UNIVERZITET U SARAJEVU

FAKULTET ZA SAOBRAĆAJ I KOMUNIKACIJE

STUDIJSKI PROGRAM

ZRAKOPLOVNI SAOBRAĆAJ

II CIKLUS STUDIJA

NA UNIVERZITETU U SARAJEVU – FAKULTETU ZA SAOBRAĆAJ I KOMUNIKACIJE

Nastavni plan

Popis obaveznih i predviđenih izbornih predmeta sa šiframa, brojem ECTS bodova i brojem kontakt sati nastave potrebnih za njihovu izvedbu (vježbe, predavanja, praksa, seminar, terenski rad, laboratorijske vježbe isl.);

NASTAVNI PLAN ZA ODSJEK: SAOBRAĆAJ, USMJERENJE: ZRAKOPLOVNI SAOBRAĆAJ

R.b	Šifra predmeta	Naziv predmeta	Status	I sem.				II sem.				III sem.				IV sem.
				P	V	L	ECTS	P	V	L	ECTS	P	V	L	ECTS	Izrada rada (ECTS)
1.	01ATCOS020101	Menadžment u transportu i komunikacijama	obavezni	3	2	1	6									
2.	02TATOS020101	Održivi razvoj i okolišni inženjering	obavezni	3	2	1	6									
3.	03TATOS020101	Logistika i inteligentni transportni sistemi	obavezni	3	2	1	6									
4.	04TATOS020101	Sistemsko projektovanje u zrakoplovnom saobraćaju	obavezni	3	2	1	6									
5.	05TATOS020101	Mehanika leta	obavezni	3	2	1	6									
6.	06TATOS020102	Intermodalni transport	obavezni					3	2	1	6					
7.	07TATOS020102	Upravljanje zrakoplovnim saobraćajem	obavezni					3	2	1	6					
8.	08TATOS020102	Planiranje prevoza i eksploatacija zrakoplova	obavezni					3	2	1	6					
9.			izborni					3	2	1	6					
10.			izborni					3	2	1	6					
11.	11TATOS020203	Zrakoplovna pristaništa	obavezni									3	2	1	6	
12.	12TATOS020203	Elementi sigurnosti i zaštite u zrakoplovnom saobraćaju	obavezni									3	2	1	6	
13.			izborni									3	2	1	6	
14.			izborni									3	2	1	6	

15.			izborni			3	2	1	6	
16.	16TATOS020204	Završni mater rad	obavezni							30
Broj potrebnih kredita				**30**	**30**	**30**				**30**

Izborni predmeti: usmjerenje: zrakoplovni saobraćaj

Šifra predmeta	**Naziv predmeta**	**Broj sati**			**ECTS**	**Semestar**
		P	**V**	**L/PR**		
09-10-1TATES020102	Informacione tehnologije i špediterskо poslovanje	3	2	1	6	**II**
09-10-2TATES020102	Performanse transportnih zrakoplova	3	2	1	6	**II**
09-10-3TATES020102	Tehnološke analize zrakoplovnog saobraćaja	3	2	1	6	**II**
09-10-4TATES020102	Aeronautičke usluge	3	2	1	6	**II**
13-14-15-1TATES020203	Metode vrednovanja i odlučivanja u saobraćajnom projektovanju	3	2	1	6	**III**
13-14-15-2TATES020203	Upravljanje i organizacija logističkih centara u saobraćaju i transportu	3	2	1	6	**III**
13-14-15-3TATES020203	Metodologija istraživačkog i naučnog rada	3	2	1	6	**III**
13-14-15-4TATES020203	Saobraćajna politika	3	2	1	6	**III**
13-14-15-5TATES020203	Geo informacijski sistemi	3	2	1	6	**III**

Opis silabusa na studijskom programu Zrakoplovni saobraćaj na b/h/s jeziku

Šifra predmeta: 01ATCOS020101	**Naziv predmeta: MENADŽMENT U TRANSPORTU I KOMUNIKACIJAMA**		
Ciklus: II	**Godina: I**	**Semestar: I**	**Broj ECTS kredita: 6**
Status: Obavezni predmet		**Ukupan broj sati: 90** Razrada distribucije sati po tipu: Predavanja: 45 Vježbe: 45 Seminar: Terenski rad:- Laboratorijske vježbe: -	

	Praksa:-
Učesnici u nastavi	**Nastavnici i saradnici izabrani na oblast kojoj predmet pripada/predmet**
Preduslov za upis:	NE
Cilj (ciljevi) predmeta:	Cilj predmeta je upoznavanje sa djelovanjem saobraćajnog sistema u tržišnim uvjetima i međunarodnim standardima, kako bi se obezbjedilo efektivno i efikasno poslovanje. Osposobljavanje studenata u sticanju određenih znanja o standardima i standardizaciji, kao i međuvezama različitih dijelova proizvodnje i ekonomskih procesa na koje utiče tehnička standardizacija.
Tematske jedinice: *(po potrebi plan izvođenja po sedmicama se utvrđuje uvažavajući specifičnosti organizacionih jedinica)*	1. Osnove menadžmenta. Pojam, proces menadžmenta i međuzavisnost sa organizacijom. Pojam menadžmenta i procesa menadžmenta. Karakteristike savremenog menadžera. Funkcije menadžera. 2. Opće i specifične karakteristike menadžmenta u prometnom sustavu. Problematika organizacije i menadžmenta u prometnom sustavu. Definicije i sadržaj menadžmenta. Menadžment i poduzetništvo u transportnim i telekomunikacijskim preduzećima. 3. Opće i specifične karakteristike menadžmenta u prometnom sustavu. Menadžerski poslovi u upravama, zavodima i agencijama. Razvitak logističkog menadžmenta. Odnosi prometne politike i menadžmenta. Razvoj prometnog sustava i prostorno-gospodarsko strukturiranje. 4. Menadžerski koncepti poboljšanja i/ili inoviranje poslovnih procesa. Procesno-orjentirani menadžment. Inoviranje i/ili reinženjering poslovih procesa. 5. Planiranje kao funkcija i aktivnost menadžmenta. Planiranje u prometnom preduzeću. Politike i strategije prometnog preduzeća. Procesni pristup strategijskom planiranju. 6. Planiranje kao funkcija i aktivnost menadžmenta. Strategijska analiza konkurentske strukture prometne grane. Metode scenarija u izboru efektivne strategije preduzeća. 7. Organizacijska struktura i procesi organizacije. Pojam i šira shvatanja organizacije. Organizacijska struktura. 8. Organizacijska struktura i procesi organizacije. Uređivanje odnosa u organizaciji. 9. Organizacijska struktura i procesi organizacije. Procesna i na znanju utemeljena organizacija. Primjeri organizacijske strukture nekih transportnih i telekomunikacijskih poduzeća. 10. Vođenje poslova i motiviranje. Vođenje poslova i vodstvo. 11. Vođenje poslova i motiviranje. Utjecaji na ponašanje ljudi i motivacija. 12. Upravljanje ljudskim resursima. Upravljanje ljudskim resursima kao funkcija menadžmenta 13. Upravljanje ljudskim resursima. Aktivnosti u procesu upravljanja ljudskim resursima. Osobni razvitak

	menadžera. 14. Menadžerska kontrola i upravljanje kvalitetom. Osnove savremene standardizacije. Metode preuzimanja i označavanja standarda, stepeni usklađenosti i terminologija u vezi sa preuzimanjem standarda.Infrastruktura kvaliteta. 15. Menadžerska kontrola i upravljanje kvalitetom. Standardi sistema upravljanja (MSS - Management Systems Standards). Integrisani sistemi upravljanja (IMS - Integrated Management Systems).
Ishodi učenja:	**Znanje:** Stečena znanja koristit će se za prepozanavanje glavnih tehnoloških procesa, kao i modela upravljanja specifičnih za saobraćajne sisteme. **Vještine:** Sposobnost primjene teorijskih i praktičnih znanja iz oblasti menadžmenta u prometu. **Kompetencije:** Sistemski pristup u razumjevanju standardizacije, ovladavanje savremenom poslovnom terminologijom, kao i predočeni praktični primjeri iz područja saobraćaja i komunikacija, pomoći će studentima u njihovom uključivanju u tehničke i druge aktivnosti po završetku studija i zapošljavanju.
Ciljevi održivog razvoja (SDGs)	SDG4 – Kvalitetno obrazovanje SDG8 – Dostojanstven rad i ekonomski rast SDG9 – Industrija, inovacije i infrastruktura SDG11 – Održivi gradovi i zajednice SDG12 – Održiva potrošnja i prozvodnja SDG16 – Mir, pravda i snažne institucije
Metode izvođenja nastave:	Metoda usmenog izlaganja, metoda razgovora, metoda demonstracije, metoda rada u skupini.
Metode provjere znanja sa strukturom ocjene:	Ocjena kreativnosti na nastavi i vježbama uz izradu samostalnih radova, ocjena parcijalnog testa u toku nastave kao i ocjena završnog ispita. Kriterijum praćenja rada i ocjenjivanja studenta u toku nastave i to prema sljedećem načinu: – Domaća zadaća/seminarski rad/praktični rad/ 15 bodova (%), položeno ako se osvoji najmanje 55 %. – I Parcijalni ispit/test/provjera znanja/35 bodova (%), položen je ako se osvoji najmanje 55 %. – Završni ispit (II Parcijalni) 50 bodova (%), položeno ako se osvoji najmanje 55 %. – Završni ispit (Integralni) 85 bodova (%), položeno ako se osvoji najmanje 55 %. Završni ispit se organizuje kao pismeni/usmeni. Student na završnom ispitu može da polaže gradivo koje nije polagao i/ili uspješno okončao tokom trajanja semestra. Potreban uslov za uspješno okončan ispit je postignut rezultat od najmanje 55% bodova od maksimalnog broja bodova na parcijalnom i završnom dijelu ispita, a dovoljan uslov je da suma ostvarenih bodova (kroz: domaću zadaću, prisustvo, parcijalni i završni ispit) bude 55. Zadaća se organizuje kroz pisanje domaće zadaće i projekata. Zadaća nema mogućnost popravljanja. Za studente koji nisu uspješno okončali parcijalni ispit, završni ispit se sastoji iz cjelokupnog pređenog gradiva u toku nastave. Popravni ispit se organizuje kao i

	završni ispit. Konačan uspjeh studenta nakon svih predviđenih oblika provjere znanja, vrednuje se i ocjenjuje sistemom ocjenjivanja kako slijedi: a) 10 (A) - izuzetan uspjeh bez grešaka ili sa neznatnim greškama, nosi 95-100 bodova; b) 9 (B) - iznad prosjeka, sa ponekom greškom, nosi 85-94 bodova; c) 8 (C) - prosječan, sa primjetnim greškama, nosi 75-84 bodova; d) 7 (D) - općenito dobar, ali sa značajnijim nedostacima, nosi 65-74 bodova; e) 6 (E) - zadovoljava minimalne uslove, nosi 55-64 bodova; f) 5 (F, FX) - ne zadovoljava minimalne uslove, manje od 55 bodova. Ukupno vrednovanje svih obaveza studenta u toku semestra, odnosno ocjena na ispitu zasnovana je na ukupnom broju bodova (%) koje je student stekao ispunjavanjem predispitnih obaveza i polaganjem parcijalnog i završnog ispita, a prema kvalitetu stečenih znanja i vještina, i sadrži maksimalno 100 bodova, te se utvrđuje prema sljedećoj skali: Obaveze studenta Bodovi (%) Prisutnost na predavanjima i vježbama... - Zadaća/Seminarski/Praksa/.....15 bodova (%) I Parcijalni ispit/Test/Provjera znanja/.....35 bodova (%) Završni ispit (II Parcijalni) .....50 bodova (%) Završni ispit (Integralni) .....85 bodova (%)
Literatura (obavezna):	1. Vujadin B. Vešović, „MENADŽMENT U SAOBRAĆAJU“, Univerzitet u Beogradu, Saobraćajni fakultet, 1997.
	2. Šefkija Čekić, Ivan Bošnjak, „MENADŽMENT U TRANSPORTU I KOMUNIKACIJAMA“, Fakultet za saobraćaj i komunikacije UNSA, Fakultet prometnih znanosti UNIZG, Sarajevo, Zagreb, 2000.
Literatura (dodatna):	1. Alija Behmen, Sabira Salihović: MATERIJALI I ROBE U TRANSPORTU - Knjiga I, klasifikacija, standardizacija, identifikacija, Fakultet za saobraćaj i komunikacije Sarajevo i DES-Sarajevo, Sarajevo, 2007.
	2. Alija Behmen, Sabira Salihović: MATERIJALI I ROBE U TRANSPORTU - Knjiga II, kvalitet: osnove, principi, kontrola, Fakultet za saobraćaj i komunikacije Sarajevo i DES-Sarajevo, Sarajevo, 2008.
	3. Međunarodni/regionalni/nacionalni standardi

Šifra predmeta: 02TATOS020101	**Naziv predmeta: ODRŽIVI RAZVOJ I OKOLIŠNI INŽINJERING**		
Ciklus: II	**Godina: I**	**Semestar: I**	**Broj ECTS kredita: 6**
Status: Obavezni predmet		**Ukupan broj sati: 90** Razraditi distribuciju sati po tipu: Predavanja: 30, Vježbe: 20,	

	Seminar: 10, Laboratorijske vježbe: 10, Praksa: 10, Terenski rad: 10.
Učesnici u nastavi	**Nastavnici i saradnici izabrani na oblast kojoj predmet pripada/predmet**
Preduslov za upis:	NE
Cilj (ciljevi) predmeta:	Sticanje edukacijskih oblika u realizaciji programa iz elemenata održivog razvoja i okolišnog inžinjeringa, te praktične analize, elaborati i projekti iz oblasti održivog razvoja i okolišnog inžinjeringa.
Tematske jedinice:	1. Uvod – osnove održivog razvoja i ekološkog inženjeringa 2. Zakonski okvir iz oblasti održivog razvoja i okolišnog inženjeringa 3. Zagađenje zraka od saobraćaja - monitoring kvalitete zraka 4. Metode detekcije zagađivača 5. CORINAIR/ COPERT 6. Elementi i način izrade karata buke 7. Elementi izrade studija uticaja na okoliš 8. Javni gradski prijevoz putnika, mobilnost i održivi razvoj 9. Energetska efikasnost, eko test i eko vožnja 10. NEAP, KEAP, LEAP, saobraćaj i transport 11. SEAP, saobraćaj i transport 12. SUMP - saobraćaj i transport 13. SECAP - saobraćaj i transport 14. Nisko karbonski transport i transport nulte emisije 15. Primjeri terenskih istraživanja iz oblasti održivog razvoja i okolišnog inženjeringa
Ishodi učenja:	**Znanje:** Teorijska i praktična znanja iz oblasti uticaja održivog razvoja i okolišnog inžinjeringa. Osnovni propisi, pravila, metode i postupci u oblasti procjene i analize stanja održivog razvoja. **Vještine**: Sposobnost primjene teorijskih i praktičnih znanja iz oblasti održivog razvoja i okolišnog inžinjeringa u funkciji očuvanja i zaštite privrednog i drugog razvoja društva sa jedne strane, odnosno unaprijeđenja i razvoja održivog transporta sa druge strane. **Kompetencije**: Sposobnosti samostalnog razumijevanja i korištenja propisa, korištenja stručne literature, primjene metoda i postupaka, mjerenja i istraživanja, izrada analiza, procjena i praktičnih rješenja, preventivnog djelovanja, te postupaka neophodnih za adekvatnu analizu, procjenu i upravljanje oblasti održivog razvoja i okolišnog inžinjeringa.
Ciljevi održivog	SDG4 – Kvalitetno obrazovanje - Osigurati uključivo i kvalitetno obrazovanje, te

razvoja (SDG):	promovirati mogućnosti cjeloživotnog učenja svih ljudi, svih životnih dobi SDG5-Rodna ravnopravnost - Postići rodnu ravnopravnost i osnažiti sve žene i djevojčice. SDG8-Dostojanstven rad i ekonomski rast - Promovirati uključiv i održiv ekonomski rast, zaposlenost i dostojanstven rad za sve. SDG9- Industrija, Inovacije i Infrastruktura -Izgraditi izdržljivu infrastrukturu, promovirati uključivu i održivu industrijalizaciju i poticati inovativnost. SDG11 – Održivi gradovi i lokalne zajednice - Učiniti gradove i naselja uključivim, sigurnim, prilagodljivim i održivim. SDG12-Održiva potrošnja i proizvodnja - Osigurati održive oblike potrošnje i proizvodnje. SDG13-Zaštita klime - Poduzeti hitne akcije u borbi protiv klimatskih promjena i njihovih posljedica SDG17- Partnerstvom do ciljeva- Uvrstiti globalno partnerstvo za održivi razvoj
Metode izvođenja nastave:	Usmeno iznošenje sa prezentacijom i prikazom različitih analiza, studija, modela i metoda u oblasti okolišnog inžinjeringa uz korištenje video i audio zapisa, softvera, mjerne opreme, te samostalno izlaganje pojedinih konkretnih istraživanja. Iniciranje rasprava i diskusija o problemima iz prakse, pojedinačnih zapažanja iz različitih okruženja, izrada samostalnih analiza, istraživanja, mjerenja i modeliranja u oblasti okolišnog inžinjeringa i održivog razvoja.
Metode provjere znanja sa strukturom ocjene:	Ocjena kreativnosti na nastavi i vježbama uz izradu samostalnih radova, ocjena parcijalnog testa u toku nastave kao i ocjena završnog ispita. Kriterijum praćenja rada i ocjenjivanja studenta u toku nastave i to prema sljedećem načinu: – Seminar 15 bodova (%), položeno ako se osvoji preko 50 %. – I Parcijalni ispit/test/provjera znanja/35 bodova (%), položen je ako se osvoji preko 50 %. – Završni ispit (II Parcijalni) 50 bodova (%), položeno ako se osvoji preko 50 %. – Završni ispit (Integralni) 85 bodova (%), položeno ako se osvoji preko 50 %. Ukupan broj bodova (%) koji student prema navedenom praćenju u toku nastave može ostvariti iznosi maksimalno 50 bodova (%), što sa Završnim (II parcijalnim) čini 100 bodova (%). Za studente koji nisu položili I Parcijalni ispit, Završni ispit (Integralni) se organizuje iz cjelokupnog pređenog gradiva u toku nastave i vježbi, i vrednuje se sa 85 bodova (%), što sa seminarskim radom/praktičnim radom čini

<table>
<tr><td></td><td>100 bodova (%). Konačan uspjeh studenta nakon svih predviđenih oblika provjere znanja, vrednuje se i ocjenjuje sistemom ocjenjivanja kako slijedi: a) 10 (A) - izuzetan uspjeh bez grešaka ili sa neznatnim greškama, nosi 95-100 bodova; b) 9 (B) - iznad prosjeka, sa ponekom greškom, nosi 85-94 bodova; c) 8 (C) - prosječan, sa primjetnim greškama, nosi 75-84 bodova; d) 7 (D) - općenito dobar, ali sa značajnijim nedostacima, nosi 65-74 bodova; e) 6 (E) - zadovoljava minimalne uslove, nosi 55-64 bodova; f) 5 (F, FX) - ne zadovoljava minimalne uslove, manje od 55 bodova.
Ukupno vrednovanje svih obaveza studenta u toku semestra, odnosno ocjena na ispitu zasnovana je na ukupnom broju bodova (%) koje je student stekao ispunjavanjem predispitnih obaveza i polaganjem parcijalnog i završnog ispita, a prema kvalitetu stečenih znanja i vještina, i sadrži maksimalno 100 bodova, te se utvrđuje prema sljedećoj skali:
<table>
<tr><td>Obaveze studenta</td><td>Bodovi (%)</td></tr>
<tr><td>Prisutnost na predavanjima i vježbama. (obavezno je prisustvu svim oblicima nastave min. 80 % i ovo je uslov za ovjeru/potpis urednog pohađanja)</td><td>0 bodova</td></tr>
<tr><td>Seminar</td><td>15 bodova (%)</td></tr>
<tr><td>I Parcijalni ispit/Test/Provjera znanja/</td><td>35 bodova (%)</td></tr>
<tr><td>Završni ispit (II Parcijalni)</td><td>50 bodova (%)</td></tr>
<tr><td>Završni ispit (Integralni)</td><td>85 bodova (%)</td></tr>
</table>
</td></tr>
<tr><td>Literatura:</td><td>Obavezna
1. Lindov, O.: Transport i okoliš, univerzitetski udžbenik Fakultet za saobraćaj i komunikacije Sarajevo, 2011.
2. Lindov, O.: Uticaj cestovnih vozila i cestovne infrastrukture na ekološke parametre. Međunarodni naučni skup “Ekološki problemi savremenog saobraćaja”, Sarajevo, 2003.
3. Lindov, O., Omerhodžić A.: Održivi razvoj i okolišni inžinjering. Skripta vježbi i testova, Fakultet za saobraćaj i komunikacije, Sarajevo, 2020.
Dopunska:
1. EC (EvropeanCommission), Directorate General Transport, 1996, Transport Research APAS Road Transport: Assessment of road transport models and systems architectures, VII-31,. ECSCEEC- EAEC, Brussels – Luxembourg.
2. EC (Evropean Commission), Directorate General Transport, 1996, Transport RTD Programme, Summary of Projects resulting from the First Call for Proposals, p.29.</td></tr>
</table>

	3. Prascevic M.R., Cvetkovic D.S., Stojanovic V.O., (1997), "Mathematical models for describing road traffic noise », Proceedings Inter-Noise 97, Budapest. 4. Pronello C., Iannelli F., 2002. Modelli di previsione del rumore da trafficoincontesti operativi e territorialidifferenti, inCollanaTrasporti, Editore Franco Angeli 5. Pronello C., André M., Pollutant emissions estimation in road transport models, Report INRETSLTE n° 2007, March 2000, BRON Cedex – France, 113 pp. 6. Pronello C., André M., Estimation tool of traffic pollutant emissions in function of macroscopic driving Promjenljive, Report INRETS-LTE, n° 2006, March 2000, BRON Cedex – France, 91 pp.

Šifra predmeta: **03TATOS020101**	**Naziv predmeta:** **LOGISTIKA I INTELIGENTNI TRANSPORTNI SISTEMI**		
Ciklus: II	**Godina: I**	**Semestar: I**	**Broj ECTS kredita:** 6
Status: Obavezni predmet		**Ukupan broj kontakt sati: 90** Opciono razraditi distribuciju sati po tipu: Predavanja 45 Vježbe 30 Seminar 15	
Učesnici u nastavi	**Nastavnici i saradnici izabrani na oblast kojoj predmet pripada/predmet**		
Preduslov za upis:	NE		
Cilj (ciljevi) predmeta:	Cilj predmeta je usvajanje znanja iz područja primjene inteligentnih transportnih sustava u logističke sustave čime se omogućava digitalizacija logističkih procesa.		
Tematske jedinice: *(po potrebi plan izvođenja po sedmicama se utvrđuje uvažavajući specifičnosti organizacionih jedinica)*	1. Osnovne pretpostavke za razvoj i koncept pametne lgistike 2. Tehnološke faze razvoja logistike 3. Digitalna transformacija logistike 4. Organizacija, planiranje i upravljanje u inteligentnim logističkim sustavima 5. Inteligentni teret i transportna oprema 6. Redizajniranje transportnih i logističkih procesa sustavima ITS-a 7. Pametna skladišta u logistici 8. Napredn ethnologije u logistici 9. Tehnologija proširene stvarnosti u logistici 10. Tehnologija Blockchain u logistici 11. Logistički softverski sustavi 12. Logističke platforme		

	13. Gradska logistika i ITS 14. Tehnologije umjetne inteligencije i automatske identifikacije u inteligentnoj logistici 15. Budući izazovi digitalne transformacije logistike
Ishodi učenja:	**Znanje:** Predmet Inteligentni transportni sustavi i logistika treba osigurati potreban nivo znanja o tehnologijama, funkcijama i učnicima ITS-a u logističkim sustavima koja će omogućiti planiranje razvoj i implementaciju intelihgentnih logističkih sustava i provođenje procesa digitalizacije u logističkim sustavima. **Vještine:** Predmet inteligentni transportni sistemi i logistika omogućava stjecanje vještina neophodnih za mjerenje, analizu i procjenu učinkovitosti, sigurnosti, utjecaja na okoliš i ekonomskih koristi od implementacije ITS-a u logističke sustave. **Kompetencije:** Studenti kroz nastavni proces predavanja, vježbe, i seminarski rad trebaju steći odgovarajuće kompetencije za dizajniranje, razvoj i upravljanje logističkim procesima primjenom inteligentnih transportnih sustava.
Cilj održivog razvoja (SDG):	SDG3 – Zdravlje i blagostanje; SDG 9 Industrija, inovacije i infrastruktura , SDG11- Održivi gradovi i zajednce, SDG 12 Održiva potrošnja i proizvodnja, SDG 13-Zaštita klime
Metode izvođenja nastave:	Predavanja, vježbe i seminarski rad.
Metode provjere znanja sa strukturom ocjene:	1. Prisustvo na na nastavi i semiraski rad 15 bodova 2. Prva provjera znanja 35 bodova 3. Završna provjera znanja 50 bodova
Literatura:	Obavezna: -Nastavni materijal dostupan na online platformi za učenje Fakulteta za saobraćaj i komunikacije Dopunska: - Mac Sullivan, Johannes Kern: The Digital Transformation of Logistics, IEEE Press, New Jersey,2021 - Rosanna Fornasiero:Next Generation Supply Chains, Springer, Cham, 2021.

	- Albert Tan, Sameer Shukkla : Title: Digital transformation of the supply chain : a practical guide for executives, World Scientific Publishing, London,2021. - John M. Longshore and Angela L.: Managing Logistics Systems, Routledge, New York, 2022. - Anthony M. Pagano, Matthew Liotine: Technology in Supply Chain Management and Logistics, elsevier, Amsterdam, 2020,

Šifra predmeta: 04TATOS020101	**Naziv predmeta: SISTEMSKO PROJEKTOVANJE U ZRAČNOM SAOBRAĆAJU**		
Ciklus: II	**Godina: I**	**Semestar: I**	**Broj ECTS kredita:** 6
Status: Obavezni predmet		**Ukupan broj kontakt sati: 90** Razrada distribucije sati po tipu: Predavanja: 45 Vježbe: 30 Seminar (DA) Laboratorijske vježbe: 15 Praksa:	
Učesnici u nastavi	**Nastavnici i saradnici izabrani na oblast kojoj predmet pripada/predmet**		
Preduslov za upis:	NE		
Cilj (ciljevi) predmeta:	Stjecanje znanja o strategijskim ciljevima razvoja zračnog prometa i metodologiji planiranja u regulativnom, tehnologijskom i operativnom području prometne politike.		
Tematske jedinice: *(po potrebi plan izvođenja po sedmicama se utvrđuje uvažavajući specifičnosti organizacionih jedinica)*	1. Uvodno predavanje - Teorija strategijskog planiranja (zračnog) prometa, sadržaj i znanstvena metodologija izučavanja. 2. Elementi strategijskog planiranja zračnog prometa – strategijski ciljevi, područja djelovanja prometne politike.Društveno-ekonomske beneficije versus eksterni troškovi zračnog prometa. 3. Status i projekcija razvoja zračnog prometa u Europi. Determinante razvoja, utjecajni čimbenici i specifični rizici u dinamici rasta zračnog prometa. 4. Komparativna analiza sustava upravljanja zrakoplovnim prometom SAD i EU. 5. Reformacijski procesi u Europskom sustavu upravljanja zrakoplovnim prometom. 6. Međunarodni propisi. – Strategijski dokumenti na globalnoj i regionalnoj razini. 7. Single European Sky (SES) legislativa. 8. Nacionalna regulativa. Potencijali razvoja zračnog prometa Bosne i Hercegovine.		

	9. Konvencionalno versus nekonvencionalno zrakoplovstvo.Specifičnosti razvojnih potreba zrakoplovne flote na intra-regionalnoj (lokalnoj) razini – niskotarifno i charter zrakoplovstvo, generalno zrakoplovstvo, poslovno zrakoplovstvo. 10. Zrakoplovni promet u funkciji regionalnog razvoja. Analiza povezivosti i dostupnosti zračnog prometa na regionalnoj razini – Dunavska regija, SEETO regija. 11. Zrakoplovni promet u funkciji kohezijske politike Europske unije.Analiza kompetitivnosti zračnog i željezničkog prometa u kontekstu revidirane TEN-T politike. 12. Status reguliranosti zračnog prometa u sadržajima vlasničke i upravljačke strukture davatelja usluga. 13. Novi koncepti planiranja učinkovitosti u sustavu upravljanja zrakoplovnim prometom (ATM Performance Scheme). Ključni indikatori i ciljevi – sigurnost, okoliš, kapacitet i troškovna efikasnost. 14. Novi koncepti planiranja procedura u aerodromskoj operativi: Airport-Collaborative Decision Making (A-CDM).Continuous Descent Approach (CDA) 15. ATM Performance Scheme FAB CE.
Ishodi učenja:	**Znanje:** Predmet sistemsko projektovanje u zrakoplovnom saobraćaju treba da osigura studentima potrebna znanja o elementima strategijskog planiranja u zračnom saobraćaju. Pored toga predmet omogućava sticanje znanja o svim ključnim elementima i relacijama prilikom planiranja zračnog saobraćaja. **Vještine:** Studenti kroz nastavni proces predavanja, vježbe, laboratorijske vježbe i praktičan rad trebaju steći odgovarajuća znanja i iskustva za praktičnu primjenu u oblasti sistemsko projektovanja i planiranja u zrakoplovnom saobraćaju. **Kompetencije:** Nakon odslušanog kolegija student će moći: 1. Tumačiti metodologiju strategijskog planiranja u zračnom prometu 2. Analizirati područja djelovanja prometne politike u zračnom prometu 3. Elaborirati društveno-ekonomske koristi zračnog prometa i eksterne troškove 4. Analizirati dinamiku rasta zračnog prometa, čimbenike utjecaja i specifične rizike 5. Komparirati scenarije razvoja zračnog prometa u odnosu na ostale prometne module 6. Specificirati strategijske dokumente razvoja zračnog prometa na globalnoj i regionalnoj razini 7. Elaborirati strategijske smjernice razvoja zračnog prometa u Europi 8. Opisati problematiku strategijskog razvoja zračnog prometa u Bosni i Hercegovini

	9. Identificirati ključna područja i indikatore učinkovitosti upravljanja zrakoplovnim prometom Primijeniti metodologiju planiranja učinkovitosti zračnog prometa
Cilj održivog razvoja (SDG):	• SDG4 – Kvalitetno obrazovanje • SDG9 – Industrija inovacije i infrastruktura
Metode izvođenja nastave:	Usmeno iznošenje sa prezentacijom i prikazom različitih metoda i procesa iz oblasti projektovanja i planiranja zrakoplovnog saobraćaja uz korištenje video i audio zapisa, te samostalno izlaganje pojedinih konkretnih problema vezanih za planiranje zračnog saobraćaja. Iniciranje rasprava i diskusija o problemima iz prakse, pojedinačnih zapažanja iz različitih okruženja, izrada samostalnih projekata.
Metode provjere znanja sa strukturom ocjene:	Ocjena kreativnosti na nastavi i vježbama uz izradu samostalnih radova, ocjena parcijalnog testa u toku nastave kao i ocjena završnog ispita. Kriterijum praćenja rada i ocjenjivanja studenta u toku nastave i to prema sljedećem načinu: – Domaća zadaća/seminarski rad/praktični rad/ 15 bodova (%), položeno ako se osvoji preko 50 %. – I Parcijalni ispit/test/provjera znanja/35 bodova (%), položen je ako se osvoji preko 50 %. – Završni ispit (II Parcijalni) 50 bodova (%), položeno ako se osvoji preko 50 %. – Završni ispit (Integralni) 85 bodova (%), položeno ako se osvoji preko 50 %. – Ukupan broj bodova (%) koji student prema navedenom praćenju u toku nastave može ostvariti iznosi maksimalno 50 bodova (%), što sa Završnim (II parcijalnim) čini 100 bodova (%). Za studente koji nisu položili I Parcijalni ispit, Završni ispit (Integralni) se organizuje iz cjelokupnog pređenog gradiva u toku nastave i vježbi, i vrednuje se sa 85 bodova (%), što sa seminarskim radom/praktičnim radom čini 100 bodova (%). Konačan uspjeh studenta nakon svih predviđenih oblika provjere znanja, vrednuje se i ocjenjuje sistemom ocjenjivanja kako slijedi: a) 10 (A) - izuzetan uspjeh bez grešaka ili sa neznatnim greškama, nosi 95-100 bodova; b) 9 (B) - iznad prosjeka, sa ponekom greškom, nosi 85-94 bodova; c) 8 (C) - prosječan, sa primjetnim greškama, nosi 75-84 bodova; d) 7 (D) - općenito dobar, ali sa značajnijim nedostacima, nosi

	65-74 bodova; e) 6 (E) - zadovoljava minimalne uslove, nosi 55-64 bodova; f) 5 (F, FX) - ne zadovoljava minimalne uslove, manje od 55 bodova. Ukupno vrednovanje svih obaveza studenta u toku semestra, odnosno ocjena na ispitu zasnovana je na ukupnom broju bodova (%) koje je student stekao ispunjavanjem predispitnih obaveza i polaganjem parcijalnog i završnog ispita, a prema kvalitetu stečenih znanja i vještina, i sadrži maksimalno 100 bodova, te se utvrđuje prema sljedećoj skali: Obaveze studenta Bodovi (%) Prisutnost na predavanjima i vježbama... - Zadaća/Seminarski/Praksa/.....15 bodova (%) I Parcijalni ispit/Test/Provjera znanja/.....35 bodova (%) Završni ispit (II Parcijalni) .....50 bodova (%) Završni ispit (Integralni) .....85 bodova (%)
Literatura:	**Obavezna:** 1. Steiner, S.: Planiranje u zračnom saobraćaju, Univerzitet u Sarajevu, Fakultet za saobraćaj i komunikacije, Sarajevo, 2016. 2. White Paper on transport - Roadmap to a single European transport area - Towards a competitive and resource-efficient transport system, Publications Office of the European Union, Luxembourg, 2011. 3. Flightpath 2050 Europe's Vision for Aviation, European Commission, Publications Office of the European Union, Luxembourg, 2011. 4. Realising Europe's vision for aviation, Strategic Research and Innovation Agenda, Volume 1: Maintaining global leadership, Serving society's needs, Advisory Council for Aviation Research and Innovation in Europe, 2012. 5. European ATM Master Plan: The Roadmap for Sustainable Air Traffic Management updated with SESAR's first developments, Edition 2, European Union, 2012. Dopunska: 6. Global Air Navigation Plan 2013–2028, Doc 9750-AN/963, Fourth Edition, International Civil Aviation Organization, Montreal, 2013. 7. Aviation Benefits Beyond Borders, Air Transport Action Group, Geneva, 2014. 8. EUROCONTROL 7-Year IFR Flight Movements and Service Units Forecast 2016-2022, Network Manager, European Organisation for the Safety of Air Navigation EUROCONTROL, Brussels, 2016.

