
	e.g. attendance at lectures / exercises		
	e.g. I am positively assessed. paper / project / essay		
	e.g. case study - group work		
	e.g. test / colloquium		
	e.g. laboratory work / lab. exercises		
	e.g. practical work		
	Final exam		
	for example. final exam (oral / written)		
	IN TOTAL	100	100 %
Web sources			
Applicable from	16.06.2021. - 175th session of the Teaching-Scientific Council of the Faculty of Transport and Traffic Engineering		

	UNIVERSITY OF EAST SARAJEVO Faculty of Transport and Traffic Engineering	
	Study program: Traffic ***Profile: Telecommunications and postal traffic***	
	I cycle / III year of study	

Course title	**FUNDAMENTALS OF COMMUNICATION**
Department	Department of Information - Communication Systems in Traffic, Faculty of Transport and Traffic Engineering in Doboj

Code	**Course status**	**Semester**	**ECTS credits**
САФ11СТ07108955,0211	required	V	5.0

Professor/s	Associate Professor Aleksandar Stjepanovic
Associate/s	

Weekly hours			**Individual student hours (per semester)**			**Student workload coefficient S_o**
L	**TE**	**LE**	**L**	**TE**	**LE**	**S_o**
2	1	1	45	22,5	22,5	1,5

Total teacher workload (hours, per semester) W = 2*15 + 1*15 + 1*15 = 30 + 15 + 15 = 60	Total student workload (hours, per semester) T = 2*15*1,5 + 1*15*1,5 + 1*15*1,5 = 45 + 22,5 + 22,5 = 90
Total workload: W + T = Uopt = 60 + 90 = 150 hours per semester	

Course aims and learning outcomes	1. Basic elements related to the communication process 2. Basics for efficient presentation, processing of telecommunication signals 3. Basic procedures of modulation of analog and digital signals 4. Basics of transmission and exchange of messages, networks, internet, web, email 5. Quality of service
Prerequisites	There is no prior conditionality
Teaching methods	Lectures, auditory exercises, laboratory exercises
Course content	1. Phenomenological analysis of communication-concepts, codes and contexts 2. Communication process and models of communication system-communication in transport 3. Application of telecommunication systems in solving transport problems. Introduction to information theory and coding. Nature and classification of messages and telecommunication signals. 4. Measurement units for signal transmission. Basic methods of signal analysis 5. Intelligent transport systems 6. Characteristics of the communication channel: bandwidth, channel capacity, transmission media 7. Influence of noise and distortion during signal transmission through telecommunication system 8. The notion of modulation. Basic signal modulation techniques 9. Basic concepts of signal discretization. Analog-to-digital conversion procedures. Time and frequency multiplex 10. Influence of noise in transmission systems 11. Digital signal modulation procedures 12. Principles of digital signal transmission 13. Influence of noise and error probability in digital transmission systems 14. Hierarchies of analog and digital transmission systems 15. Quality of service

Textbook (s)

Author/s	**Name of publication, publisher**	**Year**	**Pages (from-to)**
Dukic M	Principles of Telecommunication, Academic Thought, Belgrade	**2008**	
Stojanovic I	Fundamentals of Telecommunications, Construction Book, Belgrade	**1977**	
Banjanin M	Communication Engineering, STF Dobo	**2007**	

Additional readings			
Author/s	**Name of publication, editor**	**Year**	**Pages (from-to)**

Evaluation criteria	**Assesment methods**	**Points**	**Percentage**
	Pre-exam obligations		
	TE Attendance at lectures / exercises	5	5%
	Positively graded seminar paper	15	15%
	Colloquium 1	15	15%
	Colloquium 2	15	15%
	LE	10	10%
	Final exam	40	40%
	SUM	100	100%
Web sources			
Applicable from	06/16/2021 - 175th session of the Teaching-Scientific Council of the Faculty of Transportation		

	UNIVERSITY OF EAST SARAJEVO Faculty of Transport and Traffic Engineering	
	Study program: Traffic ***Profile: Telecommunications and postal traffic***	
	I cycle / III year of study	

Course title	**TELEMATIC SYSTEMS**
Department	Department of Information - Communication Systems in Traffic, Faculty of Transport and Traffic Engineering in Doboj

Code	**Course status**	**Semester**	**ECTS credits**
САФ11СТ07121956,0311	required	VI	6.0

Professor/s	Associate Professor Aleksandar Stjepanovic
Associate/s	

Weekly hours			**Individual student hours (per semester)**			**Student workload coefficient S_o**
L	**TE**	**LE**	**L**	**TE**	**LE**	**S_o**
3	1	1	45	15	15	1,5

Total teacher workload (hours, per semester) W = 3*15 + 1*15 + 1*15 = 75	Total student workload (hours, per semester) T = 3*15*So + 1*15*So + 1*15*So = 75 So=90
Total workload: W + T = Uopt = 60 + 90 = 150 hours per semester	

Course aims and learning outcomes	1. active knowledge of regulations and norms, European regulations related to ITS 2. proposal of solution of distributed information and communication systems for transport monitoring 3. ITS research and interaction with spatial information infrastructure 4. ITS architecture 5. defining user requirements for the purpose of refixing transport problems
Prerequisites	There is no prior conditionality
Teaching methods	Lectures, auditory exercises, laboratory exercises
Course content	1. Traffic management. Traffic management strategies 2. Adaptable telematics systems. Network capabilities 3. Basic definitions of telematics. Toll collection systems 4. European projects. Definition of ITS, Standards, norms of the directive, Legal bases, FRAME project 5. ITS architecture. Theoretical foundations, Possible applications of ITS 6. Traffic management - traffic distribution and application of telematics systems 7. Technical preconditions for the application of ITS 8. Detectors and sensors. Vehicle network architecture 9. Telecommunication networks in traffic 10. Spatial infrastructure of GIS and ITS. ITS and GPS. Location-based services 11. Variable signaling, standards. Radio data systems 12. Autonomous vehicles. Artificial intelligence systems in traffic 13. Congestion management and application of ITS in congestion management 14. Informing traffic participants, Human factor, QoE, QoS 15. Internet and ITS.

Textbook (s)

Author/s	**Name of publication, publisher**	**Year**	**Pages (from-to)**
Stjepanovic A, Kostadinovic M	Telematic systems, University of East Sarajevo, Faculty of Transport and Traffic Engineering	**2020**	

Additional readings

Author/s	**Name of publication, editor**	**Year**	**Pages (from-to)**

Evaluation criteria	**Assesment methods**	**Points**	**Percentage**

	Pre-exam obligations		
	TE Attendance at lectures / exercises	5	5%
	Positively graded seminar paper	15	15%
	Colloquium 1	15	15%
	Colloquium 2	15	15%
	LE	10	10%
	Final exam	40	40%
	SUM	100	100%
Web sources			
Applicable from	06/16/2021 - 175th session of the Teaching-Scientific Council of the Faculty of Transportation		

	UNIVERSITY OF EAST SARAJEVO Faculty of Transport and Traffic Engineering ***Study program: Traffic*** ***Profile: Telecommunications and postal traffic*** I cycle / III year of study	

Course title	**POSTAL TRAFFIC**
Department	Department of Information - Communication Systems in Traffic, Faculty of Transport and Traffic Engineering in Doboj

Code	**Course status**	**Semester**	**ECTS credits**
САФ11СТ07109156,0320	obligatory	V	6.00

Professor/s	PhD Dejan Marković, full professor
Associate/s	

Weekly hours			**Individual student hours (per semester)**			**Student workload coefficient S_o**
L	**TE**	**LE**	**L**	**TE**	**LE**	**S_o**
3	2	0	63	42	0	1.4

Total teacher workload (hours, per semester) W = 3*15 + 2*15 + 0*15 = 45 + 30 + 0 = 75 hours	Total student workload (hours, per semester) T = 3*15*1,4 + 2*15*1,4 + 0*15*1,4 = 60 + 42 + 0 = 105 hours
Total workload: W + T = U_{opt} = 75 + 105 = 180 hours per semester	

Course aims and learning outcomes	1. Introducing students to the basic concepts and knowledge in the field of postal traffic 2. History of postal traffic 3. Organization and functions of postal traffic 4. Basics of international postal traffic 5. Postal services and network.
Prerequisites	Conditions for taking the course are: 1. regular class attendance (lectures and exercises), 2. completed and defended project task, 3. passed all colloquia, 4. achieved a minimum number of points on the tests.
Teaching methods	Lectures, auditory and calculation exercises, consultations
Course content	1. Introduction. 2. Historical development of postal traffic 3. Developmental forms of postal connections 4. Functions of postal traffic 5. Basics of organization of postal traffic and communications 6. I colloquium 7. Specifics of the organization and functioning of postal traffic 8. Competition in postal traffic 9. Basics of international postal traffic 10. Congresses of the Universal Postal Union 11. Postal network 12. Classification of postal service units into classes 13. Postal services 14. Postal address code 15. II colloquium

Textbook (s)

Author/s	**Name of publication, publisher**	**Year**	**Pages (from-to)**
Marković, D., Grgurević, B.,	Poštanski saobraćaj, Saobraćajni fakultet Univerziteta u Beogradu	2006	

Additional readings

Author/s	**Name of publication, editor**	**Year**	**Pages (from-to)**
Grgurević, B., Marković, D	Poštanske usluge i mreža, Beograf, Beograd,	2005	

Evaluation criteria	**Assesment methods**	**Points**	**Percentage**
	Pre-exam obligations		

	Attendance and activities at lectures and exercises	10	10 %
	Completed and positively evaluated project task	20	20 %
	Passed tests	10	10 %
	All colloquia passed	40	40 %
	Final exam		
	oral	20	20 %
		100	100%
Web sources			
Applicable from	16.06.2021. - 175th session of the Teaching-Scientific Council of the Faculty of Transport and Traffic Engineering		

	UNIVERSITY OF EAST SARAJEVO Faculty of Transport and Traffic Engineering ***Study program: Traffic*** ***Profile: Telecommunications and postal traffic*** I cycle | III year of study	

Course title	**COMPUTER NETWORKS AND INTERNET PROTOCOLS**
Department	Department of computers, information technologies and biotechnology, ETF, University of East Sarajevo

Code	**Course status**	**Semester**	**ECTS credits**
САФ11СТ07115367,0321	mandatory	VI	7,00

Professor/s	Assistent Proffesor Goran Jauševac
Associate/s	

Weekly hours			**Individual student hours (per semester)**			**Student workload coefficient S_o**
L	**TE**	**LE**	**L**	**TE**	**LE**	**S_o**
3	2	1	67,5	45	22,5	1,5

Total teacher workload (hours, per semester) W = 3*15 + 2*15 + 1*15 = 45 + 30 + 15 = 90	Total student workload (hours, per semester) T = 3*15*1,5 + 2*15*1,5 + 1*15*1,5 = 67,5 + 45 + 22,5 = 135

Total workload: W + T = U_{opt} = 90 + 135 = 225 hours per semester

Course aims and learning outcomes	By mastering this course, the student will be able to: 1. acquire basic knowledge of computer networks and protocols, 2. to analyze the performance of computer networks and telecommunication protocols.
Prerequisites	No
Teaching methods	Lectures and laboratory exercises
Course content	1. Classification of computer networks. 2. Topologies of computer networks. 3. Definition of protocols and the concept of layered structuring. 4. Local area networks (LANs). 5. Stochastic and deterministic methods of media access control (MAC). 6. Basics of Ethernet technology. 7. **I colloquium** 8. Network layer on the Internet. 9. IPv4 and IPv6. 10. Mobile IP. 11. Basic algorithms and protocols of unicast routing on the Internet. 12. Transport layer on the Internet. 13. Email system architecture and WWW basics. 14. SNMP management functions and architecture. 15. **II colloquium**

Textbook (s)

Author/s	**Name of publication, publisher**	**Year**	**Pages (from-to)**
A.Tanenbaum, D. Wetherall.	Rašunarske mreže, V izdanje, Mikroknjiga, Beograd	2012	
W. Stallings	Computer Networking With Internet Protocols, Prentice-Hall, Inc.	2009	
S. Bigelow	Računartske mreže, instaliranje, održavanje i popravljanje, Mikroknjiga, Beograd	2004	

Additional readings

Author/s	**Name of publication, editor**	**Year**	**Pages (from-to)**

Evaluation criteria	**Assesment methods**	**Points**	**Percentage**
	Pre-exam obligations		

	attendance at lectures	5	5%
	Seminary paper	15	15%
	I Colloquium	15	15%
	II Colloquium	15	15%
	laboratory exercises	10	10%
	Final exam		
	Writing exam	40	40%
	TOTAL	100	100%
Web sources			
Applicable from	16.06.2021 - 175 Session of the Councile, Faculty of Transport and Traffic engineering		

	UNIVERSITY OF EAST SARAJEVO Faculty of Transport and Traffic Engineering ***Study program: Traffic*** ***Profile: Telecommunications and postal traffic*** I cycle / III year of study	

Course title	**BASICS OF MARKETING**
Department	Department of Marketing and Management, Faculty of Economics in Brcko

Code	**Course status**	**Semester**	**ECTS credits**
САФ11СТ07102565,0320	obligatory	IV	5.0

Professor/s	PhD Svjetlana Terzić, Associate Professor
Associate/s	

Weekly hours			**Individual student hours (per semester)**			**Student workload coefficient S_o**
L	**TE**	**LE**	**L**	**TE**	**LE**	**S_o**
3	2	0	45	45	0	1.5

Total teacher workload (hours, per semester) W=2*15 + 2*15 + 0*15 = 60 hours	Total student workload (hours, per semester) T= 2*15*S_o + 2*15*S_o + 0*15*S_o = 90 hours
Total workload: W + T = U_{opt}= 60 + 90 = 150 hours per semester	

Course aims and learning outcomes	1. Introducing students to key concepts in the field of marketing. 2. Necessary knowledge and skills for defining marketing goals and strategies. 3. Basics of marketing management. 4. Internet marketing
Prerequisites	There are no conditions for listening and taking the course.
Teaching methods	Lectures, auditory exercises, seminar paper
Course content	1. The concept and importance of marketing 2. Basic principles of marketing 3. Development of the marketing concept 4. Marketing categorical system 5. Marketing mix 6. Marketing information system and decision making 7. Marketing, market, consumer (I colloquium) 8. Marketing environment 9. Elements of marketing research 10. Basics of marketing management 11. Basic marketing instruments 12. Product in marketing 13. Price in marketing 14. Marketing channels. Promotion in marketing 15. Internet marketing (II colloquium)

Textbook (s)

Author/s	**Name of publication, publisher**	**Year**	**Pages (from-to)**
Macura P.	Marketing – osnov, Ekonomski fakultet, Banja Luka	2009.	

Additional readings

Author/s	**Name of publication, editor**	**Year**	**Pages (from-to)**
Milisavljević M., Maričić B.	Osnovi marketinga, Ekonomski fakultet, Beograd.	2004.	

Evaluation criteria	**Assesment methods**	**Points**	**Percentage**
	Pre-exam obligations		
	attendance at lectures and exercises	2 x 5	10 %
	positively graded seminar paper	10	10 %
	written exam (2 colloquia)	50	50 %
	Final exam		
	oral exam	30	30 %
	IN TOTAL	100	100 %

Web sources	
Applicable from	16.06.2021. - 175th session of the Teaching-Scientific Council of the Faculty of Transport and Traffic Engineering

	UNIVERSITY OF EAST SARAJEVO Faculty of Transport and Traffic Engineering ***Study program: Traffic*** ***Profile: Telecommunications and postal traffic*** I cycle / III year of study	

Course title	**EXPLOITATION IN POSTAL TRAFFIC**
Department	Department of Information - Communication Systems in Traffic, Faculty of Transport and Traffic Engineering in Doboj

Code	**Course status**	**Semester**	**ECTS credits**
САФ11СТ07109466,0320	obligatory	VI	6.00

Professor/s	PhD Dejan Marković, full professor
Associate/s	

Weekly hours			**Individual student hours (per semester)**			**Student workload coefficient S_o**
L	**TE**	**LE**	**L**	**TE**	**LE**	**S_o**
3	2	0	63	42	0	1.4

Total teacher workload (hours, per semester) W = 3*15 + 2*15 + 0*15 = 45 + 30 + 0 = 75 hours	Total student workload (hours, per semester) T = 3*15*1,4 + 2*15*1,4 + 0*15*1,4 = 60 + 42 + 0 = 105 hours
Total workload: W + T = U_{opt} = 75 + 105 = 180 hours per semester	

Course aims and learning outcomes	1. The importance of postal traffic in the economy and society 2. Technological processes in postal traffic 3. The role of philately and electronic postage stamps 4. Exploitation in international postal traffic
Prerequisites	Conditions for taking the course are: 1. regular class attendance (lectures and exercises), 2. completed and defended project task, 3. passed all colloquia, 4. achieved a minimum number of points on the tests
Teaching methods	Lectures, auditory and calculation exercises, consultations
Course content	1. The role of postal traffic in the economy and society 2. Technological processes in shipment transfer 3. Receipt of postal items 4. Dispatch of postal items 5. Transport of postal items 6. Arrival of postal items 7. Delivery of postal items 8. I colloquium 9. Philately 10. Electronic postage stamp 11. Systems for tracking postal items 12. Electronic business in the post office 13 Organizational structure of the postal operator 14. Exploitation in international postal traffic 15.II Colloquium

Textbook (s)

Author/s	**Name of publication, publisher**	**Year**	**Pages (from-to)**
Dobrodolac, M.; Marković, D., Blagojević, M.	Eksploatacija poštanskog saobraćaja, Saobraćajni fakultet, Beograd	2016	

Additional readings

Author/s	**Name of publication, editor**	**Year**	**Pages (from-to)**
Marković, D., Grgurević, B.,	Poštanski saobraćaj, Saobraćajni fakultet Univerziteta u Beogradu,	2006	

Evaluation criteria	**Assesment methods**	**Points**	**Percentage**
	Pre-exam obligations		

	Attendance and activities at lectures and exercises	10	10 %
	Completed and positively evaluated project task	20	20 %
	Passed tests	10	10 %
	All colloquia passed	40	40 %
	Final exam		
	oral	20	20 %
	IN TOTAL	100	100 %
Web sources			
Applicable from	16.06.2021. - 175th session of the Teaching-Scientific Council of the Faculty of Transport and Traffic Engineering		

	UNIVERSITY OF EAST SARAJEVO Faculty of Transport and Traffic Engineering	
	Study program: Traffic ***Profile: Telecommunications and postal traffic***	
	I cycle / III year of study	

Course title	**OPTICAL COMMUNICATIONS**
Department	Department of Information - Communication Systems in Traffic, Faculty of Transport and Traffic Engineering in Doboj

Code	**Course status**	**Semester**	**ECTS credits**
САФ11СТ07209565,0211	elective	VI	5.0

Professor/s	Associate Professor Aleksandar Stjepanovic
Associate/s	

Weekly hours			**Individual student hours (per semester)**			**Student workload coefficient S_o**
L	**TE**	**LE**	**L**	**TE**	**LE**	**S_o**
2	1	1	45	22,5	22,5	1,5

Total teacher workload (hours, per semester) W = 2*15 + 1*15 + 1*15 = 30 + 15 + 15 = 60	Total student workload (hours, per semester) T = 2*15*1,5 + 1*15*1,5 + 1*15*1,5 = 45 + 22,5 + 22,5 = 90
Total workload: W + T = Uopt = 60 + 90 = 150 hours per semester	

Course aims and learning outcomes	1. Introducing students to basic concepts, photodiodes, phototransistors. 2. Upon completion of the course the student will be able to fully understand the principles of signal transmission in optical telecommunications systems. 3. Know the characteristics of optical fibers and cables, the way of functioning of optical and optoelectronic components and their role in the optical communication system. 4. Will be able to independently design point-to-point optical connections in accordance with recommendations and standards.
Prerequisites	There is no prior conditionality
Teaching methods	Lectures, auditory exercises, laboratory exercises
Course content	1. Basics of light propagation. Elements of optical connection 2. Basic advantages of optical telecommunications 3. Light (velocity of propagation, refractive index, reflection and refraction, polarization) 4. Optical fibers (propagation, Snel's law, total reflection, fiber types, attenuation, dispersion, standards) 5. Optical cables 6. Light sources and transmitters (characteristics, LEDs and laser diodes) 7. I colloquium 8. Photodiodes and receivers 9. Phototransistors 10. Optoelectronic signal conversion 11. Passive and active optical components 12. Optocoupler 13. Frequency Multiplex (FDM) 14. Time multiplex (TDM) 15. II colloquium

Textbook (s)

Author/s	**Name of publication, publisher**	**Year**	**Pages (from-to)**
Popovic M, Despotovic M, Vukobratovic D	Optical Telecommunications Systems, FTN, Novi Sad	**2002**	
Marinicic A	Optical Telecommunications, University of Beograd, Beogradf	**1997**	
Karolj S	Optoelectronic systems, DMZUH Zagreb	**2003**	
Bjelica M, Matavulj P, Gvozdic D	Collection of tasks from optical telecommunications, Academic Thought, Belgrade	**2005**	

Additional readings			
Author/s	**Name of publication, editor**	**Year**	**Pages (from-to)**

	Assesment methods	**Points**	**Percentage**
Evaluation criteria	Pre-exam obligations		
	TE Attendance at lectures / exercises	5	5%
	Positively graded seminar paper	15	15%
	Colloquium 1	15	15%
	Colloquium 2	15	15%
	LE	10	10%
	Final exam	40	40%
	SUM	100	100%
Web sources			
Applicable from	06/16/2021 - 175th session of the Teaching-Scientific Council of the Faculty of Transportation		

	UNIVERSITY OF EAST SARAJEVO Faculty of Transport and Traffic Engineering ***Study program: Traffic*** ***Profile: Telecommunications and postal traffic*** I cycle / III year of study	

Course title	**RADIO COMMUNICATION SYSTEMS**
Department	Department of Telecommunications ETF East Sarajevo

Code	**Course status**	**Semester**	**ECTS credits**
САФ11СТ07209765,0211	elective	VI	5,00

Professor/s	PhD Mirko Stojčić, assistant professor
Associate/s	

Weekly hours			**Individual student hours (per semester)**			**Student workload coefficient S_o**
L	**TE**	**LE**	**L**	**TE**	**LE**	**S_o**
2	1	1	45	22.5	22.5	1.5

Total teacher workload (hours, per semester) W = 2*15 + 1*15 + 1*15 = 30 + 15 + 15 = 60 hours	Total student workload (hours, per semester) T = 2*15*1,5 + 1*15*1,5 + 1*15*1,5 = 45 + 22,5 + 22,5 = 90 hours

Total workload: W + T = U_{opt} = 60 + 90 =150 hours per semester

Course aims and learning outcomes	By mastering this course the student will be able to 1. Gain the knowledge needed to understand the basic principles and functioning of radio communication systems. 2. Understands basic problems and ways to effectively use RF spectrum as a limited resource. 3. Acquire the necessary knowledge for the application of radiocommunication systems in various modes of traffic and transport. 4. Solves basic problems of traffic engineering in radio communication systems
Prerequisites	There are no special conditions
Teaching methods	lectures, auditory exercises, laboratory exercises, consultations
Course content	1. Introduction to radio communications. International Radio Regulations. ITU-R recommendations. 2. Division of radio frequency spectrum and purposes of individual RF bands. 3. Radio connection model. Calculation of basic radio connection parameters. Ways of propagation of radio waves: surface, ionospheric, spatial waves, scattering. 4. Regulatory aspects in the field of radio communications. RF spectrum management. Tariffing of the RF spectrum. 5. Traffic engineering in radio communication systems. Traffic measurements and traffic profiles. Models for calculating the required capacity in radio communication systems. Multi-service traffic models. 6. Optimization of RF spectrum use. Dynamic access to the spectrum. 7. I colloquium 8. Radio communication services. 9. Operation of radio communication systems in traffic and transport. 10. Wireless cellular communication systems in traffic and transport. 11. Wireless ad-hoc networks in traffic and transport. 12. Wireless systems for short range in traffic and transport. 13. Satellite radio-communication systems in traffic and transport. 14. Systems for positioning and tracking of objects in traffic and transport. 15. II colloquium

Textbook (s)

Author/s	**Name of publication, publisher**	**Year**	**Pages (from-to)**
H.Sizun	Radio Wave Propagation for Telecommunication Applications, Springer	2004.	
W. Webb	Wireless Communications: The Future, John Wiley & Sons	2007.	

Additional readings

Author/s	Name of publication, editor	Year	Pages (from-to)
S. A. Kyriazakos, G.T. Karetsos	Practical Radio Resource Management in Wireless Systems, Artech House	2004	
Горан Марковић	Основи телекомуникационих система, Саобраћајни факултет Београд	2012	

	Assesment methods	Points	Percentage
Evaluation criteria	Pre-exam obligations		
	attendance at lectures / exercises	5	5%
	positively graded seminar paper	15	15%
	Colloquium 1	15	15%
	Colloquium 2	15	15%
	lab. exercises	10	10%
	Final exam		
	oral	40	40%
	IN TOTAL	100	100 %
Web sources			
Applicable from	16.06.2021. - 175th session of the Teaching-Scientific Council of the Faculty of Transport and Traffic Engineering		

	UNIVERSITY OF EAST SARAJEVO Faculty of Transport and Traffic Engineering	
	Study program: Traffic ***Profile: Telecommunications and postal traffic***	
	I cycle / III year of study	

Course title	**INTRODUCTION TO INFORMATION THEORY**
Department	Department of Information - Communication Systems in Traffic, Faculty of Transport and Traffic Engineering in Doboj

Code	**Course status**	**Semester**	**ECTS credits**
САФ11СТ07235265,0211	required	VI	5.0

Professor/s	Associate Professor Aleksandar Stjepanovic
Associate/s	

Weekly hours			**Individual student hours (per semester)**			**Student workload coefficient S_o**
L	**TE**	**LE**	**L**	**TE**	**LE**	**S_o**
2	1	1	30	15	15	1,5

Total teacher workload (hours, per semester) W = 2*15 + 1*15 + 1*15 = 30 + 15 + 15 = 60	Total student workload (hours, per semester) T =2*15* So + 1*15* So + 1*15* So = 30 + 15 + 15 = 90
Total workload: W + T = Uopt = 60 + 90 = 150 hours per semester	

Course aims and learning outcomes	1. Acquiring basic knowledge of information theory and coding theory 2. To acquaint students with the sources of information 3. Introduction to information transmission channels. 4. Introduction to statistical and security coding 5. Basic concepts of error probability theory
Prerequisites	There is no prior conditionality
Teaching methods	Lectures, auditory exercises, laboratory exercises
Course content	1. Introduction to information theory. 2. Definition of information and amount of information 3. Sources of information. Discrete and continuous sources of information 4. Information transmission channels. Discrete sources with memory 5. Statistical and security coding. 6. The concept of entropy and own information 7. Baud rate and channel capacity 8. Shannon's source and channel coding theorems 9. Basics of coding a discrete source of information 10. Data compression 11. Methods of construction of efficient compression codes 12. Block codes, convolution codes. 13. Security encryption 14. Probability of error and basis of theory 15. Basic application of information theory in cryptography. An overview of line coding procedures.

