

Semester 1		
Undergraduate	e professional study in compu	ting obligatory courses
P: Alemka Knapp P:prof.vis.šk. Ivica Levanat A: Alemka Knapp A: Diana Šaponja-Milutinović dipl.ing.fizike, pred.	Physics	ECTS:7.0
A: Marko Milanović	Kinesiology Education I	ECTS:1.0
P: Tihana Strmečki A: Tihana Strmečki	Mathematics I	ECTS:7.0
P: Danijela Pongrac , prof. L: Danijela Pongrac , prof. L:prof. Marta Alić	Computer Applications	ECTS:5.0
P: Ivan Cesar mag. ing. P: Mia Čarapina dipl. ing., pred. L:dr.sc.rač. Ivica Dodig , prof.v.š. A: Mia Čarapina dipl. ing., pred. L: Mia Čarapina dipl. ing., pred. A: Ivan Cesar mag. ing. L: Ivan Cesar mag. ing.	Programming	ECTS:7.0
Undergradua	te professional study in comp	uting elective courses
P:dr.sc. Biljana Stojaković ,prof.v.š. u trajnom zvanju A:dr.sc. Ivana Špiranec prof. visoke škole A: Zoran Vulelija	English for Computing	ECTS:3.0
P: Doc. dr. sc. Lidija Tepeš Golubić v. pred. A: Doc. dr. sc. Lidija Tepeš Golubić v. pred.	German for computing	ECTS:3.0



Semester 2			
Undergraduat	e professional study in computing ob	ligatory courses	
A: Marko Milanović	Kinesiology Education II	ECTS:1.0	
P: Tihana Strmečki A: Tihana Strmečki	Mathematics II	ECTS:7.0	
P:Prof. dr. sc. Miroslav Slamić profesor visoke škole L:Prof. dr. sc. Miroslav Slamić profesor visoke škole L: Željko Kovačević , struč.spec.ing.techn.inf. L: Ivan Cesar mag. ing. L:Dr. sc. Aleksandar Stojanović pred. L: Martina Petrovečki struč.spec.ing.techn.inf.	Object Oriented Programming	ECTS:7.0	
P: Željko Stojanović A: Eugen Poljičak mag.ing.eit L: Eugen Poljičak mag.ing.eit	Electrical Engineering and Electronics Basics	ECTS:7.0	
P: Sanja Kraljević , dipl.ing., v. pred. L:dr. sc. Roman Domović , prof. L: Petar Osterman L: Sanja Kraljević , dipl.ing., v. pred.	Introduction to WEB Technologies	ECTS:5.0	
Undergradua	te professional study in computing e	lective courses	
P:dr.sc. Biljana Stojaković ,prof.v.š. u trajnom zvanju A: Zoran Vulelija	Business English for Computing	ECTS:3.0	
P: Doc. dr. sc. Lidija Tepeš Golubić v. pred. A: Doc. dr. sc. Lidija Tepeš Golubić v. pred.	Business German for computing	ECTS:3.0	



Semester 3		
S	oftware engineering obligatory cours	es
P:Prof. dr. sc. Miroslav Slamić profesor visoke škole A:Prof. dr. sc. Miroslav Slamić profesor visoke škole L: Željko Kovačević , struč.spec.ing.techn.inf. L:Dr. sc. Aleksandar Stojanović pred. L: Danko Ivošević pred.	Algorithms and Data Structures	ECTS:7.0
P:dr.sc.rač. lvica Dodig , prof.v.š. P:dr.sc.rač. Davor Cafuta , prof.v.šk. A: Jelena Kapelac L: Jelena Kapelac	Computer Architecture	ECTS:7.0
A: Marko Milanović	Kinesiology Education III	ECTS:1.0
P:dr.sc.rač. Davor Cafuta , prof.v.šk. P:dr.sc.rač. Ivica Dodig , prof.v.š. L:dr.sc.rač. Davor Cafuta , prof.v.šk. L:dr.sc.rač. Ivica Dodig , prof.v.š.	Operating Systems	ECTS:6.0
P:v.pred. Aleksander Radovan , dipl. ing. A:v.pred. Aleksander Radovan , dipl. ing. L: Davor Lozić pred. L: Tin Kramberger struč. spec. ing. techn. inf., pred.	Java Programming	ECTS:5.0
P:dr.sc. Igor Urbiha prof.vis.šk. A:dr.sc. Igor Urbiha prof.vis.šk.	Probability and Statistics	ECTS:6.0
Computer sy	stems and network engineering oblig	atory courses
P:Prof. dr. sc. Miroslav Slamić profesor visoke škole A:Prof. dr. sc. Miroslav Slamić profesor visoke škole L: Željko Kovačević , struč.spec.ing.techn.inf. L:Dr. sc. Aleksandar Stojanović pred. L: Danko Ivošević pred.	Algorithms and Data Structures	ECTS:7.0
P:dr.sc.rač. Ivica Dodig , prof.v.š. P:dr.sc.rač. Davor Cafuta , prof.v.šk. A: Jelena Kapelac L: Jelena Kapelac	Computer Architecture	ECTS:7.0
A: Marko Milanović	Kinesiology Education III	ECTS:1.0
P:dr.sc.rač. Davor Cafuta , prof.v.šk. P:dr.sc.rač. Ivica Dodig , prof.v.š. L:dr.sc.rač. Davor Cafuta , prof.v.šk. L:dr.sc.rač. Ivica Dodig , prof.v.š.	Operating Systems	ECTS:6.0
P:v.pred. Aleksander Radovan , dipl. ing. A:v.pred. Aleksander Radovan , dipl. ing. L: Davor Lozić pred. L: Tin Kramberger struč. spec. ing. techn. inf., pred.	Java Programming	ECTS:5.0
P:dr.sc. Igor Urbiha prof.vis.šk. A:dr.sc. Igor Urbiha prof.vis.šk.	Probability and Statistics	ECTS:6.0



Semester 4					
S	oftware engineering obligatory course	es			
P: Tin Kramberger struč. spec. ing. techn. inf., pred. L: Renata Kramberger A: Tin Kramberger struč. spec. ing. techn. inf., pred. L: Tin Kramberger struč. spec. ing. techn. inf., pred. L: Brigitta Cafuta	Databases	ECTS:5.0			
A: Marko Milanović	Kinesiology Education IV	ECTS:1.0			
P: Nikolina Kasunić struč.spec.ing.techn.inf. P: Dunja Bjelobrk Knežević dipl.ing L: Dunja Bjelobrk Knežević dipl.ing L: Nikolina Kasunić struč.spec.ing.techn.inf.	Computer Networks	ECTS:6.0			
P:dr.sc.rač. Davor Cafuta , prof.v.šk. P: Tin Kramberger struč. spec. ing. techn. inf., pred. P:dr.sc.rač. Ivica Dodig , prof.v.š. P: Ivan Cesar mag. ing. P: Ognjen Mitrović struč. spec. ing. techn. inf., pred. L:dr.sc.rač. Davor Cafuta , prof.v.šk. L:dr.sc.rač. Ivica Dodig , prof.v.š. L: Tin Kramberger struč. spec. ing. techn. inf., pred. L: Ivan Cesar mag. ing.	Computing system security	ECTS:5.0			
P:dr.sc.rač. Ivica Dodig , prof.v.š. P:dr.sc.rač. Davor Cafuta , prof.v.šk. L:dr.sc.rač. Davor Cafuta , prof.v.šk.	Introduction to Unix Systems	ECTS:4.0			
	Software engineering elective courses	5			
P:Pred. Ida Popčević prof. L:Pred. Ida Popčević prof.	Communication Skills	ECTS:4.0			
P:dr.sc.rač. Davor Cafuta , prof.v.šk. P:dr.sc.rač. Ivica Dodig , prof.v.š. L:dr.sc.rač. Davor Cafuta , prof.v.šk. L:dr.sc.rač. Ivica Dodig , prof.v.š.	Open Development Platforms for Embedded Systems	ECTS:5.0			
P:dr.sc. Alen Šimec v. predavač L:dr.sc. Alen Šimec v. predavač L: Petar Osterman	Web application development	ECTS:5.0			
P:Dr. sc. Marko Horvat v. pred. L:Dr. sc. Marko Horvat v. pred. L: Tamara Ivelja mag. ing. geod. et. geoinf. L: Domagoj Tuličić	Introduction to Artificial Intelligence	ECTS:4.0			
Computer systems and network engineering obligatory courses					
P: Tin Kramberger struč. spec. ing. techn. inf., pred. L: Renata Kramberger A: Tin Kramberger struč. spec. ing. techn. inf., pred. L: Tin Kramberger struč. spec. ing. techn. inf., pred. L: Brigitta Cafuta	Databases	ECTS:5.0			



A: Marko Milanović	Kinesiology Education IV	ECTS:1.0
P: Nikolina Kasunić struč.spec.ing.techn.inf. P: Dunja Bjelobrk Knežević dipl.ing L: Dunja Bjelobrk Knežević dipl.ing L: Nikolina Kasunić struč.spec.ing.techn.inf.	Computer Networks	ECTS:6.0
P:dr.sc.rač. Davor Cafuta , prof.v.šk. P: Tin Kramberger struč. spec. ing. techn. inf., pred. P:dr.sc.rač. Ivica Dodig , prof.v.š. P: Ivan Cesar mag. ing. P: Ognjen Mitrović struč. spec. ing. techn. inf., pred. L:dr.sc.rač. Davor Cafuta , prof.v.šk. L:dr.sc.rač. Ivica Dodig , prof.v.š. L: Tin Kramberger struč. spec. ing. techn. inf., pred. L: Ivan Cesar mag. ing.	Computing system security	ECTS:5.0
P:dr.sc.rač. Ivica Dodig , prof.v.š. P:dr.sc.rač. Davor Cafuta , prof.v.šk. L:dr.sc.rač. Davor Cafuta , prof.v.šk.	Introduction to Unix Systems	ECTS:4.0
Computer s	ystems and network engineering elect	tive courses
P:Pred. Ida Popčević prof. L:Pred. Ida Popčević prof.	Communication Skills	ECTS:4.0
P:dr.sc.rač. Davor Cafuta , prof.v.šk. P:dr.sc.rač. Ivica Dodig , prof.v.š. L:dr.sc.rač. Davor Cafuta , prof.v.šk. L:dr.sc.rač. Ivica Dodig , prof.v.š.	Open Development Platforms for Embedded Systems	ECTS:5.0
P:dr.sc. Alen Šimec v. predavač L:dr.sc. Alen Šimec v. predavač L: Petar Osterman	Web application development	ECTS:5.0
P:Dr. sc. Marko Horvat v. pred. L:Dr. sc. Marko Horvat v. pred. L: Tamara Ivelja mag. ing. geod. et. geoinf. L: Domagoj Tuličić	Introduction to Artificial Intelligence	ECTS:4.0



Semester 5	oftware engineering obligatory course	26
J. Želika Chejenović		
P:dr.sc. Mladen Mauher prof.v.šk. P:dr.sc. Biljana Stojaković ,prof.v.š. u trajnom zvanju		EC13.0.0
P:v.pred. Aleksander Radovan , dipl. ing. P: Danijela Pongrac , prof.		
P:Pred. Ida Popčević prof. P: Željko Kovačević , struč.spec.ing.techn.inf.		
P: Mario Janković mag. ing. graph. techn. P: Ognjen Mitrović struč. spec. ing. techn. inf., pred.		
P: Ivan Cesar mag. ıng. P:Dr. sc. Aleksandar Stojanović pred. P: Goran Belamarić viši predavač P.dr. or. Žaliko Čiranović prof.u.č.		
P:dr.sc.rač. Davor Cafuta, prof.v.šk. P:dr.sc.rač. Ivica Dodig, prof.v.š.		
P: Dunja Bjelobrk Knežević dipl.ing P: Mia Čarapina dipl. ing., pred.		
P: Sanja Kraljević, dipl.ing., v. pred. P:Dr. sc. Marko Horvat v. pred. Pizy, prof. dr. sc. Petar landrić prof. v. čk.		
P: Tin Kramberger struč. spec. ing. techn. inf., pred.		
P: Nikola Majstorović dipl.ing. P:mr.sc. Goran Malčić v.pred.		
P: Bojan Nožica dipl. ing, v.pred. P:Prof. dr. sc. Miroslav Slamić profesor Visoke škole		
P:dr.sc. Alen Šimec v. predavač P:dr.sc. Igor Urbiha prof.vis.šk. P: Ognjen Staničić dipl. ing.		
	Software engineering elective courses	5
P: Dunja Bjelobrk Knežević dipl.ing L: Dunja Bjelobrk Knežević dipl.ing L: Nikolina Kasunić struč.spec.ing.techn.inf.	Computer Networks Administration	ECTS:5.0
P:dr.sc.rač. Davor Cafuta , prof.v.šk. P:dr.sc.rač. Ivica Dodig , prof.v.š. L:dr.sc.rač. Davor Cafuta , prof.v.šk. L:dr.sc.rač. Ivica Dodig , prof.v.š.	UNIX Systems Administration	ECTS:5.0
L: Andrej Vitez	Notwork Sonvicos	
r: Ognjeh Mitrović struč. speć. ing. techn. inf., pred. P:dr.sc. Željko Širanović prof.v.š. L:dr.sc. Željko Širanović prof.v.š. L: Vedran Tadić struč.spec.ing.techn.inf. L: Ognjen Mitrović struč. spec. ing. techn. inf., pred.	Network Services	EC15:5.0
P: Sanja Kraljević , dipl.ing., v. pred. A: Sanja Kraljević , dipl.ing., v. pred. L: Jakob Gračanin L: Sanja Kraljević , dipl.ing., v. pred.	Advanced Databases	ECTS:5.0
P: Ognjen Staničić dipl. ing. L: Ognjen Staničić dipl. ing.	Advanced JavaScript programming	ECTS:5.0

P:Prof. dr. sc. Miroslav Slamić profesor visoke škole P:Dr. sc. Aleksandar Stojanović pred. L:Dr. sc. Aleksandar Stojanović pred.	Advanced Programming in Python	ECTS:5.0
P: Dunja Bjelobrk Knežević dipl.ing L: Dunja Bjelobrk Knežević dipl.ing	Soft Computing Methods	ECTS:6.0
P: Mario Janković mag. ing. graph. techn. P:dr.sc. Maja Turčić pred. L:dr.sc. Maja Turčić pred. L: Mario Janković mag. ing. graph. techn.	Web Design	ECTS:6.0
P:mr.sc. Goran Malčić v.pred. L: lvica Vlašić	Automation and Computer Process Control	ECTS:5.0
P: Tin Kramberger struč. spec. ing. techn. inf., pred. L: Renata Kramberger	Computer Games Development	ECTS:5.0
Computer sy	stems and network engineering oblig	atory courses
	Computer Networks Administration	
P: Dunja Bjelobrk Knežević dipl.ing L: Dunja Bjelobrk Knežević dipl.ing L: Nikolina Kasunić struč.spec.ing.techn.inf.	Computer Networks Administration	EC15:5.0
P:dr.sc.rač. Davor Cafuta , prof.v.šk. P:dr.sc.rač. lvica Dodig , prof.v.š. L:dr.sc.rač. Davor Cafuta , prof.v.šk. L:dr.sc.rač. lvica Dodig , prof.v.š. L: Andrej Vitez	UNIX Systems Administration	ECTS:5.0
 P: Željko Stojanović P:dr.sc. Mladen Mauher prof.v.šk. P:dr.sc. Biljana Stojaković ,prof.v.š. u trajnom zvanju P:v.pred. Aleksander Radovan , dipl. ing. P: Danijela Pongrac , prof. P:Pred. Ida Popčević prof. P: Željko Kovačević , struč.spec.ing.techn.inf. P: Mario Janković mag. ing. graph. techn. P: Ognjen Mitrović struč. spec. ing. techn. inf., pred. P: Ivan Cesar mag. ing. P:Dr. sc. Aleksandar Stojanović pred. P: Goran Belamarić viši predavač P:dr.sc. Željko Širanović prof.v.š. P:dr.sc.rač. Davor Cafuta , prof.v.šk. P:dr.sc.rač. Ivica Dodig , prof.v.š. P: Vesna Alić-Kostešić dipl.ing.stroj. P: Dunja Bjelobrk Knežević dipl.ing P: Mia Čarapina dipl. ing., pred. P:dr. sc. Marko Horvat v. pred. P:izv. prof. dr. sc. Petar Jandrić prof. v. šk. P: Tin Kramberger struč. spec. ing. techn. inf., pred. P:mr.sc. Goran Malčić v.pred. P: Wedrana Novinc P: Bojan Nožica dipl. ing, v.pred. P:Prof. dr. sc. Miroslav Slamić profesor visoke škole P:dr.sc. Alen Šimec v. predavač P:dr.sc. Igor Urbiha prof.vis.šk. 	Seminar Paper	ECTS:6.0