	9. Challenges of Air Transport 2030: Survey of experts' views, EUROCONTROL CND Experimental Centre, Brétigny sur Orge, 2009. 10. Cook, A.(ed): European Air Traffic Management: Principles, Practice and Research, Ashgate, 2007.

Šifra predmeta: 05TATOS020101	**Naziv predmeta: MEHANIKA LETA**		
Ciklus: II	**Godina: I**	**Semestar: II**	**Broj ECTS kredita: 6**
Status: Obavezni predmet		**Ukupan broj sati: 90** Razrada distribucije sati po tipu: Predavanja: 45 Vježbe: 30 Seminar Terenski rad Laboratorijske vježbe: 15 Praksa:	
Učesnici u nastavi	**Nastavnici i saradnici izabrani na oblast kojoj predmet pripada/predmet**		
Preduslov za upis:	NE		
Cilj (ciljevi) predmeta:	Sticanje potrebnih znanja o mehanici leta zrakoplova, fazama i načinu izvršenja leta. Edukacija uključuje i familijarizaciju sa procedurama izračunavanja performansi komercijalnih zrakoplova koje se primjenjuju u provođenju zrakoplovnih operacija		
Tematske jedinice:	1. Osnove mehanike leta zrakoplova. Matematički model leta zrakoplova. 2. Način upravljanja zrakoplovom u pojedinim fazama leta. Aerodinamičke karakteristike zrakoplova bitne za mehaniku leta. 3. Kinetika leta. Horizontalni let. Ravnoteia sila u horizontalnom letu. Vučna sila, potisak i potrebna snaga za let zrakoplova. 4. Promjena potrebne snage i potiska sa promjenom visine leta i težine zrakoplova. 5. Performanse zrakoplova u horizontalnom letu, dolet i najdulje trajanje leta. Utjecaj vjetra na dolet. 6. Uzlijetanje, duljina i vrijeme uzlijetanja. Utjecaj vjetra na uzlijetanje. 7. Horizontalni zaokret, ovisnost brzine i nagiba u zaokretu. Vrijeme punog zaokreta.		

	8. Pojave koje prate zaokret. Utjecaj visine na zaokret. Dijagram Penaudova zaokreta. Unutrajnje i vanjsko klizanje pri zaokretu. 9. Let planiranja. Ravnoteia sila, polarna brzina i dolet pri planiranju. Brzina silaženja pri planiranju. 10. Let penjanja. Ravnoteža sila, brzine, te vučna sila i snaga pri penjanju. Propinjanje zrakoplova. 11. Let obrušavanja. Tipični manevri zrakoplova. Klizanje. Spirala. Zaokret. Evolucije. Prevučeni let-kovit. Minimalne brzine potrebne pri letu. 12. Maksimalni uzgon krila. Značaj sloma uzgona. Stacionarno i dinamičko povlačenje zrakoplova. Slijetanje. 13. Ravnoteža zrakoplova. Stabilnost zrakoplova. Uzdužna i poprečna stabilnost i upravljivost. 14. Automatska stabilizacija. Pokretljivost zrakoplova. Težina i balansiranje zrakoplova. 15. Osobine leta helikoptera. Način upravljanja helikopterom. Autorotacija pri vertikalnom spuštanju. Dijagram performansi helikoptera. Dolet i postojanost helikoptera.
Ishodi učenja:	**Znanje:** Teorijska i praktična znanja iz oblasti mehanike leta. Osnovni modeli, principi,mehanike leta. **Vještine:** Sposobnost primjene teorijskih i praktičnih znanja iz oblasti mehanike leta. **Kompetencije:** Kroz materiju predmeta potrebno je osigurati nivo znanja o mehanici leta transportnih zrakoplova i načinu izračunavanja performansi u svim fazama leta.
Ciljevi održivog razvoja (SDGs)	SDG 4 - Kvalitetno obrazovanje SDG 9- Industrija, inovacije i infrastruktura SDG13- Zaštita klime
Metode izvođenja nastave:	Usmeno iznošenje sa prezentacijom i prikazom različitih sistema i procesa iz oblasti mehanike leta, uz korištenje video i audio zapisa, te samostalno izlaganje pojedinih konkretnih problema na konkretnom području istraživanja. Iniciranje rasprava i diskusija o problemima iz prakse, pojedinačnih zapažanja iz različitih okruženja, izrada samostalnih istraživanja i analiza iz oblasti mehanike leta.
Metode provjere znanja sa strukturom ocjene:	Ocjena kreativnosti na nastavi i vježbama uz izradu samostalnih radova, ocjena parcijalnog testa u toku nastave kao i ocjena završnog ispita. Kriterijum praćenja rada i ocjenjivanja studenta u toku nastave i to prema sljedećem načinu: – Domaća zadaća/seminarski rad/praktični rad/ 15 bodova (%), položeno ako se osvoji preko 50 %.

	– I Parcijalni ispit/test/provjera znanja/35 bodova (%), položen je ako se osvoji preko 50 %. – Završni ispit (II Parcijalni) 50 bodova (%), položeno ako se osvoji preko 50 %. – Završni ispit (Integralni) 85 bodova (%), položeno ako se osvoji preko 50 %. Ukupan broj bodova (%) koji student prema navedenom praćenju u toku nastave može ostvariti iznosi maksimalno 50 bodova (%), što sa Završnim (II parcijalnim) čini 100 bodova (%). Za studente koji nisu položili I Parcijalni ispit, Završni ispit (Integralni) se organizuje iz cjelokupnog pređenog gradiva u toku nastave i vježbi, i vrednuje se sa 85 bodova (%), što sa seminarskim radom/praktičnim radom čini 100 bodova (%). Konačan uspjeh studenta nakon svih predviđenih oblika provjere znanja, vrednuje se i ocjenjuje sistemom ocjenjivanja kako slijedi: a) 10 (A) - izuzetan uspjeh bez grešaka ili sa neznatnim greškama, nosi 95-100 bodova; b) 9 (B) - iznad prosjeka, sa ponekom greškom, nosi 85-94 bodova; c) 8 (C) - prosječan, sa primjetnim greškama, nosi 75-84 bodova; d) 7 (D) - općenito dobar, ali sa značajnijim nedostacima, nosi 65-74 bodova; e) 6 (E) - zadovoljava minimalne uslove, nosi 55-64 bodova; f) 5 (F, FX) - ne zadovoljava minimalne uslove, manje od 55 bodova. Ukupno vrednovanje svih obaveza studenta u toku semestra, odnosno ocjena na ispitu zasnovana je na ukupnom broju bodova (%) koje je student stekao ispunjavanjem predispitnih obaveza i polaganjem parcijalnog i završnog ispita, a prema kvalitetu stečenih znanja i vještina, i sadrži maksimalno 100 bodova, te se utvrđuje prema sljedećoj skali: <u>Obaveze studenta Bodovi (%)</u> Prisutnost na predavanjima i vježbama... - Zadaća/Seminarski/Praksa/.....15 bodova (%) I Parcijalni ispit/Test/Provjera znanja/.....35 bodova (%) Završni ispit (II Parcijalni) .....50 bodova (%) Završni ispit (Integralni) .....85 bodova (%)

Literatura:	1. S. Janković: "Mehanika leta zrakoplova", Sveučilište u Zagrebu FSB, 2002. 2. David G. Hull , "Fundamentals of Airplane Flight Mechanics", Thirteenth Edition, Springer, 2001 3. M. Šabić: Mehanika leta, Skripta (u pripremi), Fakultet za saobraćaj i komunikacije, Sarajevo 2011.

Šifra predmeta: 06TATOS020102	**Naziv predmeta: INTERMODALNI TRANSPORT**		
Ciklus: II	**Godina: II**	**Semestar: II**	**Broj ECTS kredita:** 6
Status: Obavezni predmet		**Ukupan broj kontakt sati: 90** Opciono razraditi distribuciju sati po tipu: Predavanja: 45 Vježbe: 30 Seminar: 15 Terenski rad Laboratorijske vježbe Praksa	
Učesnici u nastavi	**Nastavnici i saradnici izabrani na oblast kojoj predmet pripada/predmet**		
Preduslov za upis:	NE		
Cilj (ciljevi) predmeta:	Nastavna materija koja je obuhvaćena sadržajem, treba da omogući studentima upoznavanje sa savremenim transportnim lancima, osnovama tehnološkog projektovanja i racionalizacije transportnih procesa kao i sa savremanim tehnološkim rješenjima koja se nude u okviru pojedinih tehnologija kombinovanog transporta i uz primjenu principa logistike i mogućnosti koje pružaju nove informacione i telekomunikacijske tehnologije.		
Tematske jedinice: *(po potrebi plan izvođenja po sedmicama se utvrđuje uvažavajući specifičnosti organizacionih jedinica)*	1. Tehnološke promjene; klasični transportni lanac; racionalizacija; savremeni transportni lanac 2. Sistemski pristup analizi transportnog procesa kao složenog tehnološkog sistema 3. Robni tokovi; industrijski transport; tovarne jedinice 4. Paletni sistem transporta, paletni lanac 5. Kontejnerski sistem transporta, tipične tehnologije za realizaciju kontejnerskog transportnog lanca 6. Sistem VOZILO-VOZILO		

	7. Sistem RO-RO transporta, sistem transporta barži riječnog saobraćaja 8. Skladištenje, zalihe, kapacitet skladišta, projektovanje skladišnih sistema 9. Logistika i logistički principi 10. EU transportna politika, evropski koncept intermodalizma 11. Kopneni terminali, ocjena kvaliteta rada terminala, teorija redova 12. Lučki kontejnerski terminali – skladišni platoi u terminalima 13. Komponente logističkih usluga –RTC 14. Elementi savremenog kombinovanog transporta 15. ITS i primjena telematike u savremenom kombinovanom transportu
Ishodi učenja:	**Znanje:** Studenti će steći temeljno znanje o osnovama intermodalnog transporta, uključujući tehnološke promjene, organizaciju transportnih lanaca i integraciju različitih transportnih modova. Razumjeće ključne principe skladištenja, logistike, kontejnerskih i paletnih sistema, kao i evropsku transportnu politiku s naglaskom na intermodalizam. **Vještine:** Studeni će razvijati praktične vještine u analizi i optimizaciji transportnih procesa, s naglaskom na korištenje modernih tehnologija kao što su ITS i telematika. Studenti će steći znanja kako efikasno organizirati robne tokove, upravljati terminalima, te koristiti različite transportne sisteme. **Kompetencije**: Studenti će biti sposobni primijeniti stečena znanja i vještine za upravljanje složenim transportnim lancima, optimizaciju logističkih operacija i integraciju različitih transportnih modova u savremenim industrijskim i komercijalnim okruženjima.
Cilj održivog razvoja (SDG):	SDG7 – Pristupčna energija iz čistih izvora; SDG9 – Industrija, inovacije i infrstruktura; SDG12 – Održiva potrošnja i proizvodnja; SDG17 – Partnerstvom do ciljeva.
Metode izvođenja nastave:	Tokom izvođenja programa nastavnik izlaže pojedine tematske jedinice (ex katedra), omogućava studentima praćenje video zapisa sa edukativnim sadržajem (video prezentacije) iz predmetne oblasti i organizuje diskusije na zadanu temu (interaktivna nastava). U okviru vježbi provodi se razmatranje i rješavanje primjera i zadataka sukladno teoretskoj tematici, pomaže se studentima u samostalnom rješavanju zadataka, u izradi programa i seminarskih radova.
Metode provjere znanja sa	Ocjena aktivnosti na nastavi i vježbama uz izradu samostalnih radova,

strukturom ocjene:	ocjena parcijalnog testa u toku nastave kao i ocjena završnog ispita. Kriterijum praćenja rada i ocjenjivanja studenta u toku nastave i to prema sljedećem načinu: – Seminarski rad/Terenski rad/Lab.vježbe/Praksa/ (pismena i usmena provjera) 15 bodova (%), položeno ako se osvoji preko 50 %. – I Parcijalni ispit/test/provjera znanja/ (pismena provjera) 35 bodova (%), položen je ako se osvoji preko 50 %. – Završni ispit (II Parcijalni) (pismena provjera) 50 bodova (%), položeno ako se osvoji preko 50 %. – Završni ispit (Integralni) (pismena provjera) 85 bodova (%), položeno ako se osvoji preko 50 %. Ukupan broj bodova (%) koji student prema navedenom praćenju u toku nastave može ostvariti iznosi maksimalno 50 bodova (%), što sa Završnim (II parcijalnim) čini 100 bodova (%). Za studente koji nisu položili I Parcijalni ispit, Završni ispit (Integralni) se organizuje iz cjelokupnog pređenog gradiva u toku nastave i vježbi, i vrednuje se sa 85 bodova (%), što sa seminarskim radom/praktičnim radom čini 100 bodova (%). Studenti da bi položili ispit, trebaju položiti svaki od navedenih dijelova i to: seminarski rad, prvi parcijalni ispit (test) i završni ispit (drugi parcijalni ili integralni). Evaluacija seminarskog rada i prvog parcijalnog ispita (testa) se realizira u toku trajanja nastave. Studenti koji polože prvi parcijalni ispit, na završnom ispitu polažu samo drugi parcijalni ispit, dok studenti koji ne polože prvi parcijalni ispit, na završnom ispitu polažu integralni ispit sačinjen iz prvoog i drugog parcijalnog ispita. Studenti ponovci koji u prethodnoj akademskoj godini nisu položili ispit, a koji su ispunili određene obaveze i ostvarili određene bodove, iste mogu prenijeti u tekuću akademsku godinu. Studenti ponovci koji žele izvršiti prenos bodova, trebaju informisati predmetnog nastavnika na početku semestra, do kraja prve sedmice nastave. Prenos bodova se može izvršiti samo jednom. Konačan uspjeh studenta nakon svih predviđenih oblika provjere znanja, vrednuje se i ocjenjuje sistemom ocjenjivanja kako slijedi: a) 10 (A) - izuzetan uspjeh bez grešaka ili sa neznatnim greškama, nosi 95-100 bodova; b) 9 (B) - iznad prosjeka, sa ponekom greškom, nosi 85-94 bodova; c) 8 (C) - prosječan, sa primjetnim greškama, nosi 75-84

	bodova; d) 7 (D) - općenito dobar, ali sa značajnijim nedostacima, nosi 65-74 bodova; e) 6 (E) - zadovoljava minimalne uslove, nosi 55-64 bodova; f) 5 (F, FX) - ne zadovoljava minimalne uslove, manje od 55 bodova. Ukupno vrednovanje svih obaveza studenta u toku semestra, odnosno ocjena na ispitu zasnovana je na ukupnom broju bodova (%) koje je student stekao ispunjavanjem predispitnih obaveza i polaganjem parcijalnog i završnog ispita, a prema kvalitetu stečenih znanja i vještina, i sadrži maksimalno 100 bodova, te se utvrđuje prema sljedećoj skali: Obaveze studenta Bodovi (%) Prisutnost na predavanjima i vježbama ..... 0 bodova Obavezno je prisustvo svim oblicima nastave min. 80 % i ovo je uslov za ovjeru/potpis urednog pohađanja nastave. Seminarski rad/Terenski rad/Lab.vježbe/Praksa (pism. i usm.).....15 bodova (%) I Parcijalni ispit (pismeno).....35 bodova (%) Završni ispit (II Parcijalni) (pismeno).....50 bodova (%) Završni ispit (Integralni) (pismeno).....85 bodova (%)
Literatura:	Obavezna: 1. Dalla Chiara B., Ercolani F., Gačanin E., Kiso F.: Intermodalni transport, Education and Culture TEMPUS , Sarajevo 2004. 2. Perišić R.: Savremene strategije i tehnologije razvoja transporta , SANU, Beograd, 2002. 3. Perišić R.: Sistem kvaliteta usluga logistika i informatika, SANU, Beograd, 2002. 4. Terminologija u kombiniranom transportu: UN/ECE, Prevod Kiso F., Education and Culture TEMPUS, Sarajevo, 2004. 5. Kiso, F., Karičić, S., Omerhodžić, A.: Multimodalni transport, Fakultet za saobraćaj i komunikacije, Sarajevo, 2023. Dopunska: 1. Marković I.: Nove tehnologije transporta, Fakultet prometnih znanosti Zagreb, 1985. 2. Kiso,F.: „Logistika-osnovne postavke“, predavanje skripta, FSK Sarajevo,2019. 3. Kiso,F.:“Skladištenje i teorija zaliha“, predavanje skripta, FSK Sarajevo, 2016.

Šifra predmeta: 07TATOS020102	Naziv predmeta: UPRAVLJANJE ZRAKOPLOVNIM SAOBRAĆAJEM		
Ciklus: II (drugi)	**Godina: I (prva)**	**Semestar: II (drugi)**	**Broj ECTS kredita:6 (šest)**
Status: Obavezni predmet		**Ukupan broj kontakt sati: 90** Predavanja 45 Vježbe 30 Labaratorijske vježbe 15	
Učesnici u nastavi	**Nastavnici i saradnici izabrani na oblast kojoj predmet pripada/predmet**		
Preduslov za upis:	NE		
Cilj (ciljevi) predmeta:	Stjecanje znanja o procesima i procedurama operativnih usluga u zračnom saobraćaju, procesima i procedurama upravljanja zračnim prostorom, kapacitetima i protokom zračnog saobraćaja, te upoznavanje studenata s primjenjivim programskim alatima za modeliranje i simulaciju zračnog saobraćaja i algoritmima izračuna naknada za pružanje rutnih i terminalnih usluga u zračnom saobraćaju.		
Tematske jedinice: *(po potrebi plan izvođenja po sedmicama se utvrđuje uvažavajući specifičnosti organizacionih jedinica)*	1. Uvodno predavanje – Elementi strateškog planiranja u ATM-u. 2. Planiranje CNS/ATM koncepta 3. Analiza funkcionalnih blokova zračnog prostora/ECAA sporazum 4. Podjela usluga u zračnom prometu/Pojam i podjela zračnog prostora/Vertikalna pozicija zrakoplova 5. Operativne usluge u zračnom prometu/Kontrola zračnog prometa/Razdvajanje zrakoplova 6. Upravljanje zračnim prostorom/FUA strukture zračnog prostora/CDAF/AMC/Publikacije ASM-a 7. Upravljanje protokom zračnog prometa/CDM/CFMU/NM 8. Planiranje leta u IFPS zoni 9. Tehnološki proces otvaranja sektora u kontroli zračnog prometa 10. Odnos ATS/ASM/ATFM 11. Proces planiranja kapaciteta kontrole zračnog prometa u Europi 12. Radno opterećenje kontrolora zračnog prometa 13. Analiza kompleksnosti zračnog prometa 14. Naknade za usluge kontrole zračne plovidbe 15. Analiza sustava upravljanja zrakoplovnim prometom		
Ishodi učenja:	**Znanje:** Teorijska i praktična znanja iz oblasti upravljanje zrakoplovnim saobraćajem **Vještine:** -Pravilno interpretirati temeljne pojmove i procese upravljanja zrakoplovnim saobraćajem u skladu s europskim i nacionalnim		

	regulativnim zahtjevima. -Definirati elemente sustava upravljanja zračnim saobraćajem (ATM). -Elaborirati procedure i procese operativnih usluga u sustavu upravljanja zrakoplovnim saobraćajem (ATM), upravljanja zračnim prostorom (ASM) i upravljanja protokom i kapacitetima zračnog saobraćaja (ATFCM). -Izraditi seminarski zadatak iz problematike upravljanja zrakoplovnim saobraćajem /prostorom /protokom i kapacitetom i prezentirati rezultate. -Primijeniti algoritme za izračun kapaciteta, kompleksnosti i rutnih naknada, te upotreba programskog alata za modeliranje i simulaciju na konkretnom primjeru ATM operative.
Cilj održivog razvoja (SDG):	SDG 4 - Kvalitetno obrazovanje Razvijanje i prezentiranje istraživačkih radova u ovom polju pomaže u širenju znanja i obrazovanju u oblasti upravljanja zrakoplovnim saobraćajem, što doprinosi kvalitetnom obrazovanju i stručnoj obuci. SDG 8 - Dostojanstven rad i ekonomski rast Upotreba naprednih algoritama i programskih alata za optimizaciju zrakoplovnog saobraćaja može povećati efikasnost i produktivnost u sektoru, što podržava ekonomski rast i stvaranje dostojanstvenih radnih mjesta. SDG 11 - Održivi gradovi i zajednice Efikasan sustav upravljanja zračnim saobraćajem doprinosi održivom razvoju gradova i zajednica smanjujući zagušenja i poboljšavajući povezanost između različitih lokacija. SDG 13 – Zaštita klime Optimizacija upravljanja zračnim saobraćajem može smanjiti emisije ugljen-dioksida kroz efikasnije rute i smanjenu potrošnju goriva, što doprinosi borbi protiv klimatskih promjena.
Metode izvođenja nastave:	Usmeno iznošenje sa prezentacijom i prikazom različitih sistema i procesa iz oblasti upravljanja zračnim saobraćajem, uz korištenje video i audio zapisa, te samostalno izlaganje pojedinih konkretnih problema iz oblasti upravljanja zračnim saobraćajem. Iniciranje rasprava i diskusijao problemima iz prakse, pojedinačnih zapažanja iz različitih okruženja,

	izrada samostalnih istraživanja i analiza iz oblasti ATM-a
Metode provjere znanja sa strukturom ocjene:	Ocjena kreativnosti na nastavi i vježbama uz izradu samostalnih radova, ocjena parcijalnog testa u toku nastave kao i ocjena završnog ispita. Kriterijum praćenja rada i ocjenjivanja studenta u toku nastave i to prema sljedećem načinu: – Domaća zadaća/seminarski rad/praktični rad/ 15 bodova (%), položeno ako se osvoji preko 50 %. – I Parcijalni ispit/test/provjera znanja/35 bodova (%), položen je ako se osvoji preko 50 %. – Završni ispit (II Parcijalni) 50 bodova (%), položeno ako se osvoji preko 50 %. – Završni ispit (Integralni) 85 bodova (%), položeno ako se osvoji preko 50 %. – Ukupan broj bodova (%) koji student prema navedenom praćenju u toku nastave može ostvariti iznosi maksimalno 50 bodova (%), što sa Završnim (II parcijalnim) čini 100bodova (%). Za studente koji nisu položili I Parcijalni ispit, Završni ispit (Integralni) se organizuje iz cjelokupnog pređenog gradiva u toku nastave i vježbi, i vrednuje se sa 85 bodova (%), što sa seminarskim radom/praktičnim radom čini 100 bodova (%). Konačan uspjeh studenta nakon svih predviđenih oblika provjere znanja, vrednuje se i ocjenjuje sistemom ocjenjivanja kako slijedi: a) 10 (A) - izuzetan uspjeh bez grešaka ili sa neznatnim greškama, nosi 95-100 bodova; b) 9 (B) - iznad prosjeka, sa ponekom greškom, nosi 85-94 bodova; c) 8 (C) - prosječan, sa primjetnim greškama, nosi 75-84 bodova; d) 7 (D) - općenito dobar, ali sa značajnijim nedostacima, nosi 65-74 bodova; e) 6 (E) - zadovoljava minimalne uslove, nosi 55-64 bodova; f) 5 (F, FX) - ne zadovoljava minimalne uslove, manje od 55 bodova. Ukupno vrednovanje svih obaveza studenta u toku semestra, odnosno ocjena na ispitu zasnovana je na ukupnom broju bodova (%) koje je student stekao ispunjavanjem predispitnih obaveza i polaganjem parcijalnog i završnog ispita, a prema kvalitetu stečenih znanja i vještina, i sadrži maksimalno 100 bodova, te se utvrđuje prema sljedećoj skali: Obaveze studenta Bodovi (%)

	Prisutnost na predavanjima i vježbama...- Zadaća/Seminarski/Praksa/.....15 bodova (%) I Parcijalni ispit/Test/Provjera znanja/.....35 bodova (%) Završni ispit (II Parcijalni) .....50 bodova (%) Završni ispit (Integralni) .....85 bodova (%)
Literatura:	1. Mihetec, T.: Upravljanje zračnim prometom, Sveučilište u Zagrebu, Fakultet prometnih znanosti, 2016. 2. Cook, A.: European Air Traffic Management, Asgate, UK, London, 2008. 3. Sudarshan, H.V.: Seamless Sky, Ashgate, UK, London, 2003. 4. Air Traffic Management, Doc 4444, International Civil Aviation Organisation, Montreal, 2007. 5. Annex 2: Rules of the Air, International Civil Aviation Organisation, Montreal, 2005. 6. Annex 11 : Air Traffic Services, International Civil Aviation Organisation, Montreal, 2001. 7. CFMU Handbook, EUROCONTROL, Brussels, 2012

Šifra predmeta: 08TATOS020102	**Naziv predmeta: PLANIRANJE PREVOZA I EKSPLOATACIJA ZRAKOPLOVA**		
Ciklus: II	**Godina: I**	**Semestar: II**	**Broj ECTS kredita: 6**
Status: Obavezni predmet		**Ukupan broj sati: 90** Razrada distribucije sati po tipu: Predavanja: 45 Vježbe: 30 Seminar Terenski rad Laboratorijske vježbe: 15 Praksa:	
Učesnici u nastavi	**Nastavnici i saradnici izabrani na oblast kojoj predmet pripada/predmet**		
Preduslov za upis:	NE		
Cilj (ciljevi) predmeta:	Stjecanje potrebnih znanja o metodologiji planiranja zračnog transporta i upravljanja zrakoplovnim kompanijama..		
Tematske jedinice:	1. Uvod - Razvoj zračnog transporta. 2. Zrakoplovni prijevoznici. Organizacijska struktura zrakoplovnih prijevoznika. 3. Poslovni modeli zrakoplovnih kompanija.		

	4. Deregulacija i liberalizacija tržišta zračnog transporta. 5. Zrakoplovno tržište. Segmentacija tržišta.Tržišno pozicioniranje zrakoplovne kompanije 6. PESTLE analiza.SWOT analiza.Benchmarking zrakoplovnih kompanija. 7. Pokazatelji transportnog rada. 8. Pokazatelji produktivnosti zrakoplovnih prijevoznika. 9. Planiranje flote. Metodologija selekcije flote 10. Planiranje reda letenja, posada i goriva 11. Upravljanje kapacitetima. Upravljanje cijenama. Tarife u zračnom transportu 12. Sporazumi u zračnom transportu 13. Profitabilnost zrakoplovnih kompanija. Menadžment mreže letova. Profitabilnost ruta. 14. Pokazatelji poslovanja zrakoplovne kompanije.Financijski menadžment zrakoplovne kompanije. 15. Prognoza potražnje za zrakoplovnim transportom
Ishodi učenja:	**Znanje:** Teorijska i praktična znanja iz oblasti planiranja zrakoplovnog prevoza i eksploatacije zrakoplova. Predmet Planiranje prevoza i eksploatacija zrakoplova treba studentima da omogući sticanje znanja potrebnih za poznavanje eksploatacije transportnih zrakoplova kao i metodologije planiranja upotrebe jednog zrakoplova ili cijele flote u zrakoplovnoj kompaniji **Vještine:** Sposobnost primjene teorijskih i praktičnih znanja iz oblastio planiranja zrakoplovnog prevoza i eksploatacije zrakoplova. **Kompetencije:** Studenti kroz nastavni proces predavanja, vježbe, laboratorijske vježbe i praktičan rad trebaju steći odgovarajuća znanja iz područja planiranja zračnog transporta i upravljanja poslovnim procesima za primjenu u operativnom okruženju zrakoplovne kompanije
Ciljevi održivog razvoja (SDGs)	SDG 4 - Kvalitetno obrazovanje SDG 8- Dostojanstven rad i ekonomski rast SDG 10- Smanjenje nejednakosti
Metode izvođenja nastave:	Usmeno iznošenje sa prezentacijom i prikazom različitih analiza, studija, modela i metoda u oblasti planiranja zrakoplovnog prevoza i eksploatacije zrakoplova uz korištenje video i audio zapisa, softvera, mjerne opreme, te samostalno izlaganje pojedinih konkretnih istraživanja. Iniciranje rasprava i diskusija o problemima iz prakse, pojedinačnih zapažanja iz različitih okruženja, izrada samostalnih

	analiza, istraživanja, mjerenja i modeliranja u oblasti planiranja i eksploatacije zrakoplovnih sredstava.
Metode provjere znanja sa strukturom ocjene:	Ocjena kreativnosti na nastavi i vježbama uz izradu samostalnih radova, ocjena parcijalnog testa u toku nastave kao i ocjena završnog ispita. Kriterijum praćenja rada i ocjenjivanja studenta u toku nastave i to prema sljedećem načinu: – Domaća zadaća/seminarski rad/praktični rad/ 15 bodova (%), položeno ako se osvoji preko 50 %. – I Parcijalni ispit/test/provjera znanja/35 bodova (%), položen je ako se osvoji preko 50 %. – Završni ispit (II Parcijalni) 50 bodova (%), položeno ako se osvoji preko 50 %. – Završni ispit (Integralni) 85 bodova (%), položeno ako se osvoji preko 50 %. – Ukupan broj bodova (%) koji student prema navedenom praćenju u toku nastave može ostvariti iznosi maksimalno 50 bodova (%), što sa Završnim (II parcijalnim) čini 100 bodova (%). Za studente koji nisu položili I Parcijalni ispit, Završni ispit (Integralni) se organizuje iz cjelokupnog pređenog gradiva u toku nastave i vježbi, i vrednuje se sa 85 bodova (%), što sa seminarskim radom/praktičnim radom čini 100 bodova (%). Konačan uspjeh studenta nakon svih predviđenih oblika provjere znanja, vrednuje se i ocjenjuje sistemom ocjenjivanja kako slijedi: a) 10 (A) - izuzetan uspjeh bez grešaka ili sa neznatnim greškama, nosi 95-100 bodova; b) 9 (B) - iznad prosjeka, sa ponekom greškom, nosi 85-94 bodova; c) 8 (C) - prosječan, sa primjetnim greškama, nosi 75-84 bodova; d) 7 (D) - općenito dobar, ali sa značajnijim nedostacima, nosi 65-74 bodova; e) 6 (E) - zadovoljava minimalne uslove, nosi 55-64 bodova; f) 5 (F, FX) - ne zadovoljava minimalne uslove, manje od 55 bodova. Ukupno vrednovanje svih obaveza studenta u toku semestra, odnosno ocjena na ispitu zasnovana je na ukupnom broju bodova (%) koje je student stekao ispunjavanjem predispitnih obaveza i polaganjem parcijalnog i završnog ispita, a prema kvalitetu stečenih znanja i vještina, i sadrži maksimalno 100 bodova, te se utvrđuje prema

	sljedećoj skali: Obaveze studenta Bodovi (%) Prisutnost na predavanjima i vježbama... - Zadaća/Seminarski/Praksa/.....15 bodova (%) I Parcijalni ispit/Test/Provjera znanja/.....35 bodova (%) Završni ispit (II Parcijalni) .....50 bodova (%) Završni ispit (Integralni) .....85 bodova (%)
Literatura:	1. Šabić, M.: Autorska predavanja, Fakultet za saobraćaj i komunikacije, 2016. 2. Bazargan, M.: Airline Operations and Scheduling, Ashgate Publishing Company, Aldershot, 2012. 3. Belobaba, P. P., Odoni, A., Barnhart, C.: The Global Airline Industry, John Wiley &Sons Ltd, UK, 2009. 4. Doganis, R.: The Airline Business, Routledge, London, 2005. 5. Butler, G.F., Keller, M.R.: Handbook of Airline Operations, McGraw-Hill Companies, New York, 2000.