Textbook (s)

Author/s	**Name of publication, publisher**	**Year**	**Pages (from-to)**
Drajic D, Ivanis P	Introduction to Information Theory and Coding, Academic Thought, Belgrade	**2009**	

Additional readings

Author/s	**Name of publication, editor**	**Year**	**Pages (from-to)**

Evaluation criteria	**Assesment methods**	**Points**	**Percentage**
	Pre-exam obligations		

	TE Attendance at lectures / exercises	5	5%
	Positively graded seminar paper	15	15%
	Colloquium 1	15	15%
	Colloquium 2	15	15%
	LE	10	10%
	Final exam	40	40%
	SUM	100	100%
Web sources			
Applicable from	06/16/2021 - 175th session of the Teaching-Scientific Council of the Faculty of Transportation		

	UNIVERSITY OF EAST SARAJEVO Faculty of Transport and Traffic Engineering ***Study program: Traffic*** ***Profile: Telecommunications and postal traffic*** I cycle / III year of study	

Course title	**STATISTICAL THEORY IN COMMUNICATIONS**
Department	Department of Information - Communication Systems in Traffic, Faculty of Transport and Traffic Engineering in Doboj

Code	**Course status**	**Semester**	**ECTS credits**
САФ11СТ07235365,0211	required	V	5.0

Professor/s	Associate Professor Aleksandar Stjepanovic
Associate/s	

Weekly hours			**Individual student hours (per semester)**			**Student workload coefficient S_o**
L	**TE**	**LE**	**L**	**TE**	**LE**	**S_o**
2	1	1	45	22,5	22,5	1,5

Total teacher workload (hours, per semester) W = 2*15 + 1*15 + 1*15 = 30 + 15 + 15 = 60	Total student workload (hours, per semester) T = 2*15*1,5 + 1*15*1,5 + 1*15*1,5 = 45 + 22,5 + 22,5 = 90

Total workload: W + T = Uopt = 60 + 90 = 150 hours per semester

Course aims and learning outcomes	1. Introduction to the model of telecommunication system 2. To acquaint students with the statistical approach in the analysis of telecommunication signals and linear telecommunication systems. 3. To provide theoretical bases for solving practical problems in the field of modern telecommunication systems. 4. Introduction to random processes in communications 5. Basic concepts of probability theory with application in telecommunications
Prerequisites	There is no prior conditionality
Teaching methods	Lectures, auditory exercises, laboratory exercises
Course content	1. Introduction. General model of telecommunication system 2. Classification of messages and signals 3. Overview of telecommunication systems 4. Deterministic and stochastic approach in solving communication problems. 5. Random processes. 6. Review of basic concepts of probability theory and application to telecommunication signals and systems 7. Spectral analysis of random processes 8. Stationary and ergodic random processes 9. Brief overview of spectral analysis of periodic and aperiodic signals. 10. Relationship between the transmission function of a linear communication system and the spectral characteristics of a signal. 11. Detection of binary signals in the presence of noise. 12. Small Range Communications. Fundamentals of radar systems 13. Probability of error in digital modulation procedures 14. Detection of telecommunication signals. 15. Functional communication systems in certain types of traffic

Textbook (s)

Author/s	**Name of publication, publisher**	**Year**	**Pages (from-to)**
Georgije L	Statistical theory of telecommunications and information theory, GK, Beograd	**1991**	

Additional readings

Author/s	**Name of publication, editor**	**Year**	**Pages (from-to)**

Evaluation criteria	**Assesment methods**	**Points**	**Percentage**
	Pre-exam obligations		
	TE Attendance at lectures / exercises	5	5%
	Positively graded seminar paper	15	15%
	Colloquium 1	15	15%
	Colloquium 2	15	15%
	LE	10	10%
	Final exam	40	40%
	SUM	100	100%
Web sources			
Applicable from	06/16/2021 - 175th session of the Teaching-Scientific Council of the Faculty of Transportation		

	UNIVERSITY OF EAST SARAJEVO Faculty of Transport and Traffic Engineering ***Study program: Traffic*** ***Profile: Telecommunications and postal traffic*** I cycle / IV year of study	

Course title	**FINANCIAL OPERATIONS**
Department	Department of Accounting, Auditing and Business Finance - FPE Bijeljina

Code	**Course status**	**Semester**	**ECTS credits**
САФ11СТ07135475,0220	obligatory	VII	5.0

Professor/s	PhD Slobodan Subotić, Associate Professor
Associate/s	

Weekly hours			**Individual student hours (per semester)**			**Student workload coefficient S_o**
L	**TE**	**LE**	**L**	**TE**	**LE**	**S_o**
2	2	0	45	45	0	1.5

Total teacher workload (hours, per semester) W = 2*15 + 2*15 + 0*15 = 30 + 30 + 0 = 60 hours	Total student workload (hours, per semester) T = 2*15*1,5 + 2*15*1,5 + 0*15*1,5 = 45 + 45 + 0 = 90 hours
Total workload: W + T = Uopt = 60 + 90 = 150 hours per semester	

Course aims and learning outcomes	By mastering this course the student will be able to: 1. Knowledge of financial operations of postal companies. 2. Ability to independently analyze the financial operations of the postal company. 3. Ability to independently: analyze the financial position and operations of PTT organizations; control and improvement of financial services provided by PTT organizations to users, for their own account and in their own name, and for the account and on behalf of other financial organizations. 4. Introduction to: financial instruments and financial market, international financial flows and electronic business. 5. Acquiring basic knowledge of financial flows in the fields of public, banking, monetary, international, business finance and performing financial and monetary transactions in postal traffic.
Prerequisites	No special conditions
Teaching methods	Lectures, auditory exercises, seminar paper
Course content	1. Finance as a scientific discipline 2. Basic characteristics of monetary, banking, public, international and business finance and their importance and impact on the operations of postal organizations 3. Financial markets and institutions 4. Development of banking and monetary affairs 5. Funding rules 6. Liquidity of postal organizations 7. Financial instruments and financial flows (First colloquium) 8. The role of the Central Bank 9. Domestic and international payment transactions and payment systems 10. Payment operations performed by postal organizations 11. Monetary business services for individuals and legal entities 12. Accounting and treasury operations in postal organizations 13. Electronic business 14. Electronic data processing in the field of payment transactions 15. Second colloquium

Textbook (s)

Author/s	**Name of publication, publisher**	**Year**	**Pages (from-to)**
Šarac Dragana	Finansijsko poslovanje u poštanskom saobraćaju, FTN Novi Sad	2014	
Kovačević Ljubomir, Vunjak	Upravljanje finansijama preduzeća, Saobraćajni	2009	

Nenad	fakultet Doboj		
Additional readings			
Author/s	**Name of publication, editor**	**Year**	**Pages (from-to)**
Mikerević Dragan	Finansijski menadžment, Ekonomski fakultet Banja Luka	2005	
Plakalović Novo	Monetarna ekonomija, Ekonomski fakultet Pale	2004	

Evaluation criteria	**Assesment methods**	**Points**	**Percentage**
	Pre-exam obligations		
	attendance at lectures / exercises	10	10%
	positively evaluated seminar paper	10	10%
	colloquium	30	30%
	Final exam		
	oral	50	50%
	IN TOTAL	100	100 %
Web sources			
Applicable from	16.06.2021. - 175th session of the Teaching-Scientific Council of the Faculty of Transport and Traffic Engineering		

	UNIVERSITY OF EAST SARAJEVO Faculty of Transport and Traffic Engineering	
	Study program: Traffic ***Profile: Telecommunications and postal traffic***	
	I cycle / IV year of study	

Course title	**QUALITY MANAGEMENT**
Department	

Code	**Course status**	**Semester**	**ECTS credits**
САФ11СТ07104675,0220	required	VII	5,0

Professor/s	Associate Professor Živko Erceg
Associate/s	

Weekly hours			**Individual student hours (per semester)**			**Student workload coefficient S_o**
L	**TE**	**LE**	**L**	**TE**	**LE**	**S_o**
2	2	0	45	45	0	1,5

Total teacher workload (hours, per semester) W = 2*15 + 2*15 + 0*15 = 30 + 30 + 0 = 60	Total student workload (hours, per semester) T = 2*15*1,5 + 2*15*1,5 + 0*15*1,5 = 45 + 45 + 0 = 90
Total workload: W + T = U_{opt} = 60 + 90 = 150 hours per semester	

Course aims and learning outcomes	Completing this course students will be able to: 1. understand the demands of users of products and services in the context of the needs in the modern way market, 2. use and apply different approaches, models and methods of measurement and quality improvement, 3. develop and apply specific quality management models in real terms of business, 4. manage the resources more effectively in its management in real business conditions, 5. achieves a more successful communication (internal and external).
Prerequisites	No prerequisites
Teaching methods	Lectures, auditory exercises, seminar work
Course content	1. History of development of quality management 2. Quality and standardization. Model of quality management system 3. Understanding quality. The concept and definitions of quality 4. Qualitative, qualitative and quality management 5. Understand the context of an organization. Deming's key to understanding the organization 6. Quality management systems 7. I colloquium 8. Total Quality Management (TQM). Models of excellence 9. Integrated Management Systems 10. Quality system according to ISO 9000: 2015 11. Process model of the organization 12. Risk analysis. Risk assessment methods 13. Methods and tools of quality 14. Methods of measuring customer satisfaction 15. II colloquium

Textbook

Author/s	**Name of publication, publisher**	**Year**	**Pages (from-to)**
Bobrek, M., Milekić, M., Macanović, K..	*Quality management (Integrated management system according to ISO 9001: 2015), Faculty of Transport and Traffic Engineering*	2014.	1-284
Todorović, Z.	*Quality Management, Faculty of Economics Banja Luka*	2009	1-234

Additional readings

Author/s	**Name of publication, editor**	**Year**	**Pages (from-to)**
Zivkovic, Z., Djordjevic, P..	*Quality Management, Technical Faculty Bor*	2013.	1-471

Evaluation	**Assesment methods**	**Points**	**Percentage**

criteria	Pre-exam obligations		
	Presence of lectures / exercises	10	10 %
	Seminar work	20	20 %
	Colloquium	2x35	70 %
	Final exam		
	Final exam (oral)		
	TOTAL	100	100 %
Applicable from	16.06.2021. – 175. session of the Teaching-Scientific Council of the Faculty of Transport and Traffic Engineering		

	UNIVERSITY OF EAST SARAJEVO Faculty of Transport and Traffic Engineering ***Study program: Traffic*** ***Profile: Telecommunications and postal traffic*** I cycle / IV year of study	

Course title	**THEORY OF AUTOMATIC CONTROL**
Department	Departments of Automation and Robotics - ETF East Sarajevo

Code	**Course status**	**Semester**	**ECTS credits**
САФ11СТ07110077,0321	Obligatory	VII	7,0

Professor/s	PhD Miroslav Kostadinović, associate professor
Associate/s	

Weekly hours			**Individual student hours (per semester)**			**Student workload coefficient S_o**
L	**TE**	**LE**	**L**	**TE**	**LE**	**S_o**
3	2	1	60	40	20	1,33

Total teacher workload (hours, per semester) W = 3*15 + 2*15 + 1*15 = 45 + 30 + 15 = 90	Total student workload (hours, per semester) T = 3*15*1,33 + 2*15*1,33 + 1*15*1,33 = 60 + 40 + 20 = 120
Total workload: W + T = Uopt = 90 + 120 = 210 hours per semester	

Course aims and learning outcomes	1. Introducing students to concepts and knowledge in the field of automatic control theory. 2. Students will learn and master the knowledge in the field of systems control, 3. System stability and performance, 4. Conventional industrial regulators.
Prerequisites	Does not have
Teaching methods	Lectures, theoretical exercises, seminary work
Course content	1. The concept and definition of automation. Control systems 2. The concept of open and closed control system. Control laws 3. Solving differential equations. General solution, aspect of control theory 4. Laplace transform. Laplace transform properties 5. Inverse Laplace transform 6. The transfer function of electrical networks. Graph of signal flow 7. I colloquium 8. Poles and Zeros of the transfer function. Determination of system response 9. Process classification and system errors I 10. Process classification and system errors II 11. Problem setting and stability condition 12. Algebraic stability criteria 13. Frequency stability criteria 14. Regulators 15. II Colloquium

Textbook (s)

Author/s	**Name of publication, publisher**	**Year**	**Pages (from-to)**
Stojić, M.	Continuous Automatic Control Systems, Scientific Book, Belgrade	1990.	
Kostadinović, M., Đurić, S.	Automatic Control Theory Faculty of Transport and Traffic Engineering Doboj		

Additional readings

Author/s	**Name of publication, editor**	**Year**	**Pages (from-to)**

	Assesment methods	**Points**	**Percentage**
Evaluation criteria	Pre-exam obligations		
	Attending lectures / exercises	10	10%

	Seminar papers	20	20%
	Colloquium 1	10	10%
	Colloquium 2	10	10%
	Final exam		
	Final exam (oral/written)	50	50%
	TOTAL	100	100%
Web sources			
Applicable from	16.06.2021 - 175 Session of the Councile, Faculty of Transport and Traffic engineering		

	UNIVERSITY OF EAST SARAJEVO Faculty of Transport and Traffic Engineering ***Study program: Traffic*** ***Profile: Telecommunications and postal traffic*** I cycle / IV year of study	

Course title	**MOBILE COMMUNICATIONS**
Department	Department of Telecommunications ETF East Sarajevo

Code	**Course status**	**Semester**	**ECTS credits**
САФ11СТ07110177,0321	obligatory	VII	7,00

Professor/s	PhD Mirko Stojčić, assistant professor
Associate/s	

Weekly hours			**Individual student hours (per semester)**			**Student workload coefficient S_o**
L	**TE**	**LE**	**L**	**TE**	**LE**	**S_o**
3	2	1	60	40	20	1,33

Total teacher workload (hours, per semester) W = 3*15 + 2*15 + 1*15 = 45 + 30 + 15 = 90 hours	Total student workload (hours, per semester) T = 3*15*1,33 + 2*15*1,33 + 1*15*1,33 = 60 + 40 + 20 = 120 hours
Total workload: W + T = U_{opt} = 90+120 = 210 hours per semester	

Course aims and learning outcomes	By mastering this course the student will be able to: 1. understand and explain the basic principles of functioning of mobile communication systems, 2. analyzes and compares the performance of different technologies in mobile communication systems and selects appropriate technology for specific applications in traffic, 3. plans and designs the necessary capacities of the mobile network, 4. independently proposes solutions for the application of mobile communication systems in various types of traffic.
Prerequisites	There are no special conditions
Teaching methods	Lectures, auditory exercises, laboratory exercises, consultations
Course content	1. Evolution of mobile communication systems. Basic components of a mobile communication system. Cellular organization of mobile communication systems (mega, macro, micro, pico and femto cells). 2. Cellular system capacity and ways to increase capacity. 3. Public mobile communication systems and their applications in traffic. Basic functional characteristics of GSM, UMTS and LTE cellular systems. Mobile WiMAX systems. 4. Functional systems of mobile communications in traffic (TETRA system). Mobile ad-hoc networks (MANET) and their applications in the vehicle environment (VANET). 5. Satellite (global) mobile communication systems with traffic applications. 6. Propagation models and phenomena in the mobile radio channel. 7. (I colloquium) 8. Elements of traffic engineering in mobile communication systems. 9. Mathematical modeling of mobile communication systems. Characterization of traffic flows. Traffic measurements. Traffic intensity. Traffic profiles. Determining the period of peak traffic load. Loss of traffic. Erlang's model. Engset's model. 10. Dimensioning of the required capacities for packet switched traffic and traffic based on circuit switching. Network resource optimization. 11. Service quality management in mobile communication systems. 12. Tariffing of mobile communication services. 13. Mobile service traffic forecasting. 14. Trends in the development of next generation mobile communications systems (5G). M2M communications. Heterogeneous wireless networks. 15. II colloquium
Textbook (s)	

Author/s	Name of publication, publisher	Year	Pages (from-to)
Gospić, N., Tomić, I., Popović, D., Bogojević, D.,	Razvoj mobilnih komunikacija: od GSM do LTE, Univerzitet u Beogradu – Saobraćajni fakultet, Beograd	2010	
M Stasiak, M. Głąbowski, A. Wiśniewski, P.Zwierzykowski	Modelling and Dimensioning of Mobile Wireless Networks: From GSM to LTE, John Wiley & Sons	2010	
Additional readings			
Author/s	**Name of publication, editor**	**Year**	**Pages (from-to)**

	Assesment methods	Points	Percentage
Evaluation criteria	Pre-exam obligations		
	attendance at lectures / exercises	5	5%
	positively graded seminar paper	15	15%
	Colloquium 1	15	15%
	Colloquium 2	15	15%
	lab. exercises	10	10%
	Final exam		
	oral	40	40%
	IN TOTAL	100	100 %
Web sources			
Applicable from	16.06.2021. - 175th session of the Teaching-Scientific Council of the Faculty of Transport and Traffic Engineering		

	UNIVERSITY OF EAST SARAJEVO Faculty of Transport and Traffic Engineering ***Study program: Traffic*** ***Profile: Telecommunications and Postal Traffic*** I cycle / IV year of study	

Course title	**ARTIFICIAL INTELLIGENCE**
Department	Department of computers, information technologies and biotechnology, ETF, University of East Sarajevo

Code	**Course status**	**Semester**	**ECTS credits**
САФ11СТ07135576,0311	mandatory	VII	7,00

Professor/s	Ph.D. Gordana Jotanovic, Assistant Professor
Associate/s	

Weekly hours			**Individual student hours (per semester)**			**Student workload coefficient S_o**
L	**TE**	**LE**	**L**	**TE**	**LE**	**S_o**
3	1	1	45	15	15	1.2

Total teacher workload (hours, per semester) W = 3*15 + 1*15 + 1*15 = 75	Total student workload (hours, per semester) T = 3*15*S_o + 1*15*S_o + 1*15*S_o = 75 S_o=90
Total workload: W+T=U_{opt} = 75 + 75 = 150 hours per semester	

Course aims and learning outcomes	1. Students should gain basic knowledge of intelligent systems. 2. Knowladge AIS of and their application in traffic engineering. 3. Declarative programing knowladge. 4. Theoretical basis of fuzzy logic and applications.
Prerequisites	No
Teaching methods	Oral presentation, illustrative-demonstrative method, analysis and synthesis, practical computer work
Course content	1. Historical overview, basic concepts and application of artificial intelligence in traffic engineering. 2. The concept of the artificial intelligence system (with a view to the application in traffic engineering). 3. Knowledge representation methods: declarative, procedural and semantic. 4. The problem of the knowladge transformation. State-space. 5. Search methods: breadth first search, depth first search and combined search. 6. Formalization of reasoning and inference systems. 7. Predicate calculus. 8. **Colloquium 1** 9. Resolution. Unification and unification algorithms. 10. Resolution method. 11. Fuzzy logic and fuzzy logic controllers. 12. Mamdani and Sugeno fuzzy inference systems. 13. Introduction to Artificial neural networks. 14. Introduction to Probabilistic computing. 15. **Colloquium 2**

Textbook (s)

Author/s	**Name of publication, publisher**	**Year**	**Pages (from-to)**
Petar Hotomski	Artificial Intelligence Systems, University of Novi Sad, Technical Faculty "Mihajlo Pupin" Zrenjanin	2006	
Ivana Berkovic	Elements of Artificial Intelligence, University of Novi Sad, Technical Faculty "Mihajlo Pupin", Zrenjanin	2006	
Stuart J. Russell and Peter Norvig	Artificial Intelligence, A Modern Approach, Prentice Hall	2010	

Additional readings

Author/s	**Name of publication, editor**	**Year**	**Pages (from-to)**

	Assesment methods	Points	Percentage
Evaluation criteria	Pre-exam		
	attendance at lectures	10	10%
	practical (laboratory) exercises	10	10%
	Colloquium 1	15	15%
	Colloquium 2	15	15%
	Final exam		
	oral exam	50	50%
	TOTAL	100	100%
Web sources			
Applicable from	06/16/2021 - Teaching-Scientific Council, Faculty of Transport and Traffic Engineering in Doboj		

	UNIVERSITY OF EAST SARAJEVO Faculty of Transport and Traffic Engineering ***Study program: Traffic*** ***Profile: Telecommunications and postal traffic*** I cycle / IV year of study	

Course title	**ORGANIZATION OF TRAFFIC COMPANIES**
Department	Department of Transport Engineering - Faculty of Transport and Traffic Engineering Doboj

Code	**Course status**	**Semester**	**ECTS credits**
САФ11СТ07104585,0220	obligatory	VII	5.00

Professor/s	PhD Perica Gojković, full professor
Associate/s	

Weekly hours			**Individual student hours (per semester)**			**Student workload coefficient S_o**
L	**TE**	**LE**	**L**	**TE**	**LE**	**S_o**
2	2	0	45	45	0	1.5

Total teacher workload (hours, per semester) W = 2*15 + 2*15 + 0*15 = 30 + 30 + 0 = 60 hours	Total student workload (hours, per semester) T = 2*15*1,5 + 2*15*1,5 + 0*15*1,5 = 45 + 45 + 0 = 90 hours

Total workload: W + T = U_{opt} = 60 + 90 = 150 hours per semester

Course aims and learning outcomes	By mastering this course the student will be able to: 1. learn the basic concepts of organization, as well as types and organizational models of enterprises; 2. will be able to analyze the organization of large business systems, business and development policy and development factors; 3. independently organize and lead a meeting according to defined rules; 4. acquired knowledge in practice to apply and establish their own company as well as to give instructions to others on how to do it;
Prerequisites	There are no special conditions
Teaching methods	Lectures, auditory exercises, consultations
Course content	1. The concept and development of the organization 2. Types of organizational structure 3. Organizational models of the company 4. Organizing large business systems 5. Organizational models of transport companies 6. Business and development policy 7. Characteristic business factors (I colloquium) 8. Basic methods and techniques for optimization 9. Organizational culture 10. Organization of business functions 11. Business information systems 12. Organization control. Organizing a meeting 13. Organization and management of investments 14. Organization design. Organizational transformation of the company 15. II colloquium

Textbook (s)

Author/s	**Name of publication, publisher**	**Year**	**Pages (from-to)**
Vešović, B. V., Bojović, J. N., Knežević, Lj. N.	Organizacija saobraćajnih preduzeća, Saobraćajni fakultet, Beograd,	2007.	

Additional readings

Author/s	**Name of publication, editor**	**Year**	**Pages (from-to)**

Evaluation criteria	**Assesment methods**	**Points**	**Percentage**
	Pre-exam obligations		

	attendance at lectures / exercises	10	10%
	colloquium 1	40	40%
	colloquium 2	20	20%
	Final exam		
	oral	30	30%
	IN TOTAL	100	100 %
Web sources			
Applicable from	16.06.2021. - 175th session of the Teaching-Scientific Council of the Faculty of Transport and Traffic Engineering		

	UNIVERSITY OF EAST SARAJEVO Faculty of Transport and Traffic Engineering ***Study program: Traffic*** ***Profile: Telecommunications and postal traffic*** I cycle / IV year of study	

Course title	**INTERNET TECHNOLOGIES**
Department	Department of computers, information technologies and biotechnology, ETF, University of East Sarajevo

Code	**Course status**	**Semester**	**ECTS credits**
САФ11СТ07109985,0311	mandatory	VIII	5,00

Professor/s	Ph.D. Gordana Jotanovic, Assistant Professor
Associate/s	

Weekly hours			**Individual student hours (per semester)**			**Student workload coefficient S_o**
L	**TE**	**LE**	**L**	**TE**	**LE**	**S_o**
3	1	1	30	15	15	1,5

Total teacher workload (hours, per semester) W = 2*15 + 1*15 + 1*15 = 60 hours	Total student workload (hours, per semester) T = 2*15*S_o + 1*15*S_o + 1*15*S_o = 90 hours
Total workload: W + T = U_{opt} = 60 + 90 = 150 hours per semester	

Course aims and learning outcomes	1. Students need to learn about ways to communicate using Internet technologies. 2. Students need to learn about Internet protocols and services. 3. Students should gain knowledge about Internet security and data security. 4. Students should learn about the use of the Internet and mobile devices in the traffic engineering domain.
Prerequisites	Basic knowledge in the field of Computer networks.
Teaching methods	Oral presentation. Laboratory exercises: Use of HTML and CSS language.
Course content	1. Introduction of Internet Technology. 2. Types of communication using the Internet. 3. Application layer protocols. 4. TCP / IP protocols (IP, ARP, ICMP, UDP, TCP). 5. IPv4 and IPv6 (advantages and disadvantages). 6. Internet services (INTRANET). 7. Application of Internet and mobile devices in the domain of traffic engineering. WAP standard. GPRS and SMS. 8. **Colloquium 1** 9. WEB application development technologies. 10. Marker languages (HTML, XHTML, XML). 11. Script languages. 12. Internet security and data security. 13. Access control. User authentication. 14. Cryptography. Digital signature. 15. **Colloquium 2**

Textbook (s)

Author/s	**Name of publication, publisher**	**Year**	**Pages (from-to)**
Andrew S. Tanenbaum	Computer network, Mikro knjiga, Beograd, Serbia.	2005	
Richard Fox and Wei Hao	Internet infrastructure: Networking, web services, and cloud computing. CRC Press. Boca Raton, FL, USA.	2018	
Comer, E. D.	Internetworking with TCP/IP, Prentice Hall	2013	

Additional readings

Author/s	**Name of publication, editor**	**Year**	**Pages (from-to)**
Terry Felke-Morris	Web development and design foundations with HTML5, 8th edition. Pearson. Hoboken, USA.	2016	
Josh Hill i James A. Brannan	HTML5 I CSS3: brilliant, CET	2011	

	Assesment methods	Points	Percentage
Evaluation criteria	Pre-exam		
	lectures / exercises attendance	5	5%
	project task	15	15%
	Colloquium 1	15	15%
	Colloquium 2	15	15%
	lab. exercises	10	10%
	oral exam	40	40%
	TOTAL	100	100%
Web sources			
Applicable from	06/16/2021 - Teaching-Scientific Council, Faculty of Transport and Traffic Engineering in Doboj		

	UNIVERSITY OF EAST SARAJEVO Faculty of Transport and Traffic Engineering ***Study program: Traffic*** ***Profile: Telecommunications and postal traffic*** I cycle / I year of study	

Course title	**REAL-TIME COMPUTER SYSTEMS**
Department	Department of Automation and Robotics - ETF East Sarajevo

Code	**Course status**	**Semester**	**ECTS credits**
САФ11СТ07135686,0311		VIII	6.00

Professor/s	Ph.D. Miroslav Kostadinovic
Associate/s	

Weekly hours			**Individual student hours (per semester)**			**Student workload coefficient S_o**
L	**TE**	**LE**	**L**	**TE**	**LE**	**S_o**
3	1	1	2	1	1	1,5

Total teacher workload (hours, per semester) 3*15 + 1*15 + 1*15 = W 30+ 15+ 15= 60 h	Total student workload (hours, per semester) 3*15*1,5+ 1*15*1,5 + 1*15*1,5 = T 45+22,5+ 22,5 = 90 h
Total workload: 60 + 90 =150 h	

Course aims and learning outcomes	1. Introducing students to the concepts and knowledge in the field of digital management systems. 2. Students will get acquainted and master the knowledge in the field of construction, structure, application of digital control systems, with the characteristics of the microcontroller platform 3. Microprocessor control systems and Matlaba.
Prerequisites	Does not have
Teaching methods	Lectures, auditory exercises, seminar paper
Course content	1. Problems of real-time systems. History. 2. Real-time system classifications. Applications. 3. Real-time system specification and design. Final state machine. 4. Embedded computer systems. Comparisons of different real-time systems on the example of embedded mobile robotic platforms and the automotive industry. 5. Real time system hardware. Digital inputs / outputs. Analog inputs / outputs. Pulse inputs / outputs. Real time clock. 6. Real-time operating system (RTOS). 7. Process scheduler. Call systems. Interrupt-driven systems. Multitasking systems. 8. (I colloquium) 9. Mutual exclusion of processes. Communication between tasks. Real-task programming languages. Hardware and software integration. 10. System management concept. System configuration. 11. Introduction to SCADA systems, divisions and architecture of SCADA systems as a system for monitoring and acquisition of data in real-time systems. 12. Hardware and software components of SCADA system. Examples of application. 13. Problems of communication within the real-time management system. 14. Remote control systems. 15. II colloquium

Textbook (s)

Author/s	**Name of publication, publisher**	**Year**	**Pages (from-to)**
Stojic M.	Continuous automatic control systems, Scientific book, Belgrade	1990	
2. Ковачевић Б	Signals and Systems, Академска мисао, Београд,	2007.	