P: Ognjen Staničić dipl. ing.					
Computer systems and network engineering elective courses					
P: Ognjen Mitrović struč. spec. ing. techn. inf., pred. P:dr.sc. Željko Širanović prof.v.š. L:dr.sc. Željko Širanović prof.v.š. L: Vedran Tadić struč.spec.ing.techn.inf. L: Ognjen Mitrović struč. spec. ing. techn. inf., pred.	Network Services	ECTS:5.0			
P: Sanja Kraljević , dipl.ing., v. pred. A: Sanja Kraljević , dipl.ing., v. pred. L: Jakob Gračanin L: Sanja Kraljević , dipl.ing., v. pred.	Advanced Databases	ECTS:5.0			
P: Ognjen Staničić dipl. ing. L: Ognjen Staničić dipl. ing.	Advanced JavaScript programming	ECTS:5.0			
P:Prof. dr. sc. Miroslav Slamić profesor visoke škole P:Dr. sc. Aleksandar Stojanović pred. L:Dr. sc. Aleksandar Stojanović pred.	Advanced Programming in Python	ECTS:5.0			
P: Dunja Bjelobrk Knežević dipl.ing L: Dunja Bjelobrk Knežević dipl.ing	Soft Computing Methods	ECTS:6.0			
P: Mario Janković mag. ing. graph. techn. P:dr.sc. Maja Turčić pred. L:dr.sc. Maja Turčić pred. L: Mario Janković mag. ing. graph. techn.	Web Design	ECTS:6.0			
P:mr.sc. Goran Malčić v.pred. L: Ivica Vlašić	Automation and Computer Process Control	ECTS:5.0			
P: Tin Kramberger struč. spec. ing. techn. inf., pred. L: Renata Kramberger	Computer Games Development	ECTS:5.0			



Semester 6		
	Software engineering elective courses	5
P:dr.sc. Maja Turčić pred. L:dr.sc. Maja Turčić pred.	eBook design	ECTS:5.0
P: Tin Kramberger struč. spec. ing. techn. inf., pred. L: Tin Kramberger struč. spec. ing. techn. inf., pred.	Android application development	ECTS:6.0
P: Ivan Cesar mag. ing. L: Ivan Cesar mag. ing.	Web application development in ASP.NET MVC technology	ECTS:6.0
P:v.pred. Aleksander Radovan , dipl. ing. L: Matija Dujmović	Web application in Java	ECTS:6.0
	Software engineering elective courses	5
P:dr.sc. Željko Širanović prof.v.š.	Final thesis	ECTS:19.0
Computer s	ystems and network engineering elec	tive courses
P:dr.sc. Maja Turčić pred. L:dr.sc. Maja Turčić pred.	eBook design	ECTS:5.0
P: Tin Kramberger struč. spec. ing. techn. inf., pred. L: Tin Kramberger struč. spec. ing. techn. inf., pred.	Android application development	ECTS:6.0
P: Ivan Cesar mag. ing. L: Ivan Cesar mag. ing.	Web application development in ASP.NET MVC technology	ECTS:6.0
P:v.pred. Aleksander Radovan , dipl. ing. L: Matija Dujmović	Web application in Java	ECTS:6.0
Computer s	ystems and network engineering elec	tive courses
P:dr.sc. Željko Širanović prof.v.š.	Final thesis	ECTS:19.0

Code WEB/ISVU	23080/85264	ECTS	5.0	Academic year	2018/2019
Name	Advanced Databases				
Status	5th semester - Softwa engineering (Redovni	re engineering raarstvo) - elec	(Redovni raarstvo) - elective tive course	e course5th semester - Com	puter systems and network
Teaching mode	Lectures + exercises (work at home	auditory + labo	oratory + seminar + metodo	ology + construction)	15+45 (15+30+0+0) 90
Teachers	Lectures: Sanja Kraljev Auditory exercises: Sa Laboratory exercises: Laboratory exercises:	vić , dipl.ing., v nja Kraljević , c 1. Sanja Kraljev Jakob Gračanin	. pred. dipl.ing., v. pred. ić , dipl.ing., v. pred.		
Course objectives	To introduce students implementation of a d	to objects and atabase into ar	control of data access , the information system.	basics of programming MyS	QL servers and
Learning outcomes:	1.ability to compare d 2.ability to remove da 3.ability to estimate th 4.ability to distinguish 5.ability to compare th 6.ability to create obje 7.ability to develop th 8.ability to develop th 9.ability to devise the and defining a level of 10.ability to distinguis 12.ability to distinguis	ifferent types of tabase malfunc- ne efficiency of between the si- ne mechanisms ects by using a e stored data (f flow and redire control of a par- data isolation. e permissions to h between the ne necessity for	f server-client architectures tions. Level:6 a database model in an info tructures of a centralised ar used in database managen query language (SQL). Leve functions, procedures, trigge ection of the SQL code flow. rallel data access by using v Level:6,7 o and levels of data access . requests of a transaction sy getting prompt informatior	. Level:6,7 ormation system. Level:6,7 nd a distributed database. Le nent. Level:6,7 l:6 ers) by using advanced SQL Level:6,7 various techniques: data lock . Level:6,7 stem and those of a data wa by using systems of busine	evel:6 techniques . Level:6,7 king, locking granularity arehousing system. Level:6
Methods of carrying out lectures	Ex cathedra teaching Case studies Demonstration Discussion Questions and answer	S			
Methods of carrying out auditory exercises	Group problem solving Discussion, brainstorm Computer simulations Interactive problem sc	g ning olving			
Methods of carrying out laboratory exercises	Laboratory exercises of Laboratory exercises, Group problem solving Discussion, brainstorn Interactive problem so	on laboratory e computer simu g hing blving	quipment lations		
Course content lectures	 Introductory lecture DDL, DML, embedde Aliases, subqueries, 4.Database transactio 5.Procedures and func 6.Cursors, flow control 7.Preparation for the f 8.First mid-term exam 9.Triggers, 2h, Learnir 10.Data locking, 2h, L 11.Grant, 2h, Learning 12.Connectivity, 2h, L 13.Data warehouse, 2 14.Preparation for the 15.Second mid-term exam 	e, 2h, Learning e d functions, Ca indexes, norma ns, 2h, Learning ttions, 2h, Learning e irst mid-term e n, 2h, Learning e ng outcomes:7, earning outcom g outcomes:10 earning outcom h, Learning outcom h, Learning outcom k, Learning outcom	outcomes:1,3 Irtesian / JOIN, 2h, Learning alization, 2h, Learning outco g outcomes:5,6 ning outcomes:6,7 outcomes:7,8 xam, 2h, Learning outcomes outcomes:1,2,3,4,5,6 9 hes:9 hes:8,9,10 comes:11,12 rm exam, 2h, Learning outco hig outcomes:7,8,9,10,11,1	outcomes:2 mes:5 s:1,2,3,4,5,6 omes:7,8,9,10,11,12 2	
Course content	1.No classes 2.No classes 3.No classes 4.No classes 5.No classes 6.No classes 8.No classes 9.No classes 10.No classes 11.No classes 12.No classes 13.No classes 14.No classes 15.No classes				
course content laboratory	1.No classes 2.No classes				

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	 3.Database fundamentals, 2h, Learning outcomes:1,2,3,4,5 4.Transactions, 2h, Learning outcomes:5,6,7 5.Procedures, functions, 2h, Learning outcomes:6,7,8 6.Flow control, 2h, Learning outcomes:7,8 7.Cursors, 2h, Learning outcomes:7,8 8.First midterm exam, 2h 9.Triggers, 2h, Learning outcomes:9 10.Data locks, 2h, Learning outcomes:9,10 12.Connectivity, 2h, Learning outcomes:11,12 13.Injection prevention, 2h, Learning outcomes:9,10 14.No classes 15.Second midterm exam, 2h, Learning outcomes:11,12
Kequired materials	Basic: classroom, blackboard, chaik General purpose computer laboratory Whiteboard with markers Overhead projector Tools
Exam literature	 Basic literature: 1. Skripta iz kolegija, prezentacije s predavanja 2. MySQL Documentation: MySQL Reference Manuals Additional literature: 1. Manger; R.: Baze podataka, skripta, Sveučilište u Zagrebu, Prirodoslovno Matematički fakultet, drugo izdanje, Zagreb, 2014. 2. Balling, D. J. ; Zawodny, J.: High Performance MySQL, O'Reilly, 2015. 3. Vaswani, V.; MySQL Database Usage Administration, McGraw-Hill Osborne Media, 2010. 4. Cabral, S.; Murphy, K.: MySQL Administrator's Bible, Wiley Publishing, Inc., Indianapolis, Indiana, 2009. 5. Ramakrishnan, R.; Gehrke, J.: Database Management Systems, 3rd Edition, McGraw- Hill, New York, 2003. 6. Sumathi, S.; Esakkirajan, S.: Fundamentals of Relational Database Management Systems, Springer, Verlag Berlin Heidelberg, 2007.
Students obligations	1. Done laboratory exercises (tolerance 1/6 absences). 2. Achieved minimum of 15 points of laboratory exercises (out of 50).
Knowledge evaluation during semester	Short exam is written on each laboratory exercises: holds 8 points, in each of the five labs (except laboratory exercise zero) can be won up to 8 points -> maximum 40 points from all exercises, exception: laboratory exercise zero holds 10 points. Distribution of total number of points from mid-term exams: 25% first mid-term exam, 25% second mid-term exam, 10% laboratory exercise zero, 40% remaining laboratory exercises. The first and second mid-term exam include material previously handled in lectures and laboratory exercises. Pass -> 50 % (50 bodova), Best results -> will be exempt from second mid term exam with "excellent (5)" grade, (criterion is the maximum number of points in two mid term exams and all labs, minus 10%).
Knowledge evaluation after semester	Written and oral exam. Final grade from written exam: 60% written exam, 40% laboratory exercises.
Student activities:	Aktivnost ECTS (Written exam) 5
Remark	This course can be used for final thesis theme
Prerequisites:	Students cannot enroll in this course unless they have completed Baze podataka
ISVU equivalents:	22718;75210;172325;
Proposal made by	Sanja Duk, dipl. ing.

Code WEB/ISVU	23494/156035	ECTS	5.0	Academic year	2018/2019
Name	Advanced JavaScript pr	ogramming			
Status	5th semester - Software	e engineering (Redovni	raarstvo) - elective cours	e5th semester - Compu	ter systems and network
Teaching mode	l ectures + exercises (a	$\frac{1}{1}$	seminar + metodology +	- construction)	30+30(0+30+0+0)
	work at home		Seminar + metodology +	construction	90
Teachers	Lectures:1. Ognjen Star Laboratory exercises: C	ničić dipl. ing. Janien Staničić dipl. ing.			
Course objectives	Learning modern JavaS	cript frameworks with th	he emphasis on Angular	S. Learning to develop w	eb apps using AngularJS
	and PHP. Learning to de Node.js, MongoDB).	evelop web apps using f	fullstack JavaScript based	I on the MEAN stack (An	gularJS, Express,
Learning outcomes:	1.construct interactive 2.differentiate between 3.design a web app bas 4.construct a web app u 5.develop a web server 6.build a noSQL databa 7.analize the MVC prog	web content using HTM i JavaScript Events and I sed on the JavaScript pro- using the AngularJS fran ' using the Node.js envir ise using the Mongo dat ramming paradigm. Lev	L DOM, CSS and JavaScri their triggering in time ar ogramming language. Le nework. Level:6,7 'onment. Level:6,7 'abase. Level:6,7 /el:6	pt. Level:6,7 nd on demand. Level:6 vel:6	
Methods of carrying out lectures	Ex cathedra teaching Case studies Demonstration Questions and answers	i			
Methods of carrying out laboratory exercises	Laboratory exercises, co Group problem solving Traditional literature an Data mining and knowle	omputer simulations alysis edge discovery on the V	Neb		
Course content lectures	1. Introductory lecture, 2 2. JavaScript fundament 3. Advanced JavaScript of 4. Angular - introduction 5. Angular - modules anu 6. Angular - filters, servi 7. Angular and forms, 2h 8. Angular and PHP, 2h, 9. Node.js, 2h, Learning 10. Express - fundament 11. Express - fundament 11. Express - routing, Af 12. MongoDB 1, 2h, Lea 13. Developing a MEAN 14. Related technologies 15. No class, 2h	2h, Learning outcomes: :als, 2h, Learning outcor concepts, 2h, Learning of 1, MVC, components, 2h d directives, 2h, Learning h, Learning outcomes:3, Learning outcomes:3,4 outcomes:3,4,5 tals, 2h, Learning outcon Pls, 2h, Learning outcon rning outcomes:3,6 web app, 2h, Learning outcomes s, 2h, Learning outcomes	1,2 mes:1,2 putcomes:1,2 , Learning outcomes:3,4,7 g outcomes:3,4,7 ,4 mes:3,5 nes:3,5 putcomes:3,4,5,6,7 es:3,4,5,6,7	7	
Course content laboratory	1.No class, 2h 2.No class, 2h 3.JavaScript, 2h, Learnin 4.Angular - uvod, 2h, Le 5.Angular - moduli i dire 6.Angular - filteri, servis 7.Angular i forme, 2h, L 8.Node.js, 2h, Learning 9.Express, 2h, Learning 10.MongoDB, 2h, Learning 12.Project, 2h, Learning 13.Project, 2h, Learning 14.No class, 2h 15.No class, 2h	ng outcomes:1,2 earning outcomes:3,4,7 ektive, 2h, Learning out si, \$http, 2h, Learning o earning outcomes:3,4 outcomes:3,5 j outcomes:3,5 j outcomes:3,4,5,7 g outcomes:3,4,5,7 g outcomes:3,4,5,7	comes:3,4,7 utcomes:3,4,7		
Required materials	General purpose compu Whiteboard with marke Overhead projector	uter laboratory Irs			
Exam literature	 "Eloquent JavaScript: "Pro AngularJS" Adam "Professional Node.js "Mean Machine" Chri 	: A Modern Introduction n Freeman s" Pedo Teixeira is Sevilleja, Holly Lloyd	to Programming" Marijn	Haverbeke	
Students obligations	Regular attendance of o	classes and lectures			
Knowledge evaluation during semester	Regular attendance, pro	ogramming exercises a	nd quizzes in labs, projec	.t	
Knowledge evaluation after	Written and oral exam,	project			



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semester				
Student activities:	Aktivnost ECTS			
	(Project)	3		
	(Practical work)	2		
Remark	This course can be used for final thesis	theme		
Prerequisites:	Students cannot enroll in this course un Students cannot enroll in this course un Students cannot enroll in this course un	nless they have passed Baze podataka nless they have passed Programiranje u jeziku Java nless they have passed Uvod u web tehnologije		
Proposal made by	dipl. ing. Ognjen Staničić , 11.5.2016			

Code WEB/ISVU	23223/142130	ECTS	5.0	Academic year	2018/2019
Name	Advanced Programm	ing in Python			
Status	5th semester - Softw	are engineering ((Redovni raarstvo) - elect	tive course5th semester - Corr	puter systems and network
Teaching mode	engineering (Redovn	i raarstvo) - elect	ive course	$dology \pm construction)$	30+30 (0+30+0+0)
	work at home				90
Teachers	Lectures:Prof. dr. sc. Lectures:Dr. sc. Aleks Laboratory exercises	Miroslav Slamić p sandar Stojanović ::Dr. sc. Aleksand	profesor visoke škole ć pred. ar Stojanović pred.		
Course objectives	1) acquire basic skills solving, 3) get familia	s in programming ar with useful are	in Python by applying it as of computer science	in various types of problems,	2) practice problem
Learning outcomes:	1.write the program. 2.design system arch 3.build a system for a 4.identify system kor 5.analyze system rec	Level:6,7 hitecture. Level:6 a simple query la nponents. Level:0 quirements and fu	nguage. Level:6,7 6 unctionality. Level:6		
Methods of carrying out lectures	Ex cathedra teaching Case studies Modelling Discussion Questions and answe	l Prs			
Methods of carrying out laboratory exercises	Laboratory exercises	on laboratory eq	luipment		
Course content lectures	1.Introduction to Pyth 2.Built-in data structu 3.Input/output, files a 4.Higher-order functi 5.Example of higher 6.Example of recursio 7.Environments, 2h, l 8.Classes and objects 9.Example of classes 10.Iterators and the , 11.Example of classes Learning outcomes: 1 12.Using Python for l 2h, Learning outcome 13.Example: Parsing 14.Example: Interpre 15.Overview of selec	non, 2h, Learning ures: Lists, tuples and exceptions, 2 ons and recursior order functions: N on: Pattern match Learning outcome s, 2h, Learning ou and objects: Log , 2h, Learning ou s, objects and ite ,2,3,4,5 anguage process es:2,3,4,5 textual data, 2h, ter for a simple p ted advanced pa	outcomes:1 , maps and sets, 2h, Lea h, Learning outcomes:1 n, 2h, Learning outcomes Number system conversioning, 2h, Learning outcor es:1,2,3,4,5 itcomes:1,2,3,4,5 itcomes:1,2,3,4,5 erators: Implementation of senses:1,2,3,4,5 erators: Implementation of ting: Fundamentals of grac Learning outcomes:1,2,2 programming language, 2 rts of Python, 2h, Learning	rning outcomes:1 s:1 on, 2h, Learning outcomes:1 nes:1 Learning outcomes:1,2,3,4,5 of relational algebra operators ammars, finite state automata 3,4,5 2h, Learning outcomes:1,2,3,4 ng outcomes:1,2,3,4,5	for data retrieval, 2h, and regular expressions, ,5
Course content laboratory	1.Introduction to Pyth 2.Built-in data structu 3.Input/output, files a 4.Higher-order functii 5.Recursion: Lab assi 6.Recursion: Lab assi 7.Environments: Lab 8.Classes and objects 9.Classes and objects 10.Iterators and the , 11.Parsing textual da 12.Parsing textual da 13.Interpreter for a s 14.Interpreter for a s	non: Lab assignm ures: Lists, tuples and exceptions: L ons: Lab assignm ignments, 2h, Lea ignments, 2h, Lea assignments, 2h, s: Lab assignmen s: Lab assignmen ; 2h, Learning out ta: Lab assignme imple programmi imple programmi ted advanced pa	ents, 2h, Learning outco , maps and sets: Lab ass , ab assignments, 2h, Lean nents, 2h, Learning outco arning outcomes:1,2,3,4, , Learning outcomes:1,2,3,4, , Learning outcomes:1,2,3,4, , Learning outcomes:1,2,3,4, , Learning outcomes:1,2,3,4,5 ents, 2h, Learning outcome tcomes:1,2,3,4,5 ents, 2h, Learning outcom ents, 2h, Learning outcom ing language: Work on in ing language: Work on in rts of Python: Lab assign	mes:1 ignments, 2h, Learning outcomes:1,2,3,4,5 imes:1,2,3,4,5 5 3,4,5 2s:1,2,3,4,5 2s:1,2,3,4,5 mes:1,2,3,4,5 nes:1,2,3,4,5 nplementation, 2h, Learning o nplementation, 2h, Learning o ments, 2h, Learning outcomes	mes:1,2,3,4,5 utcomes:1,2,3,4,5 utcomes:1,2,3,4,5 s:1,2,3,4,5
Required materials	General purpose com Overhead projector	iputer laboratory			
Exam literature	 L. Budin, P. Brođar 2013. A. Stojanović: Elen M. Lutz: Learning F P. Gries, J. Campbe Pragmatic Programm C. Dierbach: Introc H. Abelson, G. Sus 	nac, Z. Markučič, nenti računalnih p ³ ython, O'Reilly M all, J. Montojo: Pra lers, 2013. Juction to Compu sman: Structure	S. Perić: Napredno rješav programa s primjerima u ledia, 2014. actical Programming: An Iter Science Using Pythor and Interpretation of Cor	vanje problema programiranje Pythonu i Scali, Element, 201 Introduction to Computer Scie n: A Computational Problem-Sc nputer Programs, 2nd ed., MIT	m u Pythonu, Element, 2. nce Using Python 3, The olving Focus, Wiley, 2013. F Press, 1996.
Students obligations	Classes * 50% lectures/labs Grading * two tests (grade wi	ll be the average	of the two)		