Šifra predmeta: **09-10-1TATES020102**	**Naziv predmeta:** **INFORMACIONE TEHNOLOGIJE I ŠPEDITERSKO POSLOVANJE**		
Ciklus: II	**Godina: I**	**Semestar: II**	**Broj ECTS kredita:** 6
Status: Izborni predmet		**Ukupan broj kontakt sati: 90** Opciono razraditi distribuciju sati po tipu: Predavanja: 45 Vježbe:30 Seminarski i projektni zadatak: 15	
Učesnici u nastavi	**Nastavnici i saradnici izabrani na oblast kojoj predmet pripada/predmet**		
Preduslov za upis:	NE		
Cilj (ciljevi) predmeta:	Upoznavanje sa savremenim informacionim i komunikacijskim tehnologijama koje se primjenjuju u oblasti logističke špedicije, specifičnim softverskim alatima, te metodama i efektima njihove primjene.		
Tematske jedinice: *(po potrebi plan izvođenja po sedmicama se utvrđuje*	1. Uvod 2. Identifikacija tehnoloških procesa logističke špedicije		

uvažavajući specifičnosti organizacionih jedinica)	3. Identifikacija ključnih interesnih skupina u logističkom špediterskom lancu 4. Teoretske postavke aktuelnih informacionih tehnoloških rješenja koje se primjenjuju u oblasti špedicije 5. Značaj i mogućnosti primjene aplikativnih softvera u upravljanju sistema logističke špedicije i implementacija najboljih praksi 6. Metodološki pristupi u projektovanju informaciono-tehnoloških rješenja u logističkoj špediciji 7. CRM (Customer Relationship Management) u logističko špediterskim kompanijama 8. Planiranje i optimiziranje špediterske usluge- maksimiziranje korisnosti i snižavanje troškova procesa narudžbi, bukiranja i otpreme robe 9. Upravljanje procesima uvoza, izvoza i globalne vanjsko-trgovinske razmjene (harmonizirane tarife, ugovori o vanjskoj trgovini, INCOTERMS) 10. Softverske aplikacije za Business-to-Bussiness SCM (Supply Chain Management) 11. Softverske aplikacije za upravljanje carinskim procedurama bazirane na EU legislativi 12. Softverske aplikacije za upravljanje poslovima skladištenja 13. Softverske aplikacije za upravljanje transportnim lancem 14. Web aplikacije i on-line usluge za vanjskotrgovinsku usklađenost, tarifske klasifikacije, uvozno-izvoznu dokumentaciju, elektronsko izvještavanje, verifikacija 15. Povezivanje segmentiranih softverskih aplikacija u holistički logističko-špediterski informacioni sistem (End-to-End Management)
Ishodi učenja:	**Znanje:** Studenti kroz nastavni proces predavanja, vježbe, laboratorijske vježbe i praktičan rad trebaju steći odgovarajuća znanja i vještine za praktičnu primjenu kroz: razvoj IT i evaluaciju efekata njihove primjene u logističkoj špediciji, te samostalnu formulaciju ciljeva istraživanja i primjenu odgovarajućih metoda i modela za njihovu

	realizaciju **Vještine:** Sistemski pristup u projektovanju IT poslovnih procesa logističke špedicije i razumijevanje algoritama kao osnove špediterskih softverskih rješenja; identifikaciju i korištenje relevantnih informacionih tehnoloških rješenja iz područja logističke špedicije, kritičku analizu, procjenu i sintezu raspoloživih znanja; razvoj i primjenu špediterskih softverskih upravljačkih modela, te prezentaciju stečenih znanja stručnoj i naučnoj javnosti.planira, upravlja i kontroliše realizaciju različitih tipova projekta u poslovnim sistemima. **Kompetencije:** Aplikaciju stečenih znanja u konkretnim modelima
Cilj održivog razvoja (SDG):	SDG 4 - Kvalitetno obrazovanje: Osigurati uključivo i kvalitetno obrazovanje, te promovisati mogućnosti cjeloživotnog učenja za sve, SDG 8 - Dostojanstven rad i ekonomski rast: Promovisati održivi, uključivi i održivi ekonomski rast, zapošljavanje i dostojanstven rad za sve, SDG 9 - Industrija, inovacije i infrastruktura: Izgraditi otpornu infrastrukturu, promovirati uključivu i održivu industrializaciju i poticati inovacije, SDG 12 - Odgovorna potrošnja i proizvodnja: Osigurati održive obrasce potrošnje i proizvodnje, SDG 16 - Mir, pravda i snažne institucije: Promovisati mirne i uključive društva za održivi razvoj, osigurati pristup pravdi za sve i izgraditi efikasne, odgovorne i uključive institucije na svim nivoima
Metode izvođenja nastave:	Tokom izvođenja programa nastavnik izlaže pojedine tematske jedinice (ex katedra), omogućava studentima praćenje video zapisa sa edukativnim sadržajem (DVD, video prezentacije) iz predmetne oblasti i organizuje diskusije na zadanu temu (interaktivna nastava). U okviru vježbi provodi se razmatranje i rješavanje primjera i zadataka sukladno teoretskoj tematici, pomaže se studentima u samostalnom rješavanju zadataka, u izradi programa, projekata i seminarskih radova.
Metode provjere znanja sa strukturom ocjene:	Kriterijum vrednovanja rada i ocjenjivanja studenta u toku nastave, vrši se na sljedeći način: Seminarski rad / projektni zadatak: od 0 do 15 bodova, položeno ako se

	osvoji preko 50% I test / I provjera znanja / I parcijalni ispit: od 0 do 35 bodova, položeno ako se osvoji preko 50% Završni ispit – pismeni 20 bodova Završni ispit – usmeni 30 bodova Završni ispit (Inegralni) – pismeni - 40 bodova Završni ispit (Inegralni) – usmeni – 45 bodova Da bi student položio ispit mora položiti usmeni dio ispita. Ukupan broj bodova koji studenta može ostvariti u toku nastave može iznosi maksimalno 50 bodova. Završni ispit uključuje gradivo koje student nije položio na parcijalnom ispitu što znači da obuhvata drugi dio gradiva (II parcijalni) koji se vrednuje sa 50 bodova ili se sastoji od kompletnog gradiva, tj. I i II parcijalnog ispita. Ukupno vrednovanje svih obaveza studenta u toku semestra, odnosno ocjena na ispitu zasnovana je na ukupnom broju bodova (%) koje je student stekao ispunjavanjem predispitnih obaveza, polaganjem parcijalnog i završnog ispita. Prema kvalitetu stečenih znanja i vještina student može osvojiti maksimalno 100 bodova, a prema sljedećoj skali: Struktura bodovanja Bodovi (%) Seminarski / Projektni zadatak:..... 15 bodova (%) I test / I provjera znanja (I parcijalni ispit):.....35 bodova (%) Završni (II parcijalni ispit):.....50 bodova (%) Potreban uslov za uspješno okončan ispit je postignut rezultat od 55 bodova pri čemu na svakom dijelu ispita treba ostvariti minimalno 50% (aktivnost, parcijalni ispit, završni ispit-pismeni), tj. da bi student položio ispit mora ostvariti sljedeće uslove: - Aktivnost (seminarski rad / projektni zadatak): 7,5 bodova - I test / I provjera znanja / parcijalni ispit: 17,5 bodova - Završni ispit (II parcijalni ispit) – pismeni dio: 10 bodova Studenti koji su položili parcijalni ispit, na završnom ispitu polažu samo drugi dio gradiva (dio koji nije obuhvaćen parcijalnim ispitom). Studenti koji nisu položili parcijalni ispit, u okviru završnog ispita polažu kompletno gradivo, pri čemu kriteriji za polaganje ispita ostaje identični.

	Završni ispit se organizuje kao pismeni i/ili usmeni. Aktivnost se može pratiti kroz izradu zadaće, seminarskih radova, projektnih zadataka ili polaganje kvizova. Napomena: Studenti su obavezni prisustvovati svim oblicima nastave minimalno 80 % od ukupnog fonda sati i prisustvo na nastavi je uslov za ovjeru urednog pohađanja nastave. Student može, u opravdanim slučajevima (bolest) odsustvovati sa nastave, za što je obavezan dostaviti zdrastveno opravdanje. Seminarski rad i domaća zadaća će biti bodovane samo ako budu predane prema definisanim terminima. Naknadne predaje istih neće se bodovati. Konačan uspjeh studenta nakon svih predviđenih oblika provjere znanja, vrednuje se i ocjenjuje sistemom ocjenjivanja kako slijedi: a) 10 - izuzetan uspjeh bez grešaka ili sa neznatnim greškama, nosi 95-100 bodova; b) 9 - iznad prosjeka, sa ponekom greškom, nosi 85-94 bodova; c) 8 - prosječan, sa primjetnim greškama, nosi 75-84 bodova; d) 7 - općenito dobar, ali sa značajnijim nedostacima, nosi 65-74 bodova; e) 6 - zadovoljava minimalne uslove, nosi 55-64 bodova; f) 5 - ne zadovoljava minimalne uslove, manje od 55 bodova
Literatura:	Obavezna: 1. R. Zelenika: Logistička špedicija, Ekonomski fakultet, Zagreb, 2000. 2. Zelenika, R.: Logistički sustavi, Ekonomski fakultet u Rijeci, 2005.; 3. Gordana M. Radivojević, Upravljanje informacijama u logistici. Beograd 2023. 4. Ivanković, Č.: Špedicija i logistika, Fakultet prometnih znanosti, Zagreb, 2005. 5. R. Zelenika: Međunarodna špedicija, Ekonomski fakultet, Zagreb, 1996. 6. Deljanin: Logistika u saobraćaju i komunikacijama, Skripta, FSK, 2013. 7. Deljanin: Logistički sistemi, Skripta, FSK, 2014. Dopunska: 1. Andrijanić I., Aržek Z., Prebežac D., Zelenika R., Transportno i špeditersko poslovanje, Zagreb, 2001.

	2. Z. Aržek, G. Badovinac: Transport i osiguranje, Izdavačko-instruktivni biro, Zagreb, 1986. 3. J. Mađarić: Međunarodna špedicija, Fakultet prometnih znanosti, Zagreb, 1991. 4. Grabovac: Odgovornost poduzetnika multimodalnog prijevoza stvari, Prometni fakultet, Split, 1986. 5. Shipping and logistics management, Y H V Lun; Kee-hung Lai; T C E Cheng Publisher: New York; London : Springer, 2010. 6. International logistics supply chain outsourcing: from local to global, Alan Rushton; Steve WalkerPublisher:London : Kogan Page, 2007. 7. Transportation Management with SAP TM, Bernd Lauterbach, Stefan Sauer, Jens Kappauf, Jens Gottlieb, Dominik Metzger, Christopher Sürie, 2nd, updated and revised edition 2016. 8. Warehouse Management with SAP EWM, Balaji Kannapan, Hari Tripathy, Vinay Krishna, 2nd, updated and revised edition 2016. ČASOPISI – International Journal of Phisical Distribution, – Computers and Operation Research – International Journal of Information Management – European Journal of Operational Research – Journal of Bussines Logistics

Šifra predmeta: 09-10-2TATES020102	**Naziv predmeta:** **PERFORMANSE TRANSPORTNIH ZRAKOPLOVA**		
Ciklus: II	**Godina: I**	**Semestar: II**	**Broj ECTS kredita: 6**
Status: Izborni predmet		**Ukupan broj sati: 90** Razrada distribucije sati po tipu: Predavanja: 45 Vježbe: 30 Seminar Terenski rad Laboratorijske vježbe: 15 Praksa:	
Učesnici u nastavi	**Nastavnici i saradnici izabrani na oblast kojoj predmet pripada/predmet**		
Preduslov za upis:	NE		
Cilj (ciljevi) predmeta:	Sticanje znanja o performansama transportnih zrakoplova		

Tematske jedinice:	1. Jednačine leta aviona 2. Pravolinijski stacionarni horizontalni let aviona 3. Motorni let transportnog aviona 4. Dolet u planiranju transportnog aviona 5. Jednačine leta u penjanju transportnog aviona 6. Let transportnog aviona u horizontalnom zaokretu 7. Let u poniranju transportnog aviona 8. Opšti princip određivanja performansiaviona 9. analiza poletanja transportnog aviona 10. Analiza sletanja transportnog aviona 11. Ravnoteža transportnog aviona 12. Statička i dinamička stabilnost transportnog aviona 13. Statička stabilnost po pravcu i zaokretanju 14. Uzdužna upravljivost aviona 15. Poprečna upravljivost transportnog aviona
Ishodi učenja:	**Znanje:** Teorijska i praktična znanja iz oblasti performanse transportnih zrakoplova. **Vještine:** Sposobnost primjene teorijskih i praktičnih znanja iz oblasti performansi transportih zrakoplova **Kompetencije:** Sposobnosti samostalnog razumijevanja i korištenja propisa, korištenja stručne literature, primjene metoda i postupaka, mjerenja i istraživanja, izrada analiza, procjena i praktičnih rješenja, preventivnog djelovanja, te postupaka i procedura analiza u domenu performansi transportnih zrakoplova
Ciljevi održivog razvoja (SDGs)	SDG 4 - Kvalitetno obrazovanje SDG 9- Industrija, inovacije i infrastruktura SDG13-Zaštita klime
Metode izvođenja nastave:	Usmeno iznošenje sa prezentacijom i prikazom različitih sistema i procesa iz oblasti performanse transportnih zrakoplova, uz korištenje video i audio zapisa, te samostalno izlaganje pojedinih konkretnih problema uticaja pojedinih faktora na performanse zrakoplova. Iniciranje rasprava i diskusija o problemima iz prakse, pojedinačnih zapažanja iz različitih okruženja, izrada samostalnih istraživanja i analiza iz oblasti performansi zrakoplova
Metode provjere znanja sa strukturom ocjene:	Ocjena kreativnosti na nastavi i vježbama uz izradu samostalnih radova, ocjena parcijalnog testa u toku nastave kao i ocjena završnog ispita. Kriterijum praćenja rada i ocjenjivanja studenta u toku nastave i to prema sljedećem načinu:

	– Domaća zadaća/seminarski rad/praktični rad/ 15 bodova (%), položeno ako se osvoji preko 50 %. – I Parcijalni ispit/test/provjera znanja/35 bodova (%), položen je ako se osvoji preko 50 %. – Završni ispit (II Parcijalni) 50 bodova (%), položeno ako se osvoji preko 50 %. – Završni ispit (Integralni) 85 bodova (%), položeno ako se osvoji preko 50 %. Ukupan broj bodova (%) koji student prema navedenom praćenju u toku nastave može ostvariti iznosi maksimalno 50 bodova (%), što sa Završnim (II parcijalnim) čini 100 bodova (%). Za studente koji nisu položili I Parcijalni ispit, Završni ispit (Integralni) se organizuje iz cjelokupnog pređenog gradiva u toku nastave i vježbi, i vrednuje se sa 85 bodova (%), što sa seminarskim radom/praktičnim radom čini 100 bodova (%). Konačan uspjeh studenta nakon svih predviđenih oblika provjere znanja, vrednuje se i ocjenjuje sistemom ocjenjivanja kako slijedi: a) 10 (A) - izuzetan uspjeh bez grešaka ili sa neznatnim greškama, nosi 95-100 bodova; b) 9 (B) - iznad prosjeka, sa ponekom greškom, nosi 85-94 bodova; c) 8 (C) - prosječan, sa primjetnim greškama, nosi 75-84 bodova; d) 7 (D) - općenito dobar, ali sa značajnijim nedostacima, nosi 65-74 bodova; e) 6 (E) - zadovoljava minimalne uslove, nosi 55-64 bodova; f) 5 (F, FX) - ne zadovoljava minimalne uslove, manje od 55 bodova. Ukupno vrednovanje svih obaveza studenta u toku semestra, odnosno ocjena na ispitu zasnovana je na ukupnom broju bodova (%) koje je student stekao ispunjavanjem predispitnih obaveza i polaganjem parcijalnog i završnog ispita, a prema kvalitetu stečenih znanja i vještina, i sadrži maksimalno 100 bodova, te se utvrđuje prema sljedećoj skali: <u>Obaveze studenta Bodovi (%)</u> Prisutnost na predavanjima i vježbama... - Zadaća/Seminarski/Praksa/.....15 bodova (%) I Parcijalni ispit/Test/Provjera znanja/.....35 bodova (%) Završni ispit (II Parcijalni) .....50 bodova (%)

	Završni ispit (Integralni) .....85 bodova (%)
Literatura:	1. Doganis, R.: The Airline Business, Routledge, London, 2005. 2. Bazargan, M.: Airline Operations and Scheduling, Ashgate Publishing Company, Aldershot, 2012. 3. Belobaba, P. P., Odoni, A., Barnhart, C.: The Global Airline Industry, John Wiley &Sons Ltd, UK, 2009. 4. Doganis, R.: The Airline Business, Routledge, London, 2005.. 5. Butler, G.F., Keller, M.R.: Handbook of Airline Operations, McGraw-Hill Companies, New York, 2000. 6. Steiner, S., Mihetec, T.: Planiranje u zračnom prometu, Autorizirana predavanja, Fakultet prometnih znanosti, 2009 7. Cook, A.: European Air Traffic Management, Asgate, 2008. 8. Sudarshan, H.V.: Seamless Sky, Ashgate, 2003. 9. ICAO, Doc 444: Air Traffic Management, Fourteenth Edition, 2001 10. ICAO: Air Traffic Services, Anex 11, Thirteenth Edition, 2001 11. S. Janković: "Mehanika leta zrakoplova", Sveučilište u Zagrebu FSB, 2002. 12. David G. Hull , "Fundamentals of Airplane Flight Mechanics", Thirteenth Edition, Springer, 2001

Šifra predmeta: 09-10-3TATES020102	**Naziv predmeta**: **TEHNOLOŠKE ANALIZE ZRAKOPLOVNOG SAOBRAĆAJA**		
Ciklus: II (drugi)	**Godina: I (prva)**	**Semestar: II (drugi)**	**Broj ECTS kredita:6 (šest)**
Status: Izborni predmet		**Ukupan broj kontakt sati: 90** Predavanja 45 Vježbe 30 Labaratorijske vježbe 15	
Učesnici u nastavi	**Nastavnici i saradnici izabrani na oblast kojoj predmet pripada/predmet**		
Preduslov za upis:	Ne		
Cilj (ciljevi) predmeta:	Stjecanje širih znanja o dinamici i trendovima rasta zračnog saobraćaja i prognostičkim metodama, te ciljanih znanja o faktorima tržišnog natjecanja u segmentima prijevozničke, aerodromske i aeronautičke djelatnosti.		
Tematske jedinice: *(po potrebi plan izvođenja po*	1. Uvod - Tržište zračnog transporta. 2. Trendovi rasta – putnički saobraćaj,konkurentnost ruta, teretni saobraćaj,poslovna avijacija. 3. Modeli prognoziranja zračnog saobraćaja.		

sedmicama se utvrđuje uvažavajući specifičnosti organizacionih jedinica)	4. Deregulacija i liberalizacija tržišta. Kreiranje unutarnjeg tržišta EU. 5. Tržište zračnog transporta. Tradicionalni linijski, regionalni, čarter, niskotarifni, kargo prijevoznici. Generalna i poslovna avijacija. 6. Performanse poslovanja zrakoplovnih kompanija – kapacitet, transportni učinak i financijski pokazatelji. 7. Performanse poslovanja aerodromskih operatora. Aerodromske naknade i prava korisnika. 8. Proizvođači zrakoplova i pružatelji usluga održavanja i remonta. Svjetska zrakoplovna flota. 9. Performanse pružatelja usluga kontrole letenja. 10. Zaštita okoliša i održivi razvoj. Alternativna goriva. Trgovanje emisijama ETS. 11. Legislativa prava putnika u zračnom transportu. 12. Komercijalno udruživanje zrakoplovnih prijevoznika – zrakoplovne alijanse i cod-share sporazumi. 13. Optimiranjeruta i flotni menadžment. 14. Tarife u zračnom transportu. Yield menadžment. Revenue menadžment. 15. Zrakoplovno tržište Bosne i Hercegovine.
Ishodi učenja:	**Znanje:** Teorijska i praktična znanja iz oblasti upravljanja zrakoplovnim kompanijama. Osnovni modeli, principi poslovanja zrakoplovnih kompanija i ponašanje zrakoplovnog tržišta **Vještine:** Sposobnost primjene teorijskih i praktičnih znanja iz oblasti analiziranja pojava na zrakoplovnom tržištu **Kompetencije:** Studenti kroz nastavni proces predavanja, vježbe, laboratorijske vježbe i praktičan rad trebaju steći odgovarajuće kompetencije za komparativnu analizu tržišta zračnog transporta, primjenu metoda prognoziranja i tehnološkog modeliranja sistema zračnog transporta
Cilj održivog razvoja (SDG):	SDG 8 - Dostojanstven rad i ekonomski rast**:** Analiziranje pojava na zrakoplovnom tržištu doprinosi ekonomskom rastu kroz bolje razumijevanje tržišnih dinamika i izazova. To pomaže u optimizaciji poslovnih strategija i podržava održiv rast u sektoru zrakoplovstva, što može voditi ka stvaranju dostojanstvenih radnih mjesta. SDG 9 - Industrija, inovacije i infrastruktura**:** Razumijevanje poslovnih modela, principa rada zrakoplovnih kompanija i ponašanja tržišta doprinosi inovacijama u industriji zrakoplovstva i poboljšanju infrastrukture. To omogućava razvoj održivih poslovnih praksi i tehnoloških rješenja u sektoru zračnog transporta. SDG 12 - Odgovorna potrošnja i proizvodnja: Sticanje kompetencija za analizu tržišta, prognoziranje i tehnološko modeliranje pomaže u razvijanju održivih i odgovorno upravljanih

	poslovnih praksi u sektoru zračnog transporta. Kroz bolje razumijevanje tržišnih i tehnoloških trendova, studenti mogu doprineti optimizaciji resursa i smanjenju otpada, što je ključno za odgovornu proizvodnju i potrošnju.
Metode izvođenja nastave:	Usmeno iznošenje sa prezentacijom i prikazom različitih sistema i procesa iz oblasti kompanijskog poslovanja, uz korištenje video i audio zapisa, te samostalno izlaganje pojedinih konkretnih problema na konkretnom području istraživanja. Iniciranje rasprava i diskusijao problemima iz prakse, pojedinačnih zapažanja iz različitih okruženja, izrada samostalnih istraživanja i analiza iz oblasti poslovanja zrakoplovnih kompanija.
Metode provjere znanja sa strukturom ocjene:	Ocjena kreativnosti na nastavi i vježbama uz izradu samostalnih radova, ocjena parcijalnog testa u toku nastave kao i ocjena završnog ispita. Kriterijum praćenja rada i ocjenjivanja studenta u toku nastave i to prema sljedećem načinu: – Domaća zadaća/seminarski rad/praktični rad/ 15 bodova (%), položeno ako se osvoji preko 50 %. – I Parcijalni ispit/test/provjera znanja/35 bodova (%), položen je ako se osvoji preko 50 %. – Završni ispit (II Parcijalni) 50 bodova (%), položeno ako se osvoji preko 50 %. – Završni ispit (Integralni) 85 bodova (%), položeno ako se osvoji preko 50 %. Ukupan broj bodova (%) koji student prema navedenom praćenju u toku nastave može ostvariti iznosi maksimalno 50 bodova (%), što sa Završnim (II parcijalnim) čini 100bodova (%). Za studente koji nisu položili I Parcijalni ispit, Završni ispit (Integralni) se organizuje iz cjelokupnog pređenog gradiva u toku nastave i vježbi, i vrednuje se sa 85 bodova (%), što sa seminarskim radom/praktičnim radom čini 100 bodova (%). Konačan uspjeh studenta nakon svih predviđenih oblika provjere znanja, vrednuje se i ocjenjuje sistemom ocjenjivanja kako slijedi: a) 10 (A) - izuzetan uspjeh bez grešaka ili sa neznatnim greškama, nosi 95-100 bodova; b) 9 (B) - iznad prosjeka, sa ponekom greškom, nosi 85-94 bodova; c) 8 (C) - prosječan, sa primjetnim greškama, nosi 75-84

	bodova; d) 7 (D) - općenito dobar, ali sa značajnijim nedostacima, nosi 65-74 bodova; e) 6 (E) - zadovoljava minimalne uslove, nosi 55-64 bodova; f) 5 (F, FX) - ne zadovoljava minimalne uslove, manje od 55 bodova. Ukupno vrednovanje svih obaveza studenta u toku semestra, odnosno ocjena na ispitu zasnovana je na ukupnom broju bodova (%) koje je student stekao ispunjavanjem predispitnih obaveza i polaganjem parcijalnog i završnog ispita, a prema kvalitetu stečenih znanja i vještina, i sadrži maksimalno 100 bodova, te se utvrđuje prema sljedećoj skali: Obaveze studenta Bodovi (%) Prisutnost na predavanjima i vježbama...- Zadaća/Seminarski/Praksa/.....15 bodova (%) I Parcijalni ispit/Test/Provjera znanja/.....35 bodova (%) Završni ispit (II Parcijalni) .....50 bodova (%) Završni ispit (Integralni) .....85 bodova (%)
Literatura:	1. Šabić, M.: Autorska predavanja, Fakultet za saobraćaj i komunikacije, 2016. 2. Analyses of the EU Air Transport Market, European Commission, Observatory of Air Transport Market. 3. Belobaba, P. P., Odoni, A., Barnhart, C.: The Global Airline Industry, John Wiley &Sons Ltd, UK, 2009. 4. Doganis, R.: The Airline Business, Routledge, London, 2005. 5. Butler, G.F., Keller, M.R.: Handbook of Airline Operations, McGraw-Hill Companies, New York, 2000.

Šifra predmeta: 09-10-4TATES020102	**Naziv predmeta: AERONAUTIČKE USLUGE**		
Ciklus: II	**Godina: I**	**Semestar: II**	**Broj ECTS kredita:** 6
Status: Izborni predmet		**Ukupan broj kontakt sati: 90** Razrada distribuciju sati po tipu: Predavanja:45 Vježbe:30 Seminar: (izrada seminarskog rada) Terenski rad Laboratorijske vježbe:15	
Učesnici u nastavi	**Nastavnici i saradnici izabrani na oblast kojoj predmet**		

	pripada/predmet
Preduslov za upis:	NE
Cilj (ciljevi) predmeta:	Stjecanje osnovnih znanja o uslugama u zračnoj plovidbi i metodologiji pružanja usluga u zračnom saobraćaju i stjecanje širih znanja o upravljanju zrakoplovnim saobraćajem i službama pružatelja usluga u zračnoj plovidbi.
Tematske jedinice: *(po potrebi plan izvođenja po sedmicama se utvrđuje uvažavajući specifičnosti organizacionih jedinica)*	1. Uvodno predavanje – upoznavanje studenata s tematikom kolegija, pregled obavezne i preporučene literature. 2. Povijest i razvoj sustava kontrole zračnog prometa na globalnoj i regionalnoj razini 3. Službe komunikacije, navigacije i nadzora .Sustavi i tehnološki procesi pružanja CNS usluga 4. Služba potrage i spašavanja.Usluge potrage i spašavanja na primjeru 5. Usluge zrakoplovnog informiranja.Europski sustav zrakoplovnog informiranja (europska baza aeronautičkih podataka) 6. Služba zrakoplovne meteorologije.Ustrojstvo meteoroloških službi i MET usluge 7. Služba upravljanja zračnim prometom.Funkcije upravljanja zračnim prometom (ATFCM i ASM) 8. Operativne službe kontrole zračnog prometa: letno informiranje, uzbunjivanje, kontrola zračnog prometa 9. Uvjeti i pravila letenja 10. Operativna podjela zračnog prometa.Struktura i klasifikacija zračnog prostora 11. Vrste i tehnološki procesi razdvajanja zrakoplova 12. Opći postupci, odobrenja i upute kontrole zračnog prometa 13. Planiranje leta zrakoplova.Plan leta i operativne poruke vezane za planiranje leta zrakoplova 14. Poslovi i zadaće aerodromske i prilazne kontrole zračnog prometa Poslovi i zadaće oblasne kontrole zračnog prometa
Ishodi učenja:	**Znanje:** Teorijska i praktična znanja iz oblasti aeronautičkog informisanja. Osnovni propisi, pravila, metode i postupci u oblasti aeronautičkog informisanja u svim segmentima obavljanja zračnih operacija **Vještine:** Sposobnost primjene teorijskih i praktičnih znanja iz oblasti aeronautičkog informisanja. **Kompetencije:** 1. Razumjeti i tumačiti međunarodne regulative upravljanja u zračnom prometu 2. Elaborirati i analizirati pojedine usluge u zračnom prometu 3. Klasificirati podjelu zračnog prostora i elaborirati procese planiranje leta zrakoplova

	4. Analizirati operativne usluge u zračnom prometu 5. Razumjeti elemente pružanja meteoroloških i usluga spašavanja i potrage 6. Analizirati procedure razdvajanja zrakoplova. 7. Elaborirati i valorizirati poslove i zadaće kontrolora zračnog prometa
Cilj održivog razvoja (SDG):	• SDG4 – Kvalitetno obrazovanje • SDG9 – Industrija inovacije i infrastruktura
Metode izvođenja nastave:	Usmeno iznošenje sa prezentacijom i prikazom različitih primjera iz oblasti zrakoplovnog informisanja, uz korištenje video i audio zapisa, te samostalno izlaganje pojedinih konkretnih problema u sistemu zrakoplovnog informisanja. Iniciranje rasprava i diskusija o problemima iz prakse, pojedinačnih zapažanja iz različitih okruženja, izrada samostalnih istraživanja i analiza iz oblasti informisanja u zrakoplovnom saobraćaju.
Metode provjere znanja sa strukturom ocjene:	Ocjena kreativnosti na nastavi i vježbama uz izradu samostalnih radova, ocjena parcijalnog testa u toku nastave kao i ocjena završnog ispita. Kriterijum praćenja rada i ocjenjivanja studenta u toku nastave i to prema sljedećem načinu: – Domaća zadaća/seminarski rad/praktični rad/ 15 bodova (%), položeno ako se osvoji preko 50 %. – I Parcijalni ispit/test/provjera znanja/35 bodova (%), položen je ako se osvoji preko 50 %. – Završni ispit (II Parcijalni) 50 bodova (%), položeno ako se osvoji preko 50 %. – Završni ispit (Integralni) 85 bodova (%), položeno ako se osvoji preko 50 %. Ukupan broj bodova (%) koji student prema navedenom praćenju u toku nastave može ostvariti iznosi maksimalno 50 bodova (%), što sa Završnim (II parcijalnim) čini 100 bodova (%). Za studente koji nisu položili I Parcijalni ispit, Završni ispit (Integralni) se organizuje iz cjelokupnog pređenog gradiva u toku nastave i vježbi, i vrednuje se sa 85 bodova (%), što sa seminarskim radom/praktičnim radom čini 100 bodova (%). Konačan uspjeh studenta nakon svih predviđenih oblika provjere znanja, vrednuje se i ocjenjuje sistemom ocjenjivanja kako slijedi: a) 10 (A) - izuzetan uspjeh bez grešaka ili sa neznatnim greškama, nosi 95-100

	bodova; b) 9 (B) - iznad prosjeka, sa ponekom greškom, nosi 85-94 bodova; c) 8 (C) - prosječan, sa primjetnim greškama, nosi 75-84 bodova; d) 7 (D) - općenito dobar, ali sa značajnijim nedostacima, nosi 65-74 bodova; e) 6 (E) - zadovoljava minimalne uslove, nosi 55-64 bodova; f) 5 (F, FX) - ne zadovoljava minimalne uslove, manje od 55 bodova. Ukupno vrednovanje svih obaveza studenta u toku semestra, odnosno ocjena na ispitu zasnovana je na ukupnom broju bodova (%) koje je student stekao ispunjavanjem predispitnih obaveza i polaganjem parcijalnog i završnog ispita, a prema kvalitetu stečenih znanja i vještina, i sadrži maksimalno 100 bodova, te se utvrđuje prema sljedećoj skali: Obaveze studenta Bodovi (%) Prisutnost na predavanjima i vježbama... - Zadaća/Seminarski/Praksa/.....15 bodova (%) I Parcijalni ispit/Test/Provjera znanja/.....35 bodova (%) Završni ispit (II Parcijalni) .....50 bodova (%) Završni ispit (Integralni) .....85 bodova (%)
Literatura:	Obavezna: 1. Mihetec, T.: Usluge u zračnom saobraćaju, Autorizirana predavanja/prezentacija, Fakultet za saobraćaj i komunikacije, 2016. 2. Cook, A.: European Air Traffic Management, Asgate, UK, London, 2008. Dodatna: 3. Sudarshan, H.V.: Seamless Sky, Ashgate, UK, London, 2003. 4. Internetski izvori: ICAO (Aneksi I-XVII) FSF, IATA, ATCA, ACI, ECAC, EASA, EUROCONTROL

Šifra predmeta: 11TATOS020203	**Naziv predmeta**: **ZRAKOPLOVNA PRISTANIŠTA**		
Ciklus: II (drugi)	**Godina: II (druga)**	**Semestar: III (treći)**	**Broj ECTS kredita:6 (šest)**
Status: Obavezni predmet		**Ukupan broj kontakt sati: 90** Predavanja 45 Vježbe 30 Labaratorijske vježbe 15	

Učesnici u nastavi	**Nastavnici i saradnici izabrani na oblast kojoj predmet pripada/predmet**
Preduslov za upis:	Ne
Cilj (ciljevi) predmeta:	Nastavna materija koja je obuhvaćena sadržajem, treba da omogući studentima upoznavanje sa osnovnim karakteristikama zračnog saobraćaja kao grane saobraćajno transportnog sistema koja je u neposrednom dodiru sa ostalim vidovima saobraćaja, prevashodno sa cestovnim i poštanskim, a u novije vrijeme sve intenzivnije i sa željezničkim saobraćajem u dijelu cargo transporta. Prevashodan cilj ovoga predmeta je detaljno izučavanje zrakoplovnog pristaništa kao složenog tehničko-tehnološkog sistema i kao najvažnijeg segmenta tehničkog stratuma u sistemu zračnog saobraćaja.
Tematske jedinice: *(po potrebi plan izvođenja po sedmicama se utvrđuje uvažavajući specifičnosti organizacionih jedinica)*	1. Definicije, klasifikacija, elementi aerodroma 2. Osnove meteorologije za potrebe istraživanja, smještaja i eksploatacije aerodroma 3. Zrakoplovna pristaništa u sistemu zračnog saobraćaja, konfiguracija, veze sa okruženjem 4. Ograničenje prepreka u području aerodroma 5. Lokacija aerodroma i utjecajni faktori 6. Zaštićene zone područja aerodroma i sistem imaginarnih površi 7. Fizičke karakteristike manevarskih površina 8. Konfiguracija manevarskih površina i platforme 9. Obilježavanje poletno-slijetnih staza i rulnih staza, pristanišne platforme, prepreka i prilaza poletno-slijetnih staza 10. Prihvat i otprema zrakoplova 11. Pristanišna zgrada 12. Cargo terminal 13. Tehnički kompleks aerodroma 14. Osnovne funkcije, zadaci i organizacija kontrole letenja na aerodromu 15. Master plan zrakoplovnih pristaništa
Ishodi učenja:	Studenti kroz nastavni proces predavanja, vježbe i praktičan rad trebaju steći odgovarajuća znanja i iskustva za praktičnu primjenu u oblasti planiranja, projektovanja i eksploatacije infrastrukturnih sadržaja u zrakoplovnim lukama. Također predmet omogućava sticanje znanja i vještina neophodnih za kreiranje i praćenje procesa organizacije i upravljanja zračnim saobraćajem posebno u segmentu prihvata i otpreme, odnosno realizacije svih saobraćajnih tokova na aerodromima
Cilj održivog razvoja	