Additional readings

Author/s	**Name of publication, editor**	**Year**	**Pages (from-to)**

Evaluation criteria	**Assesment methods**	**Points**	**Percentage**

	attendance at lectures and exercises	10	10%
	seminar papers	20	20%
	I colloquium	10	10%
	II colloquium	10	10%
	Final exam		
	final exam (oral / written)	50	50%
	IN TOTAL	100	100%
Web sources			
Applicable from	16.06.2021 - 175 Session of the Councile, Faculty of Transport and Traffic engineering		

	UNIVERSITY OF EAST SARAJEVO Faculty of Transport and Traffic Engineering	
	Study program: Traffic ***Profile: Telecommunications and postal traffic***	
	I cycle / IV year of study	

Course title	**MULTIMEDIA COMMUNICATIONS**
Department	Department of Information - Communication Systems in Traffic, Faculty of Transport and Traffic Engineering in Doboj

Code	**Course status**	**Semester**	**ECTS credits**
САФ11СТ07210585,0211	elective	VIII	5.0

Professor/s	Associate Professor Aleksandar Stjepanovic
Associate/s	

Weekly hours			**Individual student hours (per semester)**			**Student workload coefficient S_o**
L	**TE**	**LE**	**L**	**TE**	**LE**	**S_o**
2	1	1	45	22,5	22,5	1,5

Total teacher workload (hours, per semester) W = 2*15 + 1*15 + 1*15 = 30 + 15 + 15 = 60	Total student workload (hours, per semester) T = 2*15*1,5 + 1*15*1,5 + 1*15*1,5 = 45 + 22,5 + 22,5 = 90
Total workload: W + T = Uopt = 60 + 90 = 150 hours per semester	

Course aims and learning outcomes	1. For collaborative interactions with technologies of modern multimedia communications 2. Efficient presentation, processing and creation of multimedia applications 3. Research of multimedia data in transport 4. Quality of service in multimedia communications 5. Development of multimedia applications for transport purposes
Prerequisites	There is no prior conditionality
Teaching methods	Lectures, auditory exercises, laboratory exercises
Course content	1. The concept of multimedia and multimedia communication in transport 2. Multimedia elements - digital text, sound, audio, video 3. Creating multimedia applications for transportation 4. Multimedia data mining 5. Multimedia communications: models, user and network requirements 6. Multimedia web applications - integration with GIS 7. Processing of multimedia signals: audio and video coding techniques 8. Distributed multimedia systems and their application in systems for monitoring and controlling the transport of goods and passengers 9. Multimedia on the Internet 10. Multimedia communication standards 11. Networks with universal multimedia access 12. Networking of multimedia communication systems 13. Quality of service in multimedia communications 14. Automatic image recognition and transport applications 15. Audio and video compression methods

Textbook (s)

Author/s	**Name of publication, publisher**	**Year**	**Pages (from-to)**
Bojkovic Z,Milovanovic D, K.Rao	Multimedia Communication Systems: Techniques, Standards and Networks, Prentice Hall	**2002**	
Jevtovic M	Multimedia telecommunications, Grafo-Žig, Belgrade	**2004**	
Banjanin M	Communication with clients, DisPublik, Belgrade	**2008**	

Additional readings

Author/s	**Name of publication, editor**	**Year**	**Pages (from-to)**

	Assesment methods	Points	Percentage
Evaluation criteria	Pre-exam obligations		
	TE Attendance at lectures / exercises	5	5%
	Positively graded seminar paper	15	15%
	Colloquium 1	15	15%
	Colloquium 2	15	15%
	LE	10	10%
	Final exam	40	40%
	SUM	100	100%
Web sources			
Applicable from	16.06.2021. - 175th session of the Teaching-Scientific Council of the Faculty of Transport and Traffic Engineering		

	UNIVERSITY OF EAST SARAJEVO Faculty of Transport and Traffic Engineering ***Study program: Traffic*** ***Profile: Telecommunications and postal traffic*** I cycle / IV year of study	

Course title	**DISTRIBUTED MULTIMEDIA SYSTEMS**
Department	Department of Information - Communication Systems in Traffic, Faculty of Transport and Traffic Engineering in Doboj

Code	**Course status**	**Semester**	**ECTS credits**
САФ11СТ07235785,0211	elective	VIII	5.0

Professor/s	Associate Professor Aleksandar Stjepanovic
Associate/s	

Weekly hours			**Individual student hours (per semester)**			**Student workload coefficient S_o**
L	**TE**	**LE**	**L**	**TE**	**LE**	**S_o**
X	Y	Z	X*15*S_o	Y*15*S_o	Z*15*S_o	

Total teacher workload (hours, per semester) X*15 + Y*15 + Z*15 = W hours	Total student workload (hours, per semester) X*15*S_o + Y*15*S_o + Z*15*S_o = T hours

Total workload: W+T=U_{opt}= + = hours per semester

Course aims and learning outcomes	1. Acquiring basic knowledge of distributed systems 2. Analysis of distributed multimedia systems 3. Introduction to distributed applications. 4. Introduction to content delivery networks 5. Introduction to content search systems
Prerequisites	There is no prior conditionality
Teaching methods	Lectures, auditory exercises, laboratory exercises
Course content	1. Introduction to multimedia systems 2. Definition of distributed multimedia systems 3. Distributed multimedia applications with application in traffic 4. Visual content search systems 5. Multimedia content search model 6. Interactivity 7. Network hypermedia systems 8. Multimedia development tools 9. Multimedia presentation tools 10. Modeling of multimedia traffic 11. Media for the transmission of information in multimedia systems 12. Multimedia systems and networking 13. Search knowledge bases 14. Semantic analysis of multimedia signals 15. Multimedia applications on the Android platform

Textbook (s)

Author/s	**Name of publication, publisher**	**Year**	**Pages (from-to)**
Others	Internet, https://docplayer.net/61332612-Distribuirani-multimedijalni-sistemi.html D. Cvetković, D. Marković, N. Savanović, Multimedija, Singidunum, Beograd, 2015.		

Additional readings

Author/s	**Name of publication, editor**	**Year**	**Pages (from-to)**

	Assesment methods	**Points**	**Percentage**
Evaluation criteria			

Web sources			
Applicable from	16.06.2021. - 175th session of the Teaching-Scientific Council of the Faculty of Transport and Traffic Engineering		

	UNIVERSITY OF EAST SARAJEVO Faculty of Transport and Traffic Engineering ***Study program: Traffic*** ***Profile: Telecommunications and postal traffic*** I cycle / IV year of study	

Course title	**DESIGN OF INFORMATION SYSTEMS**
Department	Department for Computer and Information Sciences and Bioinformatics, Faculty of Electrical Engineering East Sarajevo

Code	**Course status**	**Semester**	**ECTS credits**
САФ11СТ07208685,0211	elective	VIII	5.00

Professor/s	Željko Stjepanović, PhD, associate professor
Associate/s	

Weekly hours			**Individual student hours (per semester)**			**Student workload coefficient S_o**
L	**TE**	**LE**	**L**	**TE**	**LE**	**S_o**
2	1	1	45	22.5	22.5	1.5

Total teacher workload (hours, per semester) W = 2*15 + 1*15 + 1*15 = 30 + 15 + 15 = 60	Total student workload (hours, per semester) T = 2*15*1,5 + 1*15*1.5 + 1*15*1.5 = 45 + 22.5 + 22.5 = 90

Total workload: W + T = U_{opt} = 60 + 90 = 150 hours per semester

Course aims and learning outcomes	1. Students will have knowledge related to the development and structure of the information system in traffic 2. Students will be introduced to the methodology of information systems development 3. Students will be able to define project requirements related to business in a transport company 4. During the teaching activities, students will be introduced to certain examples related to the design of information systems 5. Students will get acquainted with the methodology of development of project tasks related to the business of the transport company
Prerequisites	There are no formal conditions
Teaching methods	Lectures, classroom exercises and consultations. Learning and independent preparation of seminar papers related to the design of information systems in traffic
Course content	1. Basics of information system. Data and information. Information and decision making in traffic. 2. Traffic information systems. Evaluation of information system in transport companies. 3. Character and development of computer technology. Introduction of computers in the information system of the transport company. 4. Domains of information technology application. Transactional data processing. Traffic management information systems. 5. Traffic decision support system. Expert systems 6. Project management. Characteristics of the project of information system development in traffic. 7. Participants in the information system development project. Reasons for starting an information system development project in transport companies. 8. II colloquium 9. Resistance to information system automation life cycle methodology. Data model methodology in transport companies. 10. Methodology of prototype development. Object-oriented methodology. Structural methodology. 11. Features and problem of structural methodology in traffic. 12. Information system research. Preparation of a feasibility study in transport companies. 13. Planning the development of information systems in transport companies. System analysis. External design. Internal design. Module programming 14. Methods and techniques for designing information systems in transport companies. 15. II colloquium

Textbook (s)			
Author/s	**Name of publication, publisher**	**Year**	**Pages (from-to)**
Rade Stankić	Design of Information Systems, Faculty of Economics in Belgrade	2013	
Additional readings			
Author/s	**Name of publication, editor**	**Year**	**Pages (from-to)**
Dr Željko Stjepanović	Skripta, Projektovanje informacionih sistema, Saobraćajni fakultet Doboj	2014	

	Assessment methods	**Points**	**Percentage**
Evaluation criteria	Pre-exam obligations		
	attendance at lectures / exercises	5	5%
	positively graded seminar paper	15	15%
	Colloquium 1	15	15%
	Colloquium 2	15	15%
	lab. exercises	10	10%
	Final exam		
	oral	40	40%
	IN TOTAL	100	100 %
Web sources			
Applicable from	16.06.2021. - 175th session of the Teaching-Scientific Council of the Faculty of Transport and Traffic Engineering		

	UNIVERSITY OF EAST SARAJEVO Faculty of Transport and Traffic Engineering		
	Study program: Traffic ***Profile: Telecommunications and postal traffic***		
	I cycle	IV year of study	

Course title	**MANAGEMENT IN TRAFFIC**
Department	Department of Marketing and Management, Faculty of Economics in Brcko

Code	**Course status**	**Semester**	**ECTS credits**
САФ11СТ07203885,0211	electoral	VIII	5.00

Professor/s	Associate Professor Živko Erceg
Associate/s	

Weekly hours			**Individual student hours (per semester)**			**Student workload coefficient S_o**
L	**TE**	**LE**	**L**	**TE**	**LE**	**S_o**
2	1	1	45	22.5	22.5	1.5

Total teacher workload (hours, per semester) W = 2*15 + 1*15 + 1*15 = 30 + 15 + 15 = 60	Total student workload (hours, per semester) T = 2*15*1.5 + 1*15*1.5 + 1*15*1.5 = 45 + 22.5 + 22.5 = 90

Total workload: W + T = U_{opt} = 60 + 90 = 150 hours per semester

Course aims and learning outcomes	By mastering this course the student will be able to: 1. Talks about strategic and operational management as areas of study, 2. Understands postal traffic management, 3. Identify, analyze and describe the organizational structure of the post office and its business functions, 4. Analyzes operational planning as a process by which goals and strategic plans are translated into directions of activity, and identifies conditions and guidelines for successful planning and development of the post office, 5. Identifies and describes the elements and role of the economic, political and social system that affects management, as well as the essential characteristics of governance and competitiveness in the international environment.
Prerequisites	No prerequisites
Teaching methods	Lectures, auditory exercises, laboratory exercises, consultations
Course content	1. The concept and development of organization and management 2. Management systems 3. Strategic management 4. Business and development policy 5. Strategy of postal traffic companies 6. Types of organizational structure 7. Organizational models of postal companies (I colloquium) 8. Designing the organization of the company 9. Information manager needs

	10. Defining and providing relevant information by hierarchical levels of management 11. Business information system 12. Management of the postal traffic company 13. Organization and management of investments in postal traffic 14. Organization of postal companies 15. Perspective of the development of postal traffic (II colloquium)

Textbook (s)			
Author/s	**Name of publication, publisher**	**Year**	**Pages (from-to)**
Vešović, V.	Traffic Management, Faculty of Transport and Traffic Engineering, Belgrade	1996.	1-284
Lončarević, R.	Management, Singidunum University, Belgrade	2007.	1-417
Jovičić, M.	Management - principles and functions, Faculty of Business Economics Bijeljina	2012.	1-344
Mišić, B.	Management – principles, concepts and processes, Singidunum University, Belgrade	2010.	1-569

	Assesment methods	**Points**	**Percentage**
Evaluation criteria	Pre-exam obligations		
	Presence of lectures / exercises	5	5%
	Seminar work	15	15%
	Colloquium 1	15	15%
	Colloquium 2	15	15%
	laboratory exercises	10	10%
	Final exam		
	Final exam (oral)	40	40%
	TOTAL	100	100 %
Applicable from	16.06.2021. – 175. session of the Teaching-Scientific Council of the Faculty of Transport and Traffic Engineering		

INFORMATICS IN TRAFFIC

UNIVERSITY OF EAST SARAJEVO
Faculty of Transport and Traffic Engineering

Study program: Traffic
Profile: Informatics in traffic

Ordinal	Code	Course title	Course status	Prerequisites	Semester	Fund of classes			ECTS
						L	TE	LE	
III year of study									
28.	САФ11СИ07135856,0311	Computer organization and architecture	O		V	3	1	1	6.00
29.	САФ11СИ07135956,0311	Programming languages	O		V	3	1	1	6.00
30.	САФ11СИ07115356,0311	Computer networks and internet protocols	O		V	3	1	1	6.00
31.	САФ11СИ07108757,0321	Digital Techniques	O		V	3	2	1	7.00
32.	САФ11СИ07114955,0311	Information systems	O		V	3	1	1	5.00
33.	САФ11СИ07114867,0330	Object-oriented programming	O		VI	3	3	0	7.00
34.	САФ11СИ07121966,0311	Telematic systems	O		VI	3	1	1	6.00
35.	САФ11СИ07102565,0320	Basics of marketing	O		VI	3	2	0	5.00
36.	САФ11СИ07236065,0211	1. Machine learning	E_2		VI	2	1	1	5.00
	САФ11СИ07236165,0211	2. Fuzzy systems			VI				
37.	САФ11СИ07236265,0211	1. Security and protection of information and communication systems	E_3		VI	2	1	1	5.00
	САФ11СИ07208365,0211	2. Internet marketing			VI				
38.	САФ11СИ07132962,0000	Professional practice	O		VI	0	0	0	2.00
TOTAL:						**28**	**14**	**8**	**60**
IV year of study									
39.	САФ11СИ07135577,0321	Artificial intelligence	O		VII	3	2	1	7.00
40.	САФ11СИ07114777,0321	Database	O		VII	3	2	1	7.00
41.	САФ11СИ07108675,0211	Design of information systems	O		VII	2	1	1	5.00
42.	САФ11СИ07115475,0220	E-business	O		VII	2	2	0	5.00
43.	САФ11СИ07115776,0311	Software engineering	O		VII	3	1	1	6.00
44.	САФ11СИ07109985,0311	Internet technologies	O		VIII	3	1	1	5.00
45.	САФ11СИ07135686,0311	Real-time computer systems	O		VIII	3	1	1	6.00
46.	САФ11СИ07104585,0220	Organization of traffic companies	O		VIII	2	2	0	5.00
47.	САФ11СИ07209685,0211	1. Expert systems	E_4		VIII	2	1	1	5.00
	САФ11СИ07236485,0211	2. Knwoledge based systems							
48.	САФ11СИ07236385,0211	1. Customer relations management	E_5		VIII	2	1	1	5.00
	САФ11СИ07215985,0211	2. Enterprise resource management							
49.	САФ11СИ07105284,0030	Graduate thesis	O		VIII	0	3	0	4.00
TOTAL:						**25**	**17**	**8**	**60**

- L - lectures
- TE - theoretical exercises
- LE - laboratory exercises

	UNIVERSITY OF EAST SARAJEVO Faculty of Transport and Traffic Engineering ***Study program: Traffic*** ***Profile: Informatics in traffic*** I cycle | III year of study	

Course title	**COMPUTER ORGANIZATION AND ARCHITECTURE**
Department	Department of Computer and Information Science and Bioinformatics ETF East Sarajevo

Code	**Course status**	**Semester**	**ECTS credits**
САФ11СИ07135856,0311	Manadatory	VI	6,00

Professor/s	Prof. dr Željko Stojanov, associate professor
Associate/s	

Weekly hours			**Individual student hours (per semester)**			**Student workload coefficient S_o**
L	**TE**	**LE**	**L**	**TE**	**LE**	**S_o**
3	1	1	45	15	15	1,2

Total teacher workload (hours, per semester) W = 3*15 + 1*15 + 1*15 = 75	Total student workload (hours, per semester) T = 3*15*So + 1*15*So + 1*15*So = 75 So=90

Total workload: $W+T=U_{opt}$= 75 + 75 = 150 hours per semester

Course aims and learning outcomes	1. Students should acquire knowledge of the layered architecture of modern computer systems. 2. Students should acquire knowledge of computer data representation. 3. Students should acquire knowledge about how to run a program on a computer. 4. Students should acquire knowledge about the use of a set of assembly instructions for a selected microprocessor system.
Prerequisites	No
Teaching methods	Lectures. Laboratory exercises.
Course content	1. Introduction to computer systems. 2. Numbers and number systems. Representing numbers in a computer. Coding. 3. Organization of computer systems. Microprocessor. 4. Operating memory. 5. Secondary memory. 6. Computer buses. **7. I colloquium.** 8. Logical basics of computer operation. 9. Level of digital logic. 10. Combination networks. Sequential networks. 11. Structural organization of computers. 12. Instruction Set Architecture level for Intel Pentium 4 microprocessors. 13. Assembly language level. 14. Linking, loading, and executing programs. **15. II colloquium**

Textbook (s)

Author/s	**Name of publication, publisher**	**Year**	**Pages (from-to)**
Andrew S. Tanenbaum	Computer architecture and organization. Mikro knjiga. Belgrad. Serbia.	2007.	
William Stallings	Computer organization and architecture: A project in the function of performance. Translation of the 9th edition. CET. Belgrade. Serbia	2013	
Željko Stojanov	Introduction to assembly language programming for Intel x86 microprocessors. Practicum for exercises in the computer laboratory. University of Novi Sad, Technical Faculty "Mihajlo Pupin"	2016.	

	Zrenjanin. Serbia.		
Additional readings			
Author/s	**Name of publication, editor**	**Year**	**Pages (from-to)**
Kip R. Irvine	Assembly language for x86 processors (8th edition). Pearson Education, Inc., Upper Saddle River, New Jersey, USA.	2019.	

Evaluation criteria	**Assesment methods**	**Points**	**Percentage**
	Pre-exam obligations		
	Colloquium 1	30	30%
	Colloquium 2	30	30%
	Final exam		
	Written exam	40	40%
	TOTAL	100	100%
Web sources			
Applicable from	16.06.2021. - 175th session of the Teaching-Scientific Council of the Faculty of Transport and Traffic Engineering		

	UNIVERSITY OF EAST SARAJEVO Faculty of Transport and Traffic Engineering ***Study program: Traffic*** ***Profile: Informatics in traffic*** I cycle / III year of study	

Course title	**PROGRAMMING LANGUAGES**
Department	Department of Information - Communication Systems in Traffic, Faculty of Transport and Traffic Engineering in Doboj

Code	**Course status**	**Semester**	**ECTS credits**
САФ11СИ07135956,0311	O	V	5,00

Professor/s	PhD Vladimir Brtka
Associate/s	

Weekly hours			**Individual student hours (per semester)**			**Student workload coefficient S_o**
L	**TE**	**LE**	**L**	**TE**	**LE**	**S_o**
3	1	1	45	15	15	1,2

Total teacher workload (hours, per semester) W = 3*15 + 1*15 + 1*15 = 30 + 15 + 15 = 75 hours	Total student workload (hours, per semester) T =3*15*S_0 + 1*15* S_0+ 1*15* S_0= 45 + 15 + 15 =75 S_0= 90 hours
Total workload: W+T=U_{opt}= 60 + 90 = 150 hours per semester	

Course aims and learning outcomes	1. Students acquire theoretical and practical knowledge and skills for using programming languages. 2. Students will be able to identify which of the many programming languages to use depending on the problem to be solved and the area of application. 3. Students will be able to apply the acquired knowledge to clearly define the problem and how to solve it in the Python programming language. 4. Students will be able to apply the acquired knowledge to clearly define the problem and how to solve it in the Java programming language.
Prerequisites	None
Teaching methods	Lectures, laboratory exercises, computer classroom exercises and consultations. Learning and independent development of practical tasks.
Course content	1. Motivation, introduction and terminology. Program paradigms. 2. Types of programming languages - structurally oriented, object oriented, functional programming, logical programming. 3. Python programming language, installation features and development environments. 4. Problem identification, decomposition of problem solutions into steps. 5. Data types, variables, operators and relations. Management structures. 6. Data structures on Python-lists, edited n-tuples, sets, dictionaries. 7. Functions and modules in Python. 8. Colloquium. 9. Java programming language, basics of object-oriented programming. Classes and instances. 10. Data types in Java. Variables and range of visibility. Operators and relations. 11. Management structures in Java: sequence, selection and iteration. 12. Inheritance. 13. Arrays one-dimensional and multi-dimensional. 14. Use Java files. 15. Practical applications of programming languages.

Textbook (s)

Author/s	**Name of publication, publisher**	**Year**	**Pages (from-to)**
R. Cadenhead, L. Lemay	Java, SAMS, Kopjuter biblioteka, Beograd, ISBN: 978-86-7310368-6.	2009	
J. Chan	Learn Java, Copyright Jamie Chan	2016	
T. Hall, J-P Stacey	"Python 3 for Absolute Beginners", Copyright by Tim Hall and J-P Stacey, ISBN: 978-1-4302-1633-9.	2009	

Additional readings			
Author/s	**Name of publication, editor**	**Year**	**Pages (from-to)**

	Assesment methods	**Points**	**Percentage**
Evaluation criteria	Pre-exam obligations		
	attendance at lectures	10	10%
	attendance at exercises	10	10%
	Colloquium	20	20%
	lab. exercises	10	10%
	Final exam		
	oral	50	50%
	TOTAL	100	100%
Web sources			
Applicable from	16.06.2021. - 175th session of the Teaching-Scientific Council of the Faculty of Transport and Traffic Engineering		

	UNIVERSITY OF EAST SARAJEVO Faculty of Transport and Traffic Engineering ***Study program: Traffic*** ***Profile: Informatics in traffic*** I cycle / III year of study	

Course title	**COMPUTER NETWORKS AND INTERNET PROTOCOLS**
Department	Department of computers, information technologies and biotechnology, ETF, University of East Sarajevo

Code	**Course status**	**Semester**	**ECTS credits**
САФ11СИ07115356,0311	Mandatory	V	6,00
Professor/s	Assistent Proffesor Goran Jauševac		
Associate/s			

Weekly hours			**Individual student hours (per semester)**			**Student workload coefficient S_o**
L	**TE**	**LE**	**L**	**TE**	**LE**	**S_o**
3	1	1	67,5	22,5	22,5	1,5

Total teacher workload (hours, per semester) W = 3*15 + 1*15 + 1*15 = 45 + 15 + 15 = 75	Total student workload (hours, per semester) T = 3*15*1,5 + 1*15*1,5 + 1*15*1,5 = 67,5 + 22,5 + 22,5 = 112,5
Total workload: W + T = U_{opt} = 75 + 112,5 = 187,5 hours per semester	

Course aims and learning outcomes	By mastering this course, the student will be able to: 1. acquire basic knowledge of computer networks and protocols, 2. to analyze the performance of computer networks and telecommunication protocols.
Prerequisites	No
Teaching methods	Lectures and laboratory exercises
Course content	1. Classification of computer networks. 2. Topologies of computer networks. 3. Definition of protocols and the concept of layered structuring. 4. Local area networks (LANs). 5. Stochastic and deterministic methods of media access control (MAC). 6. Basics of Ethernet technology. 7. **I colloquium** 8. Network layer on the Internet. 9. IPv4 and IPv6. 10. Mobile IP. 11. Basic algorithms and protocols of unicast routing on the Internet. 12. Transport layer on the Internet. 13. Email system architecture and WWW basics. 14. SNMP management functions and architecture. 15. **II colloquium**

Textbook (s)

Author/s	**Name of publication, publisher**	**Year**	**Pages (from-to)**
A.Tanenbaum, D. Wetherall.	Rašunarske mreže, V izdanje, Mikroknjiga, Beograd	2012	
W. Stallings	Computer Networking With Internet Protocols, Prentice-Hall, Inc.	2009	
S. Bigelow	Računartske mreže, instaliranje, održavanje i popravljanje, Mikroknjiga, Beograd	2004	

Additional readings

Author/s	**Name of publication, editor**	**Year**	**Pages (from-to)**

Evaluation criteria	**Assesment methods**	**Points**	**Percentage**
	Pre-exam obligations		

	attendance at lectures	5	5%
	Seminary paper	15	15%
	I Colloquium	15	15%
	II Colloquium	15	15%
	laboratory exercises	10	10%
	Final exam		
	Writing exam	40	40%
	TOTAL	100	100%
Web sources			
Applicable from	16.06.2021. - 175th session of the Teaching-Scientific Council of the Faculty of Transport and Traffic Engineering		

	UNIVERSITY OF EAST SARAJEVO Faculty of Transport and Traffic Engineering ***Study program: Traffic*** ***Profile: Telecommunications and postal traffic*** I cycle / III year of study	

Course title	**DIGITAL TECHNIQUE**
Department	Departments for electronics and electronic systems - ETF East Sarajevo

Code	**Course status**	**Semester**	**ECTS credits**
САФ11СИ07108757,0321	Obligatory	V	7,00

Professor/s	PhD Miroslav Kostadinović, associate professor
Associate/s	

Weekly hours			**Individual student hours (per semester)**			**Student workload coefficient S_o**
L	**TE**	**LE**	**L**	**TE**	**LE**	**S_o**
3	2	1	60	40	20	1,33

Total teacher workload (hours, per semester) W = 3*15 + 2*15 + 1*15 = 45 + 30 + 15 = 90	Total student workload (hours, per semester) T = 3*15*1,33 + 2*15*1,33 + 1*15*1,33 = 60 + 40 + 20 = 120
Total workload: W + T = Uopt = 90 + 120 = 210 hours per semester	

Course aims and learning outcomes	By mastering this course students should acquire knowledge in: 1. Basics of logic circuits and logic operations. 2. Standard combination networks. 3. Arithmetic Circuits. 4. Programmable logic structures
Prerequisites	There is no prior conditionality
Teaching methods	Lectures, theoretical exercises, laboratory exercises
Course content	1. Introduction. Switching algebra 2. Basic logic circuits and logic operations 3. Switch Functions and Switch Networks 4. Standard combination networks: encoder, decoder, code converter 5. Standard combination networks: multiplexer, demultiplexer, commutator 6. Memory circuits. Flip flops (I colloquium) 7. Standard sequential networks: registers 8. Standard sequential networks: counters 9. Arithmetic circuits: comparators, complementers, adder, subtractors, multiplication and division circuits 10. Programmable logic structures. Semiconductor memory 11. ROM, PROM, and RePROM memories. RAM type memories 12. Static and dynamic RAM type memory 13. Surface magnetic memories 14. A/D and D/A conversion principles 15. II colloquium

Textbook (s)

Author/s	**Name of publication, publisher**	**Year**	**Pages (from-to)**
Tešić, S.	Integrated digital electronics, Scientific book, Belgrade	1990.	
Živković, D., Popović, M.	Pulse and Digital Electronics, Academic Thought, Belgrade	2004.	
Bundalo, D.	Digital techniques, Faculty of Transport and Traffic Engineering Doboj, course materials	2015.	
Kostadinović, M., Bundalo, D.	Practicum for Digital Techniques Auditory Exercises, Faculty of Transport and Traffic Engineering Doboj	2012.	