Knowledge evaluation during semester	* 2 tests		
Knowledge evaluation after semester	* homework		
Student activities:	Aktivnost (Written exam)	ECTS 5	
Remark	This course can be used for final thesis theme		
Prerequisites:	Students cannot enroll in this course unless they have passed Programiranje		
Proposal made by	mr.sc. Aleksandar Stojanović		

Code WEB/ISVU	23366/154952	ECTS	7.0	Academic year	2018/2019
Name	Algorithms and Data S	tructures	· · · · · · · · · · · · · · · · · · ·		
Status	3rd semester - Softwar	re engineering (R	edovni raarstvo) - oblig	atory course3rd semester - Co	mputer systems and
	network engineering (F	Redovni raarstvo)) - obligatory course		
Teaching mode	Lectures + exercises (a work at home	auditory + labora	itory + seminar + meto	dology + construction)	30+45 (15+30+0+0) 135
Teachers	Lectures:1. Prof. dr. sc	. Miroslav Slamić	profesor visoke škole		
	Auditory exercises: Pro	t. dr. sc. Miroslav Danko Ivošević p	Slamić profesor visoke	škole	
	Laboratory exercises: 2	Željko Kovačević	, struč.spec.ing.techn.ii	nf.	
	Laboratory exercises:D	Dr. sc. Aleksandar	Stojanović pred.		
Course objectives	To transfer to students algorithms used for wo	s the basic knowle ork with data stru	edge related to standar ctures in C, C++, C# a	d data structures (lists, stacks, nd Java	queues, binary trees) and
Learning outcomes:	1.ability to compare th	e present algorit	hms; to analyse comple	ex algorithms. Level:6,7	
	2.ability to develop con	mplex recursive a	algorithms. Level:6,7	ata ata aka guayaa) Layahé 7	
	4.ability to devise solut	tions based on si	omplex data structures (ii	(trees, piles and priority queue	e). Level:6.7
	5.ability to propose the	e best program so	olutions based on sort a	lgorithms . Level:6,7	,,
	6.ability to combine th	e best methods o	of browsing and using a	ddressing techniques . Level:6	,7
Methods of carrying	Ex cathedra teaching				
out lectures	Case studies				
	Discussion				
out auditory	Group problem solving	nalvsis			
exercises	Discussion, brainstorm	ing			
Methods of carrying	Laboratory exercises, o	computer simulat	ions		
exercises					
Course content	1.Structured and unstr	uctured data. De	finitions of algorithms,	history, conventions and writin	g algorithms., 2h, Learning
lectures	outcomes:1			-	
	2.Algorithm complexity	y, 2h, Learning ou	Itcomes:1		
	4.Simple data structure	e. Static and dyn	amic data structures, 2	h, Learning outcomes:1,3	
	5.Single and double lin	ked lists, 2h, Lea	rning outcomes:2,3	, , ,.	
	6.Data structure type 9	Stack, 2h, Learnir	ng outcomes:3		
	7.Data structure type (8 Complex Data Struct	Queue, 2n, Learn Tures - Trees 2h	Ing outcomes:3		
	9.Binary Tree, 2h, Lear	ning outcomes:4			
	10.The heap and the p	riority queue as a	a binary tree, 2h, Learn	ing outcomes:4	
	11.Simple sort algorith	ims., 2h, Learning	g outcomes:1,5		
	13.Search algorithms.	Sequential search	h, binary search and BS	T, 2h, Learning outcomes:4,5	
	14.Techniques of direc	t addressing and	indexing, 2h, Learning	outcomes:5,6	_
	15.Hashing addressing	I. Applying Hash 1	functions in the encrypt	tion of data, 2h, Learning outco	mes:5
Course content	1.Fundamentals of ma	thematical algori	thms., 1h. Learning out	comes:1	
auditory	2.Analysis of the comp	lexity of the algo	rithms., 1h, Learning or	utcomes:1	
	3.Implementation and	analysis of recur	sion., 1h, Learning outc	omes:2	
	5.Implementing the list	t (single and dou	ble linked). Implementa	ation by array., 1h. Learning ou	tcomes:2.3
	6.Implementation of th	ne stack., 1h, Lea	rning outcomes:3		
	7.Implementation of th	e queue., 1h, Lea	arning outcomes:3		
	9. Implementation of th	e binary tree. 1	n, Learning outcomes:4	ucomes:4	
	10.Implementation of t	the priority queue	e and heap., 1h, Learnir	ng outcomes:4	
	11.Implementation of t	the simple sort al	gorithms., 1h, Learning	outcomes:1,5	
	12.Implementation of t	the fast sort algorial search 1h 16	rithms., 1h, Learning ou earning outcomes:3 4	itcomes:1,4,5	
	14.Implementing the t	echniques of dire	ct addressing., 1h, Lea	rning outcomes:5,6	
	15.Implementation tec	hniques of Hash	addressing., 1h, Learnii	ng outcomes:6	
Course content	1 Programming basic r	nathematical alg	orithms 2h Learning	nutcomes:1	
laboratory	2.Programming analys	is of the complex	ity of the algorithms., 2	h, Learning outcomes:1	
	3.Programming implen	nentation and an	alysis of recursion., 2h,	Learning outcomes:2	
	4.The programming m	odel of simple da	ta structures, 2h, Learr	ning outcomes:1,3	b Looming outcomoci2 2
	6.Programming implen	nentation of stac	k 2h. Learning outcom	es:3	.n, Learning outcomes:2,5
	7.Programming implen	nentation of que	ie., 2h, Learning outcor	nes:3	
	8.The programming m	odel complex dat	a structure of a tree., 2	h, Learning outcomes:4	
	9.Programming implen	mentation of a bir	ean and priority queue	2h Learning outcomes:4	
	11.Programming imple	ementation of of a	algorithms for sorting si	nall arrays., 2h, Learning outco	omes:5
	12.Programming imple	mentation of of f	ast algorithms for sorti	ng large sequences., 2h, Learn	ing outcomes:1,4,5
	13.Software solution b	inary and sequer	itial search., 2h, Learnir	ng outcomes:4,5	

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	14.Programming implementation of techniques of direct addressing., 2h, Learning outcomes:5,6 15.Programming implementation of techniques Hash addressing., 2h, Learning outcomes:6
Required materials	General purpose computer laboratory Whiteboard with markers Overhead projector
Exam literature	 Basic literature: 1. M. Slamić: Elektronički sadržaji predavanja (PPT prezentacije) na web stranici predmeta na Tehničkom veleučilištu u Zagrebu, 2012. www.tvz.hr. 2. R. Sedgewick: Algorithms in C/C++, Parts 1-4: Fundamentals, Data Structure, Sorting, Searching, Third Edition Additional literature: 3. Robert L. Kruse, Alexander J. Ryba: Data Structures and Program Design in C++, Prentice-Hall International, 2000. 4. R. Manger, M. Marušić: Strukture podataka i algoritmi, skripta, 3. izdanje, PMF-MO, 2007. http://web.math.pmf.unizg.hr/nastava/spa/. 5. Weiss: Data Structures and Algorithm Analysis in C, Addison-Wesley, 1997
Students obligations	To qualify for a signature is required to attend at least 70% of the total number of hours lectures, have performed at least 11 laboratory exercises and have a minimum of 15 of 30 possible points during the exercises.
Knowledge evaluation during semester	 First mid-term (colloquium): max. 30 points Second mid-term (kolokvia): max. 30 points Two Quiz test: max 10 points (5 points each) 12 lab. excercises (3 lab excercises for grade): max. 30 points. EVALUATION 90.01 to 100.00 points: excellent (5) 75.01-90.00 points: very good (4) 60.01-75.00 points: good (3) 50.01-60.00 points: sufficient (2)
Knowledge evaluation after semester	1. Writing exam - max. 70 points 2. Three lab excersises: max. 30 points. EVALUATION 90.01 to 100.00 points: excellent (5) 75.01-90.00 points: very good (4) 60.01-75.00 points: good (3) 50.01-60.00 points: sufficient (2)
Student activities:	Aktivnost ECTS (Written exam) 7
Remark	This course can be used for final thesis theme
Prerequisites:	Students cannot enroll in this course unless they have passed Programiranje
ISVU equivalents:	22733;
Proposal made by	Dr. sc. Miroslav Slamić prof. vis. šk., 14.4.2014.

Code WEB/ISVU Name	23105/111519 Android application dev	ECTS velopment	6.0	Academic year	2018/2019		
Status	6th semester - Software engineering (Redovni ra	e engineering (Redovni i aarstvo) - elective cours	raarstvo) - elective cours e	e6th semester - Comput	er systems and network		
Teaching mode	Lectures + exercises (auditory + laboratory + seminar + metodology + construction)30+30 (0+30+0+0)work at home120						
Teachers Course objectives Learning outcomes:	Lectures:1. Tin Krambe Laboratory exercises: T Acquiring the knowledg 1.to develop Android ap 2.to distinguish betwee 3.to organise a program 4.to write a program co connected with Web se 5.to design an Android 6.to analyse the functio 7.to sketch a concept of 8.to design an OO mod 9.to set up the environi 10.to develop ones own	rger struč. spec. ing. teo in Kramberger struč. sp ge related to advanced Ja oplications which are eas in Java application devel in code into classes, inte ode for an application wi rvices and databases. L application from its basis onal elements of an appl lesign solution before its el of an Android applicat ment for efficient Androi in functional Android app	chn. inf., pred. ec. ing. techn. inf., pred. ava techniques used for sy to upgrade and maint lopment and Android app rfaces and packages acc th a graphic interface, a evel:6,7 ics to a GUI. Level:6 lication and adjust them s implementation. Level:6 tion . Level:6,7 id application developme lication. Level:6,7	Android application deve ain. Level:6 Dication development. Le ording to OOP principles business logic and a pos to Android architecture. 5 ent. Level:6,7	lopment evel:6 . Level:6,7 sibility of being Level:6		
Methods of carrying out lectures	Ex cathedra teaching Case studies Demonstration Simulations Modelling Discussion Questions and answers Seminar, students pres Homework presentation	entation and discussion 1					
Methods of carrying out laboratory exercises	Laboratory exercises of Laboratory exercises, c Group problem solving Data mining and knowl Discussion, brainstormi Computer simulations Workshop	n laboratory equipment omputer simulations edge discovery on the V ng	Veb				
Course content lectures	1.Introduction to Andro 2.Activities, their lifecy 3.GUI and ahitecture ba 4.Advanced GUI, anima 5.Working with controls 6.Settings and working 7.Colloquium, 2h, Learn 9.Notifications, services 10.Multi threading, wor 11.Developing and con 12.Working with senso 13.Developing applicat 14.Android design patt 15.Final exam, 2h, Learn	id, 2h, Learning outcom- cle and GUI basics, 2h, L asics for Android program tions, styles, intents, br s for developing dialogs, with gridview, listview a ning outcomes:1,2,3,4,5, ing outcomes:1,2,3,4,5 s, push, SD card data sto king with local database suming web services, 2h rs, bluetooth, NFC, WiFi, ions for the home screen erns, 2h, Learning outco rning outcomes:1,2,3,4,5	es:2,8,9,10 Learning outcomes:6,7,8 m developing, 2h, Learni oadcast receivers, 2h, Le menus and bundle, 2h, and recyclerview controls ,6,7,8,9,10 prage , 2h, Learning outco e, OR mapping, 2h, Learn n, Learning outcomes:1,3 2h, Learning outcomes:1,3 2h, Learning outcomes:1,5 n, multimedia, 2h, Learni mes:7,8,9,10 5,6,7,8,9,10	ng outcomes:4,6,7 earning outcomes:1,3,7 Learning outcomes:3,4 s, 2h, Learning outcomes comes:1,3 ing outcomes:1,3 3,4,5,9 ing outcomes:3,10	:3,4,5		
Course content laboratory	1.Basics of Android Stu 2.Designing and calling 3.Designing a GUI, 2h, 4.Advanced GUI design 5.Construction of dialog 6.Making applications v 7.Reimbursement of lal 8.Developing applicatio 9.Working with service 10.Working with databa 11.Developing web ser 12.Developing home so 13.Connecting the devi 14.Working with sensor 15.Reimbursement of la	dio environment., 2h, Le activities, 2h, Learning Learning outcomes:1,3,5 and multilanguage sup gs and controls, 2h, Lear vith lists and grids, 2h, L boratory exercises, 2h, L boratory exercises, 2h, L on with fragments, 2h, Le s and sending push notif ase, 2h, Learning outcom vice and consuming it, li creen application, develo ce over NFC, WiFi and B rs, locations and maps, 2 aboratory exercises, 2h,	earning outcomes:2,6,7,1 outcomes:1,3,5,6,7,8 5,6,7,8 port, 2h, Learning outcor rning outcomes:1,3,5,6,8 Learning outcomes:1,3,5, earning outcomes:1,3,5, fications, 2h, Learning ou nes:1,3,4,5,6 libraries for image fetchir oping simple MP3 player, luetooth technology, 2h, 2h, Learning outcomes:1 Learning outcomes:1,3,	0 mes:1,3,5,6,8 6,8 6,8 6 itcomes:1,3,4,5,6 9, 2h, Learning outcomes: 2h, Learning outcomes: Learning outcomes:1,3, ,3,5,6 5,6,7,8,9,10	•s:1,3,5,6 1,3,5,6 4,5,6		
Required materials	General purpose compo Whiteboard with marke Overhead projector	uter laboratory rrs					
Exam literature	Reto Meier: Professiona Dawn Griffiths : Head F	al Android, Wrox, 2017 irst Android Developmei	nt: A Brain-Friendly Guid	e, O'Reilly, 2015			



	Bill Phillips: Android Programming: The	Big Nerd Ranch Guide (3rd Edition), Big Nerd	d Ranch Guides, 2017			
Students obligation	s maximum of 0 absences from exercise	s and at least 10% of total points.				
Knowledge evaluation during	Teorijski dio svih ishoda uja, max. 20 bodova					
semester	Dva kolokvija po 10 bodova, prolaz >5	Dva kolokvija po 10 bodova, prolaz >5 boda				
	Pozitivna ocjena iz teorije: Oba kolokvija po > 5 bodova					
	Zavrni ispit 40 bodova, nema praga za	prolaz				
	Vjebe, max. 40 bodova.					
	ocjenjuje se priprema, zalaganje te sadraj i izgled projekta koji je dan za domazada Kolokvij vjebi: pojedina obrana izvje uvjet je za pozitivnu ocjenu vjebi.					
	Ukupno, max. 100 bodova.					
	91 100 = 5 78 00 - 4					
	64 76 = 3					
	51 63 = 2					
	50 i manje, nedovoljno postignu					
Student activities:	Aktivnost	ECTS				
	(Written exam)	2				
	(Practical work)	2				
D	(Seminar Work)	2				
Remark	This course can be used for final thesis theme					
Prerequisites:	Students cannot enroll in this course un	iless they have passed Baze podataka	u Java			
Proposal made by	Tin Kramberger, 02.06.2017					