(SDG):	**SDG 8 - Dostojanstven rad i ekonomski rast:** Efikasno upravljanje zračnim saobraćajem doprinosi ekonomskom rastu i stvaranju novih radnih mjesta, što je u skladu s ovim ciljem. Takođe, poboljšanje organizacije i procesa može poboljšati radne uslove i produktivnost u sektoru. **SDG 9 - Industrija, inovacije i infrastruktura:** Ovaj cilj se odnosi na izgradnju otpornijih infrastruktura, unapređenje industrijskih kapaciteta i promicanje inovacija. Planiranje i projektovanje infrastrukturnih sadržaja u zrakoplovnim lukama su ključni za razvoj modernih i efikasnih infrastrukturnih rješenja. **SDG 11 - Održivi gradovi i zajednice:** Održivo upravljanje infrastrukturom i njenom eksploatacijom doprinosi stvaranju održivih gradova i zajednica. Aerodromi kao ključni infrastrukturni objekti moraju biti dizajnirani s ciljem smanjenja uticaja na okoliš i poboljšanja pristupačnosti. **SDG 12 - Održiva proizvodnja i potrošnja:** Praćenje procesa zračnog saobraćaja može pomoći u smanjenju otpada i optimizaciji resursa, što doprinosi održivoj proizvodnji i potrošnji **SDG 13 - Klimatske promjene:** Optimizacija zračnog saobraćaja može doprineti smanjenju emisija CO2 i drugih štetnih gasova, što je u skladu s ciljem borbe protiv klimatskih promjena. Efikasni sistemi za prihvat i otpremu mogu smanjiti energetske potrebe i emisije zagađivača.
Metode izvođenja nastave:	Nastava se realizira kroz izvođenje predavanja, vježbi i praktičnog dijela nastave koja uključuje izradu projektnih zadataka. Predavanja se realizuju kroz usmeno izlaganje sa prezentacijom i prikazom primjera iz prakse. Studenti će biti obavezni izraditi i prezentirati seminarske radove i/ili projektne zadatake. U realizaciji nastave se koriste različite metode koje uključuju: usmeno izlaganje i diskusije, demonstracije primjera, metoda grafičkih i video prikaza i potenciranje rada u grupama primjenom odgovarajućih metodoloških pristupa.
Metode provjere znanja sa strukturom ocjene:	Kriterijum vrednovanja rada i ocjenjivanja studenta u toku nastave, vrši se na sljedeći način: Prisustvo nastavi i vježbama će se voditi, prisustvo nastavi je obavezno kao uslov za polaganje ispita uz max. 10% izostanaka bez opravdanja. Redovno prisustvo se neće dodatno bodovati. Za redovno prisustvo neće se dodjeljivati bodovi. Potpis nije uslovljen prisustvom na nastavi. Domaća zadaća/seminarski

	rad/praktični rad/ od 0 do 15 bodova, a ocijeniti će se samo oni studenti koji su zadovoljili preko 50 % od navedenih obaveza; U toku nastave će se organizovati samo jedna provjera znanja - Parcijalni ispit u 8. ili 9. sedmici nastave sa vrednovanjem od 35 bodova, stim da će se bodovati samo oni studenti koji su položili preko 50 % od navedenog parcijalnog ispita.Završni ispit iznosi najviše 50 bodova.
Literatura:	1. Kiso Fahrudin, Kiso Fadila:"Aerodromi", Fakultet za saobraćaj i komunikacije, Sarajevo, 2000. 2. Pavlin, S:"Aerodromi I", Fakultet prometnih znanosti, Zagreb, 2002. 3. Prof. dr. sc. Pavlin, S.:"Aerodromi II"Sveučilište u Zagrebu, Fakultet Prometnih Znanosti, Studeni, 2011 4.Fejzić, E."Civilni aerodromi i aerodromski putnički terminali",Arhitektonski fakultet, Sarajevo, 2005. 5. Vojin Tošić, Bojana Mirković:" Vazduhoplovna pristaništa I", Univerzitet u Beogradu, Saobraćajni fakultet, 2011. 6. Vojin Tošić, Bojana Mirković:" Vazduhoplovna pristaništa II", Univerzitet u Beogradu, Saobraćajni fakultet, 2012. 7. Vojin Tošić, Bojana Mirković, Obrada Babić :" Vazduhoplovna pristaništ-Praktikum", Univerzitet u Beogradu, Saobraćajni fakultet, 2010. 8. Annex 14to the Convention on International Civil Aviation, Volume I, Aerodrome Design and Operations, International Civil Aviation Organization ICAO, Montreal, Canada, 199. 9.Annex 16-Zaštita okoliša, 1996. 10.KAZDA, A., CAVES, R.E.:" AIRPORT DESIGN AND OPERATION",Second Edition, Elsevier Ltd., Linacre House, Jordan Hill, Oxford OX2 8DP, U.K. 2007

Šifra predmeta: 12TATOS020203	**Naziv predmeta**: **ELEMENTI SIGURNOSTI I ZAŠTITE U ZRAČNOM SAOBRAĆAJU**		
Ciklus: II (drugi)	**Godina: II (druga)**	**Semestar: III (treći)**	**Broj ECTS kredita:6 (šest)**
Status: Obavezni predmet		**Ukupan broj kontakt sati: 90** Predavanja 45	

	Vježbe 30 Labaratorijske vježbe 15
Učesnici u nastavi	**Nastavnici i saradnici izabrani na oblast kojoj predmet pripada/predmet**
Preduslov za upis:	Ne
Cilj (ciljevi) predmeta:	Nastavna materija koja je obuhvaćena sadržajem, treba da omogući studentima istraživanje najvažnijih faktora koji determinišu sigurnost i zaštitu aerodroma. Cilj je također izučavanje međunarodnih standarda i propisa kao i tehničkotehnoloških i organizacionih rješenja koja obezbjeđuju potreban i dovoljan nivo sigurnosti i zaštite zrakoplovnog pristaništa kao i kompletnog procesa realizacije zračnog prevoza.
Tematske jedinice: *(po potrebi plan izvođenja po sedmicama se utvrđuje uvažavajući specifičnosti organizacionih jedinica)*	1. Lokacija i ograničenje prepreka u okolini aerodroma 2. Meteorološki uslovi kao faktor sigurnosti zraĉnog saobraćaja 3. Održavanje i zimska eksploatacija manevarskih površina 4. Sigurnosni aspekti u procesu prihvata i otpreme zrakoplova 5. Odleđivanje/zaštita od zaleđivanja zrakoplova 6. Mjerenje koeficijenta trenja na PSS 7. Sigurnosni sistemi i tehnološka rješenja u procesu prihvata i otpreme putnika, prtljage, poštanskih pošiljki i tereta 8. Spasilačka i vatrogasna služba na aerodromu 9. Zrakoplovne nesreće u fazi polijetanja i slijetanja (uzroci i posljedice) 10. Aerodromski komunikacijsko – informacijski sistemi u funkciji sigurnosti zraĉnog saobraćaja 11. Buka na aerodromu i u njegovoj okolini 12. Zagađenje okoline aerodroma izduvnim gasovima 13. Utjecaj aerodroma na biljni i životinjski svijet 14. Upravljanje sigurnošću u zračnom prometu(SMS) 15. Implementacija SMS u operativi, najznaĉajnije norme za uspostavljanje SMS
Ishodi učenja:	Studenti kroz nastavni proces predavanja, vježbe i praktičan rad trebaju steći odgovarajuća znanja i iskustva za praktičnu primjenu u oblasti provođenja mjera i rješenja koja obezbjeđuju propisani nivo sigurnosti i zaštite u zračnom saobraćaju.Također predmet omogućava sticanje znanja i vještina neophodnih za usklađivanje pravila, smjernica i zakonske legislative sa onima koje propisuju međunarodne organizacije.
Cilj održivog razvoja (SDG):	SDG 16 - Mir, pravda i jake institucije: Osiguranje visokih standarda sigurnosti i zaštite u zračnom saobraćaju doprinosi jačanju pravde i sigurnosti u društvu. Implementacija mjera koje garantuju sigurnost u aviaciji podržava ciljeve izgradnje jakih

	institucija i pravde. SDG 17 - Partnerstva za ciljeve: Usklađivanje lokalnih pravila i zakona sa međunarodnim standardima podstiče međunarodnu saradnju i partnerstvo, što je ključ za postizanje globalnih ciljeva održivog razvoja. Ovaj cilj promoviše jačanje globalnih partnerstava i usklađivanje sa međunarodnim normama.
Metode izvođenja nastave:	Nastava se realizira kroz izvođenje predavanja, vježbi i praktičnog dijela nastave koja uključuje izradu projektnih zadataka. Predavanja se realizuju kroz usmeno izlaganje sa prezentacijom i prikazom primjera iz prakse. Inicira diskusija o problemima sigurnosti i zaštite u zračnom saobraćaju. Studenti će biti obavezni izraditi i prezentirati seminarske radove i/ili projektne zadatake. U realizaciji nastave se koriste različite metode koje uključuju: usmeno izlaganje i diskusije, demonstracije primjera, metoda grafičkih i video prikaza i potenciranje rada u grupama primjenom odgovarajućih metodoloških pristupa.
Metode provjere znanja sa strukturom ocjene:	Kriterijum vrednovanja rada i ocjenjivanja studenta u toku nastave, vrši se na sljedeći način: Prisustvo nastavi i vježbama će se voditi, prisustvo nastavi je obavezno kao uslov za polaganje ispita uz max. 10% izostanaka bez opravdanja. Redovno prisustvo se neće dodatno bodovati. Potpis nije uslovljen prisustvom na nastavi. Domaća zadaća/seminarski rad/praktični rad/ od 0 do 15 bodova, a ocijeniti će se samo oni studenti koji su zadovoljili preko 50 % od navedenih obaveza; U toku nastave će se organizovati samo jedna provjera znanja - Parcijalni ispit u 7. ili 8. sedmici nastave sa vrednovanjem od 35 bodova, stim da će se bodovati samo oni studenti koji su položili preko 50 % od navedenog parcijalnog ispita. Završni ispit iznosi najviše 50 bodova.
Literatura:	Obavezna: - Kiso Fahrudin, Kiso Fadila:“Aerodromi“, Fakultet za saobraćaj i komunikacije, Sarajevo, 2000. - Pavlin, S:“Aerodromi I“, Fakultet prometnih znanosti, Zagreb, 2002. - Prof. dr. sc. Pavlin, S.:“Aerodromi II“Sveučilište u Zagrebu, Fakultet Prometnih Znanosti, Studeni, 2011

	- Fejzić, E.“Civilni aerodromi i aerodromski putnički terminali“,Arhitektonski fakultet, Sarajevo, 2005. - Annex 14to the Convention on International Civil Aviation, Volume I, Aerodrome Design and Operations, International Civil Aviation Organization ICAO, Montreal, Canada, 199. - Annex 16-Zaštita okoliša, 1996. - Kiso, F., Šabanović, S.: „Elementi sigurnosti i zaštite u zračnom saobraćaju“, Skripta, Sarajevo, 2016 - Šabić, M.: „Zrakoplov i zrakoplovni sistemi“, Fakultet za saobraćaj i komunikacije, Sarajevo, 2016

Šifra predmeta: 13-14-15- 1TATES020203	**Naziv predmeta: METODE VREDNOVANJA I ODLUČIVANJA U SAOBRAĆAJNOM PROJEKTOVANJU**		
Ciklus: II (drugi)	**Godina: II (druga)**	**Semestar: III (treći)**	**Broj ECTS kredita: 6 (šest)**
Status: Izborni predmet		**Ukupan broj kontakt sati: 90** Predavanja 45 Vježbe 30 Seminar 15	
Učesnici u nastavi	**Nastavnici i saradnici izabrani na oblast kojoj predmet pripada/predmet**		
Preduslov za upis:	Ne		
Cilj (ciljevi) predmeta:	Nastavna materija koja je obuhvaćena sadržajem, treba da omogući studentima upoznavanje sa osnovama planiranja i projektovanja saobraćajne infrastrukture, vrstama vrednovanja u postupku planiranja i projektovanja. Cilj predmeta je također izučavanje najznačajnijih i najčešće primjenjivanih metoda vrednovanja u procesu saobraćajnog planiranja i projektovanja. Nastavna materija obuhvata metode invensticionog, ekološkog i društveno-ekonomskog vrednovanja kao i metode višekriterijumske analize sa aplikativnim primjerima i smjernicama za upoznavanje procesa odlučivanja u saobraćajnom projektovanju.		
Tematske jedinice:	– Saobraćajni sistem kao faktor prostorne organizacije i razmještaja		

(po potrebi plan izvođenja po sedmicama se utvrđuje uvažavajući specifičnosti organizacionih jedinica)	– Metodološki pristup saobraćajnom planiranju – Osnove procesa planiranja saobraćajnica – Osnove projektovanja saobraćajnica – Teorijske pretpostavke planiranja i projektovanja saobraćajne infrastrukture – Studija opravdanosti – CB analiza – Funkcionalno vrednovanje projektnih rješenja – Funkcionalno vrednovanje cestovnih dionica – Finansijska i ekonomska analiza projekata – Analiza troškova i koristi kod saobraćajnih projekata – Višekriterijumsko vrednovanje i metode odlučivanja – Ekološko vrednovanje utjecaja infrastrukture na životnu sredinu – Upravljanje projektima saobraćajne infrastrukture – Tehnike upravljanja projektom – Priprema projekata finansiranih iz EU fondova
Ishodi učenja:	Studenti kroz nastavni proces predavanja, vježbe i praktičan rad trebaju steći odgovarajuća znanja i iskustva za praktičnu primjenu u oblasti planiranja i projektovanja saobraćajne infrastrukture. Također predmet omogućava stjecanje znanja i vještina neophodnih za vrednovanje planskih i projektnih rješenja i na osnovu toga donošenje adekvatnih odluka.
Cilj održivog razvoja (SDG):	Svaka od navedenih tematskih jedinica doprinosi različitim aspektima održivog razvoja kroz poboljšanje infrastrukture, efikasno upravljanje projektima, primjenu metoda vrednovanja i odlučivanja koje mogu doprinijeti izboru rješenja koje će uticati na ekonomski rast, zaštitu okoline i održivo upravljanje resursima. Specifični ciljevi održivog razvoja koji se mogu povezati sa silabusom predmeta su: – SDG 8: Dostojanstven rad i ekonomski rast – SDG 9: Industrija, inovacije i infrastruktura – SDG 11: Održivi gradovi i zajednice – SDG 13: Klimatske promjene – SDG 17: Partnerstva za ciljeve Povezanost tematskih jedinica sa navedenim ciljevima održivog razvoja objašnjena je detaljnije u nastavku. SDG 8 - Analiza opravdanosti i “Cost-benefit” analiza pomažu u odabiru učinkovitih i inovativnih rješenja u domenu saobraćajne infrastrukture. (podcilj “SDG 8.1”: Održavati visoke stope rasta BDP-a uz održivost) SDG 9 - Metodološki pristup saobraćajnom planiranju i razumijevanje

	teorijskih pretpostavki doprinosi poboljšanju infrastrukture i inovacija u saobraćaju. Projektovanje saobraćajnica i metode vrednovanja cestovnih dionica su ključni za razvoj kvalitetne i funkcionalne infrastrukture. Učinkovito upravljanje projektima ključno je za uspješnu realizaciju i održivost saobraćajne infrastrukture. (podcilj "SDG 9.1": Održavati visoke stope rasta BDP-a uz održivost; podcilj "SDG 9.a": Podržati istraživanje i inovacije za izgradnju održive infrastrukture) SDG 11 - Povezanost sa ovim ciljem zasniva se na važnosti održivog urbanog planiranja i upravljanja razvojem, uključujući i saobraćajnu infrastrukturu kao ključni segment. Takođe, zahvaljujući funkcionalnom vrednovanju teži se ka tome da projektna rješenja zadovolje potrebe zajednice i doprinesu održivosti. (podcilj "SDG 11.2": Osigurati da cestovne dionice doprinose sigurnom i efikasnom saobraćaju) SDG 13 - Ekološko vrednovanje doprinosi razumijevanju i minimizaciji negativnih uticaja saobraćajne infrastrukture na okolinu. (podcilj "SDG 13.2": Integrirati mjere za ublažavanje klimatskih promjena u nacionalne politike i strategije) SDG 17 - Priprema projekata za finansiranje iz EU fondova uključuje saradnju i partnerstva koja doprinose postizanju ciljeva održivog razvoja. (podcilj "SDG 17.16": Ojačati globalna partnerstva i suradnje za održivi razvoj; podcilj "SDG 17.3": Mobilizirati dodatne resurse za razvoj u zemljama u razvoju kroz međunarodne financijske institucije)
Metode izvođenja nastave:	Nastava se realizira kroz izvođenje predavanja, vježbi i praktičnog dijela nastave koja uključuje izradu projektnih zadataka. Predavanja se realizuju kroz usmeno izlaganje sa prezentacijom i prikazom primjera iz prakse. Inicira diskusija o problemima u oblasti planiranja i projektovanja saobraćajne infrastrukture. Studenti će biti obavezni izraditi i prezentirati seminarske radove i/ili projektne zadatake. U realizaciji nastave se koriste različite metode koje uključuju: usmeno izlaganje i diskusije, demonstracije primjera, metoda grafičkih i video prikaza i potenciranje rada u grupama primjenom odgovarajućih metodoloških pristupa.
Metode provjere znanja sa	Kriterijum vrednovanja rada i ocjenjivanja studenta u toku nastave, vrši

strukturom ocjene:	se na sljedeći način: Prisustvo nastavi i vježbama će se voditi, prisustvo nastavi obavezno kao uslov za polaganje ispita uz max. 10% izostanaka bez opravdanja. Redovno prisustvo se neće dodatno bodovati. Potpis nije uslovljen prisustvom na nastavi. Domaća zadaća/seminarski rad/praktični rad/ od 0 do 15 bodova, a ocijeniti će se samo oni studenti koji su zadovoljili preko 50 % od navedenih obaveza; U toku nastave će se organizovati samo jedna provjera znanja - Parcijalni ispit u 7 ili 8 sedmici nastave sa vrednovanjem od 35 bodova, s tim da će se bodovati samo oni studenti koji su položili preko 50 % od navedenog parcijalnog ispita. Završni ispit iznosi maksimalno 50 bodova.
Literatura:	Obavezna: Jovanović, N.:"Planiranje saobraćaja", Saobraćajni fakultet Univerziteta u Beogradu, 1990. Kuzović, Lj.:"Vrednovanje u upravljanju i razvojem i eksploatacijom putne mreže", Saobraćajni fakultet Univerziteta u Beogradu, 1994. Milosavljević, N.:"Elementi za tehnološko projektovanje objekata u cestovnom saobraćaju i transportu", Univerzitet u Beogradu, 1998. Kuzović, Lj.:"Utvrđivanje potreba i opravdanosti izdvajanja tranzitnog saobraćaja sa gradskih arterija izgradnjom obilaznica", Univerzitet u Beogradu, 1997. Highway Capacity Manual – HCM 1994 / HCM 2000 Kiso, F., Deljanin,A.: "Metode vrednovanja u planiranju i projektovanju saobraćajne infrastrukture", Fakultet za saobraćaj i komunikacije Univerziteta u Sarajevu, 2017.

Šifra predmeta: 13-14-15-2TATES020203	**Naziv predmeta: UPRAVLJANJE I ORGANIZACIJA LOGISTIČKIH CENTARA U SAOBRAĆAJU I TRANSPORTU**		
Ciklus: II	**Godina: II**	**Semestar: III**	**Broj ECTS kredita:** 6
Status: Izborni predmet		**Ukupan broj kontakt sati: 90** Opciono razraditi distribuciju sati po tipu: Predavanja: 45	

	Vježbe: 30 Seminarski/projektni zadatak: 15
Učesnici u nastavi	**Nastavnici i saradnici izabrani na oblast kojoj predmet pripada/predmet**
Preduslov za upis:	NE
Cilj (ciljevi) predmeta:	Sticanje osnovnih znanja o upravljanju i organizaciji logističkih centara, tehnološkim promjenama u logističkim centrima, zahtjevima u organizaciji i razvoju modernih logističkih centara.
Tematske jedinice: *(po potrebi plan izvođenja po sedmicama se utvrđuje uvažavajući specifičnosti organizacionih jedinica)*	1. Historijske osnove razvoja nauke o organizaciji i principi upravljanja. 2. Pojam definicija predmet i metod nauke o organizaciji. 3. Moderne teorije organizacije i upravljanja. 4. Koncepti i tipovi logističke organizacije. 5. Logistički provajderi. 6. Upravljanje transportom. 7. Nova logistička strategija snadbjevanja, distribucije i očekivanja kupca korisnika usluga. 8. Faktori koji utječu na organizacionu strukturu zadataka logistike. 9. Logistički centri. Mogući oblici logističkih centara. 10. Kriterijumi za izbor lokacije logističkih centara. 11. Efekti razvoja logističkih centara. 12. Logistički centri kao strateški značajan faktor povećanja kvaliteta usluga. 13. Savremeni koncept razvoja logističkih centara. 14. Upravljanje ljudskim resursima kao funkcija menadžmenta. 15. Pravci razvoja transporta i logističkih usluga u Bosni i Hercegovini
Ishodi učenja:	**Znanje:** Studenti kroz nastavni proces predavanja, vježbe, seminarski rad trebaju steći odgovarajuća znanja i iskustva u oblasti upravljanja i organizacije logističkim centrima i terminalima. Predmet proučavanja treba da osigura kritičan nivo kompetencija i znanja potrebnih za rješavanje konkretnih problema u oblasti upravljanja, organizacije i planiranja logističkih centara. **Vještine:** Nakon završetka kursa studenti će biti sposobni da razumije procese upravljanja logističkim centrima, procijene odgovarajuće metode u procesu upravljanja, procijeni odgovarajuće metode u procesu organizacije rada logističko distributivnih centara. **Kompetencije:** Aplikaciju stečenih znanja u konkretnim modelima
Cilj održivog razvoja	SDG 8 - Dostojanstven rad i ekonomski rast: Promovisati održivi,

(SDG):	uključivi i održivi ekonomski rast, zapošljavanje i dostojanstven rad za sve; SDG 9 - Industrija, inovacije i infrastruktura: Izgraditi otpornu infrastrukturu, promovirati uključivu i održivu industrijalizaciju i poticati inovacije; SDG 12 - Odgovorna potrošnja i proizvodnja: Osigurati održive obrasce potrošnje i proizvodnje.
Metode izvođenja nastave:	Nastava se realizira kroz izvođenje predavanja i vježbi. Predavanja se realizuju kroz usmeno izlaganje sa prezentacijom i prikazom primjera. Inicira diskusija o problemima upravljanja i organizacije logističkim sistemima. Studenti će biti obavezni izraditi i prezentirati seminarske radove. U realizaciji nastave se koriste različite metode koje uključuju: usmeno izlaganje i diskusije, demonstracije primjera, metoda video prikaza i potenciranje samostalnog rada primjenom odgovarajućih metodoloških pristupa.
Metode provjere znanja sa strukturom ocjene:	Kriterijum vrednovanja rada i ocjenjivanja studenta u toku nastave, vrši se na sljedeći način: – Prisustvo na nastavi - obavezno se vodi evidencija; – Prisustvo nastavi i vježbama se ne boduje; – Seminarski rad od 0 do 15 bodova; – I parcijalni ispit/I test/ I provjera znanja/ od 0 do 35 bodova; – Ukupan broj bodova koji student prema navedenom u toku nastave može ostvariti iznosi maksimalno 50 bodova – Završni / popravni ispit iznosi maximalno 50 bodova – Završni ispit se organizuje na način da studenti koji su položili prvu provjeru znanja polažu samo završni dio ispita (II dio gradiva), dok studenti koji nisu položili prvu provjeru znanja zajedno sa završnim polažu i prvi parcijalni ispit (I dio gradiva). Prema kvalitetu stečenih znanja i vještina student može osvojiti maksimalno 100 bodova, a prema sljedećoj skali: Seminarski rad i odbrana_____15 bodova (%) I test / I provjera znanja (I parcijalni ispit)__ 35 bodova (%) Završni test (II parcijalni ispit)_____50 bodova (%)

	Popravni test _____50 bodova (%) Ispit se polaže pismeno i usmeno. Napomena: Uslov da student položi prvu provjeru znanja, seminarski rad i završni ispit jeste da osvoji 50% i više od maximalno mogućeg broja bodova. Navedena skala se može korigovati prema Pravilima studiranja na Univerzitetu u Sarajevu (Član 45). Napomena: Studenti su obavezni prisustvovati svim oblicima nastave minimalno 80 % od ukupnog fonda sati. Student može, u opravdanim slučajevima (bolest) odsustvovati sa nastave, za što je obavezan dostaviti zdravstveno opravdanje. Seminarski rad i domaća zadaća će biti bodovane samo ako budu predane prema definisanim terminima. Naknadne predaje istih neće se bodovati.
Literatura:	Obavezna: 1. Bilješke i slajdovi s predavanja (moći će se preuzeti na WEB site-u Fakulteta). 2. Skripta predavanja, „Upravljanje i organizacija logističkih centara u saobraćaju i transportu“, Fakultet za saobraćaj i komunikacije, 2024. godine Dopunska: 1. ČEKIĆ, Š., BOŠNJAK, I.: Menadžment u transportu i komunikacijama, Univerzitet u Sarajevu - Sveučilište u Zagrebu, Sarajevo - Zagreb, 2000. 2. IVAKOVIĆ, Č.: TERMINALI, Fakultet prometnih znanosti, Zagreb, 2006. 3. AČIMOVIĆ, S.: Marketing logistika, Ekonomski fakultet, Beograd, 2004. 4. ZELENIKA, R.: Logistički sustavi, Ekonomski fakultet u Rijeci, 2005. 5. PERIŠIĆ, R.,A.: Sistem kvaliteta usluga logistika i informatika, Beograd, 2002. 6. BAHTJAREVIĆ-ŠIBER, F.: Managment ljudskih potencijala, Golden Marketing, Zagreb, 1999. 7. BOŽIĆ, V., RAKIĆ, S.: Poslovna logistika, Ekonomski fakultet, Beograd, 1997. 8. The Handbook of Logistics and Distribution Management: Understanding the Supply Chain Fifth Edition, 2006.

Šifra predmeta: 13-14-15-	**Naziv predmeta: METODOLOGIJA ISTRAŽIVAČKOG I**

3TATES020203	NAUČNOG RADA		
Ciklus: II	**Godina: II**	**Semestar: III**	**Broj ECTS kredita:** 6
Status: Izborni predmet		**Ukupan broj kontakt sati: 90** Predavanja: 45 Vježbe: 30 Seminari i projektni zadaci: 15	
Učesnici u nastavi	**Nastavnici i saradnici izabrani na oblast kojoj predmet pripada/predmet**		
Preduslov za upis:	NE		
Cilj (ciljevi) predmeta:	Studenti kroz nastavni proces predavanja, vježbe, seminarski rad i praktičan rad trebaju steći odgovarajuća osnovna i dodatna znanja iz oblasti metodologije naučnog i stručnog rada. Predmet „Metodologija istraživačkog i naučnog rada“ treba da osigura nivo znanja o svim načelima, metodama, ciljevima, instrumentima istraživačkog i naučnog rada kao i način definisanja i implementacije izrade naučnih i stručnih radova.		
Tematske jedinice: *(po potrebi plan izvođenja po sedmicama se utvrđuje uvažavajući specifičnosti organizacionih jedinica)*	1. Uvod u metodologiju istraživačkog rada. Funkcija istraživačkog rada. 2. Znanost o naukama. Definicija znanosti. 3. Osnovna obilježja znanosti. 4. Funkcije znanosti – istraživački rad: Funamentalna istraživanja 5. Primjenjena istraživanja. Razvojna istraživanja. Individualna i timska istraživanja. 6. Osnovne metode istraživanja. 7. Klasifikacija i selekcija metoda. 8. Tehnologija istraživačkog rada, uočavanje istraživačkog problema i njegova funkcija. 9. Izbor i analiza teme. 10. Sastavljanje radne biografije: priručnici, enciklopedije, rječnici, monografije. 11. Kako se definira predmet i cilj istraživanja? 12. Šta je istraživački rezultat i kako se verificira? 13. Pisanje i prezentacija izvještaja istraživačkog rada. 14. Koncept, uvod, izlaganje problema, argumentacija i diskusija rezultata. 15. Pisanje izbora metode istraživanja. 16. Pisanje magistarskih radova		
Ishodi učenja:	Teorijska i praktična znanja iz oblasti naučne i istraživačke djelatnosti. Predmet proučavanja treba da osigura nivo kompetencija i znanja potrebnih za rješavanje svakodnevnih problema u navedenoj oblasti.		

	Vještine: Sposobnost primjene teorijskih i praktičnih znanja iz oblasti naučne i istraživačke djelatnosti. **Kompetencije:** Sposobnosti samostalnog razumijevanja i korištenja znanja potrebnih za rješavanje specifičnih problema u oblasti naučne i istraživačke djelatnosti.
Cilj održivog razvoja (SDG):	SDG4 – Osigurati uključivo i kvalitetno obrazovanje te promovirati mogućnosti cjeloživotnog učenja; SDG5 – Postići rodnu ravnopravnost i osnažiti sve žene i djevojke; SDG9 – Izgraditi prilagodljivu infrastrukturu, promovirati uključivu i održivu industrijalizaciju i poticati inovativnost
Metode izvođenja nastave:	Nastava se realizira kroz izvođenje predavanja, vježbi, laboratorijskih vježbi/terenskog rada/prakse. Zastupljene su sljedeće metode: metoda usmenog izlaganja, metoda razgovora, metoda demonstracije, metoda grafičkih radova, metoda crtanja i metoda rada u skupini. Na predavanima se obrađuju teorijski koncepti i principi uz prikaz opisnih primjera i rješavanje određenih zadataka. Dodatni primjeri se razmatraju i rješavaju kroz vježbe, laboratorijske vježbe/terenski rad/praksu, što omogućava kontinuiran rad i pripremu za samostalno rješavanje problema. Na laboratorijskim vježbama/terenskom radu/praksi razvijat će se vještine potrebne za individualni i timski rad u cilju izvršavanja zadataka iz zadane oblasti.
Metode provjere znanja sa strukturom ocjene:	Ocjena kreativnosti na nastavi i vježbama uz izradu samostalnih radova, ocjena parcijalnog testa u toku nastave kao i ocjena završnog ispita. Kriterijum praćenja rada i ocjenjivanja studenta u toku nastave i to prema sljedećem načinu: • Domaća zadaća/seminarski rad/praktični rad/ 15 bodova (%), položeno ako se osvoji preko 50 %. • I Parcijalni ispit/test/I provjera znanja/35 bodova (%), položen je ako se osvoji preko 50 %. • Završni ispit (II Parcijalni) 50 bodova (%), položeno ako se osvoji preko 50 %. • Završni ispit (Integralni) 85 bodova (%), položeno ako se osvoji preko 50 %.

	Ukupan broj bodova (%) koji student prema navedenom praćenju u toku nastave može ostvariti iznosi maksimalno 50 bodova (%), što sa Završnim (II parcijalnim) čini 100 bodova (%). Za studente koji nisu položili I Parcijalni ispit, Završni ispit (Integralni) se organizuje iz cjelokupnog pređenog gradiva u toku nastave i vježbi, i vrednuje se sa 85 bodova (%), što sa seminarskim radom/praktičnim radom čini 100 bodova (%). Konačan uspjeh studenta nakon svih predviđenih oblika provjere znanja, vrednuje se i ocjenjuje sistemom ocjenjivanja kako slijedi: a) 10 (A) - izuzetan uspjeh bez grešaka ili sa neznatnim greškama, nosi 95-100 bodova; b) 9 (B) - iznad prosjeka, sa ponekom greškom, nosi 85-94 bodova; c) 8 (C) - prosječan, sa primjetnim greškama, nosi 75-84 bodova; d) 7 (D) - općenito dobar, ali sa značajnijim nedostacima, nosi 65-74 bodova; e) 6 (E) - zadovoljava minimalne uslove, nosi 55-64 bodova; f) 5 (F, FX) - ne zadovoljava minimalne uslove, manje od 55 bodova. Ukupno vrednovanje svih obaveza studenta u toku semestra, odnosno ocjena na ispitu zasnovana je na ukupnom broju bodova (%) koje je student stekao ispunjavanjem predispitnih obaveza i polaganjem parcijalnog i završnog ispita, a prema kvalitetu stečenih znanja i vještina, i sadrži maksimalno 100 bodova, te se utvrđuje prema sljedećoj skali: Obaveze studenta Bodovi (%) Prisutnost na predavanjima i vježbama. - Zadaća/Seminarski/Praksa/.....15 bodova (%) I Parcijalni ispit/Test/Provjera znanja/.....35 bodova (%) Završni ispit (II Parcijalni) .....50 bodova (%) Završni ispit (Integralni) .....85 bodova (%)
Literatura:	Obavezna: 1. Š. Čekić: Osnovi metodologije i tehnologije izrade znanstvenog istručnog djela, Fakultet za saobraćaj i komunikacije, Sarajevo,1999 2. S. Dubić: Uvođenje u naučni rad, Zavod za izdavanje udžbenika,Sarajevo 1970.

	3. M.Šamić: Kako nastaje naučno djelo, Svjetlost, Sarajevo,1980. 4. M.Vujović: Uvođenje u znanstveni rad, Informator, Zagreb, 1983 5. M. Filipović: Metodologija znanosti i znanstvenog rada,Svjetlost,Sarajevo 2004. 6. V. Silubrčić: Kako sastaviti, obajaviti i ocjeniti znanstveno djelo,Zagreb, 2003. 7. L. Kuba – Dž. Koking: Metodologija izrade naučnog teksta, CID;Podgorica,2004. 8. S. Kukić: Metodologija znanstveno istraživačkog rada,Ekonomski Fakultet, Mostar 2005.