Additional readings

Author/s	Name of publication, editor	Year	Pages (from-to)

	Assesment methods	Points	Percentage
Evaluation criteria	Pre-exam obligations		
	Attending lectures / exercises	5	5%
	Positive evaluation of the seminar paper	15	15%
	Colloquium 1	15	15%
	Colloquium 2	15	15%
	Laboratory exercises	10	10%
	Final exam		
	Oral exam	40	40%
	TOTAL	100	100%
Web sources			
Applicable from	16.06.2021. - 175th session of the Teaching-Scientific Council of the Faculty of Transport and Traffic Engineering		

	UNIVERSITY OF EAST SARAJEVO Faculty of Transport and Traffic Engineering ***Study program: Traffic*** ***Profile: Informatics in traffic*** I cycle / III year of study	

Course title	**INFORMATION SYSTEMS**
Department	Department for Computer and Information Sciences and Bioinformatics, Faculty of Electrical Engineering East Sarajevo

Code	**Course status**	**Semester**	**ECTS credits**
САФ11СИ07114955,0311	compulsory	VI	6.00

Professor/s	Željko Stjepanović, PhD, associate professor
Associate/s	

Weekly hours			**Individual student hours (per semester)**			**Student workload coefficient S_o**
L	**TE**	**LE**	**L**	**TE**	**LE**	**S_o**
3	1	1	63	21	21	1.4

Total teacher workload (hours, per semester) W = 3*15 + 1*15 + 1*15 = 45 + 15 + 15 = 75	Total student workload (hours, per semester) T = 3*151.4 + 1*15*1.4 + 1*15*1.4 = 63 + 21 + 21 = 105
Total workload: $W+T=U_{opt}$= 75 + 105 = 180 hours per semester	

Course aims and learning outcomes	1. Students will acquire knowledge related to the structure of information systems 2. Students will acquire knowledge related to informational system life cycle 3. Students will acquire knowledge related to development of information systems 4. Students will acquire knowledge related to business intelligence development and expert systems
Prerequisites	No formal prerequisites
Teaching methods	Lectures, classroom exercises and tutorials. Studying and individual seminar papers related to information systems.
Course content	1. Information and business systems 2. Technical and technological structures of information system 3. Information systems in the Internet environment 4. Standardization and information systems 5. Organization and data management within information systems 6. Types and structure of databases 7. Development of information systems 8. Colloquium I 9. Design of information system 10. An integral approach to the organization of information systems 11. Protection and security of information systems 12. E-business in a function of information system development 13. Analytical information systems 14. Business intelligence, expert systems and data storage 15. Colloquium II

Textbook (s)

Author/s	**Name of publication, publisher**	**Year**	**Pages (from-to)**
Željko Stjepanović	Information Systems, Faculty of Transport and Traffic Engineering Doboj	2020	**1 - 238**

Additional readings

Author/s	**Name of publication, editor**	**Year**	**Pages (from-to)**

Evaluation criteria	**Assessment methods**	**Points**	**Percentage**
	Pre-exam obligations		
	attendance to lectures / exercises	5	5%
	seminar paper positively assessed	15	15%

	colloquium 1	15	15%
	colloquium 2	15	15%
	laboratory exercises	10	10%
	final exam	40	40%
	TOTAL	100	100%
Web sources			
Applicable from	16.06.2021. - 175th session of the Teaching-Scientific Council of the Faculty of Transport and Traffic Engineering		

	UNIVERSITY OF EAST SARAJEVO Faculty of Transport and Traffic Engineering ***Study program: Traffic*** ***Profile: Informatics in traffic*** I cycle / III year of study	

Course title	**OBJECT-ORIENTED PROGRAMMING**
Department	Department of Information - Communication Systems in Traffic, Faculty of Transport and Traffic Engineering in Doboj

Code	**Course status**	**Semester**	**ECTS credits**
САФ11СИ07114867,0330	obligatory	VI	7.00

Professor/s	PhD Ljubiša Preradović
Associate/s	

Weekly hours			**Individual student hours (per semester)**			**Student workload coefficient S_o**
L	**TE**	**LE**	**L**	**TE**	**LE**	**S_o**
3	3	0	60	60	0	1.33

Total teacher workload (hours, per semester) 3*15 + 3*15 + 0*15 = 90	Total student workload (hours, per semester) $3*15*1,33 + 3*15*S_{1,33} + 0*15*1,33 = 60 + 60 + 0 = 120$

Total workload: $W+T=U_{opt}$= 90 + 120 = 210 hours per semester

Course aims and learning outcomes	1. Upon completion of the course, the student should possess theoretical knowledge and practical skills in object-oriented analysis, 2. Theoretical knowledge and practical skills for modeling and design 3. Mastering theoretical and practical knowledge in the design and implementation of models in traffic 4. To enable the student to create a project task
Prerequisites	There is no prior conditionality
Teaching methods	Lectures, auditory exercises and laboratory exercises
Course content	1. Introduction to object-oriented languages 2. Basic concepts, methodologies, approaches, processes, notations 3. Unique modeling language - UML. 4. Architecture, concepts, diagrams, models, tools. 5. Object-oriented modeling in traffic. 6. Object-oriented analysis 7. Object-oriented design of systems applied in traffic. 8. I colloquium 9. System design. Patterns. 10. Interface specification. Component oriented design 11. Design of specialized software systems (real-time, client-server, distributed, web-based). 12. Model driven software development. 13. Design of system models in traffic. Implementation in traffic. 14. Projected task 15. II colloquium

Textbook (s)

Author/s	**Name of publication, publisher**	**Year**	**Pages (from-to)**
Bruegge B., Dutoit A. H.	Object-Oriented Software Engineering Using UML, Patterns and Java, Prentice Hall	**2004.**	

Additional readings

Author/s	**Name of publication, editor**	**Year**	**Pages (from-to)**

Evaluation criteria	**Assesment methods**	**Points**	**Percentage**
	Pre-exam obligations		
	attendance at lectures / exercises	5	5%
	positively evaluated seminar paper	15	15%
	I colloquium	15	15%

	II colloquium	15	15%
	Final exam		
	oral	50	50%
	Total	100	100%
Web sources			
Applicable from	16.06.2021. - 175th session of the Teaching-Scientific Council of the Faculty of Transport and Traffic Engineering		

	UNIVERSITY OF EAST SARAJEVO Faculty of Transport and Traffic Engineering ***Study program: Traffic*** ***Profile: : Informatics in traffic*** I cycle / III year of study	

Course title	**TELEMATIC SYSTEMS**
Department	Department of Information - Communication Systems in Traffic, Faculty of Transport and Traffic Engineering in Doboj

Code	**Course status**	**Semester**	**ECTS credits**
САФ11СИ07121966,0311	required	VI	6.0

Professor/s	Associate Professor Aleksandar Stjepanovic
Associate/s	

Weekly hours			**Individual student hours (per semester)**			**Student workload coefficient S_o**
L	**TE**	**LE**	**L**	**TE**	**LE**	**S_o**
3	1	1	45	15	15	1.5

Total teacher workload (hours, per semester) W = 3*15 + 1*15 + 1*15 = 75	Total student workload (hours, per semester) T = 3*15*So + 1*15*So + 1*15*So = 75 So=90
Total workload: W + T = Uopt = 60 + 90 = 150 hours per semester	

Course aims and learning outcomes	1. active knowledge of regulations and norms, European regulations related to ITS 2. proposal of solution of distributed information and communication systems for transport monitoring 3. ITS research and interaction with spatial information infrastructure 4. ITS architecture 5. defining user requirements for the purpose of refixing transport problems
Prerequisites	There is no prior conditionality
Teaching methods	Lectures, auditory exercises, laboratory exercises
Course content	1. Traffic management. Traffic management strategies 2. Adaptable telematics systems. Network capabilities 3. Basic definitions of telematics. Toll collection systems 4. European projects. Definition of ITS, Standards, norms of the directive, Legal bases, FRAME project 5. ITS architecture. Theoretical foundations, Possible applications of ITS 6. Traffic management - traffic distribution and application of telematics systems 7. Technical preconditions for the application of ITS 8. Detectors and sensors. Vehicle network architecture 9. Telecommunication networks in traffic 10. Spatial infrastructure of GIS and ITS. ITS and GPS. Location-based services 11. Variable signaling, standards. Radio data systems 12. Autonomous vehicles. Artificial intelligence systems in traffic 13. Congestion management and application of ITS in congestion management 14. Informing traffic participants, Human factor, QoE, QoS 15. Internet and ITS.

Textbook (s)

Author/s	**Name of publication, publisher**	**Year**	**Pages (from-to)**
Stjepanovic A, Kostadinovic M	Telematic systems, University of East Sarajevo, Faculty of Transport and Traffic Engineering	**2020**	

Additional readings

Author/s	**Name of publication, editor**	**Year**	**Pages (from-to)**

Evaluation criteria	**Assesment methods**	**Points**	**Percentage**

	Pre-exam obligations		
	TE Attendance at lectures / exercises	5	5%
	Positively graded seminar paper	15	15%
	Colloquium 1	15	15%
	Colloquium 2	15	15%
	LE	10	10%
	Final exam	40	40%
	SUM	100	100%
Web sources			
Applicable from	06/16/2021 - 175th session of the Teaching-Scientific Council of the Faculty of Transportation		

	UNIVERSITY OF EAST SARAJEVO Faculty of Transport and Traffic Engineering ***Study program: Traffic*** ***Profile: Informatics in traffic*** I cycle / III year of study	

Course title	**BASICS OF MARKETING**
Department	Department of Marketing and Management, Faculty of Economics in Brcko

Code	**Course status**	**Semester**	**ECTS credits**
САФ11СИ07102565,0320	obligatory	IV	5.0

Professor/s	PhD Svjetlana Terzić, Associate Professor
Associate/s	

Weekly hours			**Individual student hours (per semester)**			**Student workload coefficient S_o**
L	**TE**	**LE**	**L**	**TE**	**LE**	**S_o**
3	2	0	45	45	0	1.5

Total teacher workload (hours, per semester) W=2*15 + 2*15 + 0*15 = 60 hours	Total student workload (hours, per semester) T= 2*15*S_o + 2*15*S_o + 0*15*S_o = 90 hours
Total workload: W + T = U_{opt}= 60 + 90 = 150 hours per semester	

Course aims and learning outcomes	1. Introducing students to key concepts in the field of marketing. 2. Necessary knowledge and skills for defining marketing goals and strategies. 3. Basics of marketing management. 4. Internet marketing
Prerequisites	There are no conditions for listening and taking the course.
Teaching methods	Lectures, auditory exercises, seminar paper
Course content	1. The concept and importance of marketing 2. Basic principles of marketing 3. Development of the marketing concept 4. Marketing categorical system 5. Marketing mix 6. Marketing information system and decision making 7. Marketing, market, consumer (I colloquium) 8. Marketing environment 9. Elements of marketing research 10. Basics of marketing management 11. Basic marketing instruments 12. Product in marketing 13. Price in marketing 14. Marketing channels. Promotion in marketing 15. Internet marketing (II colloquium)

Textbook (s)

Author/s	**Name of publication, publisher**	**Year**	**Pages (from-to)**
Macura P.	Marketing – osnov, Ekonomski fakultet, Banja Luka	2009.	

Additional readings

Author/s	**Name of publication, editor**	**Year**	**Pages (from-to)**
Milisavljević M., Maričić B.	Osnovi marketinga, Ekonomski fakultet, Beograd.	2004.	

	Assesment methods	**Points**	**Percentage**
Evaluation criteria	Pre-exam obligations		
	attendance at lectures and exercises	2 x 5	10 %
	positively graded seminar paper	10	10 %
	written exam (2 colloquia)	50	50 %
	Final exam		
	oral exam	30	30 %
	IN TOTAL	100	100 %

Web sources	
Applicable from	16.06.2021. - 175th session of the Teaching-Scientific Council of the Faculty of Transport and Traffic Engineering

	UNIVERSITY OF EAST SARAJEVO Faculty of Transport and Traffic Engineering ***Study program: Traffic*** ***Profile: Informatics in traffic*** I cycle / III year of study	

Course title	**MACHINE LEARNING**
Department	Department of Information - Communication Systems in Traffic, Faculty of Transport and Traffic Engineering in Doboj

Code	**Course status**	**Semester**	**ECTS credits**
САФ11СИ07236065,0211	E	VI	5,00

Professor/s	PhD Vladimir Brtka
Associate/s	

Weekly hours			**Individual student hours (per semester)**			**Student workload coefficient S_o**
L	**TE**	**LE**	**L**	**TE**	**LE**	**S_o**
2	1	1	30	15	15	1,2

Total teacher workload (hours, per semester) W = 2*15 + 1*15 + 1*15 = 30 + 15 + 15 = 60	Total student workload (hours, per semester) T=2*15*S_0 + 1*15* S_0+1*15* S_0 = 45 S_0+15 S_0 + 15 S_0=90
Total workload: W+T=U_{opt}= 60 + 90= 150 hours per semester	

Course aims and learning outcomes	1. Students acquire theoretical and practical knowledge and skills for work in the field of machine learning. 2. Students will be able to identify areas of application of machine learning and select suitable machine learning algorithms. 3. Students will be able to apply the acquired knowledge to clearly define the problem and how to solve it using existing software tools and modules. 4. Students will be able to apply their professional knowledge through the development of machine learning applications.
Prerequisites	None
Teaching methods	Lectures, laboratory exercises, computer classroom exercises and consultations. Learning and independent development of practical tasks.
Course content	1. Motivation, introduction and terminology. 2. Areas of application, possibilities and types of machine learning algorithms. 3. Linear regression. 4. Logistic regression. 5. Architectures of artificial neural networks, Rosenblat's Perceptron. 6. Perceptron training algorithm. 7. Single-layer artificial neural networks. 8. Colloquium. 9. Algorithm for training single-layer artificial neural networks and its properties. 10. Multilayer artificial neural networks. 11. Algorithm for training multilayer artificial neural networks - Backpropagation. 12. Implementation of single-layer artificial neural networks. 13. Implementation of multilayer neural networks. 14. Convolutional artificial neural networks. 15. Practical applications of convolutional artificial neural networks, Tensorflow-Keras-Python

Textbook (s)

Author/s	**Name of publication, publisher**	**Year**	**Pages (from-to)**
Vladimir Brtka	Machine learning, University of Novi Sad, Technical Faculty "Mihajlo Pupin", Zrenjanin.	2019	
Vladimir Brtka	Soft Computing, University of Novi Sad, Technical Faculty "Mihajlo Pupin", Zrenjanin.	2013	

Additional readings

Author/s	**Name of publication, editor**	**Year**	**Pages (from-to)**

	Assesment methods	Points	Percentage
Evaluation criteria	Pre-exam obligations		
	attendance at lectures	10	10%
	attendance at exercises	10	10%
	Colloquium	20	20%
	lab. exercises	10	10%
	Final exam		
	oral	50	50%
	TOTAL	100	100%
Web sources			
Applicable from	16.06.2021. - 175th session of the Teaching-Scientific Council of the Faculty of Transport and Traffic Engineering		

	UNIVERSITY OF EAST SARAJEVO Faculty of Transport and Traffic Engineering ***Study program: Traffic*** ***Profile: Informatics in traffic*** I cycle / III year of study	

Course title	**FUZZY SYSTEMS**
Department	Department of Information - Communication Systems in Traffic, Faculty of Transport and Traffic Engineering in Doboj

Code	**Course status**	**Semester**	**ECTS credits**
САФ11СИ07236165,0211	E	VI	5.00

Professor/s	PhD Vladimir Brtka
Associate/s	

Weekly hours			**Individual student hours (per semester)**			**Student workload coefficient S_o**
L	**TE**	**LE**	**L**	**TE**	**LE**	**S_o**
2	1	1	45	22.5	22.5	1.5

Total teacher workload (hours, per semester) W = 2*15 + 1*15 + 1*15 = 30 + 15 + 15 = 60 hours	Total student workload (hours, per semester) T =2*15*S_0 + 1*15* S_0 + 1*15* S_0 =30 S_0 + 15 S_0 + 15 S_0 = 60 S0 =90 hours

Total workload: W+T=U_{opt}= 60 + 90 = 150 hours per semester

Course aims and learning outcomes	1. Students acquire theoretical and practical knowledge and skills for work in the field of application of the fuzzy system. 2. Students will be able to recognize situations when it is convenient to apply fuzzy systems. 3. Students will be trained to use existing tools to develop a fuzzy system. 4. Acquired professional knowledge will enable students to implement fuzzy controllers for various purposes and within various real-life systems.
Prerequisites	None
Teaching methods	Lectures, laboratory exercises, computer classroom exercises and consultations. Learning and independent development of practical tasks.
Course content	1. Motivation, introduction and terminology. 2. Fuzzy sets, membership functions, properties of fuzzy sets. 3. Operations on fuzzy sets. 4. Fuzzy logical conjunctions, t-norms and co-norms. 5. Fuzzy propositions, linguistic variables and their values. 6. Fuzzy inference systems and fuzzy if-then rules, generalized Modus Ponens. 7. Fuzzy inference, inference methods. 8. Colloquium. 9. Mamdani type fuzzy controller. 10. Sugeno (TSK) type fuzzy controller. 11. Phase relations and fuzzy numbers. 12. Implementation of membership functions. 13. .Implementation of fuzzy logic operators. 14. Implementation of Mamdani fuzzy controller. 15. Practical applications of fuzzy controller.

Textbook (s)

Author/s	**Name of publication, publisher**	**Year**	**Pages (from-to)**
Vladimir Brtka	Soft Computing, University of Novi Sad, Technical Faculty "Mihajlo Pupin", Zrenjanin.	2013	5 – 77
Vladimir Brtka	Machine Learning, University of Novi Sad, Technical Faculty "Mihajlo Pupin", Zrenjanin.	2019	72 – 98

Additional readings

Author/s	**Name of publication, editor**	**Year**	**Pages (from-to)**

Evaluation criteria	**Assesment methods**	**Points**	**Percentage**

	Pre-exam obligations		
	attendance at lectures	10	10%
	attendance at exercises	10	10%
	Colloquium	20	20%
	lab. exercises	10	10%
	Final exam		
	oral	50	50%
	TOTAL	100	100%
Web sources			
Applicable from	16.06.2021. - 175th session of the Teaching-Scientific Council of the Faculty of Transport and Traffic Engineering		

	UNIVERSITY OF EAST SARAJEVO Faculty of Transport and Traffic Engineering ***Study program: Traffic*** ***Profile: Information technologies in traffic*** I cycle | III year of study	

Course title	**SECURITY AND PROTECTION OF INFORMATION AND COMMUNICATION SYSTEMS**
Department	Department of Information and Communication Systems, Faculty of Transport and Traffic Engineering in Doboj

Code	**Course status**	**Semester**	**ECTS credits**
САФ11СИ07236265,0211	elective	VI	5,00

Professor/s	Ph.D. Dragan Perakovic, Full professor
Associate/s	

Weekly hours			**Individual student hours (per semester)**			**Student workload coefficient S_o**
L	**TE**	**LE**	**L**	**TE**	**LE**	**S_o**
2	1	1	30	15	15	1,5

Total teacher workload (hours, per semester) W = 2*15 + 1*15 + 1*15 = 30 + 15 + 15 = 60 hours	Total student workload (hours, per semester) T =2*15* S_o + 1*15* S_o + 1*15* S_o = 30 S_o + 15 S_o + 15 S_o = 90 hours
Total workload: W+T=U_{opt}=60 + 90 = 150 hours per semester	

Course aims and learning outcomes	1.Identify threats, assets, vulnerabilities and risks of the information and communication system. 2.Calculate the level of threat on a certain part of the property of the communication system. 3. Analyze available methods of communication system protection. 4.Assess the quality of the established security of the information and communication system. 5.Design the security of the communication system based on available means and methods of protection.
Prerequisites	No
Teaching methods	Lectures, laboratory exercises, computer classroom exercises and consultations. Learning and independent development of practical tasks.
Course content	1. Introduction, presentation of the manner of holding the teaching process, overview of the area of safety of information and communication systems in traffic. 2.Review of the application of information and communication ecosystem in the field of traffic and transport. 3.Working framework of cyber security and defining basic security terminology, division of security according to functional groups. 4.Review of basic concepts and goals of communication security; privacy and trust in communication. 5.Cyber security trends in the EU and globally, analysis of the frequency of cyber-attacks and the methods and tools used to implement them. 6.Concepts of network communication overview of architecture, types of networks and network protocols. 7.Security Significance and Security Design of the Physical Layer and Data Layer. 8.Security Signs and Network Layer Security Design. 9.Safety significance and safety layer design. 10.Security features and application layer security design. 11.Cryptology, crypto systems, crypto algorithms and compression algorithms and their role in the communication system. 12.Cyber security challenges in cloud computing environments and the Internet of Things. 13.Security threats and vulnerabilities of critical infrastructure communication systems. 14.Application of artificial intelligence in prevention, detection and protection against cyber-attacks. 15.Concepts of quantum physics in the function of increasing the level of security of communication networks.

Textbook (s)			
Author/s	**Name of publication, publisher**	**Year**	**Pages (from-to)**
Jacobs, S.	Engineering Information Security: The Application of Systems Engineering Concepts to Achieve Information Assurance (2nd Edition), Wiley-IEEE Press, New Yersey, USA.	2016	
Macaulay, T.: R.	IoT Control: Understanding and Managing Risks and the Internet of Things (1st Edition), Moragan Kaufmann, Cambridge, USA.	2016	
Peraković, D.	Sigurnost i zaštita informacijsko komunikacijskog sustava, Fakultet prometnih znanosti, Zagreb, 2021., nastavni tekst, publicirano u digitalnom obliku na Internet poslužitelju na adresi sustava eučenja	2021	
Gupta, B. B., Chaudhary, P., Peraković, D., Psannis, K.	Privacy Concerns and Trust Issues // Managing IoT and Mobile Technologies with Innovation, Trust, and Sustainable Computing / Law, Kris MY ; WH Ip, Andrew ; Gupta, Brij B . ; Geng, Shuang (ur.)., CRC Press, Boca Raton.	2021	
Additional readings			
Author/s	**Name of publication, editor**	**Year**	**Pages (from-to)**
François Chollet	Deep Learning with Python, Manning Publications Co. ISBN 9781617294433.	2018	

	Assesment methods	**Points**	**Percentage**
Evaluation criteria	Pre-exam		
	lectures attendance	5	5%
	exercises attendance	5	5%
	Colloquium 1	30	30%
	Lab. exercises	10	10%
	Final exam		
	oral exam	50	50%
	TOTAL	100	100%
Web sources			
Applicable from	06/16/2021 - Teaching-Scientific Council, Faculty of Transport and Traffic Engineering in Doboj		

	UNIVERSITY OF EAST SARAJEVO Faculty of Transport and Traffic Engineering	
	Study program: Traffic ***Profile: Informatics in traffic***	
	I cycle / III year of study	

Course title	**INTERNET MARKETING**
Department	Department of Information - Communication Systems in Traffic, Faculty of Transport and Traffic Engineering in Doboj

Code	**Course status**	**Semester**	**ECTS credits**
САФ11СИ07208365,0211	elective	VI	5.00

Professor/s	Željko Stjepanović, PhD, associate professor
Associate/s	

Weekly hours			**Individual student hours (per semester)**			**Student workload coefficient S_o**
L	**TE**	**LE**	**L**	**TE**	**LE**	**S_o**
2	1	1	45	22.5	22.5	1.5

Total teacher workload (hours, per semester) W =2*15 + 1*15 + 1*15 = 30 + 15 + 15 = 60	Total student workload (hours, per semester) T = 2*15*1,5 + 1*15*1,5 + 1*15*1,5 = 45 + 22,5 + 22,5 = 90

Total workload: W + T = U_{opt} = 60 + 90 = 150 hours per semester

Course aims and learning outcomes	1. Students will possess basic knowledge of electronic marketing techniques 2. Students will have knowledge related to creating an internet marketing plan 3. Students will be able to apply the acquired knowledge during practical work in transport companies 4. Students will be able to create basic elements of internet presentations
Prerequisites	No formal prerequisites
Teaching methods	Lectures, classroom exercises and consultations. Learning and independent preparation of seminar papers related to internet marketing in transport companies
Course content	1. Internet marketing in our country and in the world 2. Development of internet marketing in traffic 3. Possibilities and preconditions for successful application of internet marketing in traffic 4. E-marketing in traffic 5. E-sales 6. Internet marketing techniques 7. Research of competition in traffic (I colloquium) 8. Development of Internet marketing plan in transport companies 9. Creating an Internet plan 10. Integral brand promotion in traffic 11. Internet technologies 12. Web presentations in traffic 13. Concepts of internet presence 14. Objectives of internet presence in traffic 15. Internet promotion in traffic (II colloquium)

Textbook (s)

Author/s	**Name of publication, publisher**	**Year**	**Pages (from-to)**
Šapić, D.	Marketing na Internetu	2002	

Additional readings

Author/s	**Name of publication, editor**	**Year**	**Pages (from-to)**

	Assesment methods	**Points**	**Percentage**
Evaluation criteria	Pre-exam obligations		
	attendance at lectures / exercises	5	5%
	positively graded seminar paper	15	15%

	Colloquium 1	40	40%
	Colloquium 2	40	40%
	lab. exercises		
	Final exam		
	oral		
	IN TOTAL	100	100%
Web sources			
Applicable from	16.06.2021. - 175th session of the Teaching-Scientific Council of the Faculty of Transport and Traffic Engineering		

	UNIVERSITY OF EAST SARAJEVO Faculty of Transport and Traffic Engineering ***Study program: Traffic*** ***Profile: Informatics in traffic*** I cycle / VI year of study	