Code WEB/ISVU	22963/22698	ECTS	5.0	Academic year	2018/2019
Name	Automation and Con	nputer Process Co	ontrol		
Status	5th semester - Softw engineering (Redovr	vare engineering (ni raarstvo) - elect	(Redovni raarstvo) - elect tive course	tive course5th semester - Com	puter systems and network
Teaching mode	Lectures + exercises work at home	s (auditory + labo	ratory + seminar + meto	odology + construction)	30+30 (0+30+0+0) 90
Teachers	Lectures:1. mr.sc. G Laboratory exercises	oran Malčić v.preo s: Ivica Vlašić	d.		
Course objectives	To teach students he technical processes	ow to solve proble	ems related to implement	tation of computer systems use	ed in automation of
Learning outcomes:	1.ability to distingui:	sh between comp	uter systems intended fo	r work in real time and the oth	ers . Level:6
	2.ability to relate the 3.ability to sketch th 4.ability to develop	e elements of the le control logic in a control program	system with software. Le a graphic programming l intended for simple syst	evel:6,7 anguage. Level:6 rems. Level:6,7	
	5.ability to understa	nd the connectior	ı between software, com	puter and the end elements of	a system. Level:6
Methods of carrying out lectures	Ex cathedra teachine Case studies	g			
	Demonstration				
	Discussion The lectures are bas	ed on presentation	ons of particular control c	levices and micro-controlling sy	vstems
Methods of carrying	Laboratory exercise	s on laboratory ec	quipment	evices and micro-controlling s	stems.
out laboratory	Laboratory exercises	s, computer simul	lations		
exercises	Group problem solvi	ng rmina			
	Workshop	ming			
	Exercises are perfor	med on PLC devic	ces connected to your PC	. Preparations for the exercise	in the form of training
Course content	1 Real-time compute	mers to work on t	ems 2h Learning outco	mes·1 2 3 4 5	
lectures	2.Basic functional el	ements of industr	rial control systems, 2h, l	earning outcomes:1,2,3,4,5	
	3.Programmable log	ic controller (PLC)) as the main part of a co	ntrol system, 2h, Learning out	comes:1,2,3,4,5
	4. Types of processes	s and sequential a	and distributed control sy circuits and addressing t	stems, 2h, Learning outcomes	:1,2,3,4,5
	6.Bit level instructio	ns and Ladder dia	agram programming, 2h,	Learning outcomes:1,2,3,4,5	ng outcomes.1,2,3, 1,3
	7.Direct and indirect	t adressing, optim	izing program code, 2h,	Learning outcomes:1,2,3,4,5	
	8.Commands and wo	ork with timers, 2 ork with counters	h, Learning outcomes: 1,2	2,3,4,5 • 2h Learning outcomes:1.2.3	15
	10.Pulse width modu	ulation and pulse	control device, 2h, Learn	ing outcomes:1,2,3,4,5	4,5
	11.Operation on dat	a - comparison in	structions and examples	2h, Learning outcomes:1,2,3,4	1,5 _
	12.Operation on dat	a - mathematical	instructions and example	es, 2h, Learning outcomes:1,2,	3,4,5
	14.Instructions and	changes of progra	am flow control, 2h, Lear	ning outcomes: $1, 2, 3, 4, 5$)
	15.Work with interru	uptive subroutines	s, 2h, Learning outcomes	:1,2,3,4,5	
Course content	1 Basic units of proc	rammable logic c	ontroller (PLC). 2h		
laboratory	2. Interaction with th	ne environment a	nd the PLC input and out	put control , 2h	
	3.Direct and indirect	t addressing, 2h	development co		
	4.Programming lang	ition on a PC, 2h	Silcation development so	tware, zn	
	6.Operating with tim	iers, 2h			
	7.Examples of work	from timers, 2h			
	9.Control switching	equipment, seque	ential control, 2h		
	10.Examples of proc	esses combined t	timers and counters, 2h		
	11.Analog modules,	analog value scal	ling, 2h		
	13.Operating with m	athematical instr	uctions, 2h		
	14.Interruptive subr	outines and opera	ation jump start program	, 2h	
	15. Writing the softw	are project docun	nentation, 2n		
Required materials	Basic: classroom, bla	ackboard, chalk	· · · · · · · · · · · · · · · · · · ·		
	Special purpose labo	oratory			
	Special purpose com Overhead projector	iputer laboratory			
	PLC computer, switc	hing equipment			
Exam literature	Basic literature:				
	1. G. Smiljanic, Racu 2. F. Jović, Kompiute	inala i procesi, Sk vođenje proc	olska knjiga, Zagreb, 199 cesa, Zveza organizacij z	11. a tehničko kulturo Slovenije I i	ubliana 1988
	Additional literature	:		a termieko kulturo Slovenije, Lj	ubijana, 1900.
	3. S. Ribarić, Arhitek	tura mikroproces	ora, Zagreb, 1988.		
	4. G.Malčić, D.Maršić 5. Hugh Jack, Autom	ć, Interna skripta i vating Manufactur	i podloge za vježbe ing Systems with PLCs -2	009	
Students obligations	Mandatory attendan	ice (80% level)	ing Systems with Les, 2		
Knowledge	Colloquium numeric	al tasks Seminar	Verbal knowledge testing	1	
evaluation during					
semester					



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Knowledge evaluation after semester	written and oral exams		
Student activities:	Aktivnost (Written exam) (Oral exam)	ECTS 3 2	
Remark	This course can be used for final thesis theme		
Prerequisites:	No prerequisites.		

Code WEB/ISVU	23072/85204	ECTS	3.0	Academic year	2018/2019
Name	Business English for Cor	mputing			
Status	2nd semester - Undergr	raduate professional stu	dy in computing (Redovr	ni raarstvo) - elective cou	irse
Teaching mode	Lectures + exercises (a work at home	uditory + laboratory + s	eminar + metodology +	construction)	30+30 (30+0+0+0) 30
Teachers	Lectures:1. dr.sc. Biljan Auditory exercises: Zor	a Stojaković ,prof.v.š. u an Vulelija	trajnom zvanju		
Course objectives	To develop students En	iglish language skills: ora	al and written business c	ommunication, presenta	tion of
l earning outcomes:	1 ability to analyse both	h the position and signifi	cance of the English land	quage in business world	Level:6
Learning outcomes:	1.ability to analyse both 2.to compare Croatian a 3.to identify various nor 4.to integrate computin 5.ability to generate a b 6.to make a difference l 7.ability to relate the le 8.ability to relate the le 8.ability to relate acade 10.ability to ofatinguish 11.ability to devise a pr 12.to make a difference 13.ability to analyse the 14.ability to present the 15.ability to write a CV 16.ability to analyse the synchronous/asynchror 17.to analyse phraseolo	h the position and signifi and English non-finite for n-finite forms in English. Ing terminology into new business letter, a busines between formal an infor evels of ICT education in ccupations and jobs in the mic degrees in ICT educ between high and low of resentation of a company e between various forms e most important feature and a job application let e differences between or nous). Level:6 ypes of business corresp pogy in communication vi	cance of the English lang rms. Level:6,7 Level:6 contexts. Level:6,7 ss e-mail, an order, an in mal email. Level:6 the English speaking cou- le field of expertise in the tation in the English spea- juality of business corres y in English. Level:6,7 of word formation in Englister. Level:6,7 ral and written business ondence. Level:6 a phone. Level:6	guage in business world. Ivoice, etc Level:6,7 Intries and in Croatia. Le e English speaking count aking countries and in Cr spondence in English. Lev glish. Level:6 rel:6 ish. Level:6,7 communication (verbal/r	Level:6 vel:6,7 :ries and in Croatia. oatia. Level:6,7 vel:6
Methods of carrying out lectures	Ex cathedra teaching Guest lecturer Case studies Demonstration Discussion Questions and answers Seminar, students prese Homework presentatior	entation and discussion			
Methods of carrying out auditory exercises	Group problem solving Traditional literature an Data mining and knowle Essay writing Discussion, brainstormi Interactive problem solv	nalysis edge discovery on the W ng ving	'eb		
Course content lectures	1.Non-finite forms, 2h, I 2.Croatian and English 1 3.Business corresponde 4.Formal and informal e 5.Types of business lett 6.Job application letter, 7.CV, 2h, Learning outc 8.Business offer, 2h, Le 9.Preliminary exam, 2h, 10.IT education levels in 11.Presenting a compai 12.Phraseology in comr 13.Job interview, 2h, Le 15.Preliminary exam, 2	Learning outcomes:2,14 non-finite forms, 2h, Lea ence, 2h, Learning outco email, 2h, Learning outco ter, 2h, Learning outcomes: 2h, Learning outcomes: comes:10,14,16,17 earning outcomes:10,14, , Learning outcomes:10,14, , Learning outcomes:10,14, n the world, 2h, Learning ny, 2h, Learning outcom municatin via phone, 2h, earning outcomes:13,14 h, Learning outcomes:6,	rning outcomes:2,3,14 mes:1,9,14,16,17 pmes:6,10,14,16 es:10,14,16,17 10,14,16,17 16,17 4,15 g outcomes:7,8,9,14 es:11,14 Learning outcomes:14,1 7,8,11,13,14,16,18	16,18	
Course content auditory	1.Operating systems; no 2.Word processing; non 3.Spreadsheet, databas 4.Internet and email; w 5.The Web; word forma 6.Jobs in ICT; prefixation 7.Graphics and design; 8.Dtp and multimedia; n 9.Preliminary exam, 2h 10.Web design; word fo 11.Program design and 12.Internet security; su 13.Computer networks; 14.New technologies; v 15.Preliminary exam, 2	on-finite forms (introduc on-finite forms (exercises) se; vocabulary exercises riting business email, 2h ition; writing a business n in IT terminology; appl writing a CV, 2h, Learning writing a business offer, , Learning outcomes:4,1 ormation, 2h, Learning ou computer languages; Ja ffixation in IT terminolog compunding in IT termi ocabulary exercises, 2h, h, Learning outcomes:4,	tion), 2h, Learning outcomes; , 2h, Learning outcomes; , 2h, Learning outcomes; , 2h, Learning outcomes; , Learning outcomes; , Learning outcomes; , 2h, Learning outcomes; , 2h, Learning outcomes; , 2h, Learning outcomes; , 2h, Learning outcome nology, 2h, Learning out , Learning outcomes; , 1,14	omes:2,3,4,14 :2,3,4,14 :4,5,14 i,6,9,14,15 ing outcomes:4,5,7,14,15 ing outcomes:3,4,7,14,15 i 4,5,9,14,15 hinology, 2h, Learning ou es:4,11,14 comes:4,11,14 1,14	5 5 itcomes:4,11,14

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Required materials	Basic: classroom, blackboard, chalk Whiteboard with markers Overhead projector Video equipment Operating supplies
Exam interature	1. E.M.Fabre, S.R.Esteras, Professional English in Use ICT 2. materijali s predavanja (objavljeni na web stranicama kolegija) sastavljeni od tekstova preuzetih iz suvremene stručne i metodičke literature 3. Ashley, A.A. Handbook of Commercial Correspondence. OUP, 2000
Students obligations	Regular attendance in both lectures and exercises (maximum of 3 absences from exercises are tolerated)
Knowledge evaluation during semester	2 preliminary exams in both lectures and exercises
Knowledge evaluation after semester	Written and oral exam
Student activities:	AktivnostECTS(Written exam)3
Remark	This course can be used for final thesis theme
Prerequisites:	No prerequisites.
ISVU equivalents:	22849;
Proposal made by	Professor Biljana Stojaković, PhD

Code WEB/ISVU	23073/85205	ECTS	3.0	Academic year	2018/2019			
Name	Business German for co	mputing						
Status	2nd semester - Undergraduate professional study in computing (Redovni raarstvo) - elective course							
Teaching mode	Lectures + exercises (auditory + laboratory + seminar + metodology + construction) 30+30 (30+0+0+0) work at home 30							
Teachers	Lectures:2. Doc. dr. sc. Lidija Tepeš Golubić v. pred. Auditory exercises: Doc. dr. sc. Lidija Tepeš Golubić v. pred							
Course objectives	To develop students language skills, use basic business terminology							
Learning outcomes:	Lability to formulate a CV and a job application letter in English Level 6.7							
	2.ability to analyse text to take a critical attitud 3.ability to give a prese 4.abilityto write a summ 5.ability to write a busir 6.ability to give a task b 7.ability to develop lanc 8.ability to combine the	s related to the field of e e toward the texts. Level intation in German. Level nary and a report of a tex- ness letter, an applicatior based presentation in Ge- guage skills in business c e acquired knowledge wit	xpertise and check the p :6 :6,7 xt . Level:6,7 n, etc Level:6,7 rman. Level:6,7 ommunication; to use b h the English language i	predefined theses in orde asic business terminolog in computing. Level:6,7	≥r to motivate students y. Level:6,7			
Methods of carrying out lectures	Ex cathedra teaching Discussion Questions and answers Seminar, students prese Homework presentation Other	entation and discussion 1						
Methods of carrying	Group problem solving							
out auditory	Interactive problem solv	ving						
exercises	Other							
Course content lectures	1.Introductory lecture, 2 2.Texts related to the fi 3.Texts related to the fi 4.German grammar 1, 2 5.Job application letter, 6.Job interview, 2h, Lea 7.Colloquium 1, 2h, Lea 8.Creating a PowerPoint 9.Task based presentat 10.Task based presentat 11.German grammar 2, 12.Jobs of the future, 2t 13.English loanwords in 14.Future for the Comp 15.Colloquium 2, 2h, Lea	2h, Learning outcomes:7 eld of expertise understa eld of expertise understa 2h, Learning outcomes:2, 2h, Learning outcomes:5, rning outcomes:1,2,3,4,5 t Presentation, 2h, Learni tion in German, 2h, Learni ation in German, 2h, Learni the Learning outcomes:2, h, Learning outcomes:1,2,3,4	anding and analysis, 2h, anding and analysis, 2h, 4,7,8 5,6,7,8 5,6,7,8 ing outcomes:3,6,7,8 ing outcomes:3,6,7,8 ning outcomes:3,6,7,8 2,4,7,8 ,8 Learning outcomes:2,7,8 rning outcomes:2,7,8 ,5,6,7,8	Learning outcomes:2,4,7 Learning outcomes:2,4,7	7,8 7,8			
auditory	2.Texts related to the fi 3.Texts related to the fi 4.A Review of German C 5.Job application letter, 6.Job interview, 2h, Lea 7.Colloquium 1, 2h, Lea 8.Creating a PowerPoint 9.Task based presentat 10.Task based presentat 11.German grammar 2, 12.Jobs of the future, 2t 13.English loanwords in 14.Future for the Comp 15.Colloquium 2, 2h, Le	2h, Learning outcomes: 7 eld of expertise understa eld of expertise understa Grammar 1, 2h, Learning 2h, Learning outcomes:5,6,7,8 rrning outcomes:1,2,3,4,5 t Presentation, 2h, Learni ion in German, 2h, Learni ation in German, 2h, Learni th, Learning outcomes:2,7 h, Learning outcomes:2,7 n German language, 2h, Lear earning outcomes:1,2,3,4	anding and analysis, 2h, anding and analysis, 2h, outcomes:2,4,7,8 5,6,7,8 5,6,7,8 ing outcomes:3,6,7,8 ning outcomes:3,6,7,8 2,4,7,8 ',8 .earning outcomes:2,7,8 rning outcomes:2,7,8 ,5,6,7,8	Learning outcomes:2,4,7 Learning outcomes:2,4,7	7,8 7,8			
Required materials	Basic: classroom, blackl Whiteboard with marke Overhead projector Operating supplies	board, chalk rs						
Exam literature	Basic literature: 1. Marčetić, T.: Pregled 2. Hansen-Kokoruš R., N 3. izbor tekstova objavlj Interneta	gramatike njemačkoga je 4atešić J., Pečur-Medinge jen na web stranicama ko	ezika, Školska knjiga, Za r Z., Znika M.: Njemačko plegija, tekstovi preuzeti	igreb o-hrvatski univerzalni rje i iz suvremene stručne li	čnik, Zagreb, 2005. terature, časopisa i			
Students obligations	Attending classes and p	participation in the proces	SSS					
Knowledge evaluation during	Preliminary exam, semi	nar paper						



semester	1				
Knowledge evaluation after semester	Written and/or oral exam				
Student activities:	Aktivnost (Activity in class) (Written exam) (Seminar Work)	ECTS 1 1 1			
Remark	This course can be used for final thesis theme				
Prerequisites:	No prerequisites.				
ISVU equivalents:	24375;				
Proposal made by	Phd. Lidija Tepeš Golubić, senior lect	urer, 11th of March 2014			