Šifra predmeta: 13-14-15-5TATES020203	**Naziv predmeta: SAOBRAĆAJNA POLITIKA**		
Ciklus: II	**Godina: II**	**Semestar: III**	**Broj ECTS kredita: 6**
Status: Izborni predmet		**Ukupan broj kontakt sati: 90** Opciono razraditi distribuciju sati po tipu: Predavanja: 45 Vježbe: 30 Seminari i projektni zadaci: 15	
Učesnici u nastavi	**Nastavnici i saradnici izabrani na oblast kojoj predmet pripada/predmet**		
Preduslov za upis:	NE		
Cilj (ciljevi) predmeta:	Studenti stiču osnovna teorijska znanja potrebna za izučavanje prometne politike: nacionalni značaj transportnog sistema i integracija u europske prometne tokove, alokacija pozitivnih i negativnih učinaka integracije saobraćajne politike. Piramidalna struktura i ingerencija prilikom definisanja i realizacije saobraćajnih prioriteta na nacionalnom i međunardonom nivou.		
Tematske jedinice: *(po potrebi plan izvođenja po sedmicama se utvrđuje uvažavajući specifičnosti*	– Pristupne osnove nacionlanoj prometnoj politici: pojam politike, vrste politike, funkcija politike kao pristupna osnova nacionalne prometne politike, – Komponente nacionalne prometne politike: Nositelji prometne politike, ciljevi prometne politike, instrumenti prometne politike, odnos ciljeva i instrumenata prometne politike,		

organizacionih jedinica)	– Načela nacionalne prometne politike – I dio: povezanosti prometa i ekonomije, usklađivanja djelovanja prometnog sustava i društvene rentabilnosti. – Načela nacionalne prometne politike – II dio: Načela jedinstvenog prometnog sustava, alokacije resursa, vlasništva i jednakih mogućnosti rada, izbora prometne politike i ostvarivosti prometne politike – Formuliranje prometne politike: Formuliranje, vrednovanje, efikasnost nacionalne prometne politike. Pojam i značenje determinanata prometne politike. – Usklađenost prometne politike – I dio: Ciljevi zajedničke prometne politike. Opće političke smjernice zajedničke prometne politike. – Usklađenost prometne politike – II dio: Primjena i rasprave o budućnosti prometa u okviru zajedničke prometne politike. – Transeuropska prometne mreža – I dio: Smjernice iz 1996. i revizija smjernica za transeuropsku prometnu mrežu iz 2004. godine. – Transeuropska prometne mreža – II dio: Revizija smjernica iz 2013. godine: integrirana mreža, dvoslojna struktura i koridori transeuropske prometne mreže. – Transeuropska prometne mreža – III dio: Dodatne mogućnosti financiranja projekata transeuropskih mreža. Utvrđivanje općih uvjeta za financiranje projekata transeuropskih mreža. – Transeuropska prometne mreža – IV dio: Instrument i opći ciljevi za povezivanje europe transeuropskom mrežom. Proračun Instrumenta za povezivanje Europe transeuropskom mrežom – Sektorske politike EU – I dio: Cilj i područje primjene Direktive 97/67/EZ europskog Parlamenta i Vijeća. Univerzalne poštanske usluge. – Sektorske politike EU – II dio: Usklađenje poštanskih usluga koje se mogu rezervirati. Uvjeti pružanja nerezerviranih poštanskih usluga i pristupa u mrežu. – Sektorske politike EU – III dio: Kvaliteta poštanskih usluga. Usklađenje tehničkih normi prema interesima korisnika. Odbor i nacionalno regulatorno tijelo – Sektorske politike EU – IV dio: Tržišna pravila poštanskog prometa i europska postignuća u oblasti poštanskog prometa.
Ishodi učenja:	**Znanje:** Sposobnost za kreiranje i primjenu saobraćajne politike uvažavajući postavljene predmetne ciljeve. **Vještine:** Identifikacija saobraćajnih I transportnih prioriteta potrebnih za strategijsko planirnje i kreiranje saobraćajne politike u mikro i makro okruženju. Defisnisati ciljeve saobraćajne politike i prihvatljive modele realizacije. Identifikuje prioritete u oblasti planiranja, izgradnje, revitalizacije prometnih tokova, izvrši procjenu potrebe za integracijom i liberalizacijom unutrašnjih prometnih tokova prateći europsku I međunarodnu prometnu politiku, direktive i smjernice kao i prometne

	tokove, ali i prometne tokove i politike zemalja u okruženju. **Kompetencije:** Krairanje unutrašnjeg efikasnog I efektivnog transportnoog sistema I integracija u međunarodne I EU transportne sisteme
Cilj održivog razvoja (SDG):	Ciljevi održivog razvoja i uticaj na saobraćajnu politiku: SDG 1 - Svijet bez siromaštva SDG 2 - Svijet bez gladi SDG 5 – Rodna ravnopravnost SDG 6 – Čista voda i sanitarni uvjeti SDG 7 – Pristupačna energija iz čistih izvora SDG 8 - Dostojanstven rad i ekonomski rast SDG 9 – Industrija, inovacije i infrastruktura SDG 10 – Smanjenje nejednakosti SDG 11 – Održivi gradovi i zajednice SDG 12 - Održiva ppotrošnja i proizvodnja SDG 13 – Zaštita klime SDG 14 – Očuvanje vodenog svijeta SDG 15 – Očuvanje života na zemlji SDG 16 – Mir, pravda i snažne institucije SDG 17 – Partnerstvom do cilja
Metode izvođenja nastave:	Nastava se realizira kroz izvođenje predavanja, vježbi i praktičnog dijela nastave koja uključuje izradu projektnih zadataka. Predavanja se realizuju kroz usmeno izlaganje sa prezentacijom i prikazom primjera iz prakse. Inicira diskusija o problemima planiranja, modeliranja i analize informacijskih sistema. Studenti će biti obavezni izraditi i prezentirati seminarske radove i/ili projektne zadatake. U realizaciji nastave se koriste različite metode koje uključuju: usmeno izlaganje i diskusije, demonstracije primjera, metoda grafičkih i video prikaza i potenciranje rada u grupama primjenom odgovarajućih metodoloških pristupa.
Metode provjere znanja sa strukturom ocjene:	Kriterijum vrednovanja rada i ocjenjivanja studenta u toku nastave, vrši se na sljedeći način: Aktivnost (seminarski rad / projektni zadatak): od 0 do 15 bodova; I test / I provjera znanja / I parcijalni ispit: od 0 do 35 bodova. Ukupan broj bodova koji studenta može ostvariti u toku nastave može iznosi maksimalno 50 bodova. Završni / popravni ispit uključuje gradivo koje student nije položio na parcijalnom ispitu što znači da obuhvata drugi dio gradiva (II parcijalni) koji se vrednuje sa 50 bodova ili se sastoji od kompletnog gradiva, tj. I i II parcijalnog ispita. Ukupno vrednovanje svih obaveza studenta u toku semestra, odnosno ocjena na

	ispitu zasnovana je na ukupnom broju bodova (%) koje je student stekao ispunjavanjem predispitnih obaveza, polaganjem parcijalnog i završnog ispita. Prema kvalitetu stečenih znanja i vještina student može osvojiti maksimalno 100 bodova, a prema sljedećoj skali: Struktura bodovanja Bodovi (%) Seminarski / Projektni zadatak:..... 15 bodova (%) I test / I provjera znanja (I parcijalni ispit):..... 35 bodova (%) Završni ili popravni ispit (II parcijalni ispit):..... 50 bodova (%) Potreban uslov za uspješno okončan ispit je postignut rezultat od 55 bodova pri čemu na svakom dijelu ispita treba ostvariti minimalno 55% (aktivnost, parcijalni ispit, završni ispit), tj. da bi student položio ispit mora ostvariti sljedeće uslove: - Aktivnost (seminarski rad / projektni zadatak): 9 bodova - I test / I provjera znanja / parcijalni ispit: 19 bodova - Završni ili popravni ispit (II parcijalni ispit): 27 bodova Studenti koji su položili parcijalni ispit, na završnom / popravnom ispitu polažu samo drugi dio gradiva (dio koji nije obuhvaćen parcijalnim ispitom). Studenti koji nisu položili parcijalni ispit, u okviru završnog / popravnog ispita polažu kompletno gradivo, pri čemu kriteriji za polaganje ispita ostaje identični. Završni / popravni ispit se organizuje kao pismeni i/ili usmeni. Aktivnost se može pratiti kroz izradu zadaće, seminarskih radova, projektnih zadataka ili polaganje kvizova. Konačan uspjeh studenta nakon svih predviđenih oblika provjere znanja, vrednuje se i ocjenjuje sistemom ocjenjivanja kako slijedi: a) 10 - izuzetan uspjeh bez grešaka ili sa neznatnim greškama, nosi 95-100 bodova; b) 9 - iznad prosjeka, sa ponekom greškom, nosi 85-94 bodova; c) 8 - prosječan, sa primjetnim greškama, nosi 75-84 bodova; d) 7 - općenito dobar, ali sa značajnijim nedostacima, nosi 65-74 bodova; e) 6

	- zadovoljava minimalne uslove, nosi 55-64 bodova; f) 5 - ne zadovoljava minimalne uslove, manje od 55 bodova. Navedena skala se može korigovati prema Pravilima studiranja na Univerzitetu u Sarajevu (Član 45).
Literatura:	Obavezna: 1. Juraj Padjen, Prometne politikaHrvatske, Masmedia, Zagreb 2003. godina. 2. Piero Soave, „Kratak vodić o Europskoj uniji“, Eurospki parlament, oktobar 2016. godine. 3. Marc Thomas, „Kratak vodić o Europskoj uniji“, Eurospki parlament, septembar 2016. godina. 4. Beata Tuszynska i Frederic Gouarderes, „Kratak vodić o Europskoj uniji“, Eurospki parlament, oktobar 2016. Godine. Dopunska: 1. Direktiva 97/67/EZ EUROPSKOG PARLAMENTA I VIJEĆA OD 15.12.1997. godine, „Službeni list Europskih zajednica“ br. 6/Sv. 9 od 21.01.1998. godine. 2. Direktiva 2002/39/EZ EUROPSKOG PARLAMENTA I VIJEĆA OD 10.06.2002. godine, „Službeni list Europskih zajednica“ br. 6/Sv. 1 od 05.07.2002. godine. 3. Direktiva 2008/6/EZ EUROPSKOG PARLAMENTA I VIJEĆA od 20.02.2008. godine o izmjeni i Direktiva 97/67/EZ u pogledu potpunog postizanja unutarnjeg tržišta poštanskih usluga u Zajednici, „Službeni list Europskih zajednica“ br. 06/Sv. 9 od 27.02.2008. godine. 4. Direktiva 2008-68-EZ EUROPSKOG PARLAMENTA I VIJEĆA od 24.09.2008. godine “Službeni list EU 7/Sv.7” Kopneni prijevoz opsanih tvari. 5. Direktiva 2010/40EU EUROPSKOG PARLAMENTA I VIJEĆA od 07.07.2010. “Službeni list EU 7/Sv.8” Okvir za uvođenje inteligentnih prometnih sustava u cestovnom prometu I za veze sa ostalim vrstama prevoza. 6. DIREKTIVA 2004/54/EZ EUROPSKOG PARLAMENTA I VIJEĆA od 29. travnja 2004. o minimalnim sigurnosnim zahtjevima za tunele u transeuropskoj cestovnoj mreži 7. „DIREKTIVA 2008/96/EZ EUROPSKOG PARLAMENTA I VIJEĆA od 19. studenoga 2008. o upravljanju sigurnošću cestovne infrastrukture 8. DIREKTIVA 2009/33/EZ EUROPSKOG PARLAMENTA I VIJEĆA od 23. travnja 2009. o promicanju čistih i energetski učinkovitih vozila u cestovnom prijevozu

	9. DIREKTIVA 1999/62/EZ EUROPSKOG PARLAMENTA I VIJEĆA od 17. lipnja 1999. o naknadama koje se naplaćuju za korištenje određenih infrastruktura za teška teretna vozila 10. DIREKTIVA 2004/52/EZ EUROPSKOG PARLAMENTA I VIJEĆA od 29. travnja 2004. o interoperabilnosti elektroničkih sustava za naplatu cestarine u Zajednici 11. DIREKTIVA (EU) 2019/520 EUROPSKOG PARLAMENTA I VIJEĆA od 19. ožujka 2019. o interoperabilnosti elektroničkih sustava za naplatu cestarine i olakőavanju prekogranične razmjene informacija o neplaćanju cestarina u Uniji 12. UREDBA (EZ) br. 1072/2009 EUROPSKOG PARLAMENTA I VIJEĆA od 21. listopada 2009. o zajedničkim pravilima za pristup tržištu međunarodnog cestovnog prijevoza teret 13. UREDBA (EZ) br. 561/2006 EUROPSKOG PARLAMENTA I VIJEĆA od 15. ožujka 2006. o usklađivanju određenog socijalnog zakonodavstva koje se odnosi na cestovni promet i o izmjeni uredbi Vijeća (EEZ) br. 3821/85 i (EZ) br. 2135/98 te o stavljanju izvan snage Uredbe Vijeća (EEZ) br. 3820/85 14. DIREKTIVA 2002/39/EZ EUROPSKOG PARLAMENTA I VIJEĆA od 10. lipnja 2002. o izmjeni Direktive 97/67/EZ u vezi s daljnjim otvaranjem tržišta poštanskih usluga u Zajednice 15. DIREKTIVA 2008/6/EZ EUROPSKOG PARLAMENTA I VIJEĆA od 20. veljače 2008. o izmjeni Direktive 97/67/EZ u pogledu potpunog postizanja unutarnjeg tržišta poštanskih usluga u Zajednici. 16. UREDBA (EU) br. 952/2013 EUROPSKOG PARLAMENTA I VIJEĆA od 9. listopada 2013. o Carinskom zakoniku Unije. 17. UREDBA (EU) 2018/644 EUROPSKOG PARLAMENTA I VIJEĆA od 18. travnja 2018. o uslugama prekogranične dostave paketa 18. DIREKTIVA (EU) 2019/789 EUROPSKOG PARLAMENTA I VIJEĆA od 17. travnja 2019. o utvrđivanju pravila o ostvarivanju autorskog prava i srodnih prava koja se primjenjuju na određene internetske prijenose organizacija za radiodifuziju i reemitiranja televizijskih i radijskih programa te o izmjeni Direktive Vijeća 93/83/EEZ 19. UREDBA (EU) 2015/2120 EUROPSKOG PARLAMENTA I VIJEĆA od 25. studenoga 2015. o utvrđivanju mjera u vezi s pristupom otvorenom internetu te o izmjeni Direktive 2002/22/EZ o univerzalnoj usluzi i pravima korisnika u vezi s elektroničkim komunikacijskim mrežama i uslugama i Uredbe (EU) br. 531/2012 o roamingu u javnim pokretnim komunikacijskim mrežama u Uniji. 20. UREDBA (EU) 2018/1971 EUROPSKOG PARLAMENTA I VIJEĆA od 11. prosinca 2018. o osnivanju Tijela europskih regulatora za elektroničke komunikacije (BEREC) i Agencije za potporu BEREC-u (Ured BEREC-a), izmjeni Uredbe (EU) 2015/2120 i stavljanju izvan snage Uredbe (EZ) br. 1211/2009 21. UREDBA (EU) 2019/1150 EUROPSKOG PARLAMENTA I VIJEĆA od 20. lipnja 2019. o promicanju pravednosti i

	transparentnosti za poslovne korisnike usluga internetskog posredovanja 22. UREDBA (EZ) br. 549/2004 EUROPSKOG PARLAMENTA I VIJEĆA od 10. ožujka 2004. o utvrđivanju okvira za stvaranje jedinstvenog europskog neba 23. UREDBA (EZ) br. 550/2004 EUROPSKOG PARLAMENTA I VIJEĆA od 10. ožujka 2004. o pružanju usluga u zračnoj plovidbi u jedinstvenom europskom nebu 24. UREDBA (EZ) br. 552/2004 EUROPSKOG PARLAMENTA I VIJEĆA od 10. ožujka 2004. o interoperabilnosti Europske mreže za upravljanje zračnim prometom 25. UREDBA (EU) 2019/712 EUROPSKOG PARLAMENTA I VIJEĆA od 17. travnja 2019. o zaštiti tržišnog natjecanja u zračnom prijevozu i stavljanju izvan snage Uredbe (EZ) br. 868/2004 26. DIREKTIVA 2012/34/EU EUROPSKOG PARLAMENTA I VIJEĆA od 21. studenoga 2012. o uspostavi jedinstvenog Europskog željezničkog proctora 27. DIREKTIVA (EU) 2016/797 EUROPSKOG PARLAMENTA I VIJEĆA od 11. svibnja 2016. o interoperabilnosti željezničkog sustava u Europskoj uniji 28. DIREKTIVA (EU) 2016/798 EUROPSKOG PARLAMENTA I VIJEĆA od 11. svibnja 2016. o sigurnosti željeznica, 29. UREDBA (EU) 2016/796 EUROPSKOG PARLAMENTA I VIJEĆA od 11. svibnja 2016. o Agenciji Europske unije za željeznice I stavljanju izvan snage Uredbe (EZ) br. 881/2004 30. UREDBA (EZ) br. 1371/2007 EUROPSKOG PARLAMENTA I VIJEĆA 31. od 23. listopada 2007. o pravima i obvezama putnika u željezničkom prometu 32. Bilješke i slajdovi s predavanja (mogu se preuzeti sa službene internet stranice Fakulteta za saobraćaj i komunikacije i elektronska distribucija svakom pojedinačnom studentu)

Šifra predmeta: 13-14-15 5TATES020203	**Naziv predmeta: GEOINFORMACIJSKI SISTEMI**		
Ciklus: II	**Godina: I**	**Semestar: I**	**Broj ECTS kredita:** 6
Status: Obavezni predmet		**Ukupan broj sati: 90** Predavanja: 45 Vježbe: 30 Seminari i projektni zadaci: 15	
Učesnici u nastavi	**Nastavnici i saradnici izabrani na oblast kojoj predmet pripada/predmet**		
Preduslov za upis:	NE		
Cilj (ciljevi) predmeta:	Upoznavanje studenata sa osnovnim konceptima GIS sistema, načinom rada ovih sistema, planiranjem, implementacijom i mogućim		

	primjenama.
Tematske jedinice:	– Pojam geoinformacijskih sistema (GIS) – Komponente GIS-a – Proces prikupljanja i manipulacije GIS podacima – Struktura i modeli prostornih podataka – Upravljanje bazom podataka – Koordinatni sistemi, projekcije, georeferenciranje – Baze geografskih podataka – Standardizacija u GIS-u – Izlazni podaci i kartografija – Tehnike grafičkog prikaza – Principi slojevitog prikaza prostornih podataka – Oblasti primjene i osnovne GIS funkcije – Web i mobilni GIS – Primjena GIS-a u planiranju telekomunikacijske infrastrukture – Primjena GIS-a u planiranju saobraćajne infrastrukture
Ishodi učenja:	**Znanje:** Studenti će biti upoznati sa osnovnim konceptima razvoja i standardizacijom u oblasti GIS-a, principima web i mobilnih GIS sistema kao i konkretnoj primjeni sa posebnim fokusom na oblast saobraćaja i komunikacija. Studenti će se upoznati sa procesom razvoja GIS sistema, od trenutka javljanja ideje i potrebe za GIS-om, prikupljanja podataka i formiranja GIS baze podataka, georeferenciranja, grafičkog prikaza i korištenja GIS sistema. **Vještine:** Studenti će savladati određene softverske alate potrebne za projektovanje i razvoj GIS sistema. **Kompetencije:** Nakon položenog ispita student će biti u mogućnosti planirati, projektovati i razvijati GIS sisteme i izvršiti odabir odgovarajućih tehnologija za razvoj specifičnih rješenja.
Ciljevi održivog razvoja (SDG)	SDG9 – Industrija, inovacije i infrastruktura SDG11 – Održivi gradovi i zajednice
Metode izvođenja nastave:	Nastava se realizira kroz izvođenje predavanja, vježbi i praktičnog dijela nastave koji uključuje laboratorijske vježbe. Predavanja se realizuju kroz usmeno izlaganje sa prezentacijom i prikazom primjera iz prakse. Vježbe i laboratorijske vježbe održavaju se uz upotrebu softverskih alata za rješavanje konkretnih problemskih i praktičnih zadataka. Studenti će biti obavezni izraditi i prezentirati seminarske radove i/ili projektne zadatake. U toku nastave se koriste različite metode koje uključuju: usmeno izlaganje, razgovori diskusije, demonstracije, individualni i grupni rad, itd.
Metode provjere znanja sa strukturom ocjene:	Ukupan broj bodova koji student može ostvariti u toku nastave je 50 i na završnom ispitu 50. Bodovi u toku nastave su raspoređeni na zadaće i aktivnost i/ili seminar i/ili projektni zadatak i na parcijalni ispit.

	Završni/popravni ispit uključuje gradivo koje student nije položio na parcijalnom ispitu što znači da obuhvata drugi dio gradiva koji se vrednuje sa 50 bodova za studente koji su položili parcijalni ispit. Studenti koji nisu položili gradivo sa parcijalnog ispita polažu gradivo sa parcijalnog i završnog ispita. Završni / popravni ispit se organizuje kao pismeni i/ili usmeni ispit uz polaganje praktičnog dijela. Ukupno vrednovanje svih obaveza studenta u toku semestra, odnosno ocjena na ispitu, zasnovana je na ukupnom broju bodova koje je student stekao ispunjavanjem predispitnih obaveza, polaganjem parcijalnog i završnog ispita. Prema kvalitetu stečenih znanja i vještina student može osvojiti maksimalno 100 bodova, a prema sljedećoj skali: Struktura bodovanja Bodovi (%) Seminar / Aktivnost na nastavi / Projektni zadatak:..... 20 bodova (%) I test / I provjera znanja (I parcijalni ispit):..... 30 bodova (%) Završni ili popravni ispit (II parcijalni ispit):..... 50 bodova (%) Potreban uslov za polaganje ispita je 55 bodova u sumi uz ostvarenih najmanje 55% bodova na provjerama znanja (parcijalni ispit i završni/popravni ispit). Konačan uspjeh studenta, nakon svih predviđenih oblika provjere znanja, vrednuje se i ocjenjuje sistemom kako slijedi: a) 10 - izuzetan uspjeh bez grešaka ili sa neznatnim greškama (95-100 bodova); b) 9 - iznad prosjeka, sa ponekom greškom (85-94 bodova); c) 8 - prosječan, sa primjetnim greškama (75-84 bodova); d) 7 - općenito dobar, ali sa značajnijim nedostacima (65-74 bodova); e) 6 - zadovoljava minimalne uslove (55-64 bodova); f) 5 - ne zadovoljava minimalne uslove (manje od 55 bodova).
Literatura:	Obavezna: – Nastavni materijal dostupan na Intranet portalu Fakulteta za saobraćaj i komunikacije. Dopunska: – Kang Tsung Chang, „*Introduction to Geographic Information Systems*“, McGraw-Hill Education, 2019. – Paul Bolstad, „*GIS Fundamentals A First Text on Geographic Information Systems,*“ Eider Press, 2016. – Ian Heywood, Sarah Cornelius, „*An introduction to geographical information systems*“, Pearson Education Limited, 2006. – Kurt Menke, Richard Smith Jr., Luigi Pirelli, John Van Hoesen, „*Mastering QGIS*“,“ Packt Publishing Ltd., 2016. – Gábor Farkas, „Practical GIS,“ Packt Publishing Ltd., 2017. – Anita Graser, „*Learning QGIS*,“ Packt Publishing Ltd., 2016. – Ralph M. Stair, George W. Reynolds, „*Fundamentals of Information Systems*,“ Cengage Learning, 2016. – Alan Dennis, Barbara Haley Wixom, Roberta M. Roth, „*Systems analysis and design*,“ Wiley, 2015. – Patricia Wallace, „*Introduction to Information Systems*,“ Pearson Education, 2015.

	– Arthur M. Langer, „*Analysis and Design of Information Systems, Springer-Verlag*,“ 2008. – John Wang, „*Innovations in Supply Chain Management for Information Systems*,“ Business Science Reference, 2010. – Christos Kalloniatis: “*Modern Information Systems*,“ InTech Croatia, 2012.

Opis silabusa na studijskom programu Zrakoplovni saobraćaj na engleskom jeziku

U nastavku su navedeni silabusi predmeta na Engleskom jeziku.

Course code: 01ATCOS020101	**Course title: MANAGEMENT IN TRANSPORT AND COMMUNICATIONS**		
Level: II	**Year: I**	**Semester: I**	**Number of ECTS credits: 6**
Status: Mandatory course		**Total number of contact hours: 90** Optional breakdown of hours by type: Lectures: 45 Tutorials: 45 Seminars Fieldwork: Laboratory Tutorials: Practice Concert activies	
Course participants:	**Academic staff and associates selected in the field to which the course belongs/course**		
Prerequisite for enrollment:	NO		
Course goal (goals):	The goal of the course is to familiarize students with the functioning of transport systems in market conditions and international standards to ensure effective and efficient operations. The course aims to equip students with knowledge about standards and standardization, as well as the interconnections between various parts of production and economic processes affected by technical standardization.		

Topics covered (Units of study): *(if necessary, the weekly implementation plan is established taking into account the specificities of organizational units)*	1. Basics of Management: Concept, management process, and interdependence with the organization. The concept of management and the management process. Characteristics of a modern manager. Managerial functions. 2. General and Specific Characteristics of Management in the Transport System: Issues of organization and management in the transport system. Definitions and content of management. Management and entrepreneurship in transport and telecommunications companies. 3. General and Specific Characteristics of Management in the Transport System: Managerial tasks in administrations, institutes, and agencies. Development of logistics management. Relationships between transport policy and management. Development of the transport system and spatial-economic structuring. 4. Managerial Concepts for Improving and/or Innovating Business Processes: Process-oriented management. Innovation and/or reengineering of business processes. 5. Planning as a Function and Activity of Management: Planning in a transport company. Policies and strategies of a transport company. Process approach to strategic planning. 6. Planning as a Function and Activity of Management; Strategic analysis of competitive structure in the transport sector. Scenario methods for selecting effective business strategies. 7. Organizational Structure and Processes: Concept and broader understanding of organization. Organizational structure. 8. Organizational Structure and Processes: Organizing relationships within the organization. 9. Organizational Structure and Processes: Process-based and knowledge-based organization. Examples of organizational structures in some transport and telecommunications companies. 10. Business Management and Motivation: Business management and leadership. 11. Business Management and Motivation: Influences on human behavior and motivation. 12. Human Resource Management: Human resource management as a function of management. 13. Human Resource Management: Activities in the human resource management process. Personal development of managers. 14. Managerial Control and Quality Management: Basics of modern standardization. Methods of adopting and labeling standards, levels of conformity, and terminology related to standard adoption. Quality infrastructure. 15. Managerial Control and Quality Management: Management system standards (MSS). Integrated management systems (IMS).
Learning outcomes:	**Knowledge**: Acquired knowledge will be used to recognize key

	technological processes and management models specific to transport systems. **Skills**: Ability to apply theoretical and practical knowledge in transport management. **Competencies**: A systematic approach to understanding standardization, mastering modern business terminology, and practical examples from the field of transport and communications will assist students in their integration into technical and other activities upon graduation and employment.
Sustainable Development Goal (SDG):	• SDG4 – Quality Education • SDG8 – Decent Work and Economic Growth • SDG9 – Industry, Innovation, and Infrastructure • SDG11 – Sustainable Cities and Communities • SDG 12 - Responsible Consumption and Production • SDG 16 - Peace, Justice, and Strong Institutions
Teaching methods:	Oral presentation, discussion, demonstration, group work.
Assessment methods with grading structure:	Assessment includes creativity in lectures and exercises through independent work, partial tests during the course, and the final exam. The criteria for monitoring and evaluating student performance are as follows: • Homework/Seminar/Practical Work: 15 points (%), passed if at least 55% is achieved. • First Partial Exam/Test/Knowledge Check: 35 points (%), passed if at least 55% is achieved. • Final Exam (Second Partial): 50 points (%), passed if at least 55% is achieved. • Final Exam (Comprehensive): 85 points (%), passed if at least 55% is achieved. The final exam is organized as written/oral. The student may take the material that was not covered and/or successfully completed during the semester. The required condition for a successful exam is achieving at least 55% of the total points on the partial and final exam parts. A sufficient condition is that the sum of points earned (through homework, attendance, partial, and final exams) is 55. Homework is organized through writing assignments and projects,

	with no option for resubmission. For students who did not successfully complete the partial exam, the final exam consists of the entire material covered during the course. The make-up exam is organized similarly to the final exam. Student performance after all forms of assessment is graded as follows: a) 10 (A) – Outstanding success with no or minor errors, 95-100 points; b) 9 (B) – Above average, with some errors, 85-94 points; c) 8 (C) – Average, with noticeable errors, 75-84 points; d) 7 (D) – Generally good, but with significant deficiencies, 65-74 points; e) 6 (E) – Meets minimal conditions, 55-64 points; f) 5 (F, FX) – Does not meet minimal conditions, less than 55 points. The overall evaluation of all student obligations during the semester, or the exam grade, is based on the total number of points (%) earned through fulfilling pre-exam obligations and taking partial and final exams, with a maximum of 100 points, determined by the following scale: **Student Obligations** • Attendance in lectures and exercises: - • Homework/Seminar/Practical Work: 15 points (%) • First Partial Exam/Test/Knowledge Check: 35 points (%) • Final Exam (Second Partial): 50 points (%) • Final Exam (Comprehensive): 85 points (%)
Literature:	**Mandatory**: 1. Vujadin B. Vešović, „MENADŽMENT U SAOBRAĆAJU“, Univerzitet u Beogradu, Saobraćajni fakultet, 1997. 2. Šefkija Čekić, Ivan Bošnjak, „MENADŽMENT U TRANSPORTU I KOMUNIKACIJAMA“, Fakultet za saobraćaj i komunikacije UNSA, Fakultet prometnih znanosti UNIZG, Sarajevo, Zagreb,

	2000. **Supplementary**: 1. Alija Behmen, Sabira Salihović: MATERIJALI I ROBE U TRANSPORTU - Knjiga I, klasifikacija, standardizacija, identifikacija, Fakultet za saobraćaj i komunikacije Sarajevo i DES-Sarajevo, Sarajevo, 2007. 2. Alija Behmen, Sabira Salihović: MATERIJALI I ROBE U TRANSPORTU - Knjiga II, kvalitet: osnove, principi, kontrola, Fakultet za saobraćaj i komunikacije Sarajevo i DES-Sarajevo, Sarajevo, 2008. 3. International/Regional/National Standards

Course code: 3	**Course title: SUSTAINABLE DEVELOPMENT AND ENVIRONMENTAL ENGINEERING**		
Level: II	**Year: 2024**	**Semester: I**	**Number of ECTS credits:** 6
Status: Mandatory course		**Total number of contact hours: 90** Optional breakdown of hours by type: Lectures 30 Tutorials 20 Seminars 10 Fieldwork 10 Laboratory Tutorials 10 Practice 10	
Course participants:	**Academic staff and associates selected in the field to which the course belongs/course**		
Prerequisite for enrollment:	NO		
Course goal (goals):	Acquisition of educational forms in the implementation of programs in the elements of sustainable development and environmental engineering, as well as practical analyses, studies and projects in the field of sustainable development and environmental engineering.		
Topics covered (Units of study):	1. Introduction – basics of sustainable development and environmental engineering		

(if necessary, the weekly implementation plan is established taking into account the specificities of organizational units)	2. Legal Framework in the Field of Sustainable Development and Environmental Engineering 3. Air Pollution from Traffic - Air Quality Monitoring 4. Contaminant Detection Methods 5. CORINAIR/ COPERT 6. Elements and Method of Making Noise Maps 7. Elements of Preparing an Environmental Impact Study 8. Public urban passenger transport, mobility and sustainable development 9. Energy efficiency, eco test and eco driving 10. NEAP, KEAP, LEAP, traffic and transportation 11. SEAP, Traffic & Transportation 12. SUMP_ Traffic & Transportation 13. SECAP_ Traffic & Transportation 14. Low-carbon and zero-emission transport 15. Examples of field research in the field of sustainable development and environmental engineering
Learning outcomes:	**Knowledge:** Theoretical and practical knowledge in the field of the impact of sustainable development and environmental engineering. Basic regulations, rules, methods and procedures in the field of assessment and analysis of the state of sustainable development. **Skills:** Ability to apply theoretical and practical knowledge in the field of sustainable development and environmental engineering in the function of preserving and protecting the economic and other development of society on the one hand and improving and developing sustainable transport on the other. **Competencies:** Ability to independently understand and use regulations, use professional literature, apply methods and procedures, measure and research, prepare analyses, assessments and practical solutions, preventive action, and procedures necessary for the analysis, assessment and management of the field of sustainable development and environmental engineering.
Sustainable Development Goal (SDG):	SDG4 – Quality Education – To ensure inclusive and quality education, and to promote lifelong learning opportunities for all people, of all ages. SDG5 - Gender Equality - Achieve gender equality and empower all women and girls. SDG8 - Decent Work and Economic Growth - Promote inclusive and sustainable economic growth, employment and decent work for all. SDG9- Industry, Innovation and Infrastructure -Build resilient infrastructure, promote inclusive and sustainable industrialization, and foster innovation. SDG11 - Sustainable Cities and Local Communities - Make cities and settlements inclusive, safe, resilient and sustainable.

	SDG12-Sustainable consumption and production - Ensure sustainable forms of consumption and production. SDG13-Climate Action - Take urgent action to combat climate change and its consequences SDG17- Partnerships for the Goals- Incorporating a Global Partnership for Sustainable Development
Teaching methods:	Oral presentation with presentation and presentation of various analyses, studies, models and methods in the field of environmental engineering with the use of video and audio recordings, software, measuring equipment, and independent presentation of individual specific research, Initiating discussions and discussions on practical problems, individual observations from different environments, making independent analyses, research, measurements and modelling in the field of environmental engineering and sustainable development.
Assessment methods with grading structure:	Assessment of creativity in classes and exercises with the preparation of independent papers, evaluation of the partial test during the class as well as the evaluation of the final exam. The criterion for monitoring the work and evaluation of the student during the course is as follows: ✓ Seminar 15 points (%), passed if won over 50%. ✓ I Partial exam/test/knowledge test/35 points (%), is passed if more than 50% is scored. ✓ Final exam (II Partial) 50 points (%), passed if won over 50%. ✓ Final exam (Integral) 85 points (%), passed if won over 50%. The total number of points (%) that a student can achieve during the course is a maximum of 50 points (%), which together with the Final (II partial) makes 100 points (%). For students who have not passed the I Partial Exam, the Final Exam (Integral) is organized from the entire material covered during classes and exercises, and is evaluated with 85 points (%), which with the seminar paper/practical work makes 100 points (%). The final success of the student after all the foreseen forms of examination is evaluated and evaluated by the grading system as follows: a) 10 (A) - exceptional success without errors or with minor errors, carries 95-100 points; b) 9 (B) - above average, with some error, carries 85-94 points; c) 8 (C) - average, with noticeable errors, carries 75-84 points; d) 7 (D) - generally good,

but with more significant drawbacks, carries 65-74 points; e) 6 (E) - meets the minimum requirements, carries 55-64 points; f) 5 (F, FX) - does not meet the minimum requirements, less than 55 points.

The total evaluation of all student obligations during the semester, i.e. the grade on the exam, is based on the total number of points (%) that the student has acquired by fulfilling the pre-exam obligations and passing the partial and final exam, according to the quality of the acquired knowledge and skills, and contains a maximum of 100 points, and is determined according to the following scale:

The Student's Responsibilities	Score (%)
Attendance at lectures and exercises (attendance at all forms of teaching is mandatory at least 80% and this is a condition for the certification/signature of regular attendance)	0 points
Seminar	15 points (%)
I Partial Exam / Test / Knowledge Assessment /	35 points (%)
Final exam (II partial)	50 points (%)
Final exam (Integral)	85 points (%)

Literature:

Mandatory:

4. Lindov, O.: Transport i okoliš, univerzitetski udžbenik Fakultet za saobraćaj i komunikacije Sarajevo, 2011.
5. Lindov, O.: Uticaj cestovnih vozila i cestovne infrastrukture na ekološke parametre. Međunarodni naučni skup "Ekološki problemi savremenog saobraćaja", Sarajevo, 2003.
6. Lindov, O., Omerhodžić A.: Održivi razvoj i okolišni inžinjering. Skripta vježbi i testova, Fakultet za saobraćaj i komunikacije, Sarajevo, 2020.

Supplementary:

7. EC (EvropeanCommission), Directorate General Transport, 1996, Transport Research APAS Road Transport: Assessment of road transport models and systems architectures, VII-31,. ECSCEEC- EAEC, Brussels – Luxembourg.
8. EC (Evropean Commission), Directorate General Transport, 1996, Transport RTD Programme, Summary of Projects resulting from the First Call for Proposals, p.29.
9. Prascevic M.R., Cvetkovic D.S., Stojanovic V.O., (1997), "Mathematical models for describing road traffic noise », Proceedings Inter-Noise 97, Budapest.
10. Pronello C., Iannelli F., 2002. Modelli di previsione del rumore da trafficoincontesti operativi e territorialidifferenti, inCollanaTrasporti, Editore Franco Angeli

	11. Pronello C., André M., Pollutant emissions estimation in road transport models, Report INRETSLTE n° 2007, March 2000, BRON Cedex – France, 113 pp. 12. Pronello C., André M., Estimation tool of traffic pollutant emissions in function of macroscopic driving Promjenljive, Report INRETS-LTE, n° 2006, March 2000, BRON Cedex – France, 91 pp.