Course title	**ARTIFICIAL INTELLIGENCE**
Department	Department of computers, information technologies and biotechnology, ETF, University of East Sarajevo

Code	**Course status**	**Semester**	**ECTS credits**
САФ11СИ07135577,0321	mandatory	VII	7,00

Professor/s	Ph.D. Gordana Jotanovic, Assistant Professor
Associate/s	

Weekly hours			**Individual student hours (per semester)**			**Student workload coefficient S_o**
L	**TE**	**LE**	**L**	**TE**	**LE**	**S_o**
3	1	1	30	15	15	1.5

Total teacher workload (hours, per semester) W = 3*15 + 1*15 + 1*15 = 60 hours	Total student workload (hours, per semester) T = 3*15*S_o + 1*15*S_o + 1*15*S_o = 90 hours
Total workload: W + T = Uopt = 60 + 90 = 150 hours per semester	

Course aims and learning outcomes	1. Students should gain basic knowledge of intelligent systems. 2. Knowladge AIS of and their application in traffic engineering. 3. Declarative programing knowladge. 4. Theoretical basis of fuzzy logic and applications.
Prerequisites	No
Teaching methods	Oral presentation, illustrative-demonstrative method, analysis and synthesis, practical computer work
Course content	1. Historical overview, basic concepts and application of artificial intelligence in traffic engineering. 2. The concept of the artificial intelligence system (with a view to the application in traffic engineering). 3. Knowledge representation methods: declarative, procedural and semantic. 4. The problem of the knowladge transformation. State-space. 5. Search methods: breadth first search, depth first search and combined search. 6. Formalization of reasoning and inference systems. 7. Predicate calculus. 8. **Colloquium 1** 9. Resolution. Unification and unification algorithms. 10. Resolution method. 11. Fuzzy logic and fuzzy logic controllers. 12. Mamdani and Sugeno fuzzy inference systems. 13. Introduction to Artificial neural networks. 14. Introduction to Probabilistic computing. 15. **Colloquium 2**

Textbook (s)

Author/s	**Name of publication, publisher**	**Year**	**Pages (from-to)**
Petar Hotomski	Artificial Intelligence Systems, University of Novi Sad, Technical Faculty "Mihajlo Pupin" Zrenjanin	2006	
Ivana Berkovic	Elements of Artificial Intelligence, University of Novi Sad, Technical Faculty "Mihajlo Pupin", Zrenjanin	2006	
Stuart J. Russell and Peter Norvig	Artificial Intelligence, A Modern Approach, Prentice Hall	2010	

Additional readings

Author/s	**Name of publication, editor**	**Year**	**Pages (from-to)**

	Assesment methods	Points	Percentage
Evaluation criteria	Pre-exam		
	attendance at lectures	10	10%
	practical (laboratory) exercises	10	10%
	Colloquium 1	15	15%
	Colloquium 2	15	15%
	Final exam		
	oral exam	50	50%
	TOTAL	100	100%
Web sources			
Applicable from	06/16/2021 - Teaching-Scientific Council, Faculty of Transport and Traffic Engineering in Doboj		

	UNIVERSITY OF EAST SARAJEVO Faculty of Transport and Traffic Engineering ***Study program: Traffic*** ***Profile: Informatics in traffic*** I cycle / IV year of study	

Course title	**DATABASE**
Department	Department of computers, information technologies and biotechnology, ETF, University of East Sarajevo

Code	**Course status**	**Semester**	**ECTS credits**
САФ11СИ07114777,0321	mandatory	VII	7.00

Professor/s	Ph.D. Gordana Jotanovic, Assistant Professor
Associate/s	

Weekly hours			**Individual student hours (per semester)**			**Student workload coefficient S_o**
L	**TE**	**LE**	**L**	**TE**	**LE**	**S_o**
2	1	1	45	22.5	22.5	1.5

Total teacher workload (hours, per semester) W = 2*15 + 1*15 + 1*15 = 30 + 15 + 15 = 60 hours	Total student workload (hours, per semester) T =2*15*1.5 + 1*15*1.5 + 1*15*1.5 = 45 + 22.5 + 22.5 = 90
Total workload: W + T = U_{opt} = 60 + 90 = 150 hours per semester	

Course aims and learning outcomes	1. Students will be capable of creating and implementing databases 2. Students will be trained to manage databases 3. Students will create a user interface with the help of database management tools. 4. Professional knowledge students will apply through the application and various smaller applications.
Prerequisites	No
Teaching methods	Oral presentation. Laboratory exercises.
Course content	1. Concept of Databases. 2. Database lifecycle. 3. Database architecture. 4. Elements of physical structure. 5. Primary key based access. 6. Data modeling. 7. Modeling of Entities and Relationships. 8. Colloquium 1 9. Relational Model. 10. Normalization of the Relational Scheme. 11. Languages for Relational Databases. 12. SQL language. 13. Implementation of relational operations. 14. Data integrity and security. 15. Colloquium 2

Textbook (s)

Author/s	**Name of publication, publisher**	**Year**	**Pages (from-to)**
G Jotanovic G., Jausevac G.	*Information systems and Database, University of East Sarajevo,* Faculty of Transport and Traffic Engineering	2012	
Lazarevic B., Marjanovic Z., Anicic N., Babarogic S.	Databases, Faculty of Organizational Sciences, Belgrade	2003	
Mogin P., Lukovic I.	Principles of databases, Faculty of Technical Sciences, Novi Sad	1995	

Additional readings

Author/s	**Name of publication, editor**	**Year**	**Pages (from-to)**
Elmasri R., Navathe S. B.	„Fundamentals of Database Systems“5th Edition, Addison-Wesley	2006	

	Assesment methods	Points	Percentage
Evaluation criteria	Pre-exam		
	lectures / exercises attendance	10	10%
	project task	10	10%
	Colloquium 1	15	15%
	Colloquium 2	15	15%
	lab. exercises	10	10%
	Final exam		
	oral exam	40	40%
	TOTAL	100	100%
Web sources			
Applicable from	06/16/2021 - Teaching-Scientific Council, Faculty of Transport and Traffic Engineering in Doboj		

	UNIVERSITY OF EAST SARAJEVO Faculty of Transport and Traffic Engineering ***Study program: Traffic*** ***Profile: Informatics in traffic*** I cycle / IV year of study	

Course title	**DESIGN OF INFORMATION SYSTEMS**
Department	Department of Computer and Information Science and Bioinformatics ETF East Sarajevo

Code	**Course status**	**Semester**	**ECTS credits**
САФ11СИ07108675,0211	Obligatory	VII	5.00
Professor/s			
Associate/s			

Weekly hours			**Individual student hours (per semester)**			**Student workload coefficient S_o**
L	**TE**	**LE**	**L**	**TE**	**LE**	**S_o**
2	1	1	60	40	20	1.33

Total teacher workload (hours, per semester) W = 3*15 + 2*15 + 1*15 = 45 + 30 + 15 = 90 hours	Total student workload (hours, per semester) T = 3*15*1,33 + 2*15*1,33 + 1*15*1,33 = 60 + 40 + 20 = 120 hours
Total workload: W + T = U_{opt} = 90 +120 = 210 hours per semester	

Course aims and learning outcomes	1. Students will have knowledge related to the development and structure of the information system in traffic 2. Students will be introduced to the methodology of information systems development 3. Students will be able to define project requirements related to business in a transport company 4. During the teaching activities, students will be introduced to certain examples related to the design of information systems 1. Students will get acquainted with the methodology of development of project tasks related to the business of a transport company
Prerequisites	There are no formal conditions
Teaching methods	Lectures, classroom exercises and consultations. Learning and independent preparation of seminar papers related to the design of information systems in traffic
Course content	1. Basics of information system. Data and information. Information and decision making in traffic. 2. Traffic information systems. Evaluation of information system in transport companies. 3. Character and development of computer technology. Introduction of computers in the information system of the transport company. 4. Domains of information technology application. Transactional data processing. Traffic management information systems. 5. Traffic decision support system. Expert systems 6. Project management. Characteristics of the project of information system development in traffic. 7. Participants in the information system development project. Reasons for starting an information system development project in transport companies. 8. II colloquium 9. Resistance to information system automation life cycle methodology. Data model methodology in transport companies. 10. Methodology of prototype development. Object-oriented methodology. Structural methodology. 11. Features and problem of structural methodology in traffic. 12. Information system research. Preparation of a feasibility study in transport companies. 13. Planning the development of information systems in transport companies. System analysis. External design. Internal design. Module programming 14. Methods and techniques for designing information systems in transport companies. 15. II colloquium
Textbook (s)	

Author/s	Name of publication, publisher	Year	Pages (from-to)
Dr Rade Stankić	Projektovanje informacionih sistema, Ekonomski fakultet Beograd	2013	
Additional readings			
Author/s	**Name of publication, editor**	**Year**	**Pages (from-to)**
Dr Željko Stjepanović	Skripta, Projektovanje informacionih sistema	2014	

	Assesment methods	Points	Percentage
Evaluation criteria	Pre-exam obligations		
	attendance at lectures / exercises	5	5%
	positively graded seminar paper	15	15%
	Colloquium 1	15	15%
	Colloquium 2	15	15%
	lab. exercises	10	10%
	Final exam		
	oral	40	40%
	TOTAL	100	100 %
Web sources			
Applicable from	06/16/2021 - Teaching-Scientific Council, Faculty of Transport and Traffic Engineering in Doboj		

	UNIVERSITY OF EAST SARAJEVO Faculty of Transport and Traffic Engineering ***Study program: Taffic*** ***Profile: Informatics in traffic*** I cycle / IV year of study	

Course title	**E-BUSINESS**
Department	Department of Information - Communication Systems in Traffic, Faculty of Transport and Traffic Engineering in Doboj

Code	**Course status**	**Semester**	**ECTS credits**
САФ11СИ07115475,0220	compulsory	VII	5.00

Professor/s	Željko Stjepanović, PhD, associate professor
Associate/s	

Weekly hours			**Individual student hours (per semester)**			**Student workload coefficient S_o**
L	**TE**	**LE**	**L**	**TE**	**LE**	**S_o**
2	2	0	45	45	0	1.5

Total teacher workload (hours, per semester) W = 2*15 + 2*15 + 0*15 = 30 + 30 + 0 = 60	Total student workload (hours, per semester) T = 2*15*1.5 + 3*15*1.5 + 0*15*1.5 = 45 + 45 + 0 = 90
Total workload: W + T = U_{opt} = 60 + 90 = 150 hours per semester	

Course aims and learning outcomes	1. Students will be acquainted with basic e-business models 2. Students will be able to use various electronic payment models 3. Students will be able to manage electronic banking applications 4. Students will acquire necessary knowledge related to risks and data safety in e-business
Prerequisites	No formal prerequisites
Teaching methods	Lectures, classroom exercises and tutorials. Studying and individual seminar papers related to e-business
Course content	1. Internet and globalization of business processes 2. Basic components of e-business 3. E-business infrastructure 4. Electronic banking 5. Modern forms of electronic banking 6. Electronic payment systems 7. Advantages and disadvantages of electronic banking 8. Colloquium I 9. Business intelligence and expert systems 10. Managing relationships with customers in modern business 11. Electronic commerce 12. Advantages and disadvantages of e-commerce 13. Forms of e-commerce 14. The role and importance of Internet marketing in modern business 15. Colloquium II

Textbook (s)

Author/s	**Name of publication, publisher**	**Year**	**Pages (from-to)**
Rade Stankić Branko Krsmanović	Electronic Commerce, Faculty of Foreign Trade in Bijeljina	2007	1 - 193

Additional readings

Author/s	**Name of publication, editor**	**Year**	**Pages (from-to)**
Željko Stjepanović	Teaching materials, Traffic Engineering Doboj	2018	1 - 159

	Assessment methods	**Points**	**Percentage**
Evaluation criteria	Pre-exam obligations		
	attendance to lectures / exercises	5	5%
	seminar paper positively assessed	15	15%
	colloquium 1	20	20%
	colloquium 2	20	20%

	final exam	40	40%
	TOTAL	100	100%
Web sources			
Applicable from	06/16/2021 - Teaching-Scientific Council, Faculty of Transport and Traffic Engineering in Doboj		

	UNIVERSITY OF EAST SARAJEVO Faculty of Transport and Traffic Engineering ***Study program: Traffic*** ***Profile: Informatics in traffic*** I cycle / IV year of study	

Course title	**SOFTWARE ENGINEERING**
Department	Department of Computer and Information Science and Bioinformatics ETF East Sarajevo

Code	**Course status**	**Semester**	**ECTS credits**
САФ11СИ07115776,0311	Manadatory	VII	6,00

Professor/s	Prof. dr Željko Stojanov, associate professor
Associate/s	

Weekly hours			**Individual student hours (per semester)**			**Student workload coefficient S_o**
L	**TE**	**LE**	**L**	**TE**	**LE**	**S_o**
3	1	1	45	15	15	1,2

Total teacher workload (hours, per semester) W = 3*15 + 1*15 + 1*15 = 75	Total student workload (hours, per semester) T = 3*15*So + 1*15*So + 1*15*So = 75 So=90

Total workload: $W+T=U_{opt}$= 75 + 75 = 150 hours per semester

Course aims and learning outcomes	1. students should acquire knowledge about the application of methods and tools for designing software systems. 2. students should acquire knowledge of software lifecycle processes and models 3. students should acquire knowledge that enables them to design software systems independently or within a team 4. students should acquire knowledge about the application of methods and tools of software engineering in technical systems in traffic
Prerequisites	No
Teaching methods	Lectures. Laboratory exercises.
Course content	1. Software as a product. Features and quality of software products. Application of software in traffic. 2. Principles of software engineering. 3. Software life cycle models. 4. Agile methods. 5. Software requirements. Software requirements process. 6. Software requirements modelling. Prototyping. **7. I Colloquium** 8. Software design. Conceptual and technical design. 9. Architectural styles. Modularity. 10. User interface design. 11. Characteristics of good design. Component independence. 12. Object Oriented Software Design. UML. 13. Programming standards and procedures. Preparation of documentation. 14. Design of software systems for application in traffic. **15. II Colloquium**

Textbook (s)

Author/s	**Name of publication, publisher**	**Year**	**Pages (from-to)**
Shari Lawrence Pfleeger and Joanne M. Atlee	Software engineering: Theory and practice. Translation of the third edition. CET. Belgrade, Serbia.	2006	
Željko Stojanov	Software life cycle. University of Novi Sad, Technical Faculty "Mihajlo Pupin" Zrenjanin. Serbia.	2021	
Pierre Bourque and Richard E. Fairley (Editors)	Guide to the Software Engineering Body of Knowledge, Version 3.0, SWEBOK. IEEE.	2014.	

Additional readings

Author/s	**Name of publication, editor**	**Year**	**Pages (from-to)**

Ian Sommerville	SoftwareEngineering, 9th edition. Addison-Wesley, Boston, MA, USA.	2011	

	Assesment methods	Points	Percentage
Evaluation criteria	Pre-exam obligations		
	Colloquium 1	30	30%
	Colloquium 2	30	30%
	Final exam		
	Written exam	40	40%
	TOTAL	100	100%
Web sources			
Applicable from	16.06.2021. - 175th session of the Teaching-Scientific Council of the Faculty of Transport and Traffic Engineering		

	UNIVERSITY OF EAST SARAJEVO Faculty of Transport and Traffic Engineering ***Study program: Traffic*** ***Profile: Informatics in traffic*** I cycle / IV year of study	

Course title	**INTERNET TECHNOLOGIES**
Department	Department of computers, information technologies and biotechnology, ETF, University of East Sarajevo

Code	**Course status**	**Semester**	**ECTS credits**
САФ11СИ07109985,0311	mandatory	VIII	5,00

Professor/s	Ph.D. Gordana Jotanovic, Assistant Professor
Associate/s	

Weekly hours			**Individual student hours (per semester)**			**Student workload coefficient S_o**
L	**TE**	**LE**	**L**	**TE**	**LE**	**S_o**
3	1	1	30	15	15	1,5

Total teacher workload (hours, per semester) W = 2*15 + 1*15 + 1*15 = 60 hours	Total student workload (hours, per semester) T = 2*15*S_o + 1*15*S_o + 1*15*S_o = 90 hours

Total workload: W + T = U_{opt} = 60 + 90 = 150 hours per semester

Course aims and learning outcomes	1. Students need to learn about ways to communicate using Internet technologies. 2. Students need to learn about Internet protocols and services. 3. Students should gain knowledge about Internet security and data security. 4. Students should learn about the use of the Internet and mobile devices in the traffic engineering domain.
Prerequisites	Basic knowledge in the field of Computer networks.
Teaching methods	Oral presentation. Laboratory exercises: Use of HTML and CSS language.
Course content	1. Introduction of Internet Technology. 2. Types of communication using the Internet. 3. Application layer protocols. 4. TCP / IP protocols (IP, ARP, ICMP, UDP, TCP). 5. IPv4 and IPv6 (advantages and disadvantages). 6. Internet services (INTRANET). 7. Application of Internet and mobile devices in the domain of traffic engineering. WAP standard. GPRS and SMS. 8. **Colloquium 1** 9. WEB application development technologies. 10. Marker languages (HTML, XHTML, XML). 11. Script languages. 12. Internet security and data security. 13. Access control. User authentication. 14. Cryptography. Digital signature. 15. **Colloquium 2**

Textbook (s)

Author/s	**Name of publication, publisher**	**Year**	**Pages (from-to)**
Andrew S. Tanenbaum	Computer network, Mikro knjiga, Beograd, Serbia.	2005	
Richard Fox and Wei Hao	Internet infrastructure: Networking, web services, and cloud computing. CRC Press. Boca Raton, FL, USA.	2018	
Comer, E. D.	Internetworking with TCP/IP, Prentice Hall	2013	

Additional readings

Author/s	**Name of publication, editor**	**Year**	**Pages (from-to)**
Terry Felke-Morris	Web development and design foundations with HTML5, 8th edition. Pearson. Hoboken, USA.	2016	

Josh Hill i James A. Brannan	HTML5 I CSS3: brilliant, CET	2011	

	Assesment methods	**Points**	**Percentage**
Evaluation criteria	Pre-exam		
	lectures / exercises attendance	5	5%
	project task	15	15%
	Colloquium 1	15	15%
	Colloquium 2	15	15%
	lab. exercises	10	10%
	Final exam		
	oral exam	40	40%
	TOTAL	100	100%
Web sources			
Applicable from	06/16/2021 - Teaching-Scientific Council, Faculty of Transport and Traffic Engineering in Doboj		

	UNIVERSITY OF EAST SARAJEVO Faculty of Transport and Traffic Engineering ***Study program: Traffic*** ***Profile: Informatics in traffic*** I cycle / I year of study	

Course title	**REAL-TIME COMPUTER SYSTEMS**
Department	Department of Automation and Robotics - ETF East Sarajevo

Code	**Course status**	**Semester**	**ECTS credits**
САФ11СИ07135686,0311		VIII	6.00

Professor/s	PhD Miroslav Kostadinović, associate professor
Associate/s	

Weekly hours			**Individual student hours (per semester)**			**Student workload coefficient S_o**
L	**TE**	**LE**	**L**	**TE**	**LE**	**S_o**
3	1	1	2	1	1	1,5

Total teacher workload (hours, per semester) 3*15 + 1*15 + 1*15 = W 30+ 15+ 15= 60 h	Total student workload (hours, per semester) 3*15*1,5+ 1*15*1,5 + 1*15*1,5 = T 45+22,5+ 22,5 = 90 h
Total workload: 60 + 90 =150 h	

Course aims and learning outcomes	1. Introducing students to the concepts and knowledge in the field of digital management systems. 2. Students will get acquainted and master the knowledge in the field of construction, structure, application of digital control systems, with the characteristics of the microcontroller platform 3. Microprocessor control systems and Matlaba.
Prerequisites	Does not have
Teaching methods	Lectures, auditory exercises, seminar paper
Course content	1. Problems of real-time systems. History. 2. Real-time system classifications. Applications. 3. Real-time system specification and design. Final state machine. 4. Embedded computer systems. Comparisons of different real-time systems on the example of embedded mobile robotic platforms and the automotive industry. 5. Real time system hardware. Digital inputs / outputs. Analog inputs / outputs. Pulse inputs / outputs. Real time clock. 6. Real-time operating system (RTOS). 7. Process scheduler. Call systems. Interrupt-driven systems. Multitasking systems. 8. (I colloquium) 9. Mutual exclusion of processes. Communication between tasks. Real-task programming languages. Hardware and software integration. 10. System management concept. System configuration. 11. Introduction to SCADA systems, divisions and architecture of SCADA systems as a system for monitoring and acquisition of data in real-time systems. 12. Hardware and software components of SCADA system. Examples of application. 13. Problems of communication within the real-time management system. 14. Remote control systems. 15. II colloquium

Textbook (s)

Author/s	**Name of publication, publisher**	**Year**	**Pages (from-to)**
Stojic M.	Continuous automatic control systems, Scientific book, Belgrade	1990	
2. Ковачевић Б	Signals and Systems, Академска мисао, Београд,	2007.	

Additional readings

Author/s	**Name of publication, editor**	**Year**	**Pages (from-to)**

Evaluation criteria	**Assesment methods**	**Points**	**Percentage**

	attendance at lectures and exercises	10	10%
	seminar papers	20	20%
	I colloquium	10	10%
	II colloquium	10	10%
	Final exam		
	final exam (oral / written)	50	50%
	IN TOTAL	100	100%
Web sources			
Applicable from	16.06.2021 - 175 Session of the Councile, Faculty of Transport and Traffic engineering		

	UNIVERSITY OF EAST SARAJEVO Faculty of Transport and Traffic Engineering ***Study program: Traffic*** ***Profile: Informatics in traffic*** I cycle / IV year of study	

Course title	**ORGANIZATION OF TRAFFIC COMPANIES**
Department	Department of Transport Engineering - Faculty of Transport and Traffic Engineering Doboj

Code	**Course status**	**Semester**	**ECTS credits**
САФ11СИ07104585,0220	obligatory	VIII	5.50

Professor/s	PhD Perica Gojković, full professor
Associate/s	

Weekly hours			**Individual student hours (per semester)**			**Student workload coefficient S_o**
L	**TE**	**LE**	**L**	**TE**	**LE**	**S_o**
2	2	0	45	45	0	1.5

Total teacher workload (hours, per semester) W = 2*15 + 2*15 + 0*15 = 30 + 30 + 0 = 60 hours	Total student workload (hours, per semester) T = 2*15*1,5 + 2*15*1,5 + 0*15*1,5 = 45 + 45 + 0 = 90 hours

Total workload: W + T = U_{opt} = 60 + 90 = 150 hours per semester

Course aims and learning outcomes	By mastering this course the student will be able to: 1. learn the basic concepts of organization, as well as types and organizational models of enterprises; 2. will be able to analyze the organization of large business systems, business and development policy and development factors; 3. independently organize and lead a meeting according to defined rules; 4. acquired knowledge in practice to apply and establish their own company as well as to give instructions to others on how to do it;
Prerequisites	There are no special conditions
Teaching methods	Lectures, auditory exercises, consultations
Course content	1. The concept and development of the organization 2. Types of organizational structure 3. Organizational models of the company 4. Organizing large business systems 5. Organizational models of transport companies 6. Business and development policy 7. Characteristic business factors (I colloquium) 8. Basic methods and techniques for optimization 9. Organizational culture 10. Organization of business functions 11. Business information systems 12. Organization control. Organizing a meeting 13. Organization and management of investments 14. Organization design. Organizational transformation of the company 15. II colloquium

Textbook (s)

Author/s	**Name of publication, publisher**	**Year**	**Pages (from-to)**
Vešović, B. V., Bojović, J. N., Knežević, Lj. N.	Organizacija saobraćajnih preduzeća, Saobraćajni fakultet, Beograd,	2007.	

Additional readings

Author/s	**Name of publication, editor**	**Year**	**Pages (from-to)**

Evaluation criteria	**Assesment methods**	**Points**	**Percentage**
	Pre-exam obligations		

	attendance at lectures / exercises	10	10%
	colloquium 1	40	40%
	colloquium 2	20	20%
	Final exam		
	oral	30	30%
	IN TOTAL	100	100 %
Web sources			
Applicable from	16.06.2021. - 175th session of the Teaching-Scientific Council of the Faculty of Transport and Traffic Engineering		

	UNIVERSITY OF EAST SARAJEVO Faculty of Transport and Traffic Engineering ***Study program: Traffic*** ***Profile: Informatics in traffic*** I cycle / IV year of study	

Course title	**EXPERT SYSTEMS**
Department	Department of Computer and Information Science and Bioinformatics ETF East Sarajevo

Code	**Course status**	**Semester**	**ECTS credits**
САФ11СИ07209685,0211	E	VIII	5,00

Professor/s	PhD Vladimir Brtka
Associate/s	

Weekly hours			**Individual student hours (per semester)**			**Student workload coefficient S_o**
L	**TE**	**LE**	**L**	**TE**	**LE**	**S_o**
2	1	1	30	15	15	1,5

Total teacher workload (hours, per semester) W = 2*15 + 1*15 + 1*15 = 60 hours	Total student workload (hours, per semester) T = 2*15*S_o + 1*15*S_o + 1*15*S_o = 90 hours

Total workload: W+T=U_{opt}= 60 + 90 = 150 hours per semester

Course aims and learning outcomes	1. Students should gain a basic understanding of reasoning mechanisms in expert systems. 2. The course should provide knowledge for the construction of expert systems and their application in the field of transport. 3. Students should gain knowledge about the basic components of expert systems and their purpose. 4. One of the learning outcomes should be traffic planning and optimization with the help of expert systems.
Prerequisites	None
Teaching methods	Lectures. Laboratory exercises: Implementation of a simple inference mechanism (C # or Java). Use of formalized knowledge (XML, JSON). Development of expert system components and simple application.
Course content	1. Introduction. 2. Components of expert systems. 3. Types of reasoning mechanisms in expert systems. 4. The role of knowledge. 5. Formalization of knowledge. 6. Expert and his role. 7. I colloquium 8. Knowledge-based systems and their components. 9. Applications of expert systems in traffic. 10. Expert system as a consultant. 11. Possibilities of making decisions in the field of traffic 12. Traffic flow control 13. Traffic planning and optimization. 14. Recognition of possible conflict in traffic and recommendations for possible action. 15. II colloquium

Textbook (s)

Author/s	**Name of publication, publisher**	**Year**	**Pages (from-to)**
Vladimir Brtka	Machine Learning, University of Novi Sad, Technical Faculty "Mihajlo Pupin", Zrenjanin	2019.	
Vladimir Brtka	Soft Computing, University of Novi Sad, Technical Faculty "Mihajlo Pupin", Zrenjanin	2013.	