Code WEB/ISVU	23524/156276	ECTS	4.0	Academic year	2018/2019
Name	Communication Skills				
Status	4th semester - Softwar	re engineering (Redovni)	raarstvo) - elective cours	e4th semester - Comput	er systems and network
Teaching mode	Lectures + exercises (auditory + laboratory + :	e seminar + metodology +	construction)	30+30 (0+30+0+0)
	work at home				60
Teachers	Lectures:Pred. Ida Popel	čević prof. Pred Ida Popčević prof			
Course objectives	To promote humanistic	c values such as mutual	responsibility, the rights	to being included and ac	cepted, to freedom of
	speech, tolerating the	different.			
Learning outcomes:	1.ability to formulate the	he basics of successful com	ommunication. Level:6,7	ing conflicts the basis fo	atures of group
	processes and rules of	public presentation. Lev	el:6	ing connicts, the basic le	acutes of group
	3.ability to classify tecl	hniques and skills neede	d for successful commun	ication with individuals,	in groups and in front of
	audience. Level:6,7 4.ability to devise clea	r expressing and active l	istening: to provide feed	back with respect. Level	:6.7
	5.ability to solve comm	nunication issues and co	nflicts. Level:6		
	6.ability to present var	ious business plans, prol	olems and solutions. Leve	el:6,7 th parsans of the same (ar appacita gandar
	Level:6,7	e influence of genuer ba	Sed attitudes on work wi	the persons of the same t	n opposite gender.
	8.ability to compare th	e intercultural difference	es for better communicat	ion with people belongin	g to various cultures.
	9.ability to form a lead	ler roles and functions di	rected towards social an	d emotional relations be	tween members of a
	group and performance	e of individual and group	goals. Level:6	ha rights to inclusion an	d to boing acconted
	expressing ideas freely	γ , tolerance of the difference	ent. Level:6,7		a to being accepted,
Methods of carrying	Ex cathedra teaching				
out lectures	Guest lecturer				
	Discussion				
	Questions and answers	S			
	Seminar, students pres	sentation and discussion			
	nomework presentatio	11			
Methods of carrying	Group problem solving	 			
exercises	Interactive problem so	ling Iving			
	Workshop	5			
Course content	1 Communication proc	ess (1) 2h Learning ou	itcomes:1		
lectures	2.Communication proc	ess (2)., 2h, Learning ou	tcomes:1,3		
	3.Verbal Communication	on., 2h, Learning outcom	les:2,3,4		
	5.Foundations of femin	ism., 2h, Learning outco	mes:7,8		
	6.The influence of gene	der based opinions on wo	ork with persons of the s	ame or the opposite gen	der., 2h, Learning
	7.Foundations of multi	culturalism. , 2h, Learnin	ig outcomes:7,8		
	8.Intercultural differen	ces more successful com	munication with people	from other cultures. , 2h	, Learning outcomes:6,7
	9.Negative and positive	e aspects of conflict., 2h, estructive interaction and	, Learning outcomes:3,4,	5 earning outcomes:3.4.5	
	11.Communication in s	small groups., 2h, Learni	ng outcomes:3,4,5	curring outcomes.s,4,5	
	12.Communication in L	arge groups., 2h, Learnir	ng outcomes:3,4,5	4 5	
	14.Public presentation	(1)., 2h, Learning outcor	mes:3,4,5	,4,5	
	15.Public presentation	(2)., 2h, Learning outcor	nes:3,4,5,8		
Course content	1.Introduction., 2h, Lea	arning outcomes:2,3,4,5,	.6		
laboratory	2.Non-verbal communi	ication., 2h, Learning out	.comes:2,3,4,5,6		
	3.Advanced non-verba	I communication. , 2h, Le	earning outcomes:2,3,4,5	5,6	
	5. Advanced improvisir	ng. , 2h, Learning outcon	nes:2,3,4,5,6		
	6.Improvising a discus	sion., 2h, Learning outco	mes:2,3,4,5,6		
	8.Karl Popper debate.	. 2h. Learning outcomes:	g outcomes:2,3,4,5,6		
	9.Karl Popper with a pl	an debate., 2h, Learning	outcomes:2,3,4,5,6		
	10.World Schools deba	ite. , 2h, Learning outcon	nes:2,3,4,5,6		
	12.Individual debate. ,	2h, Learning outcomes:	2,3,4,5,6,7		
	13.Group exercises. , 2	2h, Learning outcomes:1,	,2,3,4,5,6,7,8		
	14.Group exercises. , 2	2h, Learning outcomes:1, 2h, Learning outcomes:1	,2,3,4,5,6,7		
	15.Group exercises., 2	in, Learning outcomes.1,	,2,3,4,3,0,7		
Required materials	Basic: classroom, black	kboard, chalk			
	Overhead projector Chairs and tables may	not be fixed to the floor			
	and tubics may	the belined to the hour.			

Exam literature	Basic literature:						
	1. J.C. Pearson, B.H. Spitzberg: Interpersonal communication: concepts, components and contexts. Dubuque: Wm. C.						
	Brown Publishers, 1990						
	2. R. Bolton: People skills. New York: Touchstone, 1986						
	3. J.I. Van Emden, L. Becker: Presentation skills for students. London: Palgrave Macmillan, 2004						
	Additional literature:						
	1. J. Stewart (Ed.): Bridges, not walls: a book about interpersonal communication. McGraw-Hill, 1999						
	2. A. Holliday, M.I. Hyde, J. Kullman: Intercultural communication. London: Routledge, 2004						
	3. S.E. Lucas: The art of public speaking. New York: McGraw-Hill, 1998						
Students obligations	Maximum of 3 absences from exercises.						
Knowledge	Regular attendance#10#10#50\$Exam, theoretical issues#3#90#50\$						
evaluation during							
semester							
Knowledge	Oral exam						
evaluation after							
semester							
Student activities:	Aktivnost ECTS						
	(Classes attendance) 1						
	(Written exam) 1						
	(Written exam) 2						
Remark	This course can be used for final thesis theme						
Prerequisites:	No prerequisites.						

Name Computer Applications Status 1st sensets - Undergraduate professional study in computing (fieldowin ranktou) - abligatory course Status 1st sensets - Undergraduate professional study in computing (fieldowin ranktou) - abligatory course Teachers Extrures 1. Danijela Porgrad, prof. Course objectives To introduce students to information technology and its business application: to teach students how to work on a PC a standard configuration A additional of collinguish between desktop PCs, laptopt, tablet PCs, in regard with typical users. Level: 6 Status A ability to relate the type and the goal of a information system. Level: 6 Status of collinguish between different posteme operational and supporting information system. Level: 6 B ability to relate the type and the goal of an information system to the function of an organisation system. Level: 6 Status of aditory of aditor	Code WEB/ISVU	23370/154959	ECTS	5.0	Academic year	2018/2019			
Status Lits smeater - Undergraduate professional study in computing (Redown Frastrol - obligatory course Teaching mode Lectures vercices (audiory + laboratory + seminar + metodology + construction) 30 + 30 (0 + 30 + 0 + 0) Teachers Lectures: Longleia Pongra: prof. Islandary conscious (audiory + laboratory + seminar + metodology + construction) 30 + 30 (0 + 30 + 0 + 0) Course objectives To introduce students to introduce (audiory + laboratory + seminar + metodology + construction) Learning outcomes: Literative students in the post of an antice (audior) Learning outcomes: Literative students in the post of an antice (audior) Literative students in the post of an antice (audior) Sability to distinguish between deskop PCS, laptops, table PCs, in regard with typical users. Level:6 Sability to relate the type and the goal of an information system to the function of an organisation system. Level:6 Sability to relate the type and lifterent modes of organisation and different types of networks intended for busines for odising the between the interact and extranet. Level:6 Sability to distinguish between the timest, intranet and extranet. Level:6 Sability to distinguish between the timest, intranet and extranet. Level:6 Sability to distinguish between the timest, intranet and extranet. Level:6 Sability to understand the different modes of organisation and different types of networks interded for busines for other and pictures, collaboratory material weak andity to the abusine of organisation and an estrong objects and r	Name	Computer Applications	•	•	•				
Teaching mode Lectures + exercises (auditory + laboratory + seminar + metadology + construction) S0 + 30 (0+30+0+0) Teachers Lectures 1. Daniješ Pongrac , prof. Laboratory exercises (Danige Pongrac , prof. Course objectives To anotatory exercises (Danige Pongrac , prof. Laboratory exercises (Danige Pongrac , prof. Learning outcomes: Lidentify subsystems of organization information technology and its business application; to teach students how to work on a PC danige Pongrac , prof. Learning outcomes: Lidentify subsystems of organizational its Level 6 Jability to indicide the pre-out the pod of an information system; Level 6, addition; to indicide the pre-out the pod of an information system to the function of on organization system. Level 6, addition; to indicide the pre-out the pod of an information system to the function on organization system. Level 6, addition; to indicide the pre-out the pod of an information system or organization system. Level 6, addition; to indicide the pre-out the pod of an information system and system. Level 6, addition; to indicide the the end of an information system and distant data transfer. Jability to distinguish between the internet, internet and extranet. Level 6 Bability to distinguish between the internet, internet on data and instruction stoces and references (Labels of 2, 2, 2, 1, 1, 2, 1, 1, 2, 1, 1, 2, 1, 1, 2, 1, 1, 2, 1, 1, 2, 1, 1, 2, 1, 1, 2, 1, 1, 2, 1, 1, 2, 1, 1, 2, 1, 1, 2, 1, 1, 1, 2, 1, 1, 2, 1, 1, 2, 1, 1, 1, 2, 1, 1, 1, 2, 1, 1, 1, 2, 1, 1, 1, 2, 1, 1, 1, 1, 2, 1, 1, 1, 2, 1, 1, 1, 2, 1, 1, 1, 2, 1, 1, 1, 2, 1, 1, 1, 2, 1, 1, 1, 2, 1, 1, 1, 2, 1, 1, 1, 1, 2, 1, 1, 1, 2, 1,	Status	1st semester - Undergr	aduate professional stud	ly in computing (Redovn	i raarstvo) - obligatory c	ourse			
Teachers Letures:1. Daniele Porgrac, prof. Laboratory exercises; Daniele Porgrac, prof. Laboratory exercises; Daniele Porgrac, prof. Course objectives To introduce students to information technology and its business application; to teach students how to work on a PC Course objectives To introduce students to information technology and its business application; to teach students how to work on a PC Learning outcomes: Lidentify users of organizational IS. Level6 Level6, 7 4.ability to make a proposal of basic computer configuration (CR), memory, hard disk, input and output devices). Level6, 7 4.ability to understand the difference between operational and supporting information systems. Level6 Bability to distinguish between the Internet, intranet and extranet. Level6 8.ability to distinguish between the Internet, intranet and extranet. Level6 Bability to distinguish between the Internet, intranet and extranet. Level6 7.1.1.2.ability to make a proposal information systems by means of Windows and an e-mail account. Level6, 7.1.1.2.ability to make a proposal information system in profession organization appliests and references (tables of content and picture). Collaboration, mail merge, macroinstructions. Level6, 7.1.1.2.ability to make a proposal information system in the business. Definition of the system, the business application and merge macroinstructions. Level6, 7.1.1.2.ability to make a proposal information system in the system in the system intervices. Level6, 7.1.1.2.ability to make a proposal information system in the system and istication. Level6, 7	Teaching mode	Lectures + exercises (a work at home	auditory + laboratory + s	seminar + metodology +	construction)	30+30 (0+30+0+0) 90			
Laboratory exercises: Danijela Pongraz, prof. Course objectives: To introduce students to information technology and its business application; to teach students how to work on a PC Lidentify outcomes: Jidentify subsystems of organizational IS. Level:6 Zability to distinguish between desktop PCs. liptops, tablet PCs. in regard with typical users. Level:6 Sability to make a proposal of basic computer configuration (CH), memory, hand disk, input and output devices). Ability to understand the difference between operational and supporting information systems, Level:6 Sability to understand the difference between operational and supporting information systems, Level:6 Course objective: Course objective: Course objective: Course objective: Course objective: Course objective: Sability to indentify the threads related to the abuse of both the information technologies and distant data transfer. Level:6 Course objective: District to interact the threads of computer working environment by using astery and health protection rule book. Level:6, 7 District to interact to the dubies of the dubies of redifing calcing the course, the dubies of the dubies of redifing calcing the dubies and graphs, macroinstructors. Level:6, 7 District to interact the thread of the resentation by using instructions for editing calcing the dubies of the resentation. Level:6, 7 District to resenta	Teachers	Lectures:1. Danijela Po Laboratory exercises:p	ngrac , prof. rof. Marta Alić			<u>1</u>			
Course objectives To introduce students to information technology and its business application; to teach students how to work on a PC a standard configuration Learning outcomest Lidentify subsystems of organizational IS. Level6 2 ability to make a proposal of basic computer configuration (FPU, memory, hard disk, input and output devices). 4 ability to make a proposal of basic computer configuration (FPU, memory, hard disk, input and output devices). 4 ability to understand the data ofference between operational and supporting information systems. Level6 5 ability to relate the type and the goal of an information system to the function of an organisation system. Level6.7 7 ability to distinguish between the internet, information and extranet, Level6.8 8 ability to distinguish between the internet, information and extranet, Level6.7 10 ability to propare a workplace taking into account the computer working environment by using a safety and healt protection nucle box. Level6.7 11 ability to manage information systems by means of Windows and an e-mail account. Level6.7 12 ability to propare a workplace taking into account the computer working environment by using a safety and healt protection in the box. Level6.7 12 ability to make and other (Internet). Instructions for equiting and inserting outperformation. Level6.7 12 ability to propare a pt presentation by using master slide, animation, object insertion, transfer from one to anoth pot problem solving 12 ability to propare apt presentation by usin		Laboratory exercises:	Danijela Pongrac , prof.						
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7.Colloquium- the first theoretical part, 2h, Learning outcomes:1,6,7,8 8.Hardware - basic computer parts, development in the last five years, 2h, Learning outcomes:2,3 10.Software - The types and kinds of IS, 2h, Learning outcomes:4,5 11.Lifeware - Ergonomics jobs with computers, organizational knowledge, 2h, Learning outcomes:7,8 12.Orgware - IS protection and safety, 2h, Learning outcomes:9,10 13.Orgware - privacy policy, 2h, Learning outcomes:9,10 14.Colloquium - the second theoretical part, 2h, Learning outcomes:2,3,4,5,8,9,10 15.correction Colloquium first or second, 2h, Learning outcomes:1,2,3,4,5,6,7,8,9,10 15.correction Colloquium first or second, 2h, Learning outcomes:1,2,3,4,5,6,7,8,9,10 15.correction Colloquium first or second, 2h, Learning outcomes:1,2,3,4,5,6,7,8,9,10 18boratory 1.Introduction to work, exploring computer equipment, 2h 2.Office 365, OneDrive, 2h, Learning outcomes:11 3.WORD - word processing, working with documents, registration, tagging and editing text, formatting text and paragraphs, working with images, preparation for printing, mail merge, save the document in a different format, 2h, Learning outcomes:11,12 4.WORD - style text and headings, numbering, wrapp, footnotes, page numbering, table of contents, bookmarks and cross-references, tabs, home page, 2h, Learning outcomes:11,12 5.WORD - working with tables, pictures, mathematical expressions, graphical representation of data, 2h, Learning outcomes:11,12 6.WORD -		5.Netware- The develop 6.Cloud computing, 2h	pment of the Internet an , Learning outcomes:5	d its use of Intranet and	Extranet, 2h, Learning o	utcomes:6			
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12.Orgware - IS protection and safety, 2h, Learning outcomes:9,10 13.Orgware - privacy policy, 2h, Learning outcomes:9,10 14.Colloquium - the second theoretical part, 2h, Learning outcomes:2,3,4,5,8,9,10 15.correction Colloquium first or second, 2h, Learning outcomes:1,2,3,4,5,6,7,8,9,10 Course content 1aboratory 1.Introduction to work, exploring computer equipment, 2h 2.Office 365, OneDrive, 2h, Learning outcomes:11 3.WORD - word processing, working with documents, registration, tagging and editing text, formatting text and paragraphs, working with images, preparation for printing, mail merge, save the document in a different format, 2h, Learning outcomes:11,12 4.WORD - style text and headings, numbering, wrapp, footnotes, page numbering, table of contents, bookmarks and cross-references, tabs, home page, 2h, Learning outcomes:11,12 5.WORD - working with tables, pictures, mathematical expressions, graphical representation of data, 2h, Learning outcomes:11,12 6.WORD - Macros, creating and filling out a form, document protection, 2h, Learning outcomes:11,12 7.Colloquium, 2h, Learning outcomes:11,12 8.correction colloquium, 2h, Learning outcomes:11,12 9.EXCEL-spreadsheet, data entry and data types, formulas, operators, cell references, comments, worksheets, 2h, Learning outcomes:11,13		10.Software - The type 11.Lifeware - Ergonomi	s and kinds of IS, 2h, Lea ics jobs with computers,	arning outcomes:4,5 organizational knowledg	e, 2h, Learning outcome	es:7,8			
14.Colloquium - the second theoretical part, 2h, Learning outcomes:2,3,4,5,8,9,10 15.correction Colloquium first or second, 2h, Learning outcomes:1,2,3,4,5,6,7,8,9,10 Course content 1.Introduction to work, exploring computer equipment, 2h 2.Office 365, OneDrive, 2h, Learning outcomes:11 3.WORD - word processing, working with documents, registration, tagging and editing text, formatting text and paragraphs, working with images, preparation for printing, mail merge, save the document in a different format, 2h, Learning outcomes:11,12 4.WORD - style text and headings, numbering, wrapp, footnotes, page numbering, table of contents, bookmarks and cross-references, tabs, home page, 2h, Learning outcomes:11,12 5.WORD - working with tables, pictures, mathematical expressions, graphical representation of data, 2h, Learning outcomes:11,12 6.WORD - Macros, creating and filling out a form, document protection, 2h, Learning outcomes:11,12 7.Colloquium, 2h, Learning outcomes:11,12 8.correction colloquium, 2h, Learning outcomes:11,12 9.EXCEL-spreadsheet, data entry and data types, formulas, operators, cell references, comments, worksheets, 2h, Learning outcomes:11,13		12.Orgware - IS protect 13.Orgware - privacy p	tion and safety, 2h, Lear olicy, 2h, Learning outco	ning outcomes:9,10 mes:9,10					
Course content laboratory 1.Introduction to work, exploring computer equipment, 2h 2.Office 365, OneDrive, 2h, Learning outcomes:11 3.WORD - word processing, working with documents, registration, tagging and editing text, formatting text and paragraphs, working with images, preparation for printing, mail merge, save the document in a different format, 2h, Learning outcomes:11,12 4.WORD - style text and headings, numbering, wrapp, footnotes, page numbering, table of contents, bookmarks and cross-references, tabs, home page, 2h, Learning outcomes:11,12 5.WORD - working with tables, pictures, mathematical expressions, graphical representation of data, 2h, Learning outcomes:11,12 6.WORD - Macros, creating and filling out a form, document protection, 2h, Learning outcomes:11,12 7.Colloquium, 2h, Learning outcomes:11,12 8.correction colloquium, 2h, Learning outcomes:11,12 9.EXCEL-spreadsheet, data entry and data types, formulas, operators, cell references, comments, worksheets, 2h, Learning outcomes:11,13		14.Colloquium - the sec 15.correction Colloquiu	cond theoretical part, 2h im first or second, 2h, Le	, Learning outcomes:2,3, arning outcomes:1,2,3,4	,4,5,8,9,10 ,5,6,7,8,9,10				
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 4.WORD - style text and headings, numbering, wrapp, footnotes, page numbering, table of contents, bookmarks and cross-references, tabs, home page, 2h, Learning outcomes:11,12 5.WORD - working with tables, pictures, mathematical expressions, graphical representation of data, 2h, Learning outcomes:11,12 6.WORD - Macros, creating and filling out a form, document protection, 2h, Learning outcomes:11,12 7.Colloquium, 2h, Learning outcomes:11,12 8.correction colloquium, 2h, Learning outcomes:11,12 9.EXCEL-spreadsheet, data entry and data types, formulas, operators, cell references, comments, worksheets, 2h, Learning, outcomes:11,12 		3.WORD - word process paragraphs, working w Learning outcomes:11,	sing, working with docun ith images, preparation 1 12	for printing, mail merge,	ng and editing text, form save the document in a	different format, 2h,			
outcomes:11,12 6.WORD - Macros, creating and filling out a form, document protection, 2h, Learning outcomes:11,12 7.Colloquium, 2h, Learning outcomes:11,12 8.correction colloquium, 2h, Learning outcomes:11,12 9.EXCEL-spreadsheet, data entry and data types, formulas, operators, cell references, comments, worksheets, 2h, Learning outcomes:11,13		4.WORD - style text an cross-references, tabs, 5.WORD - working with	d headings, numbering, home page, 2h, Learnin tables, pictures, mather	wrapp, footnotes, page r g outcomes:11,12 matical expressions, grag	numbering, table of cont	ents, bookmarks and data. 2h. Learning			
 /.Colloquium, 2h, Learning outcomes:11,12 8.correction colloquium, 2h, Learning outcomes:11,12 9.EXCEL-spreadsheet, data entry and data types, formulas, operators, cell references, comments, worksheets, 2h, learning outcomes:11,13 		outcomes:11,12 6.WORD - Macros, crea	ting and filling out a forr	n, document protection,	2h, Learning outcomes:	11,12			
Learning outcomed: 11.13		 7.Colloquium, 2h, Learn 8.correction colloquium 9.EXCEL-spreadsheet, 6 	ning outcomes:11,12 n, 2h, Learning outcomes data entry and data type	s:11,12 es, formulas, operators, c	ell references, comment	ts, worksheets, 2h,			
10.EXCEL-table formatting, functions count, if, lookup, date and other, graphics, 2h, Learning outcomes:11,13 11.EXCEL-operation with the data, grouping, filtering, sorting, pivot table, 2h, Learning outcomes:11,13		Learning outcomes:11, 10.EXCEL-table formati 11.EXCEL-operation wit	13 ting, functions count, if, i th the data, grouping, fill	lookup, date and other, g tering, sorting, pivot tabl	graphics, 2h, Learning ou le, 2h, Learning outcome	utcomes:11,13 vs:11,13			