Course code: **03TATOS020101**	**Course title:** **LOGISTICS AND INTELLIGENT TRANSPORT SYSTEMS**		
Level: II	**Year: I**	**Semester: I**	**Number of ECTS credits:** 6
Status: Mandatory course		**Total number of contact hours: 90** Optional breakdown of hours by type: Lectures 45 Tutorials 30 Seminars 15	
Course participants:	**Academic staff and associates selected in the field to which the course belongs/course**		
Prerequisite for enrollment:	NO		
Course goal (goals):	The goal of the course is to acquire knowledge from the field of application of intelligent transport systems in logistics systems, which enables the digitization of logistics processes.		
Topics covered (Units of study): *(if necessary, the weekly implementation plan is established taking into account the specificities of organizational units)*	1. Basic assumptions for the development and concept of smart logistics 2. Technological stages of logistics development 3. Digital transformation of logistics 4. Organization, planning and management in intelligent logistics systems 5. Intelligent cargo and transport equipment 6. Redesigning transport and logistics processes with ITS systems 7. Smart warehouses in logistics 8. Advanced ethnology in logistics 9. Augmented reality technology in logistics 10. Blockchain technology in logistics 11. Logistics software systems 12. Logistics platforms 13. City logistics and ITS 14. Artificial intelligence and automatic technologies identification in intelligent logistics		

	15. Future challenges of the digital transformation of logistics
Learning outcomes:	**Knowledge**: The subject Intelligent transport systems and logistics should provide the necessary level of knowledge about technologies, functions and students of ITS in logistics systems, which will enable planning, development and implementation of intelligent logistics systems and the implementation of digitization processes in logistics systems. **Skills**: The subject intelligent transport systems and logistics enables the acquisition of skills necessary for measuring, analyzing and evaluating efficiency, safety, environmental impact and economic benefits from the implementation of ITS in logistics systems. **Competences:** Through the teaching process of lectures, exercises, and seminar work, students should acquire appropriate competencies for designing, developing and managing logistics processes using intelligent transport systems.
Sustainable Development Goal (SDG):	SDG3 – Good Health and Well-being; SDG4 – Quality Education
Teaching methods:	Lectures, exercises and seminar work.
Assessment methods with grading structure:	1. Attendance at classes and semester work 15 points 2. First knowledge test 35 points 3. Final knowledge test 50 points
Literature:	Mandatory: -Teaching material available on the online platform for study of the Faculty of Traffic and Communications Supplementary: - Mac Sullivan, Johannes Kern: The Digital Transformation of Logistics, IEEE Press, New Jersey, 2021 - Rosanna Fornasiero: Next Generation Supply Chains, Springer, Cham, 2021. - Albert Tan, Sameer Shukkla : Title: Digital transformation of the supply chain : a practical guide for executives, World Scientific Publishing, London, 2021. - John M. Longshore and Angela L.: Managing Logistics Systems,

	Routledge, New York, 2022. - Anthony M. Pagano, Matthew Liotine: Technology in Supply Chain Management and Logistics, elsevier, Amsterdam, 2020,

Course code: 04TATOS02010	**Course title: SYSTEMS DESIGN IN AIR TRAFFIC**		
Level: II	**Year: I**	**Semester: I**	**Number of ECTS credits:** 6
Status: Mandatory course		**Total number of contact hours: 90** Optional breakdown of hours by type: Lectures:45 Tutorials:30 Seminars (YES) Laboratory Tutorials:15	
Course participants:	**Academic staff and associates selected in the field to which the course belongs/course**		
Prerequisite for enrollment:	NO		
Course goal (goals):	Presentation of basic knowledge about the strategic goals of air transport development and planning methodology in the regulatory, technological and operational field of transport policy.		
Topics covered (Units of study): *(if necessary, the weekly implementation plan is established taking into account the specificities of organizational units)*	1. Introductory lecture - Theory of strategic planning of (air) transport, content and scientific methodology of study. 2. Elements of strategic air transport planning - strategic goals, areas of action of transport policy. Socio-economic benefits versus external costs of air transport. 3. Status and projection of air traffic development in Europe. Determinants of development, influencing factors and specific risks in the dynamics of air traffic growth. 4. Comparative analysis of US and EU air traffic control systems. 5. Reformation processes in the European air traffic control system. 6. International regulations. – Strategic documents at the global and regional level. 7. Single European Sky (SES) legislation. 8. National regulation. Potentials for the development of air traffic in Bosnia and Herzegovina. 9. Conventional versus non-conventional aviation. The specifics of the development needs of the aviation fleet at the intra-regional		

	(local) level – low-cost and charter aviation, general aviation, business aviation. 10. Aviation as a function of regional development. Analysis of connectivity and availability of air traffic at the regional level - Danube region, SEETO region. 11. Air transport as a function of the cohesion policy of the European Union. Analysis of the competitiveness of air and rail transport in the context of the revised TEN-T policy. 12. Air transport as a function of the cohesion policy of the European Union. Analysis of the competitiveness of air and rail transport in the context of the revised TEN-T policy. 13. New concepts of efficiency planning in the air traffic control system (ATM Performance Scheme). Key indicators and goals – safety, environment, capacity and cost efficiency. 14. New concepts of planning procedures in airport operations: Airport-Collaborative Decision Making (A-CDM). Continuous Descent Approach (CDA). 15. ATM Performance Scheme FAB CE.
Learning outcomes:	**Knowledge:** The course system design in air traffic should provide students with the necessary knowledge about the elements of strategic planning in air traffic. In addition, the course enables the acquisition of knowledge about all the key elements and relations when planning air traffic. **Skills:** Through the teaching process of lectures, exercises, laboratory exercises and practical work, students should acquire appropriate knowledge and experience for practical application in the field of system design and planning in air traffic. **Competencies:** After completing the course, the student will be able to: 1. To interpret the methodology of strategic planning in air traffic. 2. Analyze the areas of action of transport policy in air traffic. 3. Elaborate the socio-economic benefits of air traffic and external costs. 4. Analyze the dynamics of air traffic growth, influencing factors and specific risks. 5. To compare air transport development scenarios in relation to other transport modules. 6. Specify the strategic documents for the development of air traffic at the global and regional level. 7. Elaborate strategic guidelines for the development of air transport in Europe. 8. Describe the issue of strategic development of air traffic in Bosnia and Herzegovina
Sustainable Development	• SDG4 – Quality Education

Goal (SDG):	• SDG9 – Industry innovation and infrastructure
Teaching methods:	Oral presentation with various examples from the field of air traffic planning and design, with the use of video and audio recordings, and independent presentation of specific problems related to air traffic planning. Initiating debates and discussions about problems from practice, individual observations from different environments, making independent projects.
Assessment methods with grading structure:	Evaluation of creativity in classes and exercises with the creation of independent works, evaluation of the partial test during the course of the lecture, as well as the evaluation of the final exam. The criteria for monitoring the work and evaluating students during classes, according to the following method: • Homework/seminar work/practical work/ 15 points (%), passed if over 50%. • I Partial exam/test/knowledge check/35 points (%), passed if more than 50%. • Final exam (II Partial) 50 points (%), passed if over 50%. • Final exam (Integral) 85 points (%), passed if more than 50%. The total number of points (%) that a student can achieve according to the above-mentioned monitoring during classes is a maximum of 50 points (%), which with the Final (II partial) makes 100 points (%). For students who did not pass the 1st Partial exam, the Final exam (Integral) is organized from the entire material covered during classes and exercises, and is evaluated with 85 points (%), which with the seminar work/practical work makes 100 points (%). The final grade of the student, after all the foreseen forms of knowledge verification, is evaluated and graded by the grading system as follows: a) 10 (A) - exceptional success without mistakes or with minor mistakes, carries 95-100 points; b) 9 (B) - above average, with some errors, carries 85-94 points; c) 8 (C) - average, with noticeable errors, carries 75-84 points; d) 7 (D) - generally good, but with significant shortcomings, carries 65-74 points; e) 6 (E) - satisfies the minimum requirements, carries 55-64 points; f) 5 (F, FX) - does not satisfy the minimum

	requirements, less than 55 points. Student obligations Points (%) Attendance at lectures and exercises... - Assignment/Seminar/Practice/.....15 points (%) I Partial exam/Test/Knowledge check/.....35 points (%) Final exam (II Partial) .....50 points (%) Final exam (Integral) .....85 points (%)
Literature:	**Mandatory:** 1. Steiner, S.: Planiranje u zračnom saobraćaju, Univerzitet u Sarajevu, Fakultet za saobraćaj i komunikacije, Sarajevo, 2016. 2. White Paper on transport - Roadmap to a single European transport area - Towards a competitive and resource-efficient transport system, Publications Office of the European Union, Luxembourg, 2011. 3. Flightpath 2050 Europe's Vision for Aviation, European Commission, Publications Office of the European Union, Luxembourg, 2011. 4. Realising Europe's vision for aviation, Strategic Research and Innovation Agenda, Volume 1: Maintaining global leadership, Serving society's needs, Advisory Council for Aviation Research and Innovation in Europe, 2012. 5. European ATM Master Plan: The Roadmap for Sustainable Air Traffic Management updated with SESAR's first developments, Edition 2, European Union, 2012. **Supplementary:** 1. Global Air Navigation Plan 2013–2028, Doc 9750-AN/963, Fourth Edition, International Civil Aviation Organization, Montreal, 2013. 2. Aviation Benefits Beyond Borders, Air Transport Action Group, Geneva, 2014. 3. EUROCONTROL 7-Year IFR Flight Movements and Service Units Forecast 2016-2022, Network Manager, European Organisation for the Safety of Air Navigation EUROCONTROL, Brussels, 2016. 4. Challenges of Air Transport 2030: Survey of experts' views, EUROCONTROL CND Experimental Centre, Brétigny sur Orge, 2009. 5. Cook, A.(ed): European Air Traffic Management: Principles, Practice and Research, Ashgate, 2007.

Course code: 05TATOS020101	**Course title: Flight Mechanics**		
Level: II	**Year: I**	**Semester: II**	**Number of ECTS credits:** 6
Status: Mandatory course		**Total number of contact hours: 90** Optional breakdown of hours by type: Lectures: 45 Tutorials:30 Laboratory Tutorials:15	
Course participants:	**Academic staff and associates selected in the field to which the course belongs/course**		
Prerequisite for enrollment:	NO		
Course goal (goals):	Acquiring the necessary knowledge about the flight mechanics of aircraft, the phases and methods of executing flight. The education also includes familiarization with performance calculation procedures for commercial aircraft, which are applied in the execution of aviation operations.		
Topics covered (Units of study): *(if necessary, the weekly implementation plan is established taking into account the specificities of organizational units)*	1. Basics of Aircraft Flight Mechanics. Mathematical Flight Model of Aircraft. 2. Aircraft Control Methods in Different Flight Phases. Aerodynamic Characteristics of Aircraft Relevant to Flight Mechanics. 3. Flight Kinetics. Level Flight. Balance of Forces in Level Flight. Thrust, Drag, and Power Required for Aircraft Flight. 4. Change in Required Power and Thrust with Changes in Altitude and Aircraft Weight. 5. Aircraft Performance in Level Flight, Range, and Maximum Duration of Flight. Effect of Wind on Range. 6. Takeoff, Takeoff Distance, and Time. Effect of Wind on Takeoff. 7. Level Turns, Relationship Between Speed and Bank Angle in Turns. Time for a Full Turn. 8. Phenomena Associated with Turns. Effect of Altitude on Turns. Penau's Turn Diagram. Induced and Adverse Drag in Turns. 9. Gliding Flight. Force Balance, Polar Speed, and Range in Gliding. Sink Rate in Gliding. 10. Climbing Flight. Force Balance, Speeds, and Thrust and Power During Climbing. Aircraft Climbing Performance. 11. Diving Flight. Typical Aircraft Maneuvers. Glide, Spiral, Turn, Evolution. Stalled Flight Characteristics. Minimum Speeds Required in Flight.		

	12. Maximum Lift of Wings. Importance of Lift Breakthrough. Static and Dynamic Aircraft Stalls. Landing. 13. Aircraft Balance. Aircraft Stability. Longitudinal and Lateral Stability and Control. 14. Automatic Stabilization. Aircraft Mobility. Aircraft Weight and Balancing. *15.* Helicopter Flight Characteristics. Helicopter Control Methods. Autorotation in Vertical Descent. Helicopter Performance Diagram. Helicopter Range and Endurance.
Learning outcomes:	**Knowledge:** Theoretical and practical knowledge in the field of flight mechanics. Basic models and principles of flight mechanics. **Skills:** Ability to apply theoretical and practical knowledge in the field of flight mechanics. **Competencies:** The course material should ensure a level of understanding of flight mechanics for transport aircraft and the methods for calculating performance in all phases of flight.
Sustainable Development Goal (SDG):	SDG 4 - Quality Education, SDG 9- Industry, Innovation, and Infrastructure SDG13-Climate Action
Teaching methods:	**Oral presentations** involving the demonstration of various systems and processes in the field of flight mechanics, using video and audio recordings. This includes independent presentations of specific problems within the research area. **Initiating discussions and debates** on practical issues, individual observations from different environments, and developing independent research and analyses in the field of flight mechanics.
Assessment methods with grading structure:	**Evaluation Criteria:** Creativity in classes and exercises, including the preparation of independent assignments, partial tests during the course, and the final exam. The criteria for monitoring and evaluating student performance during the course are as follows: • **Homework/Seminar Work/Practical Work:** 15 points (%), passing if over 50% is achieved. • **First Partial Exam/Test/Knowledge Check:** 35 points (%), passing if over 50% is achieved. • **Final Exam (Second Partial Exam):** 50 points (%), passing if over 50% is achieved. • **Final Exam (Comprehensive):** 85 points (%), passing if over 50% is achieved.

	The total number of points (%) a student can earn based on this monitoring during the course is a maximum of 50 points (%), which combined with the final exam (Second Partial Exam) totals 100 points (%). For students who do not pass the First Partial Exam, the Final Exam (Comprehensive) is organized covering the entire course material and is worth 85 points (%), combined with the seminar/practical work to total 100 points (%). **Grading Scale:** • **10 (A)** - Exceptional performance with no or minor errors, 95-100 points. • **9 (B)** - Above average with some errors, 85-94 points. • **8 (C)** - Average with noticeable errors, 75-84 points. • **7 (D)** - Generally good but with significant deficiencies, 65-74 points. • **6 (E)** - Meets minimal requirements, 55-64 points. • **5 (F, FX)** - Does not meet minimal requirements, less than 55 points. **Student Performance Evaluation:** • **Attendance in Lectures and Exercises:** - • **Homework/Seminar/Practical Work:** 15 points (%) • **First Partial Exam/Test/Knowledge Check:** 35 points (%) • **Final Exam (Second Partial Exam):** 50 points (%) • **Final Exam (Comprehensive):** 85 points (%)
Literature:	1. S. Janković: "Mehanika leta zrakoplova", Sveučilište u Zagrebu FSB, 2002. 2. David G. Hull , "Fundamentals of Airplane Flight Mechanics", Thirteenth Edition, Springer, 2001 3. M. Šabić: Mehanika leta, Skripta (u pripremi), Fakultet za saobraćaj i komunikacije, Sarajevo 2011.

Course code: 06TRWOS020102	**Course title: INTERMODAL TRANSPORT**		
Level: II	**Year: II**	**Semester: II**	**Number of ECTS credits: 6**
Status: Mandatory course		**Total number of contact hours: 90** Optional breakdown of hours by type: Lectures: 45	

	Tutorials: 30 Seminars: 15 Fieldwork: Laboratory Tutorials: Practice
Course participants:	**Academic staff and associates selected in the field to which the course belongs/course**
Prerequisite for enrollment:	NO
Course goal (goals):	The curriculum covered by the content should enable students to become familiar with modern transport chains, the basics of technological design and optimization of transport processes, as well as contemporary technological solutions offered within various technologies of intermodal transport. This includes the application of logistics principles and the opportunities provided by new information and telecommunications technologies.
Topics covered (Units of study): *(if necessary, the weekly implementation plan is established taking into account the specificities of organizational units)*	1. Technological Changes; Classical Transport Chain; Rationalization; Modern Transport Chain 2. Systematic Approach to Analyzing the Transport Process as a Complex Technological System 3. Goods Flows; Industrial Transport; Load Units 4. Pallet Transport System, Pallet Chain 5. Container Transport System, Typical Technologies for Implementing Container Transport Chains 6. Vehicle-to-Vehicle System 7. RO-RO Transport System, Barge Transport System for River Traffic 8. Storage, Inventory, Warehouse Capacity, Warehouse System Design 9. Logistics and Logistical Principles 10. EU Transport Policy, European Concept of Intermodality 11. Land Terminals, Evaluation of Terminal Performance, Queueing Theory 12. Port Container Terminals – Storage Yards in Terminals 13. Components of Logistical Services – RTC 14. Elements of Modern Intermodal Transport 15. ITS and the Application of Telematics in Modern Intermodal Transport
Learning outcomes:	**Knowledge:** Students will gain a fundamental understanding of the basics of intermodal transport, including technological changes, organization of transport chains, and integration of different transport modes. They will understand key principles of storage, logistics, container and pallet systems, as well as European transport policy with a focus on intermodality. **Skills:** Students will develop practical skills in analyzing and optimizing transport processes, with an emphasis on using modern technologies such as ITS and telematics. They will acquire knowledge on how to efficiently organize goods flows, manage terminals, and utilize various transport systems.

	Competencies: Students will be capable of applying the acquired knowledge and skills to manage complex transport chains, optimize logistical operations, and integrate different transport modes in modern industrial and commercial environments.
Sustainable Development Goal (SDG):	SDG7 – Affordable and Clean Energy; SDG9 – Industry, Innovation, and Infrastructure; SDG12 – Responsible Consumption and Production; SDG17 – Partnership for the Goals.
Teaching methods:	During the implementation of the program, the instructor presents individual thematic units (ex cathedra), provides students with access to educational video recordings (video presentations) related to the subject area, and organizes discussions on assigned topics (interactive teaching). In the exercises, the instructor reviews and solves examples and tasks in accordance with the theoretical material, assists students in independently solving tasks, and in preparing programs and seminar papers.
Assessment methods with grading structure:	Evaluation of activities in lectures and exercises, along with the preparation of independent work, assessment of the mid-term test during the course, and the final exam. The criteria for monitoring and assessing student performance during the course are as follows: – Seminar/Fieldwork/Lab Exercises/Practice (written and oral assessment) – 15 points (%), passed if over 50% is achieved. – Mid-term exam/test/knowledge check (written assessment) – 35 points (%), passed if over 50% is achieved. – Final exam (Second Mid-term) (written assessment) – 50 points (%), passed if over 50% is achieved. – Final exam (Comprehensive) (written assessment) – 85 points (%), passed if over 50% is achieved. The total number of points (%) a student can achieve through this monitoring system during the course is a maximum of 50 points (%), which combined with the Final (Second Mid-term) totals 100 points (%). For students who did not pass the First Mid-term exam, the Final (Comprehensive) exam is organized covering all the material taught during lectures and exercises and is worth 85 points (%), combined with the seminar/practical work to make a total of 100 points (%). To pass the course, students must pass each of the following parts: the seminar paper, the first mid-term exam (test), and the final exam (second mid-term or comprehensive). The evaluation of the seminar paper and the first mid-term exam (test) is conducted during the course. Students who pass the first mid-term exam only take the second mid-term exam in the final exam, while those who do not pass the first mid-term exam will take the comprehensive final exam, which consists of both the first and second mid-term exams. Students who did not pass the exam in the previous academic year but fulfilled certain obligations and earned points can carry them over to the current academic year. Students who wish to carry over points must inform the course instructor at the start of the semester, by the end of the first week of lectures. Points may be carried over

	only once. The final student grade after all forms of knowledge assessment will be evaluated and graded according to the following system: a) 10 (A) – exceptional performance with no or minimal errors, 95-100 points; b) 9 (B) – above average, with some errors, 85-94 points; c) 8 (C) – average, with noticeable errors, 75-84 points; d) 7 (D) – generally good, but with significant deficiencies, 65-74 points; e) 6 (E) – meets minimum requirements, 55-64 points; f) 5 (F, FX) – does not meet minimum requirements, less than 55 points. The total assessment of all student obligations during the semester, i.e., the exam grade, is based on the total number of points (%) the student has achieved by fulfilling pre-exam obligations and passing the mid-term and final exams. This totals a maximum of 100 points, and is determined according to the following scale: Student Obligations Points (%) Attendance in lectures and exercises …..... 0 points Minimum 80% attendance at all forms of classes is mandatory, and this is a condition for course certification/signing off on proper attendance. Seminar Paper/Fieldwork/Lab Exercises/Practice (written and oral assessment).....15 points (%) First Mid-term Exam (written).....35 points (%) Final Exam (Second Mid-term) (written).....50 points (%) Final Exam (Comprehensive) (written).....85 points (%)
Literature:	Mandatory: 1. Dalla Chiara B., Ercolani F., Gačanin E., Kiso F.: Intermodal Transport, Education and Culture TEMPUS, Sarajevo 2004. 2. Perišić R.: Modern Strategies and Technologies for Transport Development, SANU, Belgrade, 2002. 3. Perišić R.: Quality Service Systems, Logistics, and Informatics, SANU, Belgrade, 2002. 4. Terminology in Combined Transport: UN/ECE, Translation by Kiso F., Education and Culture TEMPUS, Sarajevo, 2004. 5. Kiso, F., Karičić, S., Omerhodžić, A.: Multimodal Transport, Faculty of Traffic and Communications, Sarajevo, 2023. Supplementary: 1. Marković I.: New Transport Technologies, Faculty of Transport Sciences Zagreb, 1985. 2. Kiso, F.: "Logistics - Fundamental Concepts," Lecture Notes, FSK Sarajevo, 2019. 3. Kiso, F.: "Storage and Inventory Theory," Lecture Notes, FSK Sarajevo, 2016.

Course code:	**Course title: AIR TRAFFIC MANAGEMENT**

07TATOS020102			
Level: II (Second)	**Year: I (First)**	**Semester: II (Second)**	**Number of ECTS credits:6 (Six)**
Status: Mandatory course		**Total number of contact hours: 90** Lectures: 45 Exercises: 30 Lab exercises: 15	
Course participants:	**Academic staff and associates selected in the field to which the course belongs/course**		
Prerequisite for enrollment:	NO		
Course goal (goals):	Acquiring knowledge about the processes and procedures of operational services in air traffic, airspace management processes and procedures, capacity and flow management of air traffic, as well as familiarizing students with applicable software tools for air traffic modeling and simulation, and algorithms for calculating charges for route and terminal services in air traffic.		
Topics covered (Units of study): *(if necessary, the weekly implementation plan is established taking into account the specificities of organizational units)*	1. Introductory Lecture – Elements of Strategic Planning in ATM 2. Planning CNS/ATM Concept 3. Analysis of Functional Blocks of Airspace/ECAA Agreement 4. Classification of Air Traffic Services/Concept and Classification of Airspace/Vertical Position of Aircraft 5. Operational Air Traffic Services/Air Traffic Control/Separation of Aircraft 6. Airspace Management/FUA Airspace Structures/CDAF/AMC/ASM Publications 7. Air Traffic Flow Management/CDM/CFMU/NM 8. Flight Planning in the IFPS Zone 9. Technological Process of Sector Opening in Air Traffic Control 10. Relationship Between ATS/ASM/ATFM 11. Capacity Planning Process for Air Traffic Control in Europe 12. Air Traffic Controller Workload 13. Analysis of Air Traffic Complexity 14. Charges for Air Navigation Services 15. Analysis of Air Traffic Management Systems		
Learning outcomes:	**Knowledge:** Theoretical and practical knowledge in the field of air traffic management **Skills:** Properly interpret fundamental concepts and processes of air traffic management in accordance with European and national		

	regulatory requirements. Define the elements of the air traffic management (ATM) system. Elaborate on procedures and processes of operational services in the air traffic management (ATM) system, airspace management (ASM), and air traffic flow and capacity management (ATFCM). Develop a seminar paper on issues related to air traffic management/airspace/flow and capacity, and present the results. Apply algorithms for calculating capacity, complexity, and route charges, and use software tools for modeling and simulation on a specific example of ATM operations.
Sustainable Development Goal (SDG):	SDG 4 - Quality Education Developing and presenting research papers in this field helps to disseminate knowledge and education in air traffic management, contributing to quality education and professional training. SDG 8 - Decent Work and Economic Growth Using advanced algorithms and software tools to optimize air traffic management can enhance efficiency and productivity in the sector, supporting economic growth and the creation of decent work opportunities. SDG 11 - Sustainable Cities and Communities An efficient air traffic management system contributes to sustainable urban development by reducing congestion and improving connectivity between different locations. SDG 13 - Climate Action Optimizing air traffic management can reduce carbon emissions through more efficient routing and reduced fuel consumption, contributing to efforts against climate change.
Teaching methods:	Oral Presentation with Demonstration of Various Systems and Processes in Air Traffic Management, Using Video and Audio Recordings, and Independent Presentation of Specific Problems in Air Traffic Management. Initiating Discussions and Debates on Practical Issues, Individual Observations from Various Environments, and Conducting Independent Research and Analysis in the Field of ATM.
Assessment methods with grading structure:	Assessment of Creativity in Classes and Exercises, Including the Preparation of Independent Projects, Evaluation of Partial Tests During

	the Course, and the Final Exam. The criteria for monitoring and assessing student work during the course are as follows: • **Homework/Seminar Paper/Practical Work:** 15 points (%), passed if over 50% is achieved. • **First Partial Exam/Test/Knowledge Check:** 35 points (%), passed if over 50% is achieved. • **Final Exam (Second Partial):** 50 points (%), passed if over 50% is achieved. • **Final Exam (Comprehensive):** 85 points (%), passed if over 50% is achieved. The total number of points (%) a student can earn based on the above criteria during the course is a maximum of 50 points (%), which combined with the Final Exam (Second Partial) totals 100 points (%). For students who did not pass the First Partial Exam, the Final Exam (Comprehensive) will cover the entire course material and is valued at 85 points (%), combined with the seminar/practical work to make up 100 points (%). The final grade after all forms of knowledge assessment is evaluated and graded according to the following system: a) 10 (A) – Outstanding performance with no errors or only minor errors, 95-100 points. b) 9 (B) – Above average with some errors, 85-94 points. c) 8 (C) – Average with noticeable errors, 75-84 points. d) 7 (D) – Generally good but with significant shortcomings, 65-74 points. e) 6 (E) – Meets minimum requirements, 55-64 points. f) 5 (F, FX) – Fails to meet minimum requirements, less than 55 points. The overall assessment of student obligations during the semester, including exam grades, is based on the total number of points (%) earned by fulfilling pre-exam requirements and passing partial and final exams. The total is a maximum of 100 points and is determined according to the following scale:

	Student Obligations — Points (%) Attendance at Lectures and Exercises — - Homework/Seminar/Practical Work — 15 points (%) First Partial Exam/Test/Knowledge Check — 35 points (%) Final Exam (Second Partial) — 50 points (%) Final Exam (Comprehensive) — 85 points (%)
Literature:	8. 1. Mihetec, T.: Upravljanje zračnim prometom, Sveučilište u Zagrebu, Fakultet prometnih znanosti, 2016. 9. Cook, A.: European Air Traffic Management, Asgate, UK, London, 2008. 10. Sudarshan, H.V.: Seamless Sky, Ashgate, UK, London, 2003. 11. Air Traffic Management, Doc 4444, International Civil Aviation Organisation, Montreal, 2007. 12. Annex 2: Rules of the Air, International Civil Aviation Organisation, Montreal, 2005. 13. Annex 11 : Air Traffic Services, International Civil Aviation Organisation, Montreal, 2001. 14. CFMU Handbook, EUROCONTROL, Brussels, 2012

Course code: 08TATOS020102	**Course title: TRANSPORT PLANNING AND AIRCRAFT OPERATIONS**		
Level: II	**Year: I**	**Semester: II**	**Number of ECTS credits: 6**
Status: Mandatory course		**Total number of contact hours: 90** Optional breakdown of hours by type: Lectures: 45 Tutorials:30 Seminars Fieldwork Laboratory Tutorials 15 Practice Concert activies …	
Course participants:	**Academic staff and associates selected in the field to which the**		

	course belongs/course
Prerequisite for enrollment:	NO
Course goal (goals):	Acquisition of necessary knowledge on the methodology of air transport planning and airline management.
Topics covered (Units of study): *(if necessary, the weekly implementation plan is established taking into account the specificities of organizational units)*	1. Introduction - Development of air transport. 2. Airline carriers. Organizational structure of airline carriers. 3. Business models of airlines. 4. Deregulation and liberalization of the air transport market. 5. Air transport market. Market segmentation. Market positioning of airlines. 6. PESTLE analysis. SWOT analysis. Benchmarking of airlines. 7. Transport work indicators. 8. Productivity indicators of airline carriers. 9. Fleet planning. Fleet selection methodology. 10. Schedule planning, crew planning, and fuel planning. 11. Capacity management. Revenue management. Air transport tariffs. 12. Air transport agreements. 13. Profitability of airlines. Flight network management. Route profitability. 14. Performance indicators of airlines. Financial management of airlines. 15. Forecasting demand for air transport.
Learning outcomes:	**Knowledge**: Theoretical and practical knowledge in the field of air transport planning and aircraft operations. The course 'Transport Planning and Aircraft Operations' aims to provide students with the knowledge necessary for understanding the operation of transport aircraft as well as the methodology for planning the use of a single aircraft or an entire fleet in an airline company. **Skills:** The ability to apply theoretical and practical knowledge in the field of air transport planning and aircraft operations. **Competencies:** Through lectures, exercises, laboratory exercises, and practical work, students should acquire appropriate knowledge in the field of air transport planning and business process management for application in the operational environment of an airline company.
Sustainable Development Goal (SDG):	SDG 4 - Quality Education, SDG 8- Decent Work and Economic Growth SDG 10- Reduced Inequality
Teaching methods:	Oral presentations with the demonstration of various analyses, studies,

	models, and methods in the field of air transport planning and aircraft operations, using video and audio recordings, software, measuring equipment, and independent presentations of specific research. Initiating discussions and debates on practical issues, individual observations from different environments, and the development of independent analyses, research, measurements, and modeling in the field of planning and exploitation of aviation resources.
Assessment methods with grading structure:	Evaluation of creativity in lectures and exercises, along with the creation of independent projects, assessment of the partial test during the course, as well as evaluation of the final exam. The criteria for monitoring student performance and assessment during the course are as follows: Homework/Seminar Paper/Practical Work: 15 points (%), passed if over 50% is achieved. First Partial Exam/Test/Knowledge Check: 35 points (%), passed if over 50% is achieved. Final Exam (Second Partial): 50 points (%), passed if over 50% is achieved. Final Exam (Comprehensive): 85 points (%), passed if over 50% is achieved. "The total number of points (%) that a student can achieve according to the mentioned assessment during the course is a maximum of 50 points (%), which, together with the Final Exam (Second Partial), makes a total of 100 points (%). For students who have not passed the First Partial Exam, the Final Exam (Comprehensive) is organized covering the entire course material from lectures and exercises and is valued at 85 points (%), which, together with the seminar paper/practical work, makes a total of 100 points (%)." Final success of the student after all forms of knowledge assessment is evaluated and graded as follows: The translation of the grading system is: "Final success of the student after all forms of knowledge assessment is evaluated and graded as follows:

	a) 10 (A) - Exceptional performance with no errors or minor errors, earning 95-100 points. b) 9 (B) - Above average, with some errors, earning 85-94 points. c) 8 (C) - Average, with noticeable errors, earning 75-84 points. d) 7 (D) - Generally good, but with significant deficiencies, earning 65-74 points. e) 6 (E) - Meets the minimum requirements, earning 55-64 points. f) 5 (F, FX) - Does not meet the minimum requirements, less than 55 points." The overall evaluation of all student responsibilities during the semester, including the exam grade, is based on the total number of points (%) that the student has earned by fulfilling pre-exam obligations and taking the partial and final exams. This is based on the quality of the acquired knowledge and skills and contains a maximum of 100 points. It is determined according to the following scale Student Obligations | Points (%) Attendance at lectures and exercises... - Homework/Seminar/Practical Work ..... 15 points (%) First Partial Exam/Test/Knowledge Check ..... 35 points (%) Final Exam (Second Partial) ..... 50 points (%) Final Exam (Comprehensive) ..... 85 points (%)
Literature:	Mandatory: 1. Šabić, M.: Autorska predavanja, Fakultet za saobraćaj i komunikacije, 2016. 2. Bazargan, M.: Airline Operations and Scheduling, Ashgate Publishing Company, Aldershot, 2012. 3. Belobaba, P. P., Odoni, A., Barnhart, C.: The Global Airline Industry, John Wiley &Sons Ltd, UK, 2009. 4. Doganis, R.: The Airline Business, Routledge, London, 2005. 5. Butler, G.F., Keller, M.R.: Handbook of Airline Operations, McGraw-Hill Companies, New York, 2000.