Additional readings

Author/s	**Name of publication, editor**	**Year**	**Pages (from-to)**
J. Chan	Learn Java, Copyright Jamie Chan	2016	

	Assesment methods	Points	Percentage
Evaluation criteria	Pre-exam obligations		
	attendance at lectures / exercises	5	5%
	positively rated seminar paper	15	15%
	Colloquium 1	15	15%
	Colloquium 2	15	15%
	lab. exercises	10	10%
	Final exam		
	oral	40	40%
	TOTAL	100	100%
Web sources			
Applicable from	16.06.2021. - 175th session of the Teaching-Scientific Council of the Faculty of Transport and Traffic Engineering		

	UNIVERSITY OF EAST SARAJEVO Faculty of Transport and Traffic Engineering ***Study program: Traffic*** ***Profile: Informatics in traffic*** I cycle / III year of study	

Course title	**KNWOLEDGE BASED SYSTEMS**
Department	Department of Information - Communication Systems in Traffic, Faculty of Transport and Traffic Engineering in Doboj

Code	**Course status**	**Semester**	**ECTS credits**
САФ11СИ07236485,0211	O	V	5,00

Professor/s	PhD Vladimir Brtka
Associate/s	

Weekly hours			**Individual student hours (per semester)**			**Student workload coefficient S_o**
L	**TE**	**LE**	**L**	**TE**	**LE**	**S_o**
2	1	1	30	15	15	1,5

Total teacher workload (hours, per semester) W = 2*15 + 1*15 + 1*15 = 30 + 15 + 15 = 60 hours	Total student workload (hours, per semester) T =2*15*S_0 + 1*15* S_0+ 1*15* S_0= 30 + 15 + 15=60 S_0= 90 hours

Total workload: W+T=U_{opt}= 60 + 90 = 150 hours per semester

Course aims and learning outcomes	1. Students acquire theoretical and practical knowledge and skills for the application of knowledge-based systems. 2. Students will be able to identify situations suitable for the application of knowledge-based systems and to notice the difference in situations of application of expert systems. 3. Students will be able to apply the acquired knowledge in the field of knowledge formalization and to use existing software solutions for the application of knowledge-based systems. 4. Students will be able to apply their professional knowledge by forming a knowledge base with automated methods.
Prerequisites	None
Teaching methods	Lectures, laboratory exercises, computer classroom exercises and consultations. Learning and independent development of practical tasks.
Course content	1. Motivation, introduction and terminology. 2. Areas and examples of application of knowledge-based systems. 3. Forms of knowledge representation. 4. Components of knowledge-based systems. 5. Sources and methods of data collection for the purpose of knowledge extraction. 6. Machine learning module and its role. 7. Preparation of data for knowledge extraction. 8. Colloquium. 9. Methods and algorithms for extracting knowledge from data. 10. Statistical methods of knowledge extraction. 11. Rough set theory. 12. Patterns and their role. 13. Convolutional neural networks and their connection with knowledge-based systems. 14. Implementation of knowledge-based systems - iPython, Jupyter Notebook. 15. Practical applications of knowledge-based systems.

Textbook (s)

Author/s	**Name of publication, publisher**	**Year**	**Pages (from-to)**
Vladimir Brtka	Machine Learning, University of Novi Sad, Technical Faculty "Mihajlo Pupin", Zrenjanin.	2019	
P. Hotomski	Systems of Artificial Intelligence, University of Novi Sad, Technical Faculty "Mihajlo Pupin", Zrenjanin.	2006	

Additional readings

Author/s	Name of publication, editor	Year	Pages (from-to)

	Assesment methods	Points	Percentage
Evaluation criteria	Pre-exam obligations		
	attendance at lectures	10	10%
	attendance at exercises	10	10%
	Colloquium	20	20%
	lab. exercises	10	10%
	Final exam		
	oral	50	50%
	TOTAL	100	100%
Web sources			
Applicable from	16.06.2021. - 175th session of the Teaching-Scientific Council of the Faculty of Transport and Traffic Engineering		

	UNIVERSITY OF EAST SARAJEVO Faculty of Transport and Traffic Engineering ***Study program: Traffic*** ***Profile: Informatics in traffic*** I cycle / IV year of study	

Course title	**CUSTOMER RELATIONS MANAGEMENT**
Department	Department of Information and Communication Systems in Traffic, Faculty of Transport and Traffic Engineering in Doboj

Code	**Course status**	**Semester**	**ECTS credits**
САФ11СИ07236385,0211	Elective	VIII	5,00

Professor/s	Ph.D. Amel Kosovac, Associate Professor
Associate/s	

Weekly hours			**Individual student hours (per semester)**			**Student workload coefficient S_o**
L	**TE**	**LE**	**L**	**TE**	**LE**	**S_o**
2	1	1	30	15	15	1.5

Total teacher workload (hours, per semester) W = 2*15 + 1*15 + 1*15 = 30 + 15 + 15 = 60 hours	Total student workload (hours, per semester) T =2*15*S_0 + 1*15* S_0 + 1*15* S_0 =30S_0 + 15S_0 + 15S_0 = 60S_0 =90 hours

Total workload: W + T = U_{opt} = 60 + 90 = 150 hours per semester

Course aims and learning outcomes	1. Master the basic concepts of customer relationship management (CRM). 2. Master the basic approaches in customer satisfaction research. 3. Master techniques for predicting user behavior. 4. Master the basic tools for customer relationship management.
Prerequisites	No
Teaching methods	Oral presentation, illustrative-demonstrative method, analysis and synthesis.
Course content	1 Introduction to Customer Relationship Management (CRM): The concept and definition of CRM. Need for CRM. 2. Evolutionary development of marketing management. 3. Approaches to customer satisfaction research. 4. Customer relationship management as a business process. 5. Predicting client behaviour. Customer segmentation. Customer profitability. 6. Customer Relationship Policy. Analytical CRM. **7. Colloquium 1** 8. Customer Relationship Management Tools. 9. Technological basis of customer relationship management. 10. Electronic business and customer relationship management via the Internet. 11. CRM system life cycle. 12. CRM system reengineering. 13. Implementation of CRM solutions in telecommunications companies. 14. Operational CRM. CRM in practice, the situation in the surrounding countries. **15. Colloquium 2**

Textbook (s)

Author/s	**Name of publication, publisher**	**Year**	**Pages (from-to)**
Dyche, J., Diche, J.	The CRM handbook: A business guide to customer relationship management. Addison-Wesley	2001	
Macaulay, T., R.	IoT Control: Understanding and Managing Risks and the Internet of Things (1st Edition), Moragan Kaufmann, Cambridge, USA.	2016	
Greenberg, P.	CRM at the speed of light: Capturing and keeping customers in Internet real time. Osborne McGraw-Hill.	2002	
Peelen, E.	Customer Relationship Management, Pearson Education Limited, Essex	2005	

Additional readings			
Author/s	**Name of publication, editor**	**Year**	**Pages (from-to)**
Buttle, F.	Customer Relationship Management. 2nd ed., Butterworth-Heinmann, Amsterdam, London	2009	

	Assesment methods	**Points**	**Percentage**
Evaluation criteria	Pre-exam		
	lecture attendance	5	5%
	participation in exercises	5	5%
	Colloquium	30	30%
	lab. exercises	10	10%
	Final exam		
	oral exam	50	50%
	Total	100	100%
Web sources			
Applicable from	06/16/2021 - Teaching-Scientific Council, Faculty of Transport and Traffic Engineering in Doboj		

	UNIVERSITY OF EAST SARAJEVO Faculty of Transport and Traffic Engineering ***Study program: Traffic*** ***Profile: Informatics in traffic*** I cycle / IV year of study	

Course title	**ENTERPRISE RESOURCE MANAGEMENT**
Department	Department of Marketing and Management, Faculty of Economics in Brcko

Code	**Course status**	**Semester**	**ECTS credits**
САФ11СИ07215985,0211	electoral	VIII	5,00

Professor/s	Associate Professor Živko Erceg
Associate/s	

Weekly hours			**Individual student hours (per semester)**			**Student workload coefficient S_o**
L	**TE**	**LE**	**L**	**TE**	**LE**	**S_o**
2	1	1	45	22,5	22,5	1,5

Total teacher workload (hours, per semester) W = 2*15 + 1*15 + 1*15 = 60	Total student workload (hours, per semester) T = 2*15*1,5 + 1*15*1,5 + 1*15*1,5 = 45 + 22,5 + 22,5 = 90

Total workload: W + T = Uopt = 60 + 90 = 150 hours per semester

Course aims and learning outcomes	1. Acquisition of theoretical and practical knowledge and skills in the field of company management. 2. Acquiring knowledge in the field of selection and assessment of those resources that are justified from the aspect of social and economic point of view. 3. Acquiring knowledge about the importance of investments in transport, justification of investments and indicators of justification of investments. 4. Acquiring knowledge about software solutions in the field of enterprise resource management.
Prerequisites	No prerequisites
Teaching methods	Lectures, auditory exercises, laboratory exercises, consultations
Course content	1. The concept of enterprise resources 2. Enterprise resource characteristics 3. Types of enterprise resources 4. Objectives of the company as an integrator of heterogeneous resources 5. Management of intangible resources of the company 6. Management of financial resources of the company 7. Management of material resources of the company 8. I colloquium 9. Management of total enterprise resources Resource Management Techniques 10. Software solutions for enterprise resource management 11. ERP-planning of business resources in the company 12. Stages of ERP implementation 13. The most common modules in an ERP system 14. II colloquium

Textbook (s)

Author/s	**Name of publication, publisher**	**Year**	**Pages (from-to)**
Vesovic, Б. V., Bojovic, J. N., Knezevic, Lj. N.	Organization of traffic companies, Faculty of Transportation, Belgrade	2007.	

Additional readings

Author/s	**Name of publication, editor**	**Year**	**Pages (from-to)**

	Assesment methods	**Points**	**Percentage**
Evaluation criteria	Pre-exam obligations		
	Presence of lectures / exercises	10	10%

	Colloquium 1	20	20%
	Colloquium 2	20	20%
	laboratory exercises	10	10%
	Final exam		
	Final exam (oral)	40	40%
	TOTAL	100	100 %
Web sources			
Applicable from	16.06.2021. – 175. session of the Teaching-Scientific Council of the Faculty of Transport and Traffic Engineering		

Motor Vehicles

UNIVERSITY OF EAST SARAJEVO
Faculty of Transport and Traffic Engineering

Study program: Traffic
Profile: Motor Vehicles

Ordinal	Code	Course title	Course status	Prerequisites	Semester	Fund of classes			ECTS
						L	TE	LE	
		III year of study							
28.	САФ11СМ07116057,0330	Fundamentals of thermodynamics	O		V	3	3	0	7.00
29.	САФ11СМ07116157,0330	Fundamentals of fluid mechanics	O		V	3	3	0	7.00
30.	САФ11СМ07116254,0210	Fuel and lubricant technology	O		V	2	1	0	4.00
31.	САФ11СМ07136555,0211	Automatic control in vehicles	O		V	2	1	1	5.00
32.	САФ11СМ07106857,0330	Motor vehicles	O		V	3	3	0	7.00
33.	САФ11СМ07116466,0330	Fundamentals of vehicle dynamics	O		VI	3	3	0	6.00
34.	САФ11СМ07103966,0330	SUS engines	O		VI	3	3	0	6.00
35.	САФ11СМ07116565,0220	Fuel supply systems	O		VI	2	2	0	5.00
36.	САФ11СМ07216666,0311	1. Alternative fuels and unconventional vehicle drives	I_2		VI	3	1	1	6.00
	САФ11СМ07216766,0311	2. Mechatronic systems for engines and vehicles							
37.	САФ11СМ07216965,0220	1. Materials of road vehicles	I_3		VI	2	2	0	5.00
	САФ11СМ07217965,0220	2. Accounting and finance for managers							
38.	САФ11СИ07132962,0000	Professional practice	O		VI	0	0	0	2.00
					TOTAL:	**26**	**22**	**2**	**60**
		IV year of study							
39.	САФ11СМ07117077,0330	SUS engine design	O		VII	3	3	0	7.00
40.	САФ11СМ07117176,0320	SUS engine equipment	O		VII	3	2	0	6.00
41.	САФ11СМ07117277,0330	Vehicle design and calculation	O		VII	3	3	0	7.00
42.	САФ11СМ07103475,0220	Operation and maintenance of vehicles	O		VII	2	2	0	5.00
43.	САФ11СМ07117375,0220	Engine diagnostics and maintenance	O		VII	2	2	0	5.00
44.	САФ11СМ07117486,0320	Design and organization of vehicle maintenance systems	O		VIII	3	2	0	6.00
45.	САФ11СМ07117585,0220	Environmental protection and waste management	O		VIII	2	2	0	5.00
46.	САФ11СМ07104585,0220	Organization of transport companies	O		VIII	2	2	0	5.00
47.	САФ11СМ07217785,0220	1. Technical inspection and homologation of vehicles	I_4		VIII	2	2	0	5.00
	САФ11СМ07204785,0220	2. Traffic safety							
48.	САФ11СМ07236685,0220	1. Compressors, pumps and fans	I_5		VIII	2	2	0	5.00
	САФ11СМ07217885,0220	2. Human resources, knowledge and project management							
49.	САФ11СИ07105284,0030	Graduate thesis	O		VIII	0	3	0	4.00
					TOTAL:	**24**	**25**	**0**	**60**

- L - lectures
- TE - theoretical exercises
- LE - laboratory exercises

	UNIVERSITY OF EAST SARAJEVO Faculty of Transport and Traffic Engineering ***Study program: Traffic*** ***Profile: Motor Vehicles*** I cycle | I year of study	

Course title	**FUNDAMENTALS OF THERMODYNAMICS**
Department	Department of Motor Vehicles, Operation, Maintenance and Diagnostics of Vehicles

Code	**Course status**	**Semester**	**ECTS credits**
САФ11SM07116057,0330			

Professor/s	Prof. dr Milan Milotić
Associate/s	

Weekly hours			**Individual student hours (per semester)**			**Student workload coefficient S_o**
L	**TE**	**LE**	**L**	**TE**	**LE**	**S_o**
3	3	0	3	3	0	1,33

Total teacher workload (hours, per semester) 3*15 + 3*15 + 0*15 = W 45+ 45+ 0= 90 h	Total student workload (hours, per semester) 3*15*1,33 + 3*15*1,33 + 0*15*1,33 = T 60+ 60 + 0 = 120 h

Total workload: 90 + 120 = 210 h= U_{opt}

Course aims and learning outcomes	By mastering this course the student will be able to: Introduction to the behavior of working substances and the basic features of typical technical processes. Introduction to the basic laws of heat exchange and their application. Introduction to the basic laws of combustion
Prerequisites	Does not have
Teaching methods	Lectures, auditory exercises, seminar paper
Course content	1. Basic concepts and definitions of state size, system, energy, equilibrium and non-equilibrium processes, types of substances 2. The first principle of thermodynamics for closed and open systems 3. Ideal gases and ideally incompressible substances - properties. Mixtures of ideal gases - properties 4. Equilibrium changes in the state of ideal gases in a closed system - application in engineering 5. Equilibrium changes in the state of ideal gases in an open system - application in engineering 6. Circular processes with ideal gases as a working substance. Right-handed and left-handed processes 7. I colloquium 8. The second principle of thermodynamics. Irreversible processes in closed and open system 9. Real substances - properties. Evaporation and liquefaction. Typical processes in closed and open system 10. Circular processes with real substances - energy steam processes and cooling processes 11. Basic concepts of heat transfer - conduction, convection, radiation. Heat conduction 12. Heat exchange by convection - similarity theorem - basic models - application in engineering 13. Heat exchange by radiation - basic models - application in engineering 14. Heat exchangers - types of exchangers, calculation of basic types of exchangers 15. II colloquium

Required literature

Author/s	**Name of publication, publisher**	**Year**	**Pages (from-to)**
A. Galovic	Термодинамика	2002	1-317

Additional readings

Author/s	**Name of publication, editor**	**Year**	**Pages (from-to)**

A. Galovic	The science of heat	1997	1-135

Evaluation criteria	**Assesment methods**	**Points**	**Percentage**
	attendance at lectures and exercises	10	10%
	seminar papers	20	20%
	I colloquium	10	10%
	II colloquium	10	10%
	Final exam		
	final exam (oral / written)	50	50%
	IN TOTAL	100	100%
Web sources			
Applicable from	16.06.2021 - 175 Session of the Councile, Faculty of Transport and Traffic engineering		

	UNIVERSITY OF EAST SARAJEVO Faculty of Transport and Traffic Engineering ***Study program: Traffic*** ***Profile: Motor Vehicles*** I cycle / I year of study	

Course title	**FUNDAMENTALS OF FLUID MECHANICS**
Department	Department of Motor Vehicles, Operation, Maintenance and Diagnostics of Vehicles

Code	**Course status**	**Semester**	**ECTS credits**
САФ11SM07116157,0330			

Professor/s	Prof. dr Perica Gojković
Associate/s	

Weekly hours			**Individual student hours (per semester)**			**Student workload coefficient S_o**
L	**TE**	**LE**	**L**	**TE**	**LE**	**S_o**
3	3	0	3	3	0	1,33

Total teacher workload (hours, per semester) 3*15 + 3*15 + 0*15 = W 45+ 45+ 0= 90 h	Total student workload (hours, per semester) 3*15*1,33 + 3*15*1,33 + 0*15*1,33 = T 60+ 60 + 0 = 120 h
Total workload: W + T = 90 + 120 = 210 h	

Course aims and learning outcomes	By mastering this course the student will be able to: He applies Bernoulli's equations and integral forms of the basic laws of fluid flow to solve technical problems
Prerequisites	Does not have
Teaching methods	Lectures, auditory exercises, seminar paper
Course content	1. Mathematical foundations. Recapitulation of basic concepts in mathematics 2. Physical basics. Basic properties of fluids 3. Forces in a fluid. Equation of motion of a fluid particle 4. Fluid statics in the gravitational field. Pascal's law. Manometers 5. Determination of pressure force on flat and curved surfaces 6. Hydrostatic buoyancy. Swimming conditions. Density measurement 7. I colloquium 8. Fluid kinematics Euler's and Lagrange's description of flow. Material derivation. Trajectories and streams. Bernoulli's equation 9. Fluid dynamics. Integral forms of the law of conservation of mass, momentum, momentum and laws of mechanical energy 10. Basic laws for one-dimensional flow. Modified Bernoulli equation. Graphical representation of the contents of the Bernoulli equation 11. Dimensional analysis of body circulation. Body resistance coefficients 12. Dimensional analysis of flow in pipes 13. Hydraulic calculation of pipelines: Line losses. Local losses. Energy characteristics of hydraulic machines 14. Calculation of pressure drop, flow and pipeline diameter. Calculation of non-circular cross-section pipelines 15. II colloquium

Textbook (s)

Author/s	**Name of publication, publisher**	**Year**	**Pages (from-to)**
Virag Z.	Fluid mechanics-selected chapters, examples and tasks, FSB Zagreb	**2002**	**1-300**

Additional readings

Author/s	**Name of publication, editor**	**Year**	**Pages (from-to)**
Munson, B. R.	Fundamentals of Fluid Mechanics, John Wiley & Sons	1990	1-400

Evaluation criteria	**Assesment methods**	**Points**	**Percentage**

	attendance at lectures and exercises	10	10%
	seminar papers	20	20%
	I colloquium	10	10%
	II colloquium	10	10%
	Final exam		
	final exam (oral / written)	50	50%
	IN TOTAL	100	100%
Web sources			
Applicable from	16.06.2021 - 175 Session of the Councile, Faculty of Transport and Traffic engineering		

	UNIVERSITY OF EAST SARAJEVO Faculty of Transport and Traffic Engineering ***Study program: Traffic*** ***Profile: Motor Vehicles*** I cycle / I year of study	

Course title	**FUEL AND LUBRICANTS TECHNOLOGY**
Department	Department of Motor Vehicles, Operation, Maintenance and Diagnostics of Vehicles

Code	**Course status**	**Semester**	**ECTS credits**
САФ11SM07116254,0210			

Professor/s	Prof. dr Pero Dugić
Associate/s	

Weekly hours			**Individual student hours (per semester)**			**Student workload coefficient S_o**
L	**TE**	**LE**	**L**	**TE**	**LE**	**S_o**
2	1	0	2	1		1,6

Total teacher workload (hours, per semester) 2*15 + 1*15 + 0*15 = W 30+ 15+ 0= 45 h	Total student workload (hours, per semester) 2*15*1,6+ 1*15*1,6 + 0*15*1,5 = T 50+ 25 + 0 = 75 h
Total workload: 45 + 75 = 120 h	

Course aims and learning outcomes	By mastering this course the student will be introduced to: With the physico-chemical characteristics of fuels and lubricants, acquiring knowledge about fuel and lubricants as indispensable media of thermal energy systems. Understanding the processes of combustion and energy conversion in internal combustion engines and catalytic exhaust treatment.
Prerequisites	Does not have
Teaching methods	Lectures, auditory exercises, seminar paper
Course content	1. Definition of technical fuels. Fuel classification. Elemental fuel composition. Stoichiometric relations in fuel combustion processes, theoretical oxygen demand. 2. Basic properties of solid, liquid and gaseous fuels. Technological processing of petroleum 3. Chemical structure of liquid fuels: aliphatic, cyclic hydrocarbons, alcohols, ethers, ketones 4. Division and characteristics of liquid fuels by purpose: gasoline, gas oils, jet fuels, alcohols, gaseous fuels 5. Fuel-to-engine ratio. Combustion processes. Exhaust gases 6. Detonation combustion in Otto engine .. Alloy fuels. Octane value of fuel. 7. I colloquium 8. Detonation combustion in Diesel engine. Prone to inflammation. Cetane value of fuel 9. Start the cold engine. Fuel volatility - vapor pressure according to Reid 10. Fuel stability. Fuel aging processes. Fuel storage 11. Fuel additives, oxygenated and reformulated fuels 12. Specification of motor fuels and stability. Fuel quality requirements. Impact on the environment 13. Flue gas treatment of internal combustion engines - catalytic converters: Otto engines, Diesel engines, gas and two-stroke engines 14. Lubricants. Basics of friction. Types of lubrication. Physico-chemical characteristics of lubricants. Classification of lubricating oils. Lubricating oils for internal combustion engines 15. II colloquium

Textbook (s)

Author/s	**Name of publication, publisher**	**Year**	**Pages (from-to)**
Speight, J.G.	The chemistry and technology of petroleum, Marcel Dekker, New York	1991	1-418

Additional readings

Author/s	**Name of publication, editor**	**Year**	**Pages (from-to)**
Fuller, D.	Theory and practice of lubrication for engineers,	1956	1-200

	John Wiley&Sons, New York		

	Assesment methods	Points	Percentage
Evaluation criteria			
	attendance at lectures and exercises	10	10%
	seminar papers	20	20%
	I colloquium	10	10%
	II colloquium	10	10%
	Final exam		
	final exam (oral / written)	50	50%
	IN TOTAL	100	100%
Web sources			
Applicable from	16.06.2021 - 175 Session of the Councile, Faculty of Transport and Traffic engineering		

	UNIVERSITY OF EAST SARAJEVO Faculty of Transport and Traffic Engineering ***Study program: Traffic*** ***Profile: Motor Vehicles***	
	I cycle / I year of study	

Course title	**AUTOMATIC STEERING IN VEHICLES**
Department	Department of Automation and Robotics - ETF East Sarajevo

Code	**Course status**	**Semester**	**ECTS credits**
САФ11SM07136555,0211		V	

Professor/s	PhD Miroslav Kostadinović, associate professor
Associate/s	

Weekly hours			**Individual student hours (per semester)**			**Student workload coefficient S_o**
L	**TE**	**LE**	**L**	**TE**	**LE**	**S_o**
2	1	1	2	1	1	1,5

Total teacher workload (hours, per semester) 2*15 + 1*15 + 1*15 = W 30+ 15+ 15= 60 h	Total student workload (hours, per semester) 2*15*1,5+ 1*15*1,5 + 1*15*1,5 = T 45+22,5+ 22,5 = 90 h
Total workload: 60 + 90 =150 h	

Course aims and learning outcomes	1. Introducing students to the management of automotive subsystems that affect the behavior of vehicles as a whole. 2. Students will be able to formulate and solve management requirements related to the most commonly used automotive subsystems by applying the basics of automatic control. 3. Design of control systems of automotive subsystems such as: braking system, vehicle handling systems and propulsion system
Prerequisites	Does not have
Teaching methods	Lectures, auditory exercises, seminar paper
Course content	1. Concept and definition of automatic control system 2. Laws of governance 3. Mathematical models of automatic control systems and transmission functions 4. Laplace transform. 5. Frequency analysis of automatic control systems 6. Stability of automatic control system 7. I colloquium 8. Intelligent management. Fuzzy logic. 9. Signals, sensors and actuators in vehicles 10. Control devices and communication protocols in vehicles 11. Control systems 12. Vehicle braking systems 13. Vehicle speed control system 14. Detection and diagnosis of errors 15. II colloquium

Textbook (s)

Author/s	**Name of publication, publisher**	**Year**	**Pages (from-to)**
Stojic M.	Continuous automatic control systems, Scientific book, Belgrade	1990	
Uwe Kiencke, Lars Nielsen	"Automotive Control Systems: For Engine, Driveline, and Vehicle", Springer Verlag	2005.	
Стјепановић А., Костадиновић М.	Telematics systems, University of East Sarajevo, Faculty of Transport and Traffic Engineering, Doboj	2020.	