	12.EXCEL - conditional formatting, goal seek, data tables one and two variables, scenario, macro and document protection, 2h, Learning outcomes:11,13 13.Colloquium, 2h, Learning outcomes:11,13 14.correction colloquium, 2h, Learning outcomes:11,13 15.Presentations, select a theme, input elements, making the Master slide, animation, 2h, Learning outcomes:14
Required materials	Basic: classroom, blackboard, chalk General purpose computer laboratory Overbead projector
	Operating supplies Paper, pencil
Exam literature	Basic literature: Materijali s predavanja i vježbi dostupni na LMS-u.
	Simović, Maletić, Afrić: Osnove informatike, Zagreb 2010. Additional literature:
	K.C.Laudon, J.P.Laudon: Essentials of Management Information Systems, 12th edition, Pearson Education, England, 2017. D. Grundler, Kako radi račupalo, PRO MIL, Varaždin, 2004.
	D. Grundler, D. Franulić Šarić, T. Rolich, Primijenjeno računalstvo - Izabrani primjeri, Graphis, Zagreb, 2002.
Students obligations	maximum of 2 absences from exercises
Knowledge	1. Check preperation for exercise 20% marks
evaluation during	Points rating 0-9 Good
Semester	10-14 Good
	15-19 Very good
	20-24 Great
	2. Colloquium theory, first part, 20% of the grade, outcomes 1,2,3,4,5
	14-15 excellent
	12-13 very good
	10-11 good
	0-7 inadequate
	3. Colloquium theory, second part, 20% of the grade, outcomes 6,7,8,9,10 Number of points Rating
	14-15 excellent
	12-13 very good
	8-9 is sufficient
	0-7 inadequate
	4. Colloquium WORD (75% for passage), 20% of the grade. Outcomes 11:12
	Points rating 95-100 excellent
	89-94 very good
	82-88 good
	0-74 inadequate
	5. Colloquium EXCEL (75% for passage), 20% of the grade. outcomes 13
	Points rating 95-100 excellent
	89-94 very good
	82-88 good
	0-74 inadequate
Knowledge	First test preparation for exercise 20% marks
evaluation after	Points rating
semester	10-14 good
	15-19 very good
	20-24 excellent
	Second The theory written examination, 40% marks, outcomes 1,2,3,4,5,6,7,8,9,10
	Number of points Rating
	23-27 very good
	19-22 good
	15-18 sufficient
	U-14 Inadequate
	3rd WORD (75% for passage), 20% of the grade. outcomes 11.12
	Points rating
	A2-TOO excellent

	89-94 very good 82-88 good 75-81 sufficient 0-74 inadequate 4th EXCEL (75% for passage), 20% of the grade. outcomes 13 Points rating 95-100 excellent 89-94 very good 82-88 good 75-81 sufficient 0-74 inadequate					
Student activities:	Aktivnost ECTS (Written exam) 5					
Remark	This course can be used for final thesis theme					
Prerequisites:	No prerequisites.					
ISVU equivalents:	22744;					
Proposal made by	Vesna Alić-Kostešić dipl.ing.stroj., 9.5.2015					

Code WEB/ISVU	23367/154954	ECTS	7.0	Academic year	2018/2019
Name	Computer Architecture				
Status	3rd semester - Softwar	e engineering (Redo	vni raarstvo) - oblig	atory course3rd semester - Co	mouter systems and
	network engineering (F	Redovni raarstvo) - o	bligatory course		
Teaching mode	Lectures + exercises (a work at home	auditory + laboratory	y + seminar + meto	dology + construction)	30+45 (30+15+0+0) 135
Teachers	Lectures:1. dr.sc.rač. N Lectures:2. dr.sc.rač. D Auditory exercises: Jele Laboratory exercises: J	vica Dodig , prof.v.š. Davor Cafuta , prof.v. ena Kapelac elena Kapelac	šk.		
Course objectives	To introduce students to composed of elementa	to the structure of co ry logic circuits;	omplex algorithms a	nd logical components (bistab	les, registers and counters)
Learning outcomes:	1.ability to create a co 2.ability to design a co 3.ability to calculate a 4.ability to control Logi 5.ability to redesign log 6.ability to design a co	mbination set accorc mbination logical set minimized form of a isim program for sim gical functions so tha unter or a clock-cont	ding to predefined sp t based on a current logical circuit by me nulation and testing at they use NI or NIL trolled shift register	pecifications. Level:6,7 : state table and vice versa. Le eans of both algebraic and Kar by means of logical circuits. Le l circuits only. Level:6,7 based on bistables. Level:6,7	vel:6,7 naugh methods. Level:6 evel:6,7
Methods of carrying out lectures	Ex cathedra teaching Case studies Demonstration Simulations Modelling				
Methods of carrying out auditory exercises	Group problem solving Computer simulations				
Methods of carrying out laboratory exercises	Laboratory exercises, c	computer simulation:	S		
Course content lectures	1.Boolean functions an 2.The conversion logic 3.Minimization of logic 4.Combination circuits, 5.Flip-flops, 3h 6.Von Neumann model 7.Atmel AVR computer 8.AVR microcontroller 9.AVR computer archit 10.Assembler program 11.AVR directives and 12.C - Assembler relati 13.Input-output data tr 14.Memory hierarchy, 15.Virtual memory, 3h	d algebra, 3h, Learn circuits in the form of functions, 3h, Learn , 3h, Learning outcor l of computer archite architecture, 3h programming, 3h, Lear ecture commands, 5 examples, 2h, Learr operators, 3h, Learn on, 2h, Learning out ansfer, 3h, Learning 3h, Learning outcomes	ing outcomes:5 using only NAND and ing outcomes:5 mes:1,4 ecture, 2h earning outcomes:5, ih, Learning outcomes:2 ning outcomes:2 ing outcomes:2 comes:3 outcomes:3 es:6 i6	d NOR gates, 3h 6 es:4,5	
Course content auditory	1.No classes, 1h 2.Boolean algebra, logi 3.Conversion of functic 4.Minimizing logical fur 5.First partial exam, 1h 6.Combination circuits, 7.Flip-flops, 1h, Learnir 8.Simple assembler pro 9.Second partial exam, 10.Complex assembler 11.Subroutines and ma 12.Operations with me 13.Interruption system 14.No classes, 1h, Leai 15.Final Exam, 1h, Lea	ical functions and cir ons into the NI or NIL nctions, 1h, Learning n, Learning outcomes , 1h, Learning outcor ng outcomes:3,4 ograms, 1h, Learning , 1h, Learning outcor programs, 1h, Learning cro instructions, 1h, mory, 1h, Learning outcor rning outcomes:4 rning outcomes:2,3	rcuit, 1h, Learning or I form, 1h, Learning g outcomes:5 s:4,5 mes:1,4 g outcomes:2 mes:1,2,4 ning outcomes:2 , Learning outcomes outcomes:2,3 mes:2,3	utcomes:4 outcomes:4,5 ::2,3	
Course content laboratory	1.No classes, 2h 2.No classes, 2h 3.Boolean algebra, logi 4.Conversion of functic 5.Minimizing logical fur 6.Combination circuits, 7.Flip-flops, 2h 8.Compensation of mis 9.No classes, 2h 10.Simple assembler p 11.Complex assembler 12.Subroutines and ma 13.Operations with me 14.Interruption system	ical functions and cir ons into the NI or NIL nctions, 2h, Learning , 2h, Learning outcor seed exercises, 2h, Learnir orgrams, 2h, Learnir acro instructions, 2h, mory, 2h, Learning outcor	rcuit, 2h, Learning of I form, 2h g outcomes:5 mes:1,4 earning outcomes:1 ning outcomes:2 ning outcomes:2 , Learning outcomes outcomes:2 mes:2	utcomes:4 ,4,5 ::2	

	15.Compensation of missed exercises, 2h, Learning outcomes:2
Required materials	Basic: classroom, blackboard, chalk General purpose computer laboratory Overhead projector
Exam literature	Basic literature: S. Ribarić, Arhitektura mikroprocesora, Tehnicka knjiga, Zagreb, 1990. U. Peruško, Digitalna elektronika, Školska knjiga Zagreb, 1993. John L. Hennessy, David A. Patterson, Computer Architecture: A Quantitive Approach; Fifth Edition, Morgan Kaufmann, 2011. AVR ATmega128 Instruction Set
	Dodatna: S. Ribarić, Arhitektura racunala RISC i CISC, Školska knjiga, Zagreb, 1996. S. Ribarić, Naprednije arhitekture mikroprocesora, Element, Zagreb, 1997. L. Budin, Mikroracunala i mikroupravljaci, Element, Zagreb, 1997. Marko Čupić: Zbirka riješenih zadataka iz Digitalne elektronike i Digitalne logike, Zagreb, 2005. Myke Predko: Digital Electronics Demystified, McGraw Hill, 2006. Gnter Schmitt: Mikrocomputertechnik mit Controllern der Atmel AVR-RISC-Familie, Oldenbourg Verlag Mnchen, 2010.
Students obligations	Solving ten laboratory exercices.
Knowledge evaluation during semester	Ten laboratory exams - 6 points each Two partial exams - 10 points each Final exam - 20 points Optional points for additional effort Every partial exam has a correctional exam Maximum 100 points 0-49 - not good enough 50-61 - sufficient 62-74 - good 75-86 - very good 87-100 - excellent Written examling overland with 40 points and remaining 60 points are transforred from the achievement on laboratory
Knowledge	Written exam is evalued with 40 points, and remaining 60 points are transferred from the achievement on laboratory exams during the semester time.
semester	
Student activities:	Aktivnost ECTS (Written exam) 7
Remark	This course can be used for final thesis theme
Prerequisites:	No prerequisites.
ISVU equivalents:	22734;142128;
Proposal made by	Jelena Kapelac

Code WEB/ISVU	23359/148934	ECTS	5.0	Academic year	2018/2019	
Name	Computer Games Deve	elopment				
Status	5th semester - Softwar	e engineering (Redovni i	raarstvo) - elective cours	e5th semester - Comput	er systems and network	
Taa ahin u waada	engineering (Redovni r	aarstvo) - elective cours	e			
reaching mode	work at home 90					
Teachers	Lectures: Tin Kramberg	ger struč. spec. ing. tech	n. inf., pred.		4	
	Laboratory exercises: F	Renata Kramberger				
Course objectives	Mastering the techniqu	les of development of co	mputer games.			
Learning outcomes.	2.Establish (similarity / 3.Physics and mathem	difference) between cor atics for game developm	nventional programming lent Level:6	and programming comp	uter games Level:6	
	4.Plan development of 5. Design computer ga	computer games Level me surroundings Level	:6,7 :6			
	6.Animate objects and 7.Integrate artifitial inte 8.Create computer gan	surroundings with comp eligence with objects Le ne by the book Level:6	uter game programming evel:6,7	framework. Level:6,7		
Methods of carrying out lectures	Ex cathedra teaching Case studies Demonstration Simulations Modelling Discussion					
	Homework presentatio	'n				
Methods of carrying	Laboratory exercises o	n laboratory equipment				
out laboratory	Laboratory exercises, o	computer simulations				
exercises	Data mining and know	ledge discovery on the V	/eb			
	Discussion, brainstorm	ing				
	Computer simulations Workshop					
Course content	1.Basics of computer g	ames, 2h, Learning outc	omes:1,2,4			
lectures	3.User interface and ga	ame flow management, 2	2h, Learning outcomes:1,	,2,4,5		
	4.3D object basics, 2h,	Learning outcomes:1,2,	3,4,5			
	5.3D object modeling a	and animations, 2h, Leari	ning outcomes:5,6			
	7.Animations in a 3D e	nvironment, 2h, Learning	g outcomes:6			
	8.Colloquium, 2h, Lear	ning outcomes:1,2,3,4,5,	,6 Somoci2 4 5 6			
	10.Artificial intelligence	e in game development,	2h, Learning outcomes:2	2,6,7		
	11.Alternative platform	is for the development o	f computer games, 2h, L	earning outcomes:4,8		
	12.Multiplayer game de 13.Guest lecturer, 2h. !	evelopment, 2h, Learning Learning outcomes:8	g outcomes:2,4,8			
	14.Student project pres	sentation, 2h, Learning c	outcomes:1,2,3,4,5,6,7,8			
	15.Student project pres	sentation, 2h, Learning o	outcomes:1,2,3,4,5,6,7,8			
Course content	1.No classes. 2h					
laboratory	2.Introduction to Objec	t Oriented Programming	, 2h, Learning outcomes	:1,2		
	3.Getting to know the o	development tool, introd	uction to 2D game devel	opment, 2h, Learning ou	itcomes:1,2	
	5.Games textures and	surroundings, 2h, Learni	ng outcomes:1,2,4,5			
	6.Getting to know 3D g	Jame development, 2h, L	earning outcomes:2,3,5			
	8.Colloguium, 2h, Lear	ning outcomes:1,2,3,4,5	.6			
	9.3D object animation,	2h, Learning outcomes:	5,6			
	10.3D animations and a	avatars, 2h, Learning out	tcomes:5,6 s:4 5			
	12.Particle systems and	d audio, 2h, Learning out	tcomes:2,4,5,6			
	13.Artificial intelligence	e, 2h, Learning outcomes	s:7			
	15.Colloquium, 2h, Lea	arning outcomes:1,2,3,4,	5,6,7,8			
Required materials	General purpose comp Whiteboard with marks	uter laboratory				
	Overhead projector	515				
-						
Exam literature	Lauren S. Ferro: Gamifi Dr. Edward Lavieri: Go	Ication with Unity 5.x, Pa	ckt Publishing, 2016. 5 Packt Publishing, 2015			
	Patrick Felicia: Getting	Started with Unity, Pack	t Publishing, 2013.			
	Claudio Scolastici: Unit	y 2D Game Developmen	t Cookbook, Packt Publis	hing, 2015		
Students obligations	Attendance at 70% of I	aboratory exercises, sub	mission of the practical	project.		