Course code: 09-10-	**Course title:**

1TATES020102	INFORMATION TECHNOLOGIES AND FREIGHT FORWARDING		
Level: II	**Year: I**	**Semester: II**	**Number of ECTS credits:** 6
Status: Elective course		**Total number of contact hours: 90** Optionally elaborate the distribution of hours by type: Lectures 45 Exercises 30 Seminar and project task: 15	
Course participants:	**Academic staff and associates selected in the field to which the course belongs/course**		
Prerequisite for enrollment:	NO		
Course goal (goals):	Familiarization with modern information and communication technologies applied in the field of logistics and freight forwarding, specific software tools, and the methods and effects of their application.		
Topics covered (Units of study): *(if necessary, the weekly implementation plan is established taking into account the specificities of organizational units)*	1. Introduction 2. Identification of technological processes in logistics and freight forwarding 3. Identification of key stakeholders in the logistics and freight forwarding chain 4. Theoretical foundations of current information technology solutions applied in freight forwarding 5. Importance and application of software applications in managing logistics and freight forwarding systems and implementation of best practices 6. Methodological approaches in designing information technology solutions in logistics and freight forwarding 7. CRM (Customer Relationship Management) in Freight Forwarding and Logistics Companies Planning and optimizing forwarding services - maximizing utility and reducing costs of ordering, booking, and shipping processes 8. Management of import, export, and global foreign trade exchange (harmonized tariffs, foreign trade agreements, INCOTERMS) 9. Software applications for business-to-business SCM (Supply Chain Management) 10. Software applications for managing customs procedures based on EU legislation 11. Software applications for managing warehousing operations 12. Software applications for managing the transport chain 13. Web applications and online services for foreign trade compliance, tariff classification, import-export documentation, electronic reporting, verification		

	14. Integrating segmented software applications into a holistic logistics- freight forwarding information system (end-to-end management)
Learning outcomes:	**Knowledge**: Through lectures, exercises, laboratory work, and practical activities, students should acquire the necessary knowledge and skills for practical application through: the development of IT and evaluation of its effects in logistics forwarding, as well as the independent formulation of research objectives and the application of appropriate methods and models for their realization. **Skills:** A systemic approach to designing IT business processes in logistics forwarding and understanding algorithms as the basis for forwarding software solutions; identifying and using relevant IT solutions in the field of logistics forwarding, critical analysis, evaluation, and synthesis of available knowledge; developing and applying forwarding software management models, and presenting acquired knowledge to professional and scientific audiences. **Competencies:** Application of acquired knowledge in specific models.
Sustainable Development Goal (SDG):	SDG 4 - Quality Education - Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all. SDG 8 - Decent Work and Economic Growth - Promote sustained, inclusive, and sustainable economic growth, full and productive employment, and decent work for all. SDG 9 - Industry, Innovation, and Infrastructure - Build resilient infrastructure, promote inclusive and sustainable industrialization, and foster innovation. SDG 12 - Responsible Consumption and Production - Ensure sustainable consumption and production patterns. SDG 16 - Peace, Justice, and Strong Institutions - Promote peaceful and inclusive societies for sustainable development, provide access to justice for all, and build effective, accountable, and inclusive institutions at all levels.
Teaching methods:	During the course delivery, the instructor presents individual thematic units (ex cathedra), allows students to follow educational video content (DVDs, video presentations) related to the subject area, and organizes

	discussions on a given topic (interactive teaching). In practical classes, the discussion and resolution of examples and tasks related to theoretical topics are conducted, and assistance is provided to students in independently solving tasks, and in the preparation of programs, projects, and seminar papers.
Assessment methods with grading structure:	Criteria for assessing and grading students' work during the course are as follows: Seminar Paper / Project Task: 0 to 15 points, passed if over 50% is achieved First Test / First Knowledge Check / First Partial Exam: 0 to 35 points, passed if over 50% is achieved Final Exam – Written exam: 20 points Final Exam – Oral exam: 30 points Final Exam (Integral) – Written exam: 40 points Final Exam (Integral) – Oral exam: 45 points To pass the exam, the student must pass the oral part of exam. The total number of points a student can achieve during the course is a maximum of 50 points. The final exam includes the material that the student did not pass in the partial exam, which means it covers the second part of the material (second partial exam) which is valued at 50 points or consists of the entire material, i.e., both the first and second partial exams. The total evaluation of all student obligations during the semester, i.e., the exam grade, is based on the total number of points (%) that the student has earned by fulfilling pre-exam obligations, passing the partial and final exams. Based on the quality of the acquired knowledge and skills, the student can achieve a maximum of 100 points, according to the following scale: Grading Structure: Points (%) Seminar Paper / Project Task: 15 points (%) First Test / First Knowledge Check (First Partial Exam): 35 points (%) Final Exam (Second Partial Exam): 50 points (%) The necessary condition for successfully completing the exam is a result of 55 points, with a minimum of 50% required on each part of the exam

	(activity, partial exam, final written exam). This means that to pass the exam, the student must meet the following conditions: Activity (Seminar Paper / Project Task): 7,5 points First Test / First Knowledge Check / Partial Exam: 17.5 points Final Exam (Second Partial Exam) – Written Part: 10 points Students who pass the partial exam only need to take the second part of the material (the part not covered in the partial exam) during the final exam. Students who do not pass the partial exam will take the entire material during the final exam, with the criteria for passing the exam remaining identical. The final exam is organized as a written and/or oral exam. Activity can be tracked through homework, seminar papers, project tasks, or quizzes. Note: Students are required to attend at least 80% of the total class hours, and attendance is a condition for verifying proper class participation. In justified cases (illness), a student may be excused from classes, for which they must provide a medical excuse. Seminar papers and homework will be graded only if submitted by the defined deadlines. Late submissions will not be graded. Final student performance after all forms of knowledge assessment is evaluated and graded according to the following system: a) 10 - Exceptional performance with no errors or only minor errors, 95-100 points; b) 9 - Above average, with some errors, 85-94 points; c) 8 - Average, with noticeable errors, 75-84 points; d) 7 - Generally good, but with significant shortcomings, 65-74 points; e) 6 - Meets minimum requirements, 55-64 points; f) 5 - Does not meet minimum requirements, less than 55 points.
Literature:	Mandatory: 1. R. Zelenika: Logistics Forwarding, Faculty of Economics, Zagreb, 2000. 2. Zelenika, R.: Logistics Systems, Faculty of Economics in Rijeka, 2005. 3. Gordana M. Radivojević, Information Management in Logistics. Belgrade 2023.

	4. Ivanković, Č.: Forwarding and Logistics, Faculty of Transport Sciences, Zagreb, 2005. 5. R. Zelenika: International Forwarding, Faculty of Economics, Zagreb, 1996. 6. Deljanin: Logistics in Transport and Communications, Script, FSK, 2013. 7. Deljanin: Logistics Systems, Script, FSK, 2014. Supplementary: 1. Andrijanić I., Aržek Z., Prebežac D., Zelenika R.: Transport and Forwarding Business, Zagreb, 2001. 2. Z. Aržek, G. Badovinac: Transport and Insurance, Publishing and Instruction Bureau, Zagreb, 1986. 3. J. Mađarić: International Forwarding, Faculty of Transport Sciences, Zagreb, 1991. 4. Grabovac: Responsibility of Multimodal Transport Entrepreneurs, Traffic Faculty, Split, 1986. 5. Shipping and Logistics Management, Y H V Lun; Kee-hung Lai; T C E Cheng, Publisher: New York; London: Springer, 2010. 6. International Logistics Supply Chain Outsourcing: From Local to Global, Alan Rushton; Steve Walker, Publisher: London: Kogan Page, 2007. 7. Transportation Management with SAP TM, Bernd Lauterbach, Stefan Sauer, Jens Kappauf, Jens Gottlieb, Dominik Metzger, Christopher Sürie, 2nd, updated and revised edition, 2016. 8. Warehouse Management with SAP EWM, Balaji Kannapan, Hari Tripathy, Vinay Krishna, 2nd, updated and revised edition, 2016. Journals: • International Journal of Physical Distribution • Computers and Operations Research • International Journal of Information Management • European Journal of Operational Research • Journal of Business Logistics

Course code: 09-10-2TATES020102	**Course title: PERFORMANCE OF TRANSPORT AIRCRAFT**		
Level: II	**Year: I**	**Semester: II**	**Number of ECTS credits: 6**
Status: Mandatory course		**Total number of contact hours: 90** Optional breakdown of hours by type:	

	Lectures: 45 Tutorials:30 Seminars Fieldwork Laboratory Tutorials 15 Practice Concert activies …
Course participants:	**Academic staff and associates selected in the field to which the course belongs/course**
Prerequisite for enrollment:	NO
Course goal (goals):	Acquisition of knowledge about the performance of transport aircraft.
Topics covered (Units of study): *(if necessary, the weekly implementation plan is established taking into account the specificities of organizational units)*	1. Equations of aircraft flight 2. Straight and level stationary flight of an aircraft 3. Powered flight of a transport aircraft 4. Range planning for a transport aircraft 5. Climb flight equations for a transport aircraft 6. Horizontal turning flight of a transport aircraft 7. Descent flight of a transport aircraft 8. General principles of determining aircraft performance 9. Takeoff analysis of a transport aircraft 10. Landing analysis of a transport aircraft 11. Balance of a transport aircraft 12. Static and dynamic stability of a transport aircraft 13. Directional and yaw stability 14. Longitudinal controllability of an aircraft 15. Lateral controllability of a transport aircraft
Learning outcomes:	**Knowledge**: Theoretical and practical knowledge in the field of transport aircraft performance. **Skills**: Ability to apply theoretical and practical knowledge in the field of transport aircraft performance. **Competencies:** Ability to independently understand and apply regulations, use professional literature, apply methods and procedures, conduct measurements and research, create analyses, evaluations, and practical solutions, implement preventive actions, and perform procedures and processes of analysis in the domain of transport aircraft performance

Sustainable Development Goal (SDG):	SDG 4 - Quality Education, SDG 9- Industry, Innovation, and Infrastructure SDG13-Climate Action
Teaching methods:	Oral presentation with a display of various systems and processes in the field of transport aircraft performance, using video and audio recordings, and independent presentation of specific problems related to the impact of individual factors on aircraft performance. Initiating discussions and debates on practical issues, individual observations from different environments, and conducting independent research and analyses in the field of aircraft performance.
Assessment methods with grading structure:	Evaluation of creativity in lectures and exercises, including the preparation of independent works, assessment of partial tests during the course, as well as the final exam. The criteria for monitoring and evaluating the student's work during the course are as follows: Homework/Seminar/Practical work: 15 points (%), passed if more than 50% is achieved. First partial exam/test/knowledge check: 35 points (%), passed if more than 50% is achieved. Final exam (Second partial): 50 points (%), passed if more than 50% is achieved. Final exam (Comprehensive): 85 points (%), passed if more than 50% is achieved. The total number of points (%) a student can achieve through the monitoring described above during the course is a maximum of 50 points (%), which together with the final (second partial) exam amounts to 100 points (%). For students who have not passed the first partial exam, the final exam (comprehensive) is organized from the entire material covered during the course and exercises, and is valued at 85 points (%), which together with the seminar/practical work makes a total of 100 points (%). The student's final grade, after all the prescribed forms of knowledge assessment, is determined and evaluated according to the following grading system:

	a) 10 (A) - excellent performance with no or minimal errors, worth 95-100 points; b) 9 (B) - above average, with a few errors, worth 85-94 points; c) 8 (C) - average, with noticeable errors, worth 75-84 points; d) 7 (D) - generally good, but with significant shortcomings, worth 65-74 points; e) 6 (E) - meets minimum requirements, worth 55-64 points; f) 5 (F, FX) - does not meet minimum requirements, less than 55 points. The overall evaluation of all student obligations during the semester, i.e., the exam grade, is based on the total number of points (%) the student earned by fulfilling pre-exam obligations and passing the partial and final exams, based on the quality of acquired knowledge and skills, and includes a maximum of 100 points. The final grade is determined according to the following scale: Student obligations Points (%) Attendance at lectures and exercises - Homework/Seminar/Practical work 15 points (%) First Partial exam/Test/Knowledge check 35 points (%) Final exam (Second partial) 50 points (%) Final exam (Comprehensive) 85 points (%)
Literature:	1. Doganis, R.: The Airline Business, Routledge, London, 2005. 2. Bazargan, M.: Airline Operations and Scheduling, Ashgate Publishing Company, Aldershot, 2012. 3. Belobaba, P. P., Odoni, A., Barnhart, C.: The Global Airline Industry, John Wiley &Sons Ltd, UK, 2009. 4. Doganis, R.: The Airline Business, Routledge, London, 2005.. 5. Butler, G.F., Keller, M.R.: Handbook of Airline Operations, McGraw-Hill Companies, New York, 2000. 6.Steiner, S., Mihetec, T.: Planiranje u zračnom prometu, Autorizirana predavanja, Fakultet prometnih znanosti, 2009 7. Cook, A.: European Air Traffic Management, Asgate, 2008. 8.Sudarshan, H.V.: Seamless Sky, Ashgate, 2003. 9.ICAO, Doc 444: Air Traffic Management, Fourteenth Edition, 2001

	10.ICAO: Air Traffic Services, Anex 11, Thirteenth Edition, 2001 11. S. Janković: "Mehanika leta zrakoplova", Sveučilište u Zagrebu FSB, 2002. 12. David G. Hull , "Fundamentals of Airplane Flight Mechanics", Thirteenth Edition, Springer, 2001

Course code: 09-10-3TATES020102	**Course title: TEHNOLOGICAL ANLYSIS OF AIR TRAFFIC**		
Level: II (Second)	**Year: I (First)**	**Semester: II (Second)**	**Number of ECTS credits:6 (Six)**
Status: Elective course		**Total number of contact hours: 90** Lectures: 45 Exercises: 30 Lab exercises: 15	
Course participants:	**Academic staff and associates selected in the field to which the course belongs/course**		
Prerequisite for enrollment:	NO		
Course goal (goals):	Acquiring broader knowledge about the dynamics and growth trends of air traffic and forecasting methods, as well as targeted knowledge about market competition factors in the segments of airline, airport, and aeronautical activities		
Topics covered (Units of study): *(if necessary, the weekly implementation plan is established taking into account the specificities of organizational units)*	**1. Introduction - Air Transport Market.** **2. Growth Trends – Passenger Traffic, Route Competitiveness, Cargo Traffic, Business Aviation.** **3. Models for Forecasting Air Traffic.** 4. **Deregulation and Market Liberalization. Creating the EU Internal Market.** **5. Air Transport Market. Traditional Scheduled, Regional, Charter, Low-Cost, Cargo Carriers. General and Business Aviation.** **6. Performance of Airline Operations – Capacity, Transport Efficiency, and Financial Indicators.** **7. Performance of Airport Operators. Airport Charges and User Rights.** 8. **Aircraft Manufacturers and Providers of Maintenance and Repair Services. Global Aircraft Fleet.** **9. Performance of Air Traffic Service Providers.** **10. Environmental Protection and Sustainable Development. Alternative Fuels. Emission Trading Scheme (ETS).**		

	11. **Passenger Rights Legislation in Air Transport.** 12. **Commercial Cooperation of Airline Carriers – Airline Alliances and Code-Sharing Agreements.** 13. **Route Optimization and Fleet Management.** 14. **Tariffs in Air Transport. Yield Management. Revenue Management.** 15. **Air Transport Market of Bosnia and Herzegovina.**
Learning outcomes:	**Knowledge:** Theoretical and practical knowledge in the field of airline management. Fundamental models, principles of airline business operations, and air transport market behavior. **Skills:** Ability to apply theoretical and practical knowledge in analyzing phenomena in the air transport market. **Competencies:** Students, through lectures, exercises, laboratory work, and practical assignments, should acquire the appropriate competencies for comparative analysis of the air transport market, application of forecasting methods, and technological modeling of air transport systems.
Sustainable Development Goal (SDG):	**SDG 8 - Decent Work and Economic Growth** Analyzing phenomena in the air transport market contributes to economic growth by enhancing understanding of market dynamics and challenges. This helps optimize business strategies and supports sustainable growth in the aviation sector, potentially leading to the creation of decent jobs. **SDG 9 - Industry, Innovation, and Infrastructure** Understanding business models, principles of airline operations, and market behavior contributes to innovations in the aviation industry and improvement of infrastructure. This enables the development of sustainable business practices and technological solutions in the air transport sector. **SDG 12 - Responsible Consumption and Production** Acquiring competencies in market analysis, forecasting, and technological modeling helps develop sustainable and responsibly managed business practices in the air transport sector. Through a better understanding of market and technological trends, students can contribute to resource optimization and waste reduction, which is crucial for responsible production and consumption.
Teaching methods:	Oral presentation with the use of different systems and processes in the field of company operations, utilizing video and audio recordings, and independent presentation of specific problems in a particular research area. Initiating discussions and debates on practical issues, individual observations from various environments, and conducting independent research and analysis in the field of airline company operations.

Assessment methods with grading structure:	Assessment of Creativity in Classes and Exercises, Including the Preparation of Independent Projects, Evaluation of Partial Tests During the Course, and the Final Exam. The criteria for monitoring and assessing student work during the course are as follows: • **Homework/Seminar Paper/Practical Work:** 15 points (%), passed if over 50% is achieved. • **First Partial Exam/Test/Knowledge Check:** 35 points (%), passed if over 50% is achieved. • **Final Exam (Second Partial):** 50 points (%), passed if over 50% is achieved. • **Final Exam (Comprehensive):** 85 points (%), passed if over 50% is achieved. The total number of points (%) a student can earn based on the above criteria during the course is a maximum of 50 points (%), which combined with the Final Exam (Second Partial) totals 100 points (%). For students who did not pass the First Partial Exam, the Final Exam (Comprehensive) will cover the entire course material and is valued at 85 points (%), combined with the seminar/practical work to make up 100 points (%). The final grade after all forms of knowledge assessment is evaluated and graded according to the following system: a) 10 (A) – Outstanding performance with no errors or only minor errors, 95-100 points. b) 9 (B) – Above average with some errors, 85-94 points. c) 8 (C) – Average with noticeable errors, 75-84 points. d) 7 (D) – Generally good but with significant shortcomings, 65-74 points. e) 6 (E) – Meets minimum requirements, 55-64 points. f) 5 (F, FX) – Fails to meet minimum requirements, less than 55 points. The overall assessment of student obligations during the semester, including exam grades, is based on the total number of points (%) earned by fulfilling pre-exam requirements and passing partial and final exams.

	The total is a maximum of 100 points and is determined according to thE following scale: Student Obligations — Points (%) Attendance at Lectures and Exercises — - Homework/Seminar/Practical Work — 15 points (%) First Partial Exam/Test/Knowledge Check — 35 points (%) Final Exam (Second Partial) — 50 points (%) Final Exam (Comprehensive) — 85 points (%)
Literature:	6. Šabić, M.: Autorska predavanja, Fakultet za saobraćaj i komunikacije, 2016. 7. Analyses of the EU Air Transport Market, European Commission, Observatory of Air Transport Market. 8. Belobaba, P. P., Odoni, A., Barnhart, C.: The Global Airline Industry, John Wiley &Sons Ltd, UK, 2009. 9. Doganis, R.: The Airline Business, Routledge, London, 2005. Butler, G.F., Keller, M.R.: Handbook of Airline Operations, McGraw-Hill Companies, New York, 2000.

Course code: 09-10-4TATES020102	**Course title: AERONAUTICAL SERVICES**		
Level: II	**Year: I**	**Semester: II**	**Number of ECTS credits:** 6
Status: Elective course		**Total number of contact hours: 90** Optional breakdown of hours by type: Lectures:45 Tutorials:30 Seminars: Laboratory Tutorials:15	
Course participants:	**Academic staff and associates selected in the field to which the course belongs/course**		
Prerequisite for enrollment:	NO		
Course goal (goals):	Presentation of basic knowledge about air navigation services and the		

	methodology of providing air traffic services and acquiring broader knowledge about air traffic control and the services of air navigation service providers.
Topics covered (Units of study): *(if necessary, the weekly implementation plan is established taking into account the specificities of organizational units)*	1. Introductory lecture - introducing the students to the subject of the course, overview of required and recommended literature. 2. History and development of the air traffic control system at the global and regional level. 3. Communication, navigation and control services. Systems and technological processes of providing CNS services. 4. Search and rescue service. Search and rescue services as an example. 5. Aeronautical information services. European aeronautical information system (European aeronautical database). 6. Service of aeronautical meteorology. Organization of meteorological services and MET services. 7. Air traffic control service. Air traffic control functions (ATFCM and ASM). 8. Operational services of air traffic control: flight information, alerting, air traffic control. 9. Conditions and rules of flight. 10. Operational division of air traffic. Structure and classification of airspace. 11. Types and technological processes of aircraft separation. 12. General procedures, approvals and instructions of air traffic control. 13. Aircraft flight planning. Flight plan and operational messages related to aircraft flight planning. 14. Duties and tasks of airport and approach air traffic control
Learning outcomes:	**Knowledge:** Theoretical and practical knowledge in the field of aeronautical information. Basic regulations, rules, methods and procedures in the field of aeronautical information in all segments of air operations. **Skills:** Ability to apply theoretical and practical knowledge in the field

	of aeronautical information. **Competencies:** 1. Understand and interpret international air traffic control regulations. 2. Elaborate and analyze individual services in air transport. 3. Classify the division of airspace and elaborate the processes of aircraft flight planning. 4. Analyze operational services in air traffic. 5. Understand the elements of providing meteorological and search and rescue services. 6. Analyze aircraft separation procedures. 7. Elaborate and value the jobs and tasks of air traffic controllers
Sustainable Development Goal (SDG):	• SDG4 – Quality Education • SDG9 – Industry innovation and infrastructure
Teaching methods:	Oral presentation with various examples from the field of aeronautical information, with the use of video and audio recordings, and independent presentation of specific problems in the aeronautical information system. Initiating debates and discussions about problems from practice, individual observations from different environments, making independent research and analysis in the field of information in air traffic.
Assessment methods with grading structure:	Evaluation of creativity in classes and exercises with the creation of independent works, evaluation of the partial test during the course of the lecture, as well as the evaluation of the final exam. The criteria for monitoring the work and evaluating students during classes, according to the following method: • Homework/seminar work/practical work/ 15 points (%), passed if over 50%. • I Partial exam/test/knowledge check/35 points (%), passed if more than 50%. • Final exam (II Partial) 50 points (%), passed if over 50%. • Final exam (Integral) 85 points (%), passed if more than 50%. The total number of points (%) that a student can achieve according to the above-mentioned monitoring during classes is a maximum of 50 points (%), which with the Final (II partial) makes 100 points (%). For students who did not pass the 1st Partial exam, the Final exam (Integral)

	is organized from the entire material covered during classes and exercises, and is evaluated with 85 points (%), which with the seminar work/practical work makes 100 points (%). The final grade of the student, after all the foreseen forms of knowledge verification, is evaluated and graded by the grading system as follows: a) 10 (A) - exceptional success without mistakes or with minor mistakes, carries 95-100 points; b) 9 (B) - above average, with some errors, carries 85-94 points; c) 8 (C) - average, with noticeable errors, carries 75-84 points; d) 7 (D) - generally good, but with significant shortcomings, carries 65-74 points; e) 6 (E) - satisfies the minimum requirements, carries 55-64 points; f) 5 (F, FX) - does not satisfy the minimum requirements, less than 55 points. Ukupno vrednovanje svih obveza studenata u tijeku semestra, odnosno ocjena na ispitu zasnovana je na ukupnom broju bodova (%) koje je student stekao ispunjavanjem predispitnih obveza i polaganjem parcijalnog i završnog ispita, a prema kvaliteti stečenih znanja i vještina, i sadrži maksimalno 100 bodova, te se utvrđuje prema sljedećoj skali: <u>Student obligations Points (%)</u> Attendance at lectures and exercises... - Assignment/Seminar/Practice/.....15 points (%) I Partial exam/Test/Knowledge check/.....35 points (%) Final exam (II Partial) .....50 points (%) Final exam (Integral) .....85 points (%)
Literature:	**Mandatory:** 1. Mihetec, T.: Usluge u zračnom saobraćaju, Autorizirana predavanja/prezentacija, Fakultet za saobraćaj i komunikacije, 2016. 2. Cook, A.: European Air Traffic Management, Asgate, UK, London, 2008. **Supplementary:** 1. Sudarshan, H.V.: Seamless Sky, Ashgate, UK, London, 2003. 2. Internetski izvori: ICAO (Anex I-XVII), FSF, IATA, ATCA, ACI, ECAC, EASA, EUROCONTROL

Course code: 11TATOS020203	**Course title: AIRPORTS**		
Level: II (Second)	**Year: II (Second)**	**Semester: III (Third)**	**Number of ECTS credits:6 (Six)**
Status: Mandatory course		**Total number of contact hours: 90** Lectures: 45 Exercises: 30 Lab exercises: 15	
Course participants:	**Academic staff and associates selected in the field to which the course belongs/course**		
Prerequisite for enrollment:	NO		
Course goal (goals):	The course material covered should enable students to become familiar with the basic characteristics of air traffic as a branch of the transportation system that is directly connected with other modes of transport, primarily road and postal transport, and more recently, increasingly with railway transport in the area of cargo transportation. The primary goal of this course is the detailed study of aircraft parking areas as a complex technical-technological system and as the most important segment of the technical stratum in the air traffic system.		
Topics covered (Units of study): *(if necessary, the weekly implementation plan is established taking into account the specificities of organizational units)*	1. Definitions, Classification, and Elements of Airports 2. Basics of Meteorology for Research, Location, and Operation of Airports 3. Aircraft Parking Areas in the Air Traffic System: Configuration and Connections with the Environment 4. Obstacle Restrictions in the Airport Area 5. Airport Location and Influencing Factors 6. Protected Zones in the Airport Area and the Imaginary Surfaces System 7. Physical Characteristics of Maneuvering Areas 8. Configuration of Maneuvering Areas and Platforms 9. Marking of Runways and Taxiways, Parking Platforms, Obstacles, and Runway Access 10. Aircraft Arrival and Departure 11. Terminal Building 12. Cargo Terminal 13. Airport Technical Complex 14. Basic Functions, Tasks, and Organization of Air Traffic Control at the Airport 15. Master Plan for Aircraft Parking Areas		

Learning outcomes:	Through the teaching process involving lectures, exercises, and practical work, students are expected to acquire the necessary knowledge and experience for practical application in the areas of planning, designing, and operating infrastructure at airports. Additionally, the course provides students with the knowledge and skills required to create and monitor the processes of organizing and managing air traffic, particularly in the segment of arrivals and departures, and the execution of all traffic flows at airports.
Sustainable Development Goal (SDG):	SDG 8: Decent Work and Economic Growth Efficient management of air traffic contributes to economic growth and job creation, aligning with this goal. Improved organization and processes can also enhance working conditions and productivity in the sector. SDG 9: Industry, Innovation, and Infrastructure This goal focuses on building resilient infrastructure, upgrading industrial capacities, and promoting innovation. Planning and designing infrastructure in airports is crucial for developing modern and efficient infrastructure solutions. SDG 11: Sustainable Cities and Communities Sustainable management of infrastructure and its exploitation contributes to creating sustainable cities and communities. Airports, as key infrastructure components, must be designed to minimize environmental impact and improve accessibility. SDG 12: Responsible Consumption and Production Monitoring air traffic processes can help reduce waste and optimize resource use, contributing to responsible consumption and production. SDG 13: Climate Action Optimizing air traffic can help reduce CO2 emissions and other pollutants, aligning with the goal of combating climate change. Efficient systems for handling arrivals and departures can reduce energy needs and emissions.
Teaching methods:	The teaching is conducted through lectures, exercises, and practical classes, which include the preparation of project assignments. Lectures are delivered through oral presentations with the use of practical examples. Students will be required to prepare and present seminar papers and/or project assignments. Various methods are used in the teaching process, including oral presentations and discussions, demonstrations of examples, graphical and video presentations, and emphasizing group work using appropriate methodological approaches.
Assessment methods with grading structure:	The criteria for evaluating and grading students during the course are as follows: Attendance in lectures and exercises will be recorded;

	attendance is mandatory as a condition for taking the exam, with a maximum of 10% unexcused absences allowed. Regular attendance will not be awarded additional points. Signing the attendance sheet is not contingent upon class attendance. Homework/seminar papers/practical work will be graded from 0 to 15 points, and only students who complete more than 50% of the assigned tasks will be evaluated. During the course, there will be only one knowledge assessment—a partial exam in the 8th or 9th week of classes, worth 35 points, with only students who score more than 50% on this partial exam being graded. The final exam is worth a maximum of 50 points.
Literature:	1. Kiso Fahrudin, Kiso Fadila:"Aerodromi", Fakultet za saobraćaj i komunikacije, Sarajevo, 2000. 2. Pavlin, S:"Aerodromi I", Fakultet prometnih znanosti, Zagreb, 2002. 3. Prof. dr. sc. Pavlin, S.:"Aerodromi II"Sveučilište u Zagrebu, Fakultet Prometnih Znanosti, Studeni, 2011 4.Fejzić, E."Civilni aerodromi i aerodromski putnički terminali",Arhitektonski fakultet, Sarajevo, 2005. 5. Vojin Tošić, Bojana Mirković:" Vazduhoplovna pristaništa I", Univerzitet u Beogradu, Saobraćajni fakultet, 2011. 6. Vojin Tošić, Bojana Mirković:" Vazduhoplovna pristaništa II", Univerzitet u Beogradu, Saobraćajni fakultet, 2012. 7. Vojin Tošić, Bojana Mirković, Obrada Babić :" Vazduhoplovna pristaništ-Praktikum", Univerzitet u Beogradu, Saobraćajni fakultet, 2010. 8. Annex 14to the Convention on International Civil Aviation, Volume I, Aerodrome Design and Operations, International Civil Aviation Organization ICAO, Montreal, Canada, 199. 9.Annex 16-Zaštita okoliša, 1996. 10.KAZDA, A., CAVES, R.E.:" AIRPORT DESIGN AND OPERATION",Second Edition, Elsevier Ltd., Linacre House, Jordan Hill, Oxford OX2 8DP, U.K. 2007

Course code: 12TATOS020203	**Course title: ELEMENTS OF PROTECTION AND SECURITY SYSTEMIN AIR TRAFFIC**		
Level: II (Second)	**Year: II (Second)**	**Semester: III (Third)**	**Number of ECTS credits:6 (Six)**
Status: Mandatory course		**Total number of contact hours: 90** Lectures: 45 Exercises: 30 Lab exercises: 15	
Course participants:	**Academic staff and associates selected in the field to which the course belongs/course**		
Prerequisite for enrollment:	NO		
Course goal (goals):	**The course material should enable students to explore the most important factors that determine the safety and security of airports. The aim is also to study international standards and regulations, as well as technical, technological, and organizational solutions that ensure the necessary and adequate level of safety and security for aircraft parking areas and the entire air transport process.**		
Topics covered (Units of study): *(if necessary, the weekly implementation plan is established taking into account the specificities of organizational units)*	1. Location and Obstacle Restrictions in the Vicinity of Airports 2. Meteorological Conditions as a Factor in Air Traffic Safety 3. Maintenance and Winter Operation of Maneuvering Areas 4. Safety Aspects in the Aircraft Arrival and Departure Process 5. De-icing/Anti-icing of Aircraft 6. Measuring the Friction Coefficient on Pavement Surface Strength (PSS) 7. Safety Systems and Technological Solutions in the Process of Handling Passengers, Baggage, Mail, and Cargo 8. Rescue and Firefighting Services at Airports 9. Aircraft Accidents During Takeoff and Landing (Causes and Consequences) 10. Airport Communication and Information Systems for Air Traffic Safety 11. Noise at Airports and in the Surrounding Area 12. Environmental Pollution Around Airports from Exhaust Gases 13. Impact of Airports on Flora and Fauna 14. Safety Management in Air Traffic (SMS) 15. Implementation of SMS in Operations, Key Standards for Establishing SMS		
Learning outcomes:	**Through the teaching process involving lectures, exercises, and practical work, students are expected to acquire the necessary knowledge and experience for the practical application of measures and solutions that ensure the prescribed level of safety and security in air traffic. Additionally, the course provides students with the knowledge and skills required to align rules, guidelines, and legal regulations with those established by international organizations.**		

Sustainable Development Goal (SDG):	**SDG 16 - Peace, Justice, and Strong Institutions** Ensuring high standards of safety and security in air traffic contributes to strengthening justice and safety in society. Implementing measures that guarantee safety in aviation supports the goals of building strong institutions and justice. **SDG 17 - Partnerships for the Goals** Aligning local rules and regulations with international standards fosters international cooperation and partnerships, which is key to achieving global sustainable development goals. This goal promotes strengthening global partnerships and aligning with international norms.
Teaching methods:	The teaching is carried out through lectures, exercises, and practical classes, which include the preparation of project assignments. Lectures are conducted through oral presentations with the use of examples from practice. Discussions on safety and security issues in air traffic are initiated. Students will be required to prepare and present seminar papers and/or project assignments. Various methods are used in the teaching process, including oral presentations and discussions, demonstration of examples, graphical and video presentations, and group work using appropriate methodological approaches.
Assessment methods with grading structure:	The criteria for evaluating and grading students during the course are as follows: Attendance in lectures and exercises will be recorded, and attendance is mandatory as a condition for taking the exam, with a maximum of 10% unexcused absences allowed. Regular attendance will not be awarded additional points. Signing the attendance sheet is not contingent upon class attendance. Homework/seminar papers/practical work will be graded from 0 to 15 points, and only students who meet more than 50% of the assigned obligations will be evaluated. During the course, there will be only one knowledge assessment— a partial exam in the 7th or 8th week of classes, worth 35 points, with only students who score more than 50% on this partial exam being graded. The final exam is worth a maximum of 50 points.
Literature:	1. Kiso Fahrudin, Kiso Fadila:“Aerodromi“, Fakultet za saobraćaj i komunikacije, Sarajevo, 2000. 2. Pavlin, S:“Aerodromi I“, Fakultet prometnih znanosti, Zagreb, 2002. 3. Prof. dr. sc. Pavlin, S.:“Aerodromi II“Sveučilište u Zagrebu, Fakultet Prometnih Znanosti, Studeni, 2011 4.Fejzić, E.“Civilni aerodromi i aerodromski putnički

	terminali“,Arhitektonski fakultet, Sarajevo, 2005. 5. Vojin Tošić, Bojana Mirković:“ Vazduhoplovna pristaništa I“, Univerzitet u Beogradu, Saobraćajni fakultet, 2011. 6. Vojin Tošić, Bojana Mirković:“ Vazduhoplovna pristaništa II“, Univerzitet u Beogradu, Saobraćajni fakultet, 2012. 7. Vojin Tošić, Bojana Mirković, Obrada Babić :“ Vazduhoplovna pristaništ-Praktikum“, Univerzitet u Beogradu, Saobraćajni fakultet, 2010. 8. Annex 14to the Convention on International Civil Aviation, Volume I, Aerodrome Design and Operations, International Civil Aviation Organization ICAO, Montreal, Canada, 199. 9.Annex 16-Zaštita okoliša, 1996. 10.KAZDA, A., CAVES, R.E.:“ AIRPORT DESIGN AND OPERATION“,Second Edition, Elsevier Ltd., Linacre House, Jordan Hill, Oxford OX2 8DP, U.K. 2007

Course code: 13-14-15-1TATES020203	**Course title: EVALUATION AND DECISION-MAKING METHODS IN TRAFFIC ENGINEERING**		
Level: II (Second)	**Year: II (Second)**	**Semester: III (Third)**	**Number of ECTS credits: 6 (Six)**
Status: Elective course		**Total number of contact hours: 90** Lectures: 45 Exercises: 30 Seminar: 15	
Course participants:	**Academic staff and associates selected in the field to which the course belongs/course**		
Prerequisite for enrollment:	NO		
Course goal (goals):	The course content aims to familiarize students with the fundamentals of planning and designing traffic infrastructure and types of evaluation in the planning and design process. The course also studies the most significant and commonly applied evaluation methods in traffic planning and design. The course material includes investment, environmental, and		

	socio-economic evaluation methods and multi-criteria analysis methods with practical examples and guidelines for understanding the decision-making process in traffic engineering.
Topics covered (Units of study): *(if necessary, the weekly implementation plan is established taking into account the specificities of organizational units)*	– Traffic system as a factor of spatial organization and distribution – Methodological approach to traffic planning – Basics of traffic route planning – Basics of traffic route design – Theoretical assumptions of traffic infrastructure planning and design – Feasibility Study – CB analysis – Functional evaluation of project solutions – Functional evaluation of road sections – Financial and economic project analysis – Cost-benefit analysis in traffic projects – Multi-criteria evaluation and decision-making methods – Environmental impact assessment of infrastructure – Traffic infrastructure project management – Project management techniques – Preparation of projects financed by EU funds
Learning outcomes:	Through lectures, exercises, and practical work, students should acquire the necessary knowledge and experience for practical application in traffic infrastructure planning and design. The course also enables the acquisition of knowledge and skills required for evaluating planning and design solutions and making appropriate decisions based on that evaluation.
Sustainable Development Goal (SDG):	Each of the thematic units contributes to different aspects of sustainable development through improved infrastructure, effective project management, and application of evaluation and decision-making methods that can contribute to economic growth, environmental protection, and sustainable resource management. Specific SDGs connected to the course syllabus include: SDG 8: Decent Work and Economic Growth SDG 9: Industry, Innovation, and Infrastructure SDG 11: Sustainable Cities and Communities SDG 13: Climate Action SDG 17: Partnerships for the Goals The connection between thematic units and these SDGs is explained in

	more detail below: "SDG 8": Feasibility and cost-benefit analysis assist in selecting effective and innovative solutions in traffic infrastructure. (Subgoal "SDG 8.1": Sustain high economic growth rates with sustainability) "SDG 9": Methodological approach to traffic planning and understanding theoretical assumptions contribute to infrastructure improvement and innovation in transportation. Designing traffic routes and evaluating road sections are crucial for developing quality and functional infrastructure. Effective project management is key to successful implementation and sustainability of traffic infrastructure. (Subgoal "SDG 9.1": Sustain high economic growth rates with sustainability; Subgoal "SDG 9.a": Support research and innovation for building sustainable infrastructure) "SDG 11": The connection to this goal is based on the importance of sustainable urban planning and development management, including traffic infrastructure as a key segment. Additionally, functional evaluation aims to ensure that project solutions meet community needs and contribute to sustainability. (Subgoal "SDG 11.2": Ensure that road sections contribute to safe and efficient traffic) "SDG 13": Environmental evaluation contributes to understanding and minimizing the negative impacts of traffic infrastructure on the environment. (Subgoal "SDG 13.2": Integrate measures to mitigate climate change into national policies and strategies) "SDG 17": Preparing projects for EU funding involves collaboration and partnerships that contribute to achieving sustainable development goals. (Subgoal "SDG 17.16": Strengthen global partnerships and collaborations for sustainable development; Subgoal "SDG 17.3": Mobilize additional resources for development in developing countries through international financial institutions)
Teaching methods:	Teaching is conducted through lectures, exercises, and practical parts that include project assignments. Lectures are delivered through oral presentations with examples from practice. Discussions on issues in traffic infrastructure planning and design are encouraged. Students are

	required to complete and present seminar papers and/or project assignments. Various methods are used, including oral presentations and discussions, demonstrations, graphical and video presentations, and group work using appropriate methodological approaches.
Assessment methods with grading structure:	Evaluation criteria for student performance are as follows: Attendance in lectures and exercises will be recorded, with attendance being mandatory as a condition for taking the exam, with a maximum of 10% unexcused absences allowed. Regular attendance will not be additionally rewarded. The signature is not conditional on attendance. Homework/seminar paper/practical work: 0 to 15 points, with grading only for students who meet over 50% of the specified requirements. One knowledge check will be organized during the course - a partial exam in the 7th or 8th week with a value of 35 points, with grading only for students who pass over 50% of the partial exam. The final exam is worth a maximum of 50 points.
Literature:	Mandatory: Jovanović, N.: "Traffic Planning", Faculty of Transport Engineering, University of Belgrade, 1990. Kuzović, Lj.: "Evaluation in Management and Development and Exploitation of Road Networks", Faculty of Transport Engineering, University of Belgrade, 1994. Milosavljević, N.: "Elements for Technological Design of Road Traffic and Transport Facilities", University of Belgrade, 1998. Kuzović, Lj.: "Determining the Needs and Justification for Removing Transit Traffic from Urban Arteries by Building Bypasses", University of Belgrade, 1997. Highway Capacity Manual – HCM 1994 / HCM 2000 Kiso, F., Deljanin, A.: "Evaluation Methods in Traffic Infrastructure Planning and Design", Faculty of Transport and Communications, University of Sarajevo, 2017.