Additional readings

Author/s	**Name of publication, editor**	**Year**	**Pages (from-to)**

Evaluation criteria	**Assesment methods**	**Points**	**Percentage**

	attendance at lectures and exercises	10	10%
	seminar papers	20	20%
	I colloquium	10	10%
	II colloquium	10	10%
	Final exam		
	final exam (oral / written)	50	50%
	IN TOTAL	100	100%
Web sources			
Applicable from	16.06.2021 - 175 Session of the Councile, Faculty of Transport and Traffic engineering		

	UNIVERSITY OF EAST SARAJEVO Faculty of Transport and Traffic Engineering ***Study program: Traffic*** ***Profile: Motor Vehicles*** I cycle / I year of study	

Course title	**MOTOR VEHICLES**
Department	Department of Motor Vehicles, Operation, Maintenance and Diagnostics of Vehicles

Code	**Course status**	**Semester**	**ECTS credits**
САФ11SM07106857,0330			

Professor/s	Prof. dr Mesud Ajanović
Associate/s	

Weekly hours			**Individual student hours (per semester)**			**Student workload coefficient S_o**
L	**TE**	**LE**	**L**	**TE**	**LE**	**S_o**
3	3	0	3	3	0	1,33

Total teacher workload (hours, per semester) 3*15 + 3*15 + 0*15 = W 45+ 45+ 0= 90 h	Total student workload (hours, per semester) 3*15*1,33 + 3*15*1,33 + 0*15*1,33 = T 60+ 60 + 0 = 120 h
Total workload: 90 + 120 = 210 h	

Course aims and learning outcomes	By mastering this course the student acquires knowledge: From the field of dynamic properties of motor vehicles and getting acquainted with the design solutions of individual assemblies
Prerequisites	Does not have
Teaching methods	Lectures, auditory exercises, seminar paper
Course content	1. Historical overview of motor vehicle development. Propulsion engines of motor vehicles 2. Forces acting on motor vehicles, driving resistances, traction forces 3. Limit of traction forces with respect to available friction force 4. Lateral guidance forces, vertical forces 5. Balance of traction forces and driving resistance. Power balance 6. Basics of braking theory, balance of forces and energy during braking 7. I colloquium 8. Determination of deceleration, braking factor, braking distance and time. Stop the road 9. Vehicle stability. Longitudinal and transverse stability 10. Vehicle handling. Vehicle comfort 11 Main assemblies of motor vehicles 12. Wheels and tires 13 Support system 14. Management system. Braking system 15. II colloquium

Textbook (s)

Author/s	**Name of publication, publisher**	**Year**	**Pages (from-to)**
Krpan,D.	Motor vehicles, II. edition, University of Zagreb, Zagreb	1990	1-260

Additional readings

Author/s	**Name of publication, editor**	**Year**	**Pages (from-to)**

Evaluation criteria	**Assesment methods**	**Points**	**Percentage**
	Pre-exam obligations		
	attendance at lectures and exercises	10	10%
	seminar papers	20	20%

	I colloquium	10	10%
	II colloquium	10	10%
	Final exam		
	final exam (oral / written)	50	50%
	IN TOTAL	100	100%
Web sources			
Applicable from	16.06.2021 - 175 Session of the Councile, Faculty of Transport and Traffic engineering		

	UNIVERSITY OF EAST SARAJEVO Faculty of Transport and Traffic Engineering ***Study program: Traffic*** ***Profile: Motor Vehicles*** I cycle / I year of study	

Course title	**FUNDAMENTALS OF VEHICLE DYNAMICS**
Department	Department of Motor Vehicles, Operation, Maintenance and Diagnostics of Vehicles

Code	**Course status**	**Semester**	**ECTS credits**
САФ11SM071164660330			

Professor/s	Prof. dr Mesud Ajanović
Associate/s	

Weekly hours			**Individual student hours (per semester)**			**Student workload coefficient S_o**
L	**TE**	**LE**	**L**	**TE**	**LE**	**S_o**
3	3	0	3	3	0	1

Total teacher workload (hours, per semester) 3*15 + 3*15 + 0*15 = W 45+ 45+ 0= 90 h	Total student workload (hours, per semester) 3*15*1 + 3*15*1 + 0*15*1 = T 45+ 45 + 0 = 90 h
Total workload: 90 + 90 = 180 h	

Course aims and learning outcomes	By mastering this course the student acquires knowledge: On the basic concepts of the dynamics of motor vehicles, longitudinal, transverse and vertical forces acting on the vehicle during its movement. Acquiring the knowledge needed to assess the characteristics of motor vehicles and formulate requirements that are based on the analysis of dynamics in the design and construction of motor vehicles and their systems and units.
Prerequisites	Does not have
Teaching methods	Lectures, auditory exercises, seminar paper
Course content	1. Basic concepts of motor vehicle 2. Basic concepts of motor vehicle dynamics 3. Point mechanics 4. Vehicle aerodynamics 5. Resistance to movement 6. Transmission of forces between ground and wheels 7. I colloquium 8. Selection of drive motor 9. Motor characteristic converters 10. Departure of the vehicle from the place 11 Rectilinear movement of vehicles 12. Vehicle braking 13 Vehicle performance 14. Transverse vehicle dynamics. Vertical vehicle dynamics. Collision mechanics 15. II colloquium

Textbook (s)

Author/s	**Name of publication, publisher**	**Year**	**Pages (from-to)**
Knor P.	Dynamics of motor vehicles, Faculty of Mechanical Engineering Sarajevo, Sarajevo	2006	1-328

Additional readings

Author/s	**Name of publication, editor**	**Year**	**Pages (from-to)**
Jankovic D., Todorovic J.	Theory of motor vehicle motion, Faculty of Mechanical Engineering, Belgrade	1991	1-225

Evaluation criteria	**Assesment methods**	**Points**	**Percentage**

	Pre-exam obligations		
	attendance at lectures and exercises	10	10%
	seminar papers	20	20%
	I colloquium	10	10%
	II colloquium	10	10%
	Final exam		
	final exam (oral / written)	50	50%
	IN TOTAL	100	100%
Web sources			
Applicable from	16.06.2021 - 175 Session of the Councile, Faculty of Transport and Traffic engineering		

	UNIVERSITY OF EAST SARAJEVO Faculty of Transport and Traffic Engineering ***Study program: Traffic*** ***Profile: Motor Vehicles*** I cycle / I year of study	

Course title	**MOTORS SUS**
Department	Department of Motor Vehicles, Operation, Maintenance and Diagnostics of Vehicles

Code	**Course status**	**Semester**	**ECTS credits**
САФ11SM07103966,0330			

Professor/s	Prof. dr Zoran Ristikić
Associate/s	

Weekly hours			**Individual student hours (per semester)**			**Student workload coefficient S_o**
L	**TE**	**LE**	**L**	**TE**	**LE**	**S_o**
3	3	0	3	3	0	1

Total teacher workload (hours, per semester) 3*15 + 3*15 + 0*15 = 90	Total student workload (hours, per semester) 3*15*1,33 + 3*15*1,33 + 0*15*1,33 = 90
Total workload: 90 + 90 = 180 h	

Course aims and learning outcomes	By mastering this course the student will be able to: 1. to learn about the division of SUS engines, their characteristics and basic elements; 2. to get acquainted with the principles of operation of two-stroke and four-stroke SUS engines; 3. to analyze the basic systems of SUS engines as well as the processes in SUS and other engines; 4. acquired knowledge applied in practice.
Prerequisites	Does not have
Teaching methods	Lectures, auditory exercises, seminar paper
Course content	1. Engine definition. History of SUS engine development 2. SUS engine division 3. Geometric parameters of the SUS engine. Basic elements, mechanisms and systems of SUS engines 4. Principle of operation of four-stroke and two-stroke SUS engines 5. Piston mechanism 6. Crankshaft and engine flywheel 7. Mechanism for changing the working material (I colloquium) 8. Basic SUS engine systems 9. Theoretical cycles of SUS engines 10. Thermal - physical properties of fuels, mixtures and combustion products 11. Actual SUS engine cycles 12. Processes of changing the working substance in SUS engines 13. The process of compression, combustion and expansion in oto engines 14. Compression, combustion and expansion process in diesel engines 15. Indicator and effective indicators of SUS engines (II colloquium)

Textbook (s)

Author/s	**Name of publication, publisher**	**Year**	**Pages (from-to)**
Todorovic, T., Antonic Z.	Fundamentals of SUS engines, Faculty of Technical Sciences Novi Sad, Novi Sad,	1997	
Klinar, I.	SUS engines, auxiliary textbook, FTN, Novi Sad,	2008	

Additional readings

Author/s	**Name of publication, editor**	**Year**	**Pages (from-to)**
Todorovic, T., Antonic Z.	Basics of SUS engines, Faculty of Transportation Doboj,	2009	

Tomic, M., Petrovic, S.	Internal combustion engines, Faculty of Mechanical Engineering, Belgrade	2000	

	Assesment methods	Points	Percentage
Evaluation criteria	Pre-exam obligations		
	attendance at lectures / exercises	10	10%
	I am positively assessed. paper / project / essay	10	10%
	case study - group work		
	test / colloquium	2x10	20%
	Final exam		
	oral	60	60%
	IN TOTAL	100	100%
Web sources			
Applicable from	16.06.2021 - 175 Session of the Councile, Faculty of Transport and Traffic engineering		

	UNIVERSITY OF EAST SARAJEVO Faculty of Transport and Traffic Engineering ***Study program: Traffic*** ***Profile: Motor Vehicles*** I cycle / I year of study	

Course title	**FUEL SUPPLY SYSTEMS**
Department	Department of Motor Vehicles, Operation, Maintenance and Diagnostics of Vehicles

Code	**Course status**	**Semester**	**ECTS credits**
САФ11SM07116565,0220			

Professor/s	Prof. dr Zdravko Nunić
Associate/s	

Weekly hours			**Individual student hours (per semester)**			**Student workload coefficient S_o**
L	**TE**	**LE**	**L**	**TE**	**LE**	**S_o**
2	2	0	2	2	0	1,5

Total teacher workload (hours, per semester) 2*15 + 2*15 + 0*15 = W 30+ 30+ 0= 60 h	Total student workload (hours, per semester) 2*15*1,5 + 2*15*1,5 + 0*15*1,5 = T 45+ 45 + 0 = 90 h
Total workload: 60 + 90 = 150 h	

Course aims and learning outcomes	By mastering this course the student acquires knowledge: With the methods of fuel supply to the engine sus, the principles of operation of individual fuel supply systems, trends in their development, as well as introduction to the methods of regulation of fuel supply in different modes of engine operation.
Prerequisites	Does not have
Teaching methods	Lectures, auditory exercises, seminar paper
Course content	1. Role, requirements and general characteristics of fuel supply in oto and diesel engines 2. Basic divisions of the fuel supply system 3. Hydrodynamic processes in the diesel fuel supply system 4. Characteristic sizes of the injection process (injection characteristics, jet parameters, injector characteristics and their impact on injection) 5. Optimal fuel injection parameters for diesel engines 6. The role and tasks of the regulator in diesel engines 7. I colloquium 8. Types of regulators according to construction and method of regulation 9. Motor as an object of regulation 10. Conditions of static and dynamic equilibrium 11 Engine-to-fuel system stability parameters for diesel engines 12. How to supply fuel and create a mixture with the engine 13 Types of fuel supply systems for oto engines (carburetion, injection) 14. Principles of modern electronic regulation in oto engines. Development trends, with basic characteristics. 15. II colloquium

Textbook (s)

Author/s	**Name of publication, publisher**	**Year**	**Pages (from-to)**
Filipovic Ivan	Oprema motora sui, MF Sarajevo	1994	1-188

Additional readings

Author/s	**Name of publication, editor**	**Year**	**Pages (from-to)**
Cernej A., Dobovisek Z.	Fuel supply diesel and oto engines, IGKRO Svjetlost, Sarajevo	1980	1-205

Evaluation criteria	**Assesment methods**	**Points**	**Percentage**
	Pre-exam obligations		

	attendance at lectures and exercises	10	10%
	seminar papers	20	20%
	I colloquium	10	10%
	II colloquium	10	10%
	Final exam		
	final exam (oral / written)	50	50%
	IN TOTAL	100	100%
Web sources			
Applicable from	16.06.2021 - 175 Session of the Councile, Faculty of Transport and Traffic engineering		

	UNIVERSITY OF EAST SARAJEVO Faculty of Transport and Traffic Engineering ***Study program: Traffic*** ***Profile: Motor Vehicles*** I cycle / I year of study	

Course title	**ALTERNATIVE FUELS AND UNCONVENTIONAL VEHICLE DRIVES**
Department	Department of Motor Vehicles, Operation, Maintenance and Diagnostics of Vehicles

Code	**Course status**	**Semester**	**ECTS credits**
САФ11SM07216666,0311			

Professor/s	Prof. dr Pero Dugić
Associate/s	

Weekly hours			**Individual student hours (per semester)**			**Student workload coefficient S_o**
L	**TE**	**LE**	**L**	**TE**	**LE**	**S_o**
3	1	1	63	21	21	1,4

Total teacher workload (hours, per semester) 3*15 + 1*15 + 1*15 = W 45+ 15+ 15= 75 h	Total student workload (hours, per semester) 2*15*1,5 + 2*15*1,5 + 0*15*1,5 = T 45+ 45 + 0 = 90 h
Total workload: 75 + 105 = 180 h	

Course aims and learning outcomes	By mastering this course the student acquires knowledge: On potential alternative fuels and their advantages and disadvantages in relation to fossil fuels in SUS engines
Prerequisites	Does not have
Teaching methods	Lectures, auditory exercises, seminar paper
Course content	1. An overview of global trends in fuel consumption and vehicle growth, as well as fuel reserves for motor vehicle propulsion 2. Pollutants in the exhaust gases from the SUS engine 3. Measures to control emissions of pollutants 4. Renewable energy sources 5. Types of alternative fuels 6. Production, handling and storage of alternative fuels 7. I colloquium 8. Properties of alternative fuels and their comparison with conventional fuels for motor vehicle propulsion 9. Combustion efficiency and the possibility of reducing emissions of pollutants 10. Use of biodiesel and its mixtures in SUS engines 11. Use of LPG to drive the SUS engine 12. Use of CNG to drive the SUS engine 13. Use of hydrogen to drive the SUS engine 14. Use of fuel cells to drive the SUS engine. A brief overview of other types of alternative motor vehicle propulsion 15. II colloquium

Textbook (s)

Author/s	**Name of publication, publisher**	**Year**	**Pages (from-to)**
OECD	Motor Vehicle Pollution – Reduction strategies beyond 2010, OECD, Paris	1995	1-378

Additional readings

Author/s	**Name of publication, editor**	**Year**	**Pages (from-to)**
Cernej A., Dobovisek Z.	Liquid fuel saving - selected chapters in motoring, Faculty of Mechanical Engineering, Sarajevo	1980	1-285

Evaluation criteria	**Assesment methods**	**Points**	**Percentage**

	Pre-exam obligations		
	attendance at lectures and exercises	10	10%
	seminar papers	20	20%
	I colloquium	10	10%
	II colloquium	10	10%
	Final exam		
	final exam (oral / written)	50	50%
	IN TOTAL	100	100%
Web sources			
Applicable from	16.06.2021 - 175 Session of the Councile, Faculty of Transport and Traffic engineering		

	UNIVERSITY OF EAST SARAJEVO Faculty of Transport and Traffic Engineering ***Study program: Traffic*** ***Profile: Motor Vehicles*** I cycle / I year of study	

Course title	**MECHATRONIC SYSTEMS IN ENGINES AND VEHICLES**
Department	Department of Motor Vehicles, Operation, Maintenance and Diagnostics of Vehicles

Code	**Course status**	**Semester**	**ECTS credits**
САФ11SM07216766,0311			

Professor/s	Prof. dr Slobodan Lubura
Associate/s	

Weekly hours			**Individual student hours (per semester)**			**Student workload coefficient S_o**
L	**TE**	**LE**	**L**	**TE**	**LE**	**S_o**
3	1	1	63	21	21	1,4

Total teacher workload (hours, per semester) 3*15 + 1*15 + 1*15 = W 45+ 15+ 15= 75 h	Total student workload (hours, per semester) 3*15*1,4 + 1*15*1,4 + 1*15*1,4 = T 63 + 21 + 21 = 105 h
Total workload: 75 + 105 = 180 h	

Course aims and learning outcomes	By mastering this course the student acquires knowledge and acquaintance with With electronic motor vehicle systems and the basics of automotive mechatronics
Prerequisites	Does not have
Teaching methods	Lectures, auditory exercises, seminar paper
Course content	1. Introduction, historical overview, basics of electronics applied in motor vehicles 2. Accumulators and machines for generating electricity. Dynamo machines. Alternators. Lights 3. Electrical starting devices for internal combustion engines. Sensors. Actuators 4. Electrical equipment for Otto engine operation 5. Electronic equipment for Otto engine operation. Computer-controlled injection in Otto engines 6. Computer-controlled injection in Diesel engines 7. I colloquium 8. Dynamic model of automobile drive 9. Dynamic model of Otto engine 10. Automatic transmission modeling 11. Car tire models 12. Vehicle dynamics models 13. Suspension models 14. TCS traction control. Anti-lock braking systems ABS. Equipment to increase driver and passenger comfort. Air conditioning devices Navigation devices. Devices for displaying data and parameters in the driver 's field of vision and control instruments 15. II colloquium

Textbook (s)

Author/s	**Name of publication, publisher**	**Year**	**Pages (from-to)**
Ribbens	Automotive Handbook, Bosch	2000	1-330

Additional readings

Author/s	**Name of publication, editor**	**Year**	**Pages (from-to)**
BOSCH Springer Verlag, Berlin	Kraftfahrtechnisches taschenbuch	1999	1-385

Evaluation criteria	**Assesment methods**	**Points**	**Percentage**
	Pre-exam obligations		
	attendance at lectures and exercises	10	10%

	seminar papers	20	20%
	I colloquium	10	10%
	II colloquium	10	10%
	Final exam		
	final exam (oral / written)	50	50%
	IN TOTAL	100	100%
Web sources			
Applicable from	16.06.2021 - 175 Session of the Councile, Faculty of Transport and Traffic engineering		

	UNIVERSITY OF EAST SARAJEVO Faculty of Transport and Traffic Engineering ***Study program: Traffic*** ***Profile: Motor Vehicles*** I cycle / I year of study	

Course title	**ROAD VEHICLE MATERIALS**
Department	Department of Motor Vehicles, Operation, Maintenance and Diagnostics of Vehicles

Code	**Course status**	**Semester**	**ECTS credits**
САФ11SM07216965,0220			

Professor/s	Prof. dr Bojan Marić
Associate/s	

Weekly hours			**Individual student hours (per semester)**			**Student workload coefficient S_o**
L	**TE**	**LE**	**L**	**TE**	**LE**	**S_o**
2	2	0	2	2	0	1,5

Total teacher workload (hours, per semester) 2*15 + 2*15 + 0*15 = W 30+ 30+ 0= 60 h	Total student workload (hours, per semester) 2*15*1,5 + 2*15*1,5 + 0*15*1,5 = T 45 + 45 + 0 = 90 h
Total workload: 60 + 90 = 150 h	

Course aims and learning outcomes	By mastering this course the student acquires knowledge and acquaintance with With structure properties and application of materials for road vehicle constructions - high and high strength steels, light metals, composite materials and wood
Prerequisites	Does not have
Teaching methods	Lectures, auditory exercises, seminar paper
Course content	1. Material requirements for materials for use in road vehicles 2. Mechanisms of material hardening 3. Properties and applications of high and high strength steels 4. Structure, properties and application of steels and castings for elevated and high temperatures 5. Structure, properties and application of Ni and Co alloys 6. Structure, properties and application of ceramics and intermetallic compounds 7. I colloquium 8. Structure and properties of aluminum alloys 9. Types and applications of aluminum alloys in road vehicles 10. Structure, properties and application of cellular materials 11. Application of cellular materials in road vehicles 12. Structure and properties of composite materials 13. Application of composite materials in road vehicles 14. Structure and properties of wood. Application of wood in road vehicles 15. II colloquium

Textbook (s)

Author/s	**Name of publication, publisher**	**Year**	**Pages (from-to)**
Calister, W.D.	Materials Science and Engineering, J. Wiley&Sons, Inc. New York	2000	1-218

Additional readings

Author/s	**Name of publication, editor**	**Year**	**Pages (from-to)**
Filetin, T; Kovacicek, F; Indof, J	Properties and application of materials, FSB Zagreb	2002	1-185

Evaluation criteria	**Assesment methods**	**Points**	**Percentage**
	Pre-exam obligations		
	attendance at lectures and exercises	10	10%

	seminar papers	20	20%
	I colloquium	10	10%
	II colloquium	10	10%
	Final exam		
	final exam (oral / written)	50	50%
	IN TOTAL	100	100%
Web sources			
Applicable from	16.06.2021 - 175 Session of the Councile, Faculty of Transport and Traffic engineering		

	UNIVERSITY OF EAST SARAJEVO Faculty of Transport and Traffic Engineering ***Study program: Traffic*** ***Profile: Motor Vehicles*** I cycle / I year of study	

Course title	**ACCOUNTING AND FINANCE FOR MANAGERS**
Department	Department of Accounting, Auditing and Business Finance - FPE Bijeljina

Code	**Course status**	**Semester**	**ECTS credits**
CAФ11SM07217965,0220			

Professor/s	Prof. dr Slobodan Subotić
Associate/s	

Weekly hours			**Individual student hours (per semester)**			**Student workload coefficient S_o**
L	**TE**	**LE**	**L**	**TE**	**LE**	**S_o**

Total teacher workload (hours, per semester) 2*15 + 2*15 + 0*15 = W 30+ 30+ 0= 75 h	Total student workload (hours, per semester) 2*15*1,5 + 2*15*1,5 + 0*15*1,5 = T 45 + 45 + 0 = 90 h
Total workload: 60 + 90 = 150 h	

Course aims and learning outcomes	By mastering this course, students will be able to master the basic concepts and problems of accounting and finance in order to prepare for making the best possible business decisions. Understanding the field of finance and accounting is key to the rational action of each manager to assess the financial situation in the company, compare the financial position of the company with other companies, determine sources of funding and opportunities to obtain the necessary funds for smooth operation, growth and development.
Prerequisites	Does not have
Teaching methods	Lectures, auditory exercises, seminar paper
Course content	1. Introduction (need for basic knowledge in the field of accounting and finance). 2. Accounting, Accounting Law, International Accounting Standards 3. Accounting and financial reports 4. Analysis of accounting reports 5. Management Accounting 6. Cost management 7. First colloquium 8. Business plan. Financial business plan 9. Enterprise financing. Cash flows. The time value of money. Financial leverage. 10. Capital markets. Company financing. Problems of financing 11. Financing by issuing securities 12. Bonds 13. Ordinary and preferential actions. Other securities 14. Making investment decisions. Evaluation of the financial efficiency of the project 15. Second colloquium

Textbook (s)

Author/s	**Name of publication, publisher**	**Year**	**Pages (from-to)**
1. Stevanovic Nikola, Petrovic Teodor	1. Management Accounting, Faculty of Economics Brčko, Brčko	2010	
2. Kovacevic Ljubimir, Vunjak Nenad	2. Corporate Finance Management - Business Finance, Faculty of Transportation Doboj, Doboj	2009	
3. Subotic Slobodan, Mirovic Goran	3. Financial markets, institutions and instruments, VŠTH Trebinje	2020	

Additional readings

Author/s	**Name of publication, editor**	**Year**	**Pages (from-to)**
Vunjak Nenad, Vitez	Corporate capital market management, ANU RS	2018	

Miroslav, Radovic Milan	Banja Luka, VŠMB Belgrade		

	Assesment methods	Points	Percentage
Evaluation criteria	Pre-exam obligations		
	Attendance at lectures / exercises	5	5%
	Seminary work	5	5%
	The first colloquium	20	20%
	Second Colloquium	20	20%
	Final exam		
	Oral	50	50%
	IN TOTAL	100	100%
Web sources			
Applicable from	16.06.2021 - 175 Session of the Councile, Faculty of Transport and Traffic engineering		

	UNIVERSITY OF EAST SARAJEVO Faculty of Transport and Traffic Engineering ***Study program: Traffic*** ***Profile: Motor Vehicles*** I cycle | I year of study	

Course title	**ENGINE CONSTRUCTION SUS**
Department	Department of Motor Vehicles, Operation, Maintenance and Diagnostics of Vehicles

Code	**Course status**	**Semester**	**ECTS credits**
САФ11SM07117077,0330			

Professor/s	Prof. dr Snežana Petković
Associate/s	

Weekly hours			**Individual student hours (per semester)**			**Student workload coefficient S_o**
L	**TE**	**LE**	**L**	**TE**	**LE**	**S_o**
3	3	0	2	2	0	1,33

Total teacher workload (hours, per semester) 3*15 + 3*15 + 0*15 = W 45+ 45+ 0= 90 h	Total student workload (hours, per semester) 3*15*1,33 + 3*15*1,33 + 0*15*1,33 = T 60 + 60 + 0 = 120 h
Total workload: 90 + 120 = 210 h	

Course aims and learning outcomes	By mastering this course the student acquires knowledge and acquaintance with Comprehensive insight into theoretical and practical knowledge of engine dynamics and construction of basic elements of engines and engine systems
Prerequisites	Does not have
Teaching methods	Lectures, auditory exercises, seminar paper
Course content	1. Constructive concepts, types and divisions of engines 2. Construction of fixed engine parts 3. Kinematics and dynamics of the motor mechanism 4. Uneven torque and angular velocity of the crankshaft 5. Engine balancing 6. Engine piston group construction 7. I colloquium 8. Connecting rod and crankshaft construction 9. Crankshaft construction 10. Construction of engine distribution system 11. Vibration problem in the engine and engine suspension 12. Torsional oscillations of the engine crankshaft 13. Engine cooling system 14. Engine lubrication system. Engine starting system. 15. II colloquium

Textbook (s)

Author/s	**Name of publication, publisher**	**Year**	**Pages (from-to)**
.			

Additional readings

Author/s	**Name of publication, editor**	**Year**	**Pages (from-to)**

	Assesment methods	**Points**	**Percentage**
Evaluation criteria	Pre-exam obligations		
	attendance at lectures and exercises	10	10%
	seminar papers	20	20%
	I colloquium	10	10%
	II colloquium	10	10%

	Final exam		
	final exam (oral / written)	50	50%
	IN TOTAL	100	100%
Web sources			
Applicable from	16.06.2021 - 175 Session of the Councile, Faculty of Transport and Traffic engineering		

	UNIVERSITY OF EAST SARAJEVO Faculty of Transport and Traffic Engineering ***Study program: Traffic*** ***Profile: Motor Vehicles*** I cycle | I year of study	

Course title	**ENGINE EQUIPMENT SUS**
Department	Department of Motor Vehicles, Operation, Maintenance and Diagnostics of Vehicles

Code	**Course status**	**Semester**	**ECTS credits**
САФ11SM07117176,0320			

Professor/s	Prof. dr Mesud Ajanović
Associate/s	

Weekly hours			**Individual student hours (per semester)**			**Student workload coefficient S_o**
L	**TE**	**LE**	**L**	**TE**	**LE**	**S_o**
3	2	0	63	42	0	1,4

Total teacher workload (hours, per semester) 3*15 + 2*15 + 0*15 = W 45+ 30+ 0= 75 h	Total student workload (hours, per semester) 3*15*1,4+ 3*15*1,4+ 0*15*1,4= T 63 + 42 + 0 = 105 h
Total workload: 75 + 105 = 180 h	

Course aims and learning outcomes	By mastering this course the student acquires knowledge and acquaintance with Comprehensive insight into theoretical and practical knowledge of engine dynamics and construction of basic elements of engines and engine systems
Prerequisites	Does not have
Teaching methods	Lectures, auditory exercises, seminar paper
Course content	1. Introductory considerations on the formation of the mixture 2. Formation of a mixture in a gasoline engine using a carburetor 3. Gasoline fuel injection systems 4. Comparison of system and carburetor system 5. Electronically controlled fuel injection systems 6. Basic hydraulic elements of the system 7. I colloquium 8. Diesel mixture formation systems 9. high pressure pumps 10. Injectors 11. Diesel fuel injection systems with electronic regulation 12. Pump-injector system with electronic regulation 13. Common Rail Engine Cooling and Exhaust Systems 14. Ignition systems for oto engines - conventional and electronically controlled. 15. II colloquium

Textbook (s)

Author/s	**Name of publication, publisher**	**Year**	**Pages (from-to)**
.			