Knowledge	The theoretical part of the learning outcomes, max, 20 points						
evaluation during	The theoretical part of the rearming outcomes, maxing points						
semester	2 colloquiums, 10 points each.						
	For passage, it is necessary to collect> 5 points.						
	Practical part of the learning outcomes max 80% of the points:						
	Exercises, max. 40 points.						
	The preparation, commitment, content and appearance of the project that is given for the exercise are evaluated.						
	Colloquium exercises: individual reports, a condition for a positive grade.						
	Practical work, max 40 points.						
	Total, max. 100 points. 91 - 100 = 5 78 - 90 = 4						
	64 - 77 = 3						
	51 - 63 = 2						
	50 and under, under-achievement						
Knowledge	Total = Written exam + points during the semester of labs						
evaluation after							
semester	Total, max. 100 points.						
	91 - 100 = 5						
	78 - 90 = 4						
	64 - 77 = 3						
	51 - 63 = 2						
	50 and under, under-achievement						
Student activities:	Aktivnost ECTS						
	(Written exam) 5						
Remark	This course can be used for final thesis theme						
Prerequisites:	Students cannot enroll in this course unless they have passed Programiranje						
Proposal made by	Tin Kramberger , 02.06.2017.						

Code WEB/ISVU	23373/154963	ECTS	6.0	Academic year	2018/2019
Name	Computer Networks	•		•	
Status	4th semester - Softwa	re engineering (Redovni	raarstvo) - obligatory cou	urse4th semester - Comp	outer systems and
	network engineering (Redovni raarstvo) - oblig	gatory course		-
Teaching mode	Lectures + exercises (work at home	auditory + laboratory +	seminar + metodology +	- construction)	30+30 (0+30+0+0) 120
Teachers	Lectures:1. Dunja Bjele Lectures: Nikolina Kas Laboratory exercises: Laboratory exercises:	obrk Knežević dipl.ing unić struč.spec.ing.tech Dunja Bjelobrk Knežević Nikolina Kasunić struč.s	n.inf. dipl.ing pec.ing.techn.inf.		
Course objectives	To transfer to students network layer and tran students to set up a sr	s the knowledge related hsport layer; to introduc mall-sized to medium-siz	to basic principles of a co e students to problems re zed computer network	omputer network, physic lated to internetworking	al layer, data layer, and routing; to qualify
Learning outcomes:	1.ability to analyse the 2.to decompose comp 3.to identify computer 4.ability to design a so 5.ability to test the fur 6.to evaluate the com	e way today's computer uter communications in r networks functional ele olution of small-sized to nctionality of a small-siz puter network security.	networks function. Level: to layers. Level:6 ments and equipments. L a medium-sized compute ed to a medium-sized con Level:6,7	6 Level:6 r network. Level:6 nputer network. Level:6	
Methods of carrying out lectures	Ex cathedra teaching Guest lecturer Case studies Discussion				
Methods of carrying out laboratory exercises	Laboratory exercises of Laboratory exercises, Mind mapping Workshop	on laboratory equipment computer simulations			
Course content lectures	1.Introduction to Comi 2.Computer Networking P 4.Networking Media ar 5.Physical Layer, 2h, L 6.Data Link Layer, 2h, L 7.Network Layer and II 8.Transport Layer, 2h, 9.Routing, 2h, Learnin 10.Application Layer a 11.Generic Cabling, 2H 12.Wireless Networks, 13.LAN MAN WAN netw 14.Service Oriented Mi 15.Computer Networks	munications and Compu Architecture - Reference rinciples, 2h, Learning o n Protocols, 2h, Learning earning outcomes:1 Learning outcomes:1 Pv4 addressing, 2h, Lea Learning outcomes:2,3 g outcomes:1 nd Network Applications n, Learning outcomes:1 2h, Learning outcomes:1 2h, Learning outcomes:s exorking, 2h, Learning ou etworks, 2h, Learning ou	ter Networks, 2h, Learnin e Models, 2h, Learning ou utcomes:1 g outcomes:1 rning outcomes:1 s, 2h, Learning outcomes: 1 tcomes:1 utcomes:1,2 outcomes:1	g outcomes:1 tcomes:1 1	
Course content laboratory	1.Network Tools, MAC 2.Network Tools, ARP I 3.Network Tools, Netw 4.IPv4 Addressing, 2h, 5.IPv4 Subnetting - VL 6.Subnetting and LAN 7.Basic Router Configu 8.Static Routing, 2h, L 9.WLAN Configuration, 10.Dynamic Routing P 11.Configuring DHCP of 12.Hands-On Lab, 2h, 13.Hands-On Lab, 2h, 14.Generic Cabling, 2h 15.Final Exam, 2h, Lea	and IP Address Usage, 2 Protocol, 2h, Learning or ork Protocol Analizer, 2l Learning outcomes:1,4 SM, 2h, Learning outcor Configuration, 2h, Learning outcores:1,2,4 , 2h, Learning outcomes:1,2,4 , 2h, Learning outcomes:2,3, Learning outcomes:2,3,4 arning outcomes:2,3,4	2h, Learning outcomes:1,4 utcomes:1,4,5 h, Learning outcomes:1,4 nes:1,4,5 hing outcomes:1,4 ccomes:2,4 :1,3,4 h, Learning outcomes:3,4 g outcomes:2,3,4 4 5	4,5 ,5 ,5	
Required materials	Special purpose labora Special purpose comp Whiteboard with mark Overhead projector Maquette Tools	atory uter laboratory ers			
Exam literature	Basic literature: 1. A.S. Tanenbaum, Da 0132126958 Additional literature: 2. James F. Kurose, Ke 2012 ISBN-10: 013285	avid J. Wetherall: Compu ith W. Ross: Computer N 6204 ISBN-13: 978-013	iter Networks (5th Edition Jetworking: A Top-Down A 2856201), Prentice Hill, October ⁻ Approach (6th Edition)	7, 2010, ISBN-10:



Students obligations	Lectures regular attendance (max. 2 absence) Labs regular attendance (max. 2 absence)				
Knowledge evaluation during semester	Preliminary exam 1. teoretical test 1st part Preliminary exam 2. practical exam Preliminary exam 3. teoretical test 2nd part				
Knowledge evaluation after semester	written and oral exams				
Student activities:	Aktivnost (Written exam) (Written exam)	ECTS 5 1			
Remark	This course can be used for final thesis theme				
Prerequisites:	No prerequisites.				
ISVU equivalents:	22715;171887;				
Code WEB/ISVU	23365/154946	ECTS	5.0	Academic year	2018/2019
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Name	Computer Networks	Administration			·
Status	5th semester - Softv	vare engineering) (Redovni raarstvo) - electiv	ve course5th semester - Com	puter systems and network
	engineering (Redovi	ni raarstvo) - obl	igatory course		
Teaching mode	Lectures + exercises	s (auditory + lab	ooratory + seminar + metod	lology + construction)	15+45 (0+45+0+0)
Teachers	Work at nome	olobrk Knožović	dinl ing		90
leachers	Laboratory exercise	s: Dunja Bjelobrk	< Knežević dipl.ing		
	Laboratory exercise	s: Nikolina Kasur	nić struč.spec.ing.techn.inf.		
Course objectives	Learning of compute	er networks man	agement and administration	า	
Learning outcomes:	1.identification of co	mputer network	s management and adminis	stration tasks. Level:6	
	3 medium complex	computer netwo	rk design. Level:6	etwork. Level:6	
	4.ability to control a	small-sized to n	nedium-sized computer netw	work. Level:6,7	
	5.ability to detect th	e causes of mal	functions in a small-sized to	medium-sized computer net	work. Level:6
	6.defining of compu	ter network secu ility requierement	Irity elements. Level: /		
	8.evaluation of com	puter networks o	outsourcing needs. Level:6,7	1	
	,		•		
Methods of carrying	Ex cathedra teachin	g			
out lectures	Guest lecturer				
	Seminar, students p	resentation and	discussion		
	referral visit				
Methods of carrying	Laboratory exercise	s on laboratory e	equipment		
out laboratory	Laboratory exercises	s, computer simi	ulations		
exercises	Other	ing			
	Data center visit				
Course content	1.Introduction to net	twork managem	ent (1), 1h, Learning outcon	nes:1	
lectures	2.Uvod u upravljanje	e mreama (2), 11 pont basis tools	1, Learning outcomes:2		
	4.Modern networkin	a equipment. 1h	Learning outcomes:2		
	5.Contemporary cor	nputer network (design, 1h, Learning outcom	nes:3	
	6.Generic cabling sy	stems, 1h, Lear	ning outcomes:3		
	8 OSI network mana	r networks, In, L aement model	earning outcomes:3		
	9.SNMP network ma	nagement, 1h, L	earning outcomes:5		
	10.Network traffic m	nanagement, 1h,	Learning outcomes:5		
	11.Networking secu	rity - firewall, NA	T, 1h, Learning outcomes:5		
	13.Computer netwo	rks administratio	n, 1h, Learning outcomes:5		
	14.Outsourcing in co	omputer network	ks, 1h, Learning outcomes:8		
	15.Data center man	agement, 1h, Le	arning outcomes:7		
Course content	1 Pacie Poutor Confi	iguration BID Br	atocal Static Pouting 2h L	arning outcomocy2 5	
laboratory	2.Dynamic Routing I	Protocols, OSPF	Protocol, 3h, Learning outco	mes:2,5	
	3.Access Lists, 3h, L	earning outcome	es:2,4,5,6		
	4.Switching, VLAN, S	Switch Port Secu	rty, 3h, Learning outcomes:	2,4,5	
	6.Multilaver Switchir	g, 3n, Learning d ng. 3h. Learning	outcomes:2,3,4,5		
	7.Generic Cabling, 3	h, Learning out	comes:2,5		
	8.Encapsulation and	authentication,	3h, Learning outcomes:2,3,	4,5,6	
	9.Network Documer	iting, 3h, Learnir etwork Protocol	1g outcomes:2,6 Analyzer 3h Learning outco	nmes 2 4 5 6	
	11.SNMP Protocol, N	letwork Monitorii	ng Tools, 3h, Learning outco	omes:4,5,6	
	12.IPv6 addressing,	3h, Learning out	tcomes:1,3		
	13.Visit to Data Cen	ter, 3h, Learning	j outcomes:5,6		
	15.Final Exam, 3h, L	earning outcom	es:2,3,4,5,6		
		-			
Required materials	General purpose cor	mputer laborator	ſУ		
	Special purpose con	nputer laboratory	У		
	Overhead projector	II KEIS			
	Tools				
	Special equipment				
Exam literature	Pacie literature				
	1. M. Burges: Princir	oles of Network a	and System Administration.	John Wiley and Sons. 2002	
	2. Greg Shields The	Shortcut Guide	To Network Management for	the Midmarket' Realtimepul	olishers.com, e-knjiga,
	izdanje 2007				
	Additional literature				
	1. Internetworking T	echnologies Har	ndbook, Handbook By Cisco	Chapter 56: Simple Network	Management Protocol.
	Publisher: Cisco Pres	ss; 4 edition 200	3	,	J,
	2. C. Hunt: TCP/IP No	etwork Administ	ration, OReilly, 2002		



Students obligations	Regular lecture attendance (maximum of 2 absences from lectures) Regular exercise attendance (maximum of 2 absences from exercises)				
Knowledge evaluation during semester	Preliminary exam No 1: teoretical exam part 1 Preliminary exam No 2: practical exam: computer network configuration Preliminary exam No 3: teoretical exam part 2				
Knowledge evaluation after semester	written and oral exams				
Student activities:	Aktivnost ECTS (Written exam) 5				
Remark	This course can be used for final thesis theme				
Prerequisites:	Students cannot enroll in this course unless they have passed Računalne mreže				
ISVU equivalents:	22654;200101;				
Proposal made by	May 25 2015				

Code WEB/ISVU	24059/194673	ECTS	5.0	Academic year	2018/2019
Name	Computing system sec	urity			
Status	4th semester - Softwar	e engineering (Redo	vni raarstvo) - obl	igatory course4th semester - Con	puter systems and
Tooching mode	network engineering (F	(edovní raarstvo) - o	bligatory course	todology (construction)	20 + 20 (0 + 20 + 0 + 0)
	work at home		y + seminal + me	todology + construction)	90
Teachers	Lectures:1. dr.sc.rač. C Lectures:2. Tin Krambe Lectures:3. dr.sc.rač. N Lectures:4. Ivan Cesar Lectures:5. Ognjen Mit Laboratory exercises: 1 Laboratory exercises: 1 Laboratory exercises: 1	avor Cafuta , prof.v. ger struč. spec. ing /ica Dodig , prof.v.š. mag. ing. rović struč. spec. ing r.sc.rač. Davor Cafut van Cesar mag. ing. r.sc.rač. Ivica Dodig Fin Kramberger struč	šk. J. techn. inf., pred. J. techn. inf., pred. ta , prof.v.šk. , prof.v.š. 5. spec. ing. techn.	inf., pred.	-
Course objectives	The student is introduc	ed to the modern co	oncepts of comput	er security in software solutions a	ind computer networks
Learning outcomes:	1.Ability to formulate t	hreats to computer s	security. Level:6,7		I
	2.ability to generalize f 3.ability to clasify netw 4.ability to comment to 5.ability to reconsider	eatures of individual ork threats and thre odays concepts of co solutions for compute	l participants in th eats when creating omputer security ir er system protecti	e concept of computer security. L software solutions. Level:6,7 a software solutions and compute on in the program and network c	.evel:6,7 r systems. Level:6 oncept. Level:6,7
Methods of carrying	Ex cathedra teaching				
out lectures	Demonstration Simulations Discussion Questions and answers	5			
Methods of carrying out laboratory exercises	Workshop				
Course content	1.Introduction to comp	uter security, 2h, Le	arning outcomes:	,2,3	
	3.Social Engineering, 2 4.Cycle of hackers, 2h, 5.Network attacks, 2h, 6.IOT security, 2h, Lear 7.Buffer overflow attac 8.Malicious programs, 9.Cryptography, 2h, Le 10.Windows Active Dir 11.Mobile Application S 12.Database system se 13.Application Security 14.Web Service Securit 15.Exam, 2h, Learning	h, Learning outcomes: Learning outcomes: Learning outcomes: ning outcomes:1,2,3 k, 2h, Learning outco 2h, Learning outcomes:1,2 ectory Security, 2h, Learning ecurity, 2h, Learning outcomes:1,2,3,4,5	es:4,5 2,3 1,2 3 omes:3,4,5 c,4 Learning outcomes: g outcomes:2,3,4 outcomes:3,4,5 mes:4,5 comes:1,2,3	s:1,2	
Course content	1, 1h				
	2, 11 3, 1h 4, 1h 5, 1h 6, 1h 7, 1h 8, 1h 9, 1h 10, 1h 11, 1h 12, 1h 13, 1h 14, 1h 15, 1h				
Required materials	Special purpose compt Whiteboard with marke Overhead projector	iter laboratory ers			
Exam literature	Basic literature: Andrew S. Tanenbaum Avi Silberschatz: Opera Jon Erickson: Hacking T Peter Kim: The hacker Vijay Kumar Velu: Mast	: Modern Operating S Iting System Concep The Art of exploitatio Playbook 2 (red tean tering Kali Linux for J	Systems, ots n n and blue team v Advanced Penetra	ersion) tion Testing	
Students obligations	-				
Knowledge	exam				



evaluation during semester		
Knowledge evaluation after semester	Exam	
Student activities:	Aktivnost (Written exam) (Oral exam)	ECTS 3 2
Remark	This course can be used for final thesis theme	
Prerequisites:	No prerequisites.	
ISVU equivalents:	22714;	
Proposal made by	dr.sc. Davor Cafuta, prof.v.š. 01.01.2019.	