Course code:	**Course title:** MANAGEMENT AND ORGANIZATION OF LOGISTICS CENTERS IN TRAFFIC AND TRANSPORTATION
13-14-15-	

2TATES020203			
Level: II	**Year: II**	**Semester: III**	**Number of ECTS credits: 6**
Status: Elective course		**Total number of contact hours: 90** Optional breakdown of hours by type: Lectures: 45 Tutorials: 30 Seminars:15 Fieldwork: Laboratory Tutorials: Practice Concert activies …	
Course participants:	**Academic staff and associates selected in the field to which the course belongs/course**		
Prerequisite for enrollment:	NO		
Course goal (goals):	Acquiring basic knowledge about the management and organization of logistics centers, technological changes in logistics centers, and the requirements for the organization and development of modern logistics centers		
Topics covered (Units of study): *(if necessary, the weekly implementation plan is established taking into account the specificities of organizational units)*	1. Historical Foundations of the Development of the Science of Organization and Management Principles. 2. The Concept, Definition, Subject, and Method of the Science of Organization. 3. Modern Theories of Organization and Management. 4. Concepts and Types of Logistics Organization. 5. Logistics Providers. 6. Transport Management. 7. New Logistics Strategy for Supply, Distribution, and Customer Expectations. 8. Factors Influencing the Organizational Structure of Logistics Tasks. 9. Logistics Centers: Possible Forms of Logistics Centers. 10. Criteria for Selecting the Location of Logistics Centers. 11. Effects of the Development of Logistics Centers. 12. Logistics Centers as a Strategically Significant Factor for Improving Service Quality. 13. Contemporary Concept of Logistics Center Development. 14. Human Resource Management as a Function of Management. 15. Trends in the Development of Transport and Logistics Services in Bosnia and Herzegovina.		
Learning outcomes:	**Knowledge**: Through lectures, exercises, and seminar work,		

	students should acquire appropriate knowledge and experience in the field of management and organization of logistics centers and terminals. The subject of study should ensure a critical level of competencies and knowledge necessary for solving specific problems in the areas of management, organization, and planning of logistics centers. **Skills**: Upon completion of the course, students will be able to understand the processes of managing logistics centers, evaluate appropriate methods in the management process, and assess suitable methods in the organization of work in logistics distribution centers. **Competencies**: Application of acquired knowledge in specific models.
Sustainable Development Goal (SDG):	SDG 8 - Decent Work and Economic Growth Promote sustained, inclusive, and sustainable economic growth, full and productive employment, and decent work for all. SDG 9 - Industry, Innovation, and Infrastructure Build resilient infrastructure, promote inclusive and sustainable industrialization, and foster innovation. SDG 12- Responsible Consumption and Production Ensure sustainable consumption and production patterns.
Teaching methods:	Teaching is conducted through lectures and exercises. Lectures are delivered through oral presentations with examples. Discussions on management and organization issues in logistics systems are initiated. Students will be required to prepare and present seminar papers. Various methods are employed in the teaching process, including: oral presentations and discussions, demonstrations of examples, video presentations, and encouraging independent work through appropriate methodological approaches.
Assessment methods with grading structure:	Assessment includes creativity in lectures and exercises through independent work, partial tests during the course, and the final exam. The criteria for monitoring and evaluating student performance are as follows: • Homework/Seminar/Practical Work: 15 points (%), passed if at least 55% is achieved. • First Partial Exam/Test/Knowledge Check: 35 points (%), passed if at least 55% is achieved. • Final Exam (Second Partial): 50 points (%), passed if at least 55% is achieved. • Final Exam (Comprehensive): 85 points (%), passed if at least

	55% is achieved. The final exam is organized as written/oral. The student may take the material that was not covered and/or successfully completed during the semester. The required condition for a successful exam is achieving at least 55% of the total points on the partial and final exam parts. A sufficient condition is that the sum of points earned (through homework, attendance, partial, and final exams) is 55. Homework is organized through writing assignments and projects, with no option for resubmission. For students who did not successfully complete the partial exam, the final exam consists of the entire material covered during the course. The make-up exam is organized similarly to the final exam. Student performance after all forms of assessment is graded as follows: g) 10 (A) – Outstanding success with no or minor errors, 95-100 points; h) 9 (B) – Above average, with some errors, 85-94 points; i) 8 (C) – Average, with noticeable errors, 75-84 points; j) 7 (D) – Generally good, but with significant deficiencies, 65-74 points; k) 6 (E) – Meets minimal conditions, 55-64 points; l) 5 (F, FX) – Does not meet minimal conditions, less than 55 points. The overall evaluation of all student obligations during the semester, or the exam grade, is based on the total number of points (%) earned through fulfilling pre-exam obligations and taking partial and final exams, with a maximum of 100 points, determined by the following scale: • Attendance in lectures and exercises: - • Homework/Seminar/Practical Work: 15 points (%) • First Partial Exam/Test/Knowledge Check: 35 points (%) • Final Exam (Second Partial): 50 points (%) • Final Exam (Comprehensive): 85 points (%) **The exam is conducted both in writing and orally.** **Note**: A student must pass the first knowledge assessment,

	seminar paper, and final exam by achieving 50% or more of the maximum possible points. The grading scale may be adjusted according to the Rules of Study at the University of Sarajevo (Article 45). **Note**: Students are required to attend all forms of instruction for at least 80% of the total hours. In justified cases (such as illness), a student may be absent from classes but must provide a medical justification. The seminar paper and homework will only be graded if submitted by the defined deadlines. Late submissions will not be graded.
Literature:	**Mandatory**: 1. Bilješke i slajdovi s predavanja (moći će se preuzeti na WEB site-u Fakulteta). 2. Skripta predavanja, „Upravljanje i organizacija logističkih centara u saobraćaju i transportu“, Fakultet za saobraćaj i komunikacije, 2024. godine **Supplementary**: 1. ČEKIĆ, Š., BOŠNJAK, I.: Menadžment u transportu i komunikacijama, Univerzitet u Sarajevu - Sveučilište u Zagrebu, Sarajevo - Zagreb, 2000. 2. IVAKOVIĆ, Č.: TERMINALI, Fakultet prometnih znanosti, Zagreb, 2006. 3. AČIMOVIĆ, S.: Marketing logistika, Ekonomski fakultet, Beograd, 2004. 4. ZELENIKA, R.: Logistički sustavi, Ekonomski fakultet u Rijeci, 2005. 5. PERIŠIĆ, R.,A.: Sistem kvaliteta usluga logistika i informatika, Beograd, 2002. 6. BAHTJAREVIĆ-ŠIBER, F.: Managment ljudskih potencijala, Golden Marketing, Zagreb, 1999. 7. BOŽIĆ, V., RAKIĆ, S.: Poslovna logistika, Ekonomski fakultet, Beograd, 1997. 8. The Handbook of Logistics and Distribution Management: Understanding the Supply Chain Fifth Edition, 2006.

Course code: 13-14-15-3TATES020203	**Course title: RESEARCH AND SCIENTIFIC METHODOLOGY**

Level: II	**Year: II**	**Semester: III**	**Number of ECTS credits:** 6
Status: Elective Course		**Total number of contact hours: 90** Lectures: 45 hours Exercises: 30 hours Seminars and Project Tasks: 15 hours	
Course participants:		**Academic staff and associates selected in the field to which the course belongs/course**	
Prerequisite for enrollment:		NO	
Course goal (goals):		Through lectures, exercises, seminar work, and practical assignments, students should acquire the necessary basic and additional knowledge in the field of scientific and professional research methodology. The course "Methodology of Research and Scientific Work" aims to provide a comprehensive understanding of all principles, methods, objectives, and instruments of research and scientific work, as well as the process of defining and implementing the creation of scientific and professional papers.	
Topics covered (Units of study): *(if necessary, the weekly implementation plan is established taking into account the specificities of organizational units)*		1. Introduction to the Methodology of Research Work. The function of research work. 2. Science of Sciences. Definition of science. 3. Basic characteristics of science. 4. Functions of science – research work: Fundamental research. 5. Applied research. Developmental research. Individual and team research. 6. Basic research methods. 7. Classification and selection of methods. 8. Technology of research work, identifying the research problem, and its function. 9. Selection and analysis of the topic. 10. Compiling a working bibliography: manuals, encyclopedias, dictionaries, monographs. 11. How to define the subject and objective of research? 12. What is a research result, and how is it verified? 13. Writing and presenting research work reports. 14. Concept, introduction, problem statement, argumentation, and discussion of results. 15. Writing the choice of research method. 16. Writing master's theses.	
Learning outcomes:		**Knowledge:** Theoretical and practical knowledge in the field of	

	scientific and research activities. The course should ensure a level of competence and knowledge necessary to address everyday problems in this field. **Skills**: Ability to apply theoretical and practical knowledge in the field of scientific and research activities. **Competencies:** Ability to independently understand and utilize knowledge needed to solve specific problems in the field of scientific and research activities.
Sustainable Development Goal (SDG):	SDG4 – Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all; SDG5 – Achieve gender equality and empower all women and girls; SDG9 – Build resilient infrastructure, promote inclusive and sustainable industrialization, and foster innovation.
Teaching methods:	The course is delivered through lectures, exercises, laboratory exercises/fieldwork/practice. The following methods are employed: oral presentation, discussion, demonstration, graphic work, drawing, and group work. Lectures cover theoretical concepts and principles, including descriptive examples and the resolution of specific tasks. Additional examples are discussed and solved through exercises, laboratory work/fieldwork/practice, facilitating continuous work and preparation for independent problem-solving. In laboratory exercises/fieldwork/practice, skills needed for both individual and team tasks are developed to address assignments within the given field.
Assessment methods with grading structure:	Evaluation of Creativity in Class and Exercises, Including Independent Work, Partial Test Assessment During Classes, and Final Exam Assessment. The criteria for tracking student performance and grading during classes are as follows: • Homework/Seminar Paper/Practical Work: 15 points (%), passed if more than 50% is achieved. • First Partial Exam/Test/Knowledge Check: 35 points (%), passed if more than 50% is achieved. • Final Exam (Second Partial Exam): 50 points (%), passed if more than 50% is achieved.

	• Final Exam (Comprehensive): 85 points (%), passed if more than 50% is achieved. The total number of points (%) a student can achieve through class participation and assessments is a maximum of 50 points (%), which, combined with the Final Exam (Second Partial), totals 100 points (%). For students who did not pass the First Partial Exam, the Final Exam (Comprehensive) is organized for all covered material during classes and exercises and is valued at 85 points (%), combined with the seminar paper/practical work for a total of 100 points (%). The final student success, after all the foreseen forms of knowledge assessment, is evaluated and graded according to the following system: • 10 (A) - Outstanding performance with no or minor errors, worth 95-100 points. • 9 (B) - Above average, with some errors, worth 85-94 points. • 8 (C) - Average, with noticeable errors, worth 75-84 points. • 7 (D) - Generally good, but with significant shortcomings, worth 65-74 points. • 6 (E) - Meets minimum criteria, worth 55-64 points. • 5 (F, FX) - Does not meet minimum criteria, less than 55 points. Total Assessment of All Student Obligations During the Semester, or Exam Grade Based on the Total Number of Points (%): • Attendance at Lectures and Exercises: - • Homework/Seminar/Practical Work: 10 points (%) • Workshop: 5 points (%) • First Partial Exam/Test/Knowledge Check: 35 points (%) • Final Exam (Second Partial): 50 points (%) • Final Exam (Comprehensive): 85 points (%)
Literature:	Mandatory: 1. Š. Čekić: Osnovi metodologije i tehnologije izrade znanstvenog istručnog djela, Fakultet za saobraćaj i komunikacije, Sarajevo,1999 2. S. Dubić: Uvođenje u naučni rad, Zavod za izdavanje udžbenika,Sarajevo 1970. 3. M.Šamić: Kako nastaje naučno djelo, Svjetlost, Sarajevo,1980. 4. M.Vujović: Uvođenje u znanstveni rad, Informator, Zagreb, 1983 5. M. Filipović: Metodologija znanosti i znanstvenog rada,Svjetlost,Sarajevo 2004. 6. V. Silubrčić: Kako sastaviti, obajaviti i ocjeniti znanstveno djelo,Zagreb, 2003. 7. L. Kuba – Dž. Koking: Metodologija izrade naučnog teksta,

	CID;Podgorica,2004. 8. S. Kukić: Metodologija znanstveno istraživačkog rada,Ekonomski Fakultet, Mostar 2005.

Course code: 13-14-15-5TATES020203	**Course title: TRAFFIC POLICY**		
Level: II	**Year: II**	**Semester: III**	**Number of ECTS credits:** 6
Status: Elective course		**Total number of contact hours: 90** Optional breakdown of hours by type: Lectures: 45 Tutorials: 30 Seminars and project tasks: 15	
Course participants:	**Academic staff and associates selected in the field to which the course belongs/course**		
Prerequisite for enrollment:	NO		
Course goal (goals):	Students acquire the basic theoretical knowledge necessary for the study of transport policy: the national importance of the transport system and its integration into European traffic flows, the allocation of positive and negative effects of the integration of transport policy. Pyramidal structure and authority when defining and implementing traffic priorities at the national and international level.		
Topics covered (Units of study): *(if necessary, the weekly implementation plan is established taking into account the specificities of organizational units)*	- Approaches to the national transport policy: the concept of politics, types of policies, the function of politics as an approach to the national transport policy, - National transport policy components: Transport policy holders, transport policy objectives, transport policy instruments, relationship between transport policy objectives and instruments, - Principles of the national transport policy - Part I: the connection between transport and the economy, coordination of the operation of the transport system and social profitability. - Principles of national transport policy - Part II: Principles of a unified transport system, allocation of resources, ownership and equal work opportunities, choice of transport policy and feasibility of transport policy - Formulation of transport policy: Formulation, evaluation, efficiency of national transport policy. The concept and meaning of determinants of transport policy.		

	- Harmonization of transport policy – Part I: Objectives of common transport policy. General political guidelines of the common transport policy. - Harmonization of transport policy – Part II: Application and discussions on the future of transport within the framework of the common transport policy. - Trans-European transport network – Part I: Guidelines from 1996 and revision of the guidelines for the trans-European transport network from 2004. - Trans-European transport network – Part II: Revision of the 2013 guidelines: integrated network, two-layer structure and corridors of the trans-European transport network. - Trans-European transport network – Part III: Additional funding opportunities for trans-European network projects. Determination of general conditions for financing projects of trans-European networks. - Trans-European transport network - Part IV: Instrument and general objectives for connecting Europe with the trans-European network. Budget of the Instrument for Connecting Europe with the Trans-European Network - Sectoral policies of the EU - Part I: Objective and scope of application of Directive 97/67/EC of the European Parliament and of the Council. Universal postal services. - EU sectoral policies – Part II: Harmonization of bookable postal services. Conditions for providing non-reserved postal services and access to the network. - Sectoral policies of the EU – Part III: Quality of postal services. Harmonization of technical standards according to the interests of users. Board and National Regulatory Authority - Sectoral policies of the EU - Part IV: Market rules of postal traffic and European achievements in the field of postal traffic.
Learning outcomes:	**Knowledge:** The ability to create and apply traffic policy respecting the set objectives. **Skills:** Identification of traffic and transport priorities necessary for strategic planning and creation of traffic policy in the micro and macro environment. Define traffic policy goals and acceptable implementation models. Identifies priorities in the area of planning, construction, revitalization of traffic flows, assesses the need for integration and liberalization of internal traffic flows following European and international traffic policy, directives and guidelines as well as traffic flows, but also traffic flows and policies of neighboring countries. **Competencies:** Creation of internal efficient and effective transport system and integration into international and EU transport systems
Sustainable Development	Goals of sustainable development and impact on traffic policy:

Goal (SDG):	SDG 1 - A world without poverty SDG 2 - A world without hunger SDG 5 – Gender equality SDG 6 – Clean water and sanitation SDG 7 – Affordable energy from clean sources SDG 8 - Decent work and economic growth SDG 9 – Industry, innovation and infrastructure SDG 10 – Reducing inequality SDG 11 – Sustainable cities and communities SDG 12 - Sustainable consumption and production SDG 13 – Climate protection SDG 14 – Conservation of the aquatic world SDG 15 – Preservation of life on earth SDG 16 – Peace, justice and strong institutions SDG 17 – Partnership to the goal
Teaching methods:	The teaching is realized through lectures, exercises and the practical part of the teaching, which includes the creation of project tasks. Lectures are conducted through oral presentation with presentation and presentation of examples from practice. It initiates a discussion on the problems of planning, modeling and analysis of information systems. Students will be required to create and present seminar papers and/or project assignments. Different methods are used in teaching, including: oral presentations and discussions, demonstration of examples, methods of graphic and video presentations and strengthening of work in groups using appropriate methodological approaches.
Assessment methods with grading structure:	The criteria for evaluating the student's work and evaluation during classes is as follows: Activity (seminar paper / project assignment): from 0 to 15 points; 1st test / 1st knowledge test / 1st partial exam: from 0 to 35 points. The total number of points that a student can earn during classes is a maximum of 50 points. The final/remedial exam includes the material that the student did not pass on the partial exam, which means that it includes the second part of the material (II partial) which is evaluated with 50 points or consists of the complete material, i.e. I and

	II partial exam. The total evaluation of all the student's obligations during the semester, i.e. the grade on the exam, is based on the total number of points (%) that the student earned by fulfilling the pre-exam obligations, passing the partial and final exams. According to the quality of acquired knowledge and skills, a student can win a maximum of 100 points, and according to the following scale: Scoring structure: Points (%) Seminar / Project task:..... 15 points (%) 1st test / 1st knowledge test (1st partial exam):..... 35 points (%) Final or remedial exam (II partial exam):..... 50 points (%) The required condition for successfully completing the exam is a score of 55 points, where a minimum of 55% must be achieved in each part of the exam (activity, partial exam, final exam), i.e. in order to pass the exam, the student must meet the following conditions: - Activity (seminar paper / project assignment): 9 points - 1st test / 1st knowledge test / partial exam: 19 points - Final or remedial exam (II partial exam): 27 points Students who passed the partial exam take only the second part of the material (the part that is not included in the partial exam) on the final/remedial exam. Students who did not pass the partial exam take the complete material as part of the final/remedial exam, while the criteria for passing the exam remain identical. The final / make-up exam is organized as written and/or oral. The activity can be followed through the creation of homework, seminar papers, project tasks or taking quizzes. The final success of the student, after all the foreseen forms of knowledge verification, is evaluated and graded by the grading system as follows: a) 10 - exceptional success without errors or with minor errors, carries 95-100 points; b) 9 - above average, with some errors,

	carries 85-94 points; c) 8 - average, with noticeable errors, carries 75-84 points; d) 7 - generally good, but with significant shortcomings, carries 65-74 points; e) 6 - meets the minimum requirements, carries 55-64 points; f) 5 - does not meet the minimum requirements, less than 55 points. The above scale can be adjusted according to the Rules of studying at the University of Sarajevo (Article 45).
Literature:	Mandatory: 1. Juraj Padjen, Traffic policy of Croatia, Masmedia, Zagreb, 2003. 2. Piero Soave, "A brief guide to the European Union", European Parliament, October 2016. 3. Marc Thomas, "A Brief Guide to the European Union", European Parliament, September 2016. 4. Beata Tuszynska and Frederic Gouarderes, "A Brief Guide to the European Union", European Parliament, October 2016. Supplementary: 1. Directive 97/67/EC OF THE EUROPEAN PARLIAMENT AND COUNCIL OF 15.12.1997. year, "Official Gazette of the European Communities" no. 6/St. 9 of 21.01.1998. year. 2. Directive 2002/39/EC OF THE EUROPEAN PARLIAMENT AND COUNCIL OF 10.06.2002. year, "Official Gazette of the European Communities" no. 6/St. 1 of 05.07.2002. year. 3. Directive 2008/6/EC OF THE EUROPEAN PARLIAMENT AND COUNCIL dated February 20, 2008. on the amendment and Directive 97/67/EC regarding the complete achievement of the internal market of postal services in the Community, "Official Gazette of the European Communities" no. 06/St. 9 of 27.02.2008. year. 4. Directive 2008-68-EZ OF THE EUROPEAN PARLIAMENT AND COUNCIL dated September 24, 2008. "Official Gazette EU 7/Vol. 7" Land transport of controlled substances. 5. Directive 2010/40EU OF THE EUROPEAN PARLIAMENT AND COUNCIL dated 07.07.2010. "Official Gazette of the EU 7/Vol.8" Framework for the introduction of intelligent transport systems in road transport and for connections with other types of transport. 6. DIRECTIVE 2004/54/EC OF THE EUROPEAN PARLIAMENT AND COUNCIL 7 of April 29, 2004 on minimum safety requirements for tunnels in the trans-European road network 7. "DIRECTIVE 2008/96/EC OF THE EUROPEAN PARLIAMENT AND COUNCIL of November 19, 2008 on road infrastructure safety management

	8. DIRECTIVE 2009/33/EC OF THE EUROPEAN PARLIAMENT AND COUNCIL of April 23, 2009 on the promotion of clean and energy-efficient vehicles in road transport 9. DIRECTIVE 1999/62/EC OF THE EUROPEAN PARLIAMENT AND COUNCIL of June 17, 1999 on charges for the use of certain infrastructures for heavy goods vehicles 10. DIRECTIVE 2004/52/EC OF THE EUROPEAN PARLIAMENT AND COUNCIL of April 29, 2004 on the interoperability of electronic toll collection systems in the Community 11. DIRECTIVE (EU) 2019/520 OF THE EUROPEAN PARLIAMENT AND COUNCIL of March 19, 2019 on the interoperability of electronic toll collection systems and facilitating the cross-border exchange of information on non-payment of tolls in the Union 12. REGULATION (EC) no. 1072/2009 OF THE EUROPEAN PARLIAMENT AND COUNCIL of October 21, 2009 on common rules for access to the international road freight transport market 13. REGULATION (EC) no. 561/2006 OF THE EUROPEAN PARLIAMENT AND COUNCIL of March 15, 2006 on the harmonization of certain social legislation related to road transport and on the amendment of Council Regulation (EEC) no. 3821/85 and (EC) no. 2135/98 and repealing Council Regulation (EEC) no. 3820/85 14. DIRECTIVE 2002/39/EC OF THE EUROPEAN PARLIAMENT AND COUNCIL of June 10, 2002 amending Directive 97/67/EC regarding the further opening of the postal services market in the Community 15. DIRECTIVE 2008/6/EC OF THE EUROPEAN PARLIAMENT AND COUNCIL of 20 February 2008 amending Directive 97/67/EC with regard to the full achievement of the internal market for postal services in the Community. 16. REGULATION (EU) no. 952/2013 OF THE EUROPEAN PARLIAMENT AND COUNCIL of October 9, 2013 on the Customs Code of the Union. 17. REGULATION (EU) 2018/644 OF THE EUROPEAN PARLIAMENT AND COUNCIL of April 18, 2018 on cross-border package delivery services 18. DIRECTIVE (EU) 2019/789 OF THE EUROPEAN PARLIAMENT AND COUNCIL of April 17, 2019 on establishing rules on the exercise of copyright and related rights that apply to certain internet transmissions by organizations for broadcasting and rebroadcasting of television and radio programs and on amending the Council Directive 93/83/EEC 19. REGULATION (EU) 2015/2120 OF THE EUROPEAN PARLIAMENT AND COUNCIL of November 25, 2015 on

	establishing measures related to open Internet access and amending Directive 2002/22/EC on universal service and user rights in connection with electronic communications networks and services and Regulation (EU) no. 531/2012 on roaming in public mobile communication networks in the Union. 20. REGULATION (EU) 2018/1971 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 11 December 2018 on the establishment of the Body of European Regulators for Electronic Communications (BEREC) and the BEREC Support Agency (BEREC Office), amending Regulation (EU) 2015 /2120 and repealing Regulation (EC) no. 1211/2009 21. REGULATION (EU) 2019/1150 OF THE EUROPEAN PARLIAMENT AND COUNCIL of June 20, 2019 on promoting fairness and transparency for business users of online mediation services 22. REGULATION (EC) no. 549/2004 OF THE EUROPEAN PARLIAMENT AND COUNCIL of March 10, 2004 on establishing the framework for the creation of a single European sky 23. REGULATION (EC) no. 550/2004 OF THE EUROPEAN PARLIAMENT AND COUNCIL of March 10, 2004 on the provision of air navigation services in the single European sky 24. REGULATION (EC) no. 552/2004 OF THE EUROPEAN PARLIAMENT AND COUNCIL of 10 March 2004 on the interoperability of the European air traffic management network 25. REGULATION (EU) 2019/712 OF THE EUROPEAN PARLIAMENT AND COUNCIL of April 17, 2019 on the protection of market competition in the air 26. DIRECTIVE 2012/34/EU OF THE EUROPEAN PARLIAMENT AND COUNCIL of 21 November 2012 on the establishment of a single European railway proctor 27. DIRECTIVE (EU) 2016/797 OF THE EUROPEAN PARLIAMENT AND COUNCIL of 11 May 2016 on the interoperability of the railway system in the European Union 28. DIRECTIVE (EU) 2016/798 OF THE EUROPEAN PARLIAMENT AND COUNCIL of May 11, 2016 on railway safety, 29. REGULATION (EU) 2016/796 OF THE EUROPEAN PARLIAMENT AND COUNCIL of May 11, 2016 on the European Union Agency for Railways and repealing Regulation (EC) no. 881/2004 30. REGULATION (EC) no. 1371/2007 OF THE EUROPEAN PARLIAMENT AND COUNCIL31 of October 23, 2007 on the rights and obligations of passengers in rail traffic 31. Notes and slides from lectures (can be downloaded from the official website of the Faculty of Traffic and Communications and distributed electronically to each individual student)

Course code: 13-14-15- 5TATES020203	**Course title: GEOGRAPHIC INFORMATION SYSTEMS**		
Level: II	**Year: I**	**Semester: I**	**Number of ECTS credits: 6**
Status: Mandatory course		**Total number of contact hours: 90** Lectures: 45; Practical Exercises: 30; Seminars and Project Tasks: 15	
Course participants:	**Academic staff and associates selected in the field to which the course belongs/course**		
Prerequisite for enrollment:	NO		
Course goal (goals):	**Familiarizing students with the fundamental concepts of GIS systems, their operational methods, planning, implementation, and potential applications.**		
Topics covered (Units of study):	1. The concept of Geographic Information Systems (GIS) 2. Components of GIS 3. The process of collecting and manipulating GIS data 4. Structure and models of spatial data 5. Database management 6. Coordinate systems, projections, georeferencing 7. Geographic data bases 8. Standardization in GIS 9. Output data and cartography 10. Techniques for graphical representation 11. Principles of layered representation of spatial data 12. Areas of application and basic GIS functions 13. Web and mobile GIS 14. Application of GIS in telecommunications infrastructure planning 15. Application of GIS in transportation infrastructure planning		
Learning outcomes:	**Knowledge:** Students will become familiar with the fundamental concepts of GIS development and standardization, the principles of web and mobile GIS systems, and their specific applications with a particular focus on transportation and communications. They will learn about the process of developing GIS systems, from the initial idea and need for GIS, through data collection and formation of GIS databases, to georeferencing, graphical representation, and the use of GIS systems. **Skills:** Students will acquire proficiency in specific software tools needed for designing and developing GIS systems.		

	Competencies: After passing the exam, students will be capable of planning, designing, and developing GIS systems, and selecting appropriate technologies for developing specific solutions.
Sustainable Development Goal (SDG):	**SDG 9 – Industry, Innovation, and Infrastructure** **SDG 11 – Sustainable Cities and Communities**
Teaching methods:	The course is delivered through lectures, practical exercises, and hands-on laboratory work. Lectures are conducted through oral presentations with slides and practical examples. Exercises and laboratory work involve the use of software tools to address specific problems and practical tasks. Students will be required to prepare and present seminar papers and/or project tasks. Various methods are employed during the course, including oral presentations, discussions, demonstrations, individual and group work, etc.
Assessment methods with grading structure:	**Grading and Evaluation:** The total number of points a student can earn during the course is 50, with another 50 points available in the final exam. The points for the course are distributed among assignments and activities and/or seminar papers and/or project tasks, and the partial exam. The final/re-sit exam covers material not included in the partial exam, meaning it includes the second part of the material worth 50 points for students who have passed the partial exam. Students who have not passed the material covered in the partial exam will take the material from both the partial and final exams. The final/re-sit exam will be organized as a written and/or oral exam, including a practical component. The overall evaluation of all student obligations during the semester, including the exam grade, is based on the total number of points earned from fulfilling pre-exam obligations, the partial exam, and the final exam. Based on the quality of acquired knowledge and skills, a student can earn a maximum of 100 points, according to the following scale: **Grading Structure:** • Seminar / Class Participation / Project Task: 20 points (20%) • First Test / First Knowledge Check (Partial Exam): 30 points (30%)

	• Final or Re-sit Exam (Second Partial Exam): 50 points (50%) **Passing Criteria:** To pass, a student must earn at least 55 points in total and achieve at least 55% of the points on the knowledge checks (partial exam and final/re-sit exam). **Final Grade System:** After all forms of knowledge assessment, the student's performance is evaluated and graded as follows: a) 10 - Excellent performance with no errors or minimal errors (95-100 points) b) 9 - Above average, with a few errors (85-94 points) c) 8 - Average, with noticeable errors (75-84 points) d) 7 - Generally good, but with significant deficiencies (65-74 points) e) 6 - Meets minimum requirements (55-64 points) f) 5 - Does not meet minimum requirements (less than 55 points)
Literature:	Mandatory: – Alem Čolaković, "Geographic Information Systems (LECTURE NOTES)," Faculty of Traffic and Communications, Sarajevo, 2023. Supplementary: – Kang Tsung Chang, „*Introduction to Geographic Information Systems*“, McGraw-Hill Education, 2019. – Paul Bolstad, „*GIS Fundamentals A First Text on Geographic Information Systems*,“ Eider Press, 2016. – Ian Heywood, Sarah Cornelius, „*An introduction to geographical information systems*“, Pearson Education Limited, 2006. – Kurt Menke, Richard Smith Jr., Luigi Pirelli, John Van Hoesen, „*Mastering QGIS*“,“ Packt Publishing Ltd., 2016. – Gábor Farkas, „Practical GIS,“ Packt Publishing Ltd., 2017. – Anita Graser, „*Learning QGIS*,“ Packt Publishing Ltd., 2016. – Ralph M. Stair, George W. Reynolds, „*Fundamentals of Information Systems*,“ Cengage Learning, 2016. – Alan Dennis, Barbara Haley Wixom, Roberta M. Roth, „*Systems analysis and design*,“ Wiley, 2015. – Patricia Wallace, „*Introduction to Information Systems*,“ Pearson Education, 2015. – Arthur M. Langer, „*Analysis and Design of Information Systems, Springer-Verlag*,“ 2008. – John Wang, „*Innovations in Supply Chain Management for Information Systems*,“ Business Science Reference, 2010.

	– Christos Kalloniatis: "*Modern Information Systems*," InTech Croatia, 2012.