Additional readings

Author/s	**Name of publication, editor**	**Year**	**Pages (from-to)**

	Assesment methods	**Points**	**Percentage**
Evaluation criteria	Pre-exam obligations		
	attendance at lectures and exercises	10	10%
	seminar papers	20	20%
	I colloquium	10	10%
	II colloquium	10	10%

	Final exam		
	final exam (oral / written)	50	50%
	IN TOTAL	100	100%
Web sources			
Applicable from	16.06.2021 - 175 Session of the Councile, Faculty of Transport and Traffic engineering		

	UNIVERSITY OF EAST SARAJEVO Faculty of Transport and Traffic Engineering ***Study program: Traffic*** ***Profile: Motor Vehicles*** I cycle / I year of study	

Course title	**VEHICLE DESIGN AND BUDGET**
Department	Department of Motor Vehicles, Operation, Maintenance and Diagnostics of Vehicles

Code	**Course status**	**Semester**	**ECTS credits**
САФ11SM07117277,0330			

Professor/s	Prof. dr Zoran Ristikić
Associate/s	

Weekly hours			**Individual student hours (per semester)**			**Student workload coefficient S_o**
L	**TE**	**LE**	**L**	**TE**	**LE**	**S_o**
3	3	0	3	2	0	1,33

Total teacher workload (hours, per semester) 3*15 + 3*15 + 0*15 = W 45+ 45+ 0= 90 h	Total student workload (hours, per semester) 3*15*1,33 + 3*15*1,33 + 0*15*1,33 = T 60 + 60 + 0 = 120 h
Total workload: 90 + 120 = 210 h	

Course aims and learning outcomes	By mastering this course the student acquires knowledge and acquaintance with Construction of motor vehicles and trailers. Basic concepts of vehicle construction
Prerequisites	Does not have
Teaching methods	Lectures, auditory exercises, seminar paper
Course content	1. General information on the construction of motor vehicles and trailers 2. Tasks, types, characteristics and selection of specific equipment of powertrains. Tasks, types, characteristics and selection of mechanical power transmissions 3. Calculation of mechanical power transmissions. Calculation of gears, shafts and bearings 4. Tasks, types, characteristics and selection of locomotor systems 5. Calculation of planetary gears. Calculation of main and differential gears. Budget of drive bridges 6. Tasks, types, characteristics and selection of control and support systems 7. I colloquium 8. Support system calculation. Calculation of the wheel guidance mechanism. Management system budget 9. Tasks, types, characteristics and selection of braking systems 10. Calculation of friction systems. Transmission and command mechanism calculation. Calculation of transmission mechanisms of brake systems 11. Calculation of articulated gears (couplings and shafts). Calculation of the front axle (dependent support) 12. Tasks, types, characteristics and selection of special superstructures on vehicles 13. Basic approaches to the calculation of load-bearing structures, loads 14. Calculation of load-bearing structures of passenger vehicles and buses. Calculation of load-bearing structures of trucks - frames 15. II colloquium

Textbook (s)

Author/s	**Name of publication, publisher**	**Year**	**Pages (from-to)**
.			

Additional readings

Author/s	**Name of publication, editor**	**Year**	**Pages (from-to)**

Evaluation criteria	**Assesment methods**	**Points**	**Percentage**

	Pre-exam obligations		
	attendance at lectures and exercises	10	10%
	seminar papers	20	20%
	I colloquium	10	10%
	II colloquium	10	10%
	Final exam		
	final exam (oral / written)	50	50%
	IN TOTAL	100	100%
Web sources			
Applicable from	16.06.2021 - 175 Session of the Councile, Faculty of Transport and Traffic engineering		

	UNIVERSITY OF EAST SARAJEVO Faculty of Transport and Traffic Engineering ***Study program: Traffic*** ***Profile: Motor Vehicles*** I cycle | I year of study	

Course title	**VEHICLE OPERATION AND MAINTENANCE**
Department	Department of Motor Vehicles, Operation, Maintenance and Diagnostics of Vehicles

Code	**Course status**	**Semester**	**ECTS credits**
САФ11SM07103475,0220			

Professor/s	Prof. dr Mesud Ajanović
Associate/s	

Weekly hours			**Individual student hours (per semester)**			**Student workload coefficient S_o**
L	**TE**	**LE**	**L**	**TE**	**LE**	**S_o**
2	2	0	2	2	0	1,5

Total teacher workload (hours, per semester) 2*15 + 2*15 + 0*15 = W 30+ 30+ 0= 60 h	Total student workload (hours, per semester) 2*15*1,5 + 2*15*1,5 + 0*15*1,5 = T 45 + 45 + 0 = 90 h
Total workload: 60 + 90 = 150 h	

Course aims and learning outcomes	By mastering this course the student will be able to: Using known methods of monitoring the operation and maintenance of vehicles, with the establishment of failure diagnostics
Prerequisites	Does not have
Teaching methods	Lectures, auditory exercises, seminar paper
Course content	1. Defining the concept of maintenance. Process approach to maintenance 2. Basic ways of realization of maintenance 3. Determining the condition of the vehicle - diagnostics 4. Set a maintenance goal 5. Vehicle performance 6. Measurement of performance characteristics 7. I colloquium 8. Conditions for realization of maintenance 9. Plant maintenance support functions 10. Requirements in relation to the protection of humans and the environment 11. Quality of maintenance 12. Identification of users and specification of their requirements 13. Defining requirements for suppliers and subcontractors 14. Improving maintenance 15. II colloquium

Textbook (s)

Author/s	**Name of publication, publisher**	**Year**	**Pages (from-to)**
Ranko Bozickovic	Operation and maintenance of vehicles	2011	1-317

Additional readings

Author/s	**Name of publication, editor**	**Year**	**Pages (from-to)**
Ranko Bozickovic	Collection of tasks from the reliability of technical systems	2009	1-135

Evaluation criteria	**Assesment methods**	**Points**	**Percentage**
	Pre-exam obligations		
	for example. attendance at lectures / exercises	10	10%
	for example. I am positively assessed. paper / project / essay	20	20%
	for example. case study - group work	/	/

	for example. test / colloquium	70	70%
	for example. laboratory work / lab. exercises	/	/
	for example. practical work	/	/
	Final exam		
	for example. final exam (oral / written)	70	70%
	IN TOTAL	100	100%
Web sources			
Applicable from	16.06.2021 - 175 Session of the Councile, Faculty of Transport and Traffic engineering		

	UNIVERSITY OF EAST SARAJEVO Faculty of Transport and Traffic Engineering ***Study program: Traffic*** ***Profile: Motor Vehicles*** I cycle / I year of study	

Course title	**ENGINE DIAGNOSIS AND MAINTENANCE**
Department	Department of Motor Vehicles, Operation, Maintenance and Diagnostics of Vehicles

Code	**Course status**	**Semester**	**ECTS credits**
САФ11SM07117375,0220			

Professor/s	Prof. dr Božidar Krstić
Associate/s	

Weekly hours			**Individual student hours (per semester)**			**Student workload coefficient S_o**
L	**TE**	**LE**	**L**	**TE**	**LE**	**S_o**
2	2	0	2	2	0	1,5

Total teacher workload (hours, per semester) 2*15 + 2*15 + 0*15 = W 30+ 30+ 0= 60 h	Total student workload (hours, per semester) 2*15*1,5 + 2*15*1,5 + 0*15*1,5 = T 45 + 45 + 0 = 90 h

Total workload: 60 + 90 = 150 h

Course aims and learning outcomes	By mastering this course the student will be able to: Practical application of statistical methods in monitoring and predicting the occurrence of engine failures. Introduction to the basics of "on-board" diagnostics on modern motor vehicles
Prerequisites	Does not have
Teaching methods	Lectures, auditory exercises, seminar paper
Course content	1. Introductory considerations 2. Quality of engine operation, operational safety of the engine 3. Engine reliability in operation 4. Engine operating modes 5. Fuel consumption in engine operation 6. Wear of engines and engine parts - general characteristics 7. I colloquium 8. Methods of determining wear 9. Wear of the most important parts and assemblies of the engine 10. Fundamentals of the theory of technical diagnostics 11. Methods and means of determining diagnostic parameters 12. On-Board diagnostics (OBD) of vehicle engines 13. The future of OBD diagnostics 14. Overhaul and overhaul of engines. Engine overhaul costs 15. II colloquium

Textbook (s)

Author/s	**Name of publication, publisher**	**Year**	**Pages (from-to)**

Additional readings

Author/s	**Name of publication, editor**	**Year**	**Pages (from-to)**

Evaluation criteria	**Assesment methods**	**Points**	**Percentage**
	Pre-exam obligations		
	for example. attendance at lectures / exercises	10	10%
	for example. I am positively assessed. paper / project / essay	20	20%
	for example. case study - group work	/	/

	for example. test / colloquium	70	70%
	for example. laboratory work / lab. exercises	/	/
	for example. practical work	/	/
	Final exam		
	for example. final exam (oral / written)	70	70%
	IN TOTAL	100	100%
Web sources			
Applicable from	16.06.2021 - 175 Session of the Councile, Faculty of Transport and Traffic engineering		

	UNIVERSITY OF EAST SARAJEVO Faculty of Transport and Traffic Engineering ***Study program: Traffic*** ***Profile: Motor Vehicles*** I cycle / I year of study	

Course title	**DESIGN AND ORGANIZATION OF VEHICLE MAINTENANCE SYSTEMS**
Department	Department of Motor Vehicles, Operation, Maintenance and Diagnostics of Vehicles

Code	**Course status**	**Semester**	**ECTS credits**
САФ11SM07117486,0320			

Professor/s	Prof. dr Božidar Krstić
Associate/s	

Weekly hours			**Individual student hours (per semester)**			**Student workload coefficient S_o**
L	**TE**	**LE**	**L**	**TE**	**LE**	**S_o**
3	2	0	3	2	0	1,4

Total teacher workload (hours, per semester) 3*15 + 2*15 + 0*15 = W 45+ 30+ 0= 75 h	Total student workload (hours, per semester) 3*15*1,4 + 2*15*1,4 + 0*15*1,4 = T 63 + 42 + 0 = 105 h

Total workload: 75 + 105 = 180 h

Course aims and learning outcomes	By mastering this course the student will be able to: Through this study to acquire the necessary knowledge for the design and organization of the so-called. open systems, small and authorized vehicle maintenance services. They are easier to adapt to changes in technique and technology and easier to integrate into larger systems. Since today vehicles are built on the principles of modular construction, then the same principles must be respected in vehicle maintenance
Prerequisites	Does not have
Teaching methods	Lectures, auditory exercises, seminar paper
Course content	1. Introductory considerations 2. Maintenance and logistics engineering 3. Concept of maintenance 4. Maintenance organization 5. Basics of maintenance system design. Vehicle maintenance facilities 6. Construction of facilities for vehicle maintenance. Projected task 7. I colloquium 8. Logistical support for maintenance 9. Number of maintenance vehicles. Estimation of maintenance system capacity 10. Quality in use 11. Technological process. Types of technological process 12. Workplace (r / m) for maintenance of vehicles and assemblies 13. Specialized maintenance plants 14. General guidelines for the design of service workshops - the case of Mercedes / Daimler Benz, Volkswagen, Scania. After sales service activities - After sales 15. II colloquium

Textbook (s)

Author/s	**Name of publication, publisher**	**Year**	**Pages (from-to)**
.			

Additional readings

Author/s	**Name of publication, editor**	**Year**	**Pages (from-to)**

	Assesment methods	**Points**	**Percentage**
Evaluation criteria	Pre-exam obligations		

	for example. attendance at lectures and exercises	10	10%
	seminar papers	20	20%
	I colloquium	10	10%
	II colloquium	10	10%
	Final exam		
	final exam (oral / written)	50	50%
	IN TOTAL	100	100%
Web sources			
Applicable from	16.06.2021 - 175 Session of the Councile, Faculty of Transport and Traffic engineering		

	UNIVERSITY OF EAST SARAJEVO Faculty of Transport and Traffic Engineering ***Study program: Traffic*** ***Profile: Motor Vehicles*** I cycle | I year of study	

Course title	**ENVIRONMENTAL PROTECTION AND WASTE MANAGEMENT**
Department	Department of Transport Engineering - Faculty of Transportation Doboj

Code	**Course status**	**Semester**	**ECTS credits**
САФ11SM07117585,0220			

Professor/s	Prof. dr Milan Milotić
Associate/s	

Weekly hours			**Individual student hours (per semester)**			**Student workload coefficient S_o**
L	**TE**	**LE**	**L**	**TE**	**LE**	**S_o**
2	2	0	2	2	0	1,5

Total teacher workload (hours, per semester) 2*15 + 2*15 + 0*15 = W 30+ 30+ 0= 75 h	Total student workload (hours, per semester) 2*15*1,5 + 2*15*1,5 + 0*15*1,5 = T 45 + 45 + 0 = 90 h
Total workload: 60 + 90 = 150 h	

Course aims and learning outcomes	By mastering this course the student will be able to: Has insight into the acquisition of knowledge about technological processes in environmental protection, and knowledge about the impact of SUS engines on the environment
Prerequisites	Does not have
Teaching methods	Lectures, auditory exercises, seminar paper
Course content	1. Principles of sustainable development, concepts of renewability and energy efficiency 2. Energy and climate 3. The role of stratospheric ozone ("Champagne ozone cycle") 4. Impact of energy, industry and transport on the environment 5. Impact of SUS engines on the environment 6. Toxic exhaust emissions from otto and diesel engines 7. I colloquium 8. Standards (regulations) in the field of engine exhaust emissions 9. Exhaust gas treatment of internal combustion engines 10. Other engine emissions 11. SUS engine noise 12. Wastewater and management principles 13. Solid waste, categorization, quantities, composition and management principles 14. Hazardous waste, definition, classification and management principles. Waste disposal. 15. II colloquium

Textbook (s)

Author/s	**Name of publication, publisher**	**Year**	**Pages (from-to)**
R.A. Hinrichs, M. Kleinbach	Energy Its Use and the Environment, Harcourt College Publishers	2002	1-258

Additional readings

Author/s	**Name of publication, editor**	**Year**	**Pages (from-to)**
R.J. Heinsohn	Sources and Control of Air Pollution, Prentice Hall	1999	1-238

Evaluation criteria	**Assesment methods**	**Points**	**Percentage**
	Pre-exam obligations		
	for example. attendance at lectures and exercises	10	10%
	seminar papers	20	20%
	I colloquium	10	10%

	II colloquium	10	10%
	Final exam		
	for example. final exam (oral / written)	50	50%
	IN TOTAL	100	100%
Web sources			
Applicable from	16.06.2021 - 175 Session of the Councile, Faculty of Transport and Traffic engineering		

	UNIVERSITY OF EAST SARAJEVO Faculty of Transport and Traffic Engineering ***Study program: Traffic*** ***Profile: Motor Vehicles*** I cycle / I year of study	

Course title	**ORGANIZATION OF TRAFFIC COMPANIES**
Department	Department of Transport Engineering - Faculty of Transportation Doboj

Code	**Course status**	**Semester**	**ECTS credits**
САФ11SM07104585,0220			

Professor/s	Prof. dr Perica Gojković
Associate/s	

Weekly hours			**Individual student hours (per semester)**			**Student workload coefficient S_o**
L	**TE**	**LE**	**L**	**TE**	**LE**	**S_o**
2	2	0	2*15*1,5=45	2*15*1,5=45	0*15*1,5=0	1,5

Total teacher workload (hours, per semester) 2*15 + 2*15 + 0*15 = 60	Total student workload (hours, per semester) 2*15*1,4+ 2*15*1,4+ 0*15*1,4 =90

Total workload: 60 + 90 = 150 h

Course aims and learning outcomes	By mastering this course, students will be able to: 1. learn the basic concepts of organization, as well as types and organizational models of enterprises; 2. will be able to analyze the organization of large business systems, business and development policy and development factors; 3. independently organize and lead a meeting according to defined rules; 4. acquired knowledge in practice to apply and establish their own company as well as to give instructions to others on how to do it;
Prerequisites	Does not have
Teaching methods	Lectures, auditory exercises, seminar paper
Course content	1. The concept and development of the organization 2. Types of organizational structure 3. Organizational models of the company 4. Organizing large business systems 5. Organizational models of transport companies 6. Business and development policy 7. Characteristic business factors (I colloquium) 8. Basic methods and techniques for optimization 9. Organizational culture 10. Organization of business functions 11. Business information systems 12. Organization control. Organizing a meeting 13. Organization and management of investments 14. Organization design. Organizational transformation of the company 15. II colloquium

Textbook (s)

Author/s	**Name of publication, publisher**	**Year**	**Pages (from-to)**
.Veskovic, B.V, Bojovic, J.N., Knezevic, Lj.N.	Organization of transport companies, Faculty of Transport and Traffic Engineering, Belgrade.	2007	

Additional readings

Author/s	**Name of publication, editor**	**Year**	**Pages (from-to)**

	Assesment methods	Points	Percentage
Evaluation criteria	Pre-exam obligations		
	attendance at lectures and exercises	10	10%
	I colloquium	40	40%
	II colloquium	20	20%
	passed colloquia (theory)	20	20%
	Final exam		
	Oral	10	100%
	IN TOTAL	100	100%
Web sources			
Applicable from	16.06.2021 - 175 Session of the Councile, Faculty of Transport and Traffic engineering		

	UNIVERSITY OF EAST SARAJEVO Faculty of Transport and Traffic Engineering ***Study program: Traffic*** ***Profile: Motor Vehicles*** I cycle | I year of study	

Course title	**TECHNICAL INSPECTION AND APPROVAL OF VEHICLES**
Department	Department of Motor Vehicles, Operation, Maintenance and Diagnostics of Vehicles

Code	**Course status**	**Semester**	**ECTS credits**
САФ11SM07217785,0220			

Professor/s	Prof. dr Zoran Ristikić
Associate/s	

Weekly hours			**Individual student hours (per semester)**			**Student workload coefficient S_o**
L	**TE**	**LE**	**L**	**TE**	**LE**	**S_o**
Total workload:						

Course aims and learning outcomes	
Prerequisites	
Teaching methods	
Course content	

Textbook (s)			
Author/s	**Name of publication, publisher**	**Year**	**Pages (from-to)**

Additional readings			
Author/s	**Name of publication, editor**	**Year**	**Pages (from-to)**

	Assesment methods	**Points**	**Percentage**
Evaluation criteria	Pre-exam obligations		
	for example. attendance at lectures and exercises		
	seminar papers		
	I colloquium		
	II colloquium		
	Final exam		
	for example. final exam (oral / written)		
	IN TOTAL		

Web sources	
Applicable from	16.06.2021 - 175 Session of the Councile, Faculty of Transport and Traffic engineering

	UNIVERSITY OF EAST SARAJEVO Faculty of Transport and Traffic Engineering ***Study program: Traffic*** ***Profile: Motor Vehicles***	
	I cycle / IV year of study	

Full subject name	**TRAFFIC SAFETY**
Desk	Department of Transport Engineering - Faculty of Transportation Doboj

Code	**Course status**	**Semester**	**ECTS credits**
САФ11SM07204785,0220	elective	VIII	5,0

Professor/s	Prof. dr Bojan Marić
Associate/s	

Hours / teaching load (weekly)			**Individual student workload (semester hours)**			**Student workload coefficient So**
П	**АВ**	**ЛВ**	**П**	**АВ**	**ЛВ**	**S_o**
2	2	0	2*15*1,5=45	2*15*1,5=45	0*15*1,5=0	1,5

total teaching load (in hours, semester) 2*15 + 2*15 + 0*15 = 60	total student workload (in hours, semester) 2*15*1,5 + 2*15*1,5+ 0*15*1,5= 90

Total workload of the course (teaching + student): W + T = Uopt hours per semester
60 + 90 = 150 hours per semester

Learning outcomes	By mastering this course the student will be able to: 1. understands the state and tendencies in traffic safety in the region and in the world 2. explain the concept and elements of the traffic safety management process 3. Explain traffic safety factors 4. measure traffic safety performance indicators 5. understands the investigation and analysis of traffic accidents
Conditionality	None
Teaching methods	lectures ex chair, workshops, discussion, focus groups, individual and group work
Course content by weeks	1. Introduction, subject and method of study. Traffic safety methods 2. Scientific discipline based on traffic safety 3. State and tendencies in traffic safety 4. Traffic safety factors 5. Protection system and responsibilities in traffic safety 6. Regulations in traffic safety 7. Measurement in traffic safety 8. Traffic safety indicators 9. Traffic safety management 10. Traffic safety measures 11. Traffic accidents, Investigation of traffic accidents 12. Traffic-technical analysis of traffic accidents 13. Modern procedures for improving road safety 14. Speed control 15. Databases of importance for traffic safety

Required literature			
Author/s	**Name of publication, publisher**	**Year**	**Pages(from-to)**

Lipovac Krsto, Jovanovic Dragan and Vujanic Milan	Basics of traffic safety,, Criminal Police Academy, Belgrade	2014	1-388
Lipovac Krsto	Traffic safety, High School of Internal Affairs, Banja Luka	2007	166-174
Additional literature			
Author/s	**Name of publication, publisher**	**Year**	**Pages (from-to)**
	Law on Fundamentals of Road Traffic Safety in BiH official messenger BiH, No. 6/06, 75/06, 44/07 and 84/09.		
	Law on Road Traffic Safety, official messenger RS no. 41/09, 53/10, 101/11, 32/13 -US, 55/14.		

	Type of student performance evaluation	**Points**	**Percentage**
Obligations, forms of knowledge assessment and assessment	Pre-exam obligations		
	activity during classes - tests	10	10%
	colloquiums	15	15%
	positively evaluated seminar paper	20	20%
	Final exam		
	Written exam	35	35%
	Final exam-oral	20	20
	IN TOTAL	100	100 %
Validation date	16.06.2021 - 175 Session of the Councile, Faculty of Transport and Traffic engineering		

	UNIVERSITY OF EAST SARAJEVO Faculty of Transport and Traffic Engineering ***Study program: Traffic*** ***Profile: Motor Vehicles***	
	I cycle / IV year of study	

Full subject name	**COMPRESSORS, PUMPS AND FANS**
Desk	Department of Motor Vehicles, Operation, Maintenance and Diagnostics of Vehicles

Code	**Course status**	**Semester**	**ECTS credits**
САФ11SM07236685,0220	elective	VI	5,0

Professor/s	Prof. dr Perica Gojković
Associate/s	

Hours / teaching load (weekly)			**Individual student workload (semester hours)**			**Student workload coefficient So**
П	**АВ**	**ЛВ**	**П**	**АВ**	**ЛВ**	**S_o**
2	2	0	2	2	0	1,5

total teaching load (in hours, semester) 2 * 15 + 2 * 15 + 0 * 15 = W 30+ 30+ 0 = 60 h	total student workload (in hours, semester) 2 * 15 * 1.5 + 2 * 15 * 1.5 + 0 * 15 * 1.5 = T 45 + 45 + 0 = 90 h

Total workload of the course (teaching + student): W + T = Uopt hours per semester
90 + 120 = 210 h = Uopt

Learning outcomes	By mastering this course the student acquires knowledge and acquaintance with Reciprocating compressors used as an important aggregate machine, as well as introduction to the types and characteristics of pumps and fans
Conditionality	None
Teaching methods	Lectures, auditory exercises, seminar paper
Course content by weeks	1. Introduction to reciprocating compressors 2. Theoretical duty cycle of a reciprocating compressor 3. Realistic reciprocating compressor duty cycle. Multistage compaction 4. Calculation of the main dimensions of the reciprocating compressor. Reciprocating compressor systems 5. Reciprocating compressor capacity regulation 6. Reciprocating compressor construction. Reciprocating compressor operation 7. I colloquium 8. Pumps 9. Specifics of operating characteristics of radial, semi-axial and axial centrifugal pumps. Start pumps and sudden changes in operation 10. Pumping plants. Application of pumps on SUS engines and vehicles 11. Fans 12. Specifics of working characteristics of radial and axial fans. Fan start and sudden changes in operation 13. Fan plants. Application of fans on SUS engines and vehicles 14. Basic ways of regulating pumps and fans. Measurements on pumps and fans. New trends in the development of pumps and fans in the world 15. II colloquium

Required literature

Author/s	**Name of publication, publisher**	**Year**	**Pages(from-to)**
R.A. Hinrichs, M. Kleinbach	Energy Its Use and the Environment	2002	1-310

Additional literature			
Author/s	**Name of publication, publisher**	**Year**	**Pages (from-to)**
R.J. Heinsohn	Sources and Control of Air Pollution, Prentice Hall	1999	1-285

	Type of student performance evaluation	**Points**	**Percentage**
Obligations, forms of knowledge assessment and assessment	Pre-exam obligations		
	attendance at lectures and exercises	10	10%
	seminar papers	20	20%
	I colloquium	10	10%
	II colloquium	10	10%
	Final exam		
	Final exam (oral/ written)	50	50%
	IN TOTAL	100	100 %
Validation date	16.06.2021 - 175 Session of the Councile, Faculty of Transport and Traffic engineering		

	UNIVERSITY OF EAST SARAJEVO Faculty of Transport and Traffic Engineering ***Study program: Traffic*** ***Profile: Motor Vehicles***	
	I cycle / IV year of study	

Full subject name	**HUMAN RESOURCES, KNOWLEDGE AND PROJECT MANAGEMENT**
Desk	Department of Marketing and Management, Faculty of Economics in Brcko

Code	**Course status**	**Semester**	**ECTS credits**
САФ11SM07217885,0220	required	VIII	5,0

Professor/s	Prof. dr Živko Erceg
Associate/s	

Hours / teaching load (weekly)			**Individual student workload (semester hours)**			**Student workload coefficient So**
П	**АВ**	**ЛВ**	**П**	**АВ**	**ЛВ**	**S_o**
2	2	0	2	2	0	1,5

total teaching load (in hours, semester) 2*15 + 2*15 + 0*15 = W 30+ 30+ 0= 75 h	total student workload (in hours, semester) 2*15*1,5 + 2*15*1,5 + 0*15*1,5 = T 45 + 45 + 0 = 90 h

Total workload of the course (teaching + student): W + T = Uopt hours per semester
60 + 90 = 150 h= U_{opt}

Learning outcomes	By mastering this course the student will be able to: It manages the human resources and key functions and responsibilities of each manager. The aim is to acquaint students with tasks and activities in this area, strategic management, planning the needs and structure of employees, education and development of employees, creating an appropriate climate in the workplace and environment, and knowledge and projects
Conditionality	None
Teaching methods	Lectures, auditory exercises, seminar paper
Course content by weeks	1. Tasks and activities in HRM. Management environment 2. Resistance to change and change management-change management system 3. Strategic management and managers. Strategic human resource management 4. Globalization and human resource management. Human resources planning in the company 5. Functions of managers. Types of leadership. Leadership styles. Groups and group management. Characteristics and size of the group 6. Organizational culture. Contemporary trends in organizational culture 7. I colloquium 8. Career development and education in the company. Strategic plan of continuing education 9. Creativity and creative techniques. Creativity and enterprise. Techniques for developing the creativity of employees and managers. Techniques for evaluating performance at work .. 10. Knowledge - empirical basics, understanding the concept of Knowledge management: people and processes, the basic process of knowledge management 11. Area of application of UZ.- Reference model of UZ. Business and process models UZ 12. Knowledge collection, diagnosis and assessment. UZ manufacturing companies. UZ in research and development 13. Modeling knowledge - languages and tools. Tool selection criteria. Knowledge structure. Search techniques. Intellectual capital: measuring knowledge: ways of measuring. 14 Project management, objectives, efficiency, monitoring and analysis, measurement, improvement 15. II colloquium

Required literature			
Author/s	**Name of publication, publisher**	**Year**	**Pages(from-to)**
Van Bahtijarević - Šiber, F.	Human Resources Management, Golden marketing, Zagreb	1999	1-228
Additional literature			
Author/s	**Name of publication, publisher**	**Year**	**Pages (from-to)**
Marušić, S	Human Resources Management, Adeco, Zagreb,	2001	1-280

	Type of student performance evaluation	**Points**	**Percentage**
Obligations, forms of knowledge assessment and assessment	Pre-exam obligations		
	attendance at lectures and exercises	10	10%
	seminar papers	20	20%
	I colloquium	10	10%
	II colloquium	10	10%
	Final exam		
	Final exam (oral/ written)	50	50%
	IN TOTAL	100	100 %
Validation date	16.06.2021 - 175 Session of the Councile, Faculty of Transport and Traffic engineering		