Code WEB/ISVU Name	23078/85250 Databases	ECTS	5.0	Academic year	2018/2019	
Status	4th semester - Software engineering (Redovni raarstvo) - obligatory course4th semester - Computer systems and network engineering (Redovni raarstvo) - obligatory course					
Teaching mode	Lectures + exercises (a work at home	uditory + laboratory + s	seminar + metodology +	construction)	15+45 (15+30+0+0) 90	
Teachers	Lectures: 1. Tin Kramber Auditory exercises: Tin Laboratory exercises: B Laboratory exercises: R Laboratory exercises: Ti	rger struč. spec. ing. tec Kramberger struč. spec. rigitta Cafuta enata Kramberger in Kramberger struč. spo	hn. inf., pred. ing. techn. inf., pred. ec. ing. techn. inf., pred.			
Course objectives	system. Practical work with themselves and master	the concept, properties with the database mana different methods of ha	and role of databases ar gement system will enab indling databases.	ld data mining systems i le them to qualify stude	in an information nts to familiarize	
Learning outcomes:	 ability to build a datal ability to design norm ability to create basic ability to construct SQ ability to control embed ability to connect mul ability to sort and gro ability to compare an ability to organize and 	base model. Level:6,7 alized database. Level:6,7 SQL queries. Level:6,7 QL queries with data filte edded SQL functions. Le tiple data tables using S up data retrieved by a q outer SQL query with ar d optimize the database	sring. Level:6,7 vel:6,7 GQL queries. Level:6,7 juery. Level:6 n inner SQL query. Level: using indexes. Level:6,7	6,7		
Methods of carrying out lectures	Ex cathedra teaching Case studies Demonstration Simulations Modelling Discussion Questions and answers					
Methods of carrying out auditory exercises	Laboratory exercises on Laboratory exercises, co Interactive problem solv	l laboratory equipment omputer simulations ving				
Methods of carrying out laboratory exercises	Laboratory exercises on Laboratory exercises, co Interactive problem solv	l laboratory equipment omputer simulations ving				
Course content lectures	1.Introduction, primary 2.Data types, model, no 3.Basic DDL and DML cl 4.String, date, and agre 5.Cartesian product, na 6.Join, 2h, Learning out 7.Alias, 2h, Learning out 8.Group by, having, 2h, 9.Subselect, 2h, Learnin 10.Keys, indexes, full te 11.Query optimization, 12.Creating and restorin 13.Working with anothe 14.Guest lecturer, 2h 15.Repeat for the final e	and foreign, database d ormalization, 2h, Learnin auses, 2h, Learning out gate functions, NULL va tural join, 2h, Learning o comes:3,4,5,6 Learning outcomes:7 Ig outcomes:8 ext indexes, 2h, Learning 2h, Learning outcomes: ng database backups, 2l ir database system and exam, 2h, Learning outcomes	esign, 2h, Learning outco g outcomes:1,2 comes:3,4 lues, 2h, Learning outcor outcomes:3,4,5,6 g outcomes:9 9 h, Learning outcomes:9 tools, 2h, Learning outco omes:1,2,3,4,5,6,7,8,9	omes:1,2 nes:3,4,5 mes:1,2,3,4,5,6,7,8,9		
Course content auditory	1.No classes, 2h 2.No classes, 2h 3.Database design, 2h, 4.Database import, basi 6.Functions and the WH 7.Cartesian product, na 8.JOIN, 2h, Learning out 9.Colloquium, 2h, Learnin 10.Aliases, 2h, Learning 11.GROUP BY, ORDER B 12.Subselect, 2h, Learnin 13.Indexes, 2h, Learnin 14.Compensatory exerce 15.Final exam, 2h, Learn	Learning outcomes:1 on, 2h, Learning outcom ic DDL and DML clauses IERE clause, 2h, Learnin tural join, functions, 2h, icomes:4,5,6 ing outcomes:4,5,6 IY, HAVING clauses, 2h, ing outcomes:6,8 g outcomes:9 ises, 2h, Learning outcom	es:1,2 , 2h, Learning outcomes: g outcomes:3,4,5 Learning outcomes:4,5,6 6 Learning outcomes:6,7 pmes:1,2,3,4,5,6,7,8,9 5,6,7,8,9	3		
Course content laboratory	1.No classes, 2h 2.No classes, 2h 3.Database design, 2h, 4.Database normalizatio 5.Database import, basi	Learning outcomes:1 on, 2h, Learning outcom ic DDL and DML clauses	es:1,2 , 2h, Learning outcomes:	3		

	 6.Functions and the WHERE clause, 2h, Learning outcomes:2,3,4 7.Cartesian product, natural join, functions, 2h, Learning outcomes:4,5,6 8.JOIN, 2h, Learning outcomes:4,5,6 9.Colloquium, 2h, Learning outcomes:1,2,3,4,5,6 10.Aliases, 2h, Learning outcomes:4,5,6 11.GROUP BY, ORDER BY, HAVING clauses, 2h, Learning outcomes:6,7 12.Subselect, 2h, Learning outcomes:9 14.Compared the function of the provision of th
	15.Final exam, 2h, Learning outcomes:1,2,3,4,5,6,7,8,9
Required materials	General purpose computer laboratory Whiteboard with markers Overhead projector
Exam literature	Basic literature: 1. Kramberger, T.; Duk, S.; Kovačević, R.: Baze podataka, TVZ, Zagreb, 2018, ISBN: 978-953-7048-70-9 1. Abraham Silberschatz: DATABASE SYSTEM CONCEPTS SIXTH EDITION, 2011 2. Radovan, M.: Baza podataka, Informator, Zagreb, 1993.
	Additional literature: 1. Tkalac, S.: Relacijski model podataka, Informator, Zagreb, 1988. 2. Ullman, D.,J.: Database and Knowledge - base Systems, Computer Science Press, 1999. 3. Date, C.J.: An Introduction to Database Systems, Addison-Wesley publishing Company, New York. 1994
Students obligations	Presence at all laboratory exercises with a minimum of 10% points
Knowledge	

evaluation during semester

Code WEB/ISVU	24061/195334	ECTS	5.0	Academic year	2018/2019	
Name	eBook design			-		
Status	6th semester - Compu	ter systems and network	engineering (Redovni ra	arstvo) - elective course	6th semester - Software	
	engineering (Redovni r	raarstvo) - elective cours	e			
Teaching mode	Lectures + exercises (a work at home	Lectures + exercises (auditory + laboratory + seminar + metodology + construction) 30+30 (0+30+0+0) work at home 90				
Teachers	Lectures:1. dr.sc. Maja	Turčić pred.				
Course chiestiyes	Laboratory exercises:d	r.sc. Maja Turcic pred.	ork applied in installation	n of complay application	programe together with	
Course objectives	the risks and ways of t	heir compensation		Tor complex application	programs, together with	
Learning outcomes:	1.ability to analyse the	users' requests and lim	itations before the devel	opment phase. Level:6		
	2.ability to design mod	lules which fit into the w	hole of an application. Le	evel:6		
	3.ability to organise te	am work and cooperatio	n . Level:6,7	n Lovel:67		
	5.ability to present the	e current state and the a	dvancements achieved in	n the development of an	application . Level:6,7	
	6.ability to write documentation . Level:6,7					
	7.ability to prepare tes	its to check the function	ality of an application. Le	vel:6,7		
	o.ability to plan the ms		n of an application. Leve	1:0,7		
Methods of carrying	Guest lecturer					
out lectures	Case studies					
	Demonstration					
	Ouestions and answer	S				
	Seminar, students pres	sentation and discussion				
Methods of carrying	Laboratory exercises, o	computer simulations				
exercises	Discussion, brainstorm	ing				
	Interactive problem so	lving				
Course contout	1 Decident exercises April	insting description 2h				
Course content	2 Project groups. Appli 2 Project groups. Appli	cation description. , 2n,	Learning outcomes:1			
	3.Guest lecturer., 2h, l	_earning outcomes:1,3	Learning outcomes.1			
	4.User requirements a	nd constraints, 2h, Learr	ing outcomes:1			
	5.Application features.	, 2h, Learning outcomes	:2,4	autcomoci2 2		
	7.Working on module of	development . Progress r	eport., 2h. Learning out	comes:2.3.5		
	8.Working on module of	development . Progress r	eport., 2h, Learning out	comes:2,3,5		
	9.Working on module of	Jevelopment . Progress r	eport., 2h, Learning out	comes:2,3,5		
	10.Working on module	development Progress	report., 2n, Learning ou report 2h Learning ou	tcomes:2,3,5		
	12.Working on module	development . Docume	nting. , 2h, Learning out	comes:6		
	13.Presentation., 2h, L	earning outcomes:5,6				
	14.Presentation., 2h, L	earning outcomes:4,5,6				
	IJ.Fresentation., 21, E	earning outcomes.4,3,0				
Course content	1.Working on module of	development . Progress r	eport., 2h, Learning out	comes:1,5,6		
laboratory	2.Working on module of	development . Progress r	eport., 2h, Learning out	comes:1,5,6		
	3.Working on module of 4 Working on module of	Jevelopment . Progress r development . Progress r	eport., 2h, Learning out eport 2h Learning out	:0mes:1,5,6 :0mes:1 5 6		
	5.Working on module of	development . Progress r	report., 2h, Learning out	comes:1,5,6		
	6.Working on module of	development . Progress r	eport., 2h, Learning out	comes:1,5,6		
	7.Working on module of Reconstruction 2b. Lo	Jevelopment . Progress r	eport., 2h, Learning out	:omes:1,5,6		
	9.Presentation., 2h, Le	arning outcomes:1,5,6				
	10.Presentation., 2h, L	earning outcomes:1,5,6				
	11.Presentation., 2h, L	earning outcomes:1,5,6				
	12.Presentation., 2h, L 13.Presentation., 2h, L	earning outcomes:1,5,6 earning outcomes:1,5,6				
	14.Presentation., 2h, L	earning outcomes:1,5,6				
	15.Presentation., 2h, L	earning outcomes:1,5,6				
Pequired materials	Special purpose comp	uter laboratory				
Required materials	Whiteboard with mark	ers				
	Overhead projector					
Exam literature	Basic literature:	u odabranog komercijaln	og programskog naketa			
	Additional literature:					
	1. Y.F. Musaji: Integrate	ed Auditing of ERP Syste	ms, John Wiley Sons, 200	02		
	2. T.F. Wallace, M.H. K	remza: ERP:Making It Ha	ppen: The Implementers	Guide to Success with E	nterprise Resource	
	Planning, John Wiley So	ons, 2000				
Students obligations	maximum of 3 absence	es from exercises				
Knowledge	Redovitost pohaa#15#	#10#50\$Programski zad	atak#1#90#50\$			
-						

evaluation during semester	
Knowledge evaluation after	written and oral exams
semester	
Remark	This course can be used for final thesis theme
Prerequisites:	No prerequisites.
ISVU equivalents:	22649;

Code WEB/ISVU	23369/154957	ECTS	7.0	Academic year	2018/2019
Name	Electrical Engineering a	and Electronics Basics	•		
Status	2nd semester - Underg	raduate professional stu	dy in computing (Redovr	ii raarstvo) - obligatory o	course
Teaching mode	Lectures + exercises (a work at home	auditory + laboratory + s	seminar + metodology +	construction)	45+45 (30+15+0+0) 120
Teachers	Lectures:1. Željko Stoja	nović			
	Auditory exercises: Eug Laboratory exercises: E	jen Poljičak mag.ing.eit Jugen Poljičak mag.ing.e	it		
Course objectives	Student should obtain a	an overview over conten	nporary electronic device	s and master basic circu	uit analysis methods in
	order to evaluate the p	erformance ofelectronic	products.		
Learning outcomes:	1.Formulate a mathem	atical solution to a elect	ric circuit or its part by us	sing basic methods of ci	rcuit analysis
	2. Include the features of	of nonlinear and multipo	le electronic components	into a mathematical so	lution to a circuit.
	Level:6,7				
	3.Calculate currents and voltages in simple electronic and electrical circuits with several components Level:6				
	4.Draw a scheme of basic electrical and electronic circuits. Level:6				
	6.Draw symbols and characteristics of basic electronic components Level:6				
	7.Design a simple elect	ronic circuit (digital swit	ch, amplifier, comparato	r and trigger, rectifier, s	tabilizer, filter, indicator
	light, heater, multivibra 8 Conduct Jaboratory m	ator, A/D converter, SH c	ircuit) Level:6	uits (current voltage w	aveform with its
	characteristic values, ti	ime relationships) Leve	l:6,7	uits (current, voitage, w	
	9.Analyse electrical circ	uits by using simple sim	ulation programs Level	:6	
	Level:6.7	or a physical quantity in	an electrical circuit, base	a on physical laws and e	environment innuence
	/				
Methods of carrying	Ex cathedra teaching				
outliectures	Demonstration				
	Discussion				
Methods of carrying	Group problem solving				
out auditory	Discussion, brainstormi	ing			
exercises	Other	-			
Methods of carrying	Short tests. Laboratory exercises of	n laboratory equipment			
out laboratory	Discussion, brainstormi	ing			
exercises	Computer simulations				
Course content	1.Introduction, Basic co	oncepts, Resistors, 3h. I	earning outcomes:1.4.6.	10	
lectures	2.Basic electricity laws.	Basic electrical instrum	ents and power sources.	Electrical work, energy	and power., 3h,
	Learning outcomes:1,3	,4,7,10 itanco 3h Learning out	comes: 1.3.6.10		
	4.Capacitors. RC circuit	s., 3h, Learning outcom	es:1,3,4,6,7,10		
	5.Magnetism, magnetic	force, electric motors.,	3h, Learning outcomes:1	.,7,10	
	outcomes:1.4.5.6.7.10	ction, self induction, mu	tual induction. Alternatin	g current, generator, tra	insformer., 3n, Learning
	7.Alternate current res	ponses of resistor, conde	enser and inductor. Appa	rent, reactive and real p	ower. Application of
	phasor calculus., 3h, Le	earning outcomes:1,3,4,7	7,10 Nonlinear and multiper	t elements in circuits. Fu	indomentals of
	semiconductors., 3h, Le	earning outcomes:1,2,3,	4,6,7,9,10	c elements in circuits. I t	
	9.PN-Junction. Diodes.,	3h, Learning outcomes:	1,2,3,4,6,7,10		10
	Transistors: basic conc	es: rectifiers, stabilizers	and limiters., 2h, Learnin ming outcomes:2,3,4,6,7	g outcomes:1,2,3,4,6,7, .10	10
	11.Bipolar transistors a	ns applications., 3h, Lea	rning outcomes:1,2,3,4,6	5,7,10	
	12.Unipolar transistors	and applications., 2h, Le	earning outcomes:1,2,3,4	.,6,7,10 3 4 7 10	
	13.Operational amplifie	ers., 3h, Learning outcom	nes:1,3,4,6,7,10	5,4,7,10	
	14.Multivibrators: bista	ble, monostable, astable	e. Schmitt trigger., 3h, Le	arning outcomes:1,3,4,6	5,7,10
	15.A/D converters. SH (circuits., 3n, Learning ou	tcomes:1,3,4,6,7,10		
Course content	1.Physical quantities ar	nd units. Ohms law and r	esistors., 2h, Learning ou	utcomes:1,3,4,6,7,10	
auditory	2.Serial and parallel con	nnections of resistors. A	nalysis of circuits by Kirc	hhoffs laws. , 2h, Learnir	ıg
	3.Analysis of circuits by	/ Kirchhoffs laws. Voltage	e loss, open circuit, short	circuit., 2h, Learning ou	Itcomes:1,3,4,7,10
	4.Voltage loss, open cir	cuit, short circuit. Electr	ical work, energy and po	wer., 2h, Learning outco	mes:1,3,4,7,10
	5.Electrical work, energe 6 BC-circuits and batter	yy and power. Electrosta	tics., 2h, Learning outcor	nes:1,3,4,6,7,10	
	7.Magnetic force, elect	ric motors., 2h, Learning	outcomes:1,3,4,10	511103.1,5,4,0,7,10	
	8.Induced voltage., 2h,	Learning outcomes:1,3,	4,6,7,10		
	9.5Inusoide. Sinusoidal	steady-state in basic RL or calculus, Ideal transfo	mer., 2h, Learning	outcomes:1,3,4,5,7,10 mes:1,3,4,5,6,7,10	
	11.Diode circuits. Stabi	lizers., 2h, Learning out	comes:1,2,3,4,6,7,10		
	12.Circuits with bipolar	transistors., 2h, Learnin	g outcomes:1,2,3,4,6,7,1	.0	
	14.0perational amplifie	ers - basic properties and	Learning outcomes:1,2,3 I circuits., 2h, Learning o	,4,0,7,10 utcomes:1,2,3,4.6.7.10	
	15.Mulivibrators and tri	iggers., 2h, Learning out	comes:1,2,3,4,6,7,10		



Course content	1.No lessons
laboratory	2.No lessons
	3.No lessons
	4.Kirchhoffs laws, 2h, Learning outcomes:1,3,6,8,10
	5.No lessons
	6.No lessons
	7.RC- circuits responses, 2h, Learning outcomes:6,8,10
	8.No lessons
	9.No lessons
	10.No lessons
	11.No lessons
	12.Diode and rectifiers, 2h, Learning outcomes:4,6,8,10
	13.Bipolar junction transistor switch, 2h, Learning outcomes:4,6,8,10
	14.Operational amplifier, 2h, Learning outcomes:3,4,6,8,10
	15.Multivibrators, 2h, Learning outcomes:2,3,8
Required materials	Basic: classroom, blackboard, chalk
	Special purpose laboratory
	Video equipment
	Maquette
	Operating supplies
	electronic components-resistors, tranistrors, diodes, capacitors, integrated circuits, printed circuit boards, protoboards
Exam literature	Osnovna:
	1. E. Stanić, Osnove elektrotehnike, Školska knjiga
	2. J. Grilec, D. Zorc, Osnove elektronike, Školska knjiga
	3. Ž. Stojanović, Osnove elektrotehnike i elektronike - predavanja, 2018
	Additional literature:
	1. M. Nahvi, J.A. Edminister: Schaum's Outline of Electric Circuits, McGraw-Hill
Students obligations	Laboratory attendance (100%) and minimal total score (25%) during the semester.
Knowledge	Written tests (2) 90 points
evaluation during	Laboratory work (5) 10 points
semester	Total 100 points
	Final grade with minimum of 8 points of laboratory work and each written test with minimum of 50% :
	63-76 points (3)
	76-90 points (4)
	90-100 points (5)
	Written test grades without of minimum of 8 points of laboratory work or each written test with minimum of 50% :
	KOIOKVIJU:
	50-05 (points (2)
	US-70 points (5)
Knowledge	written exam and oral exam.
somester	Minimum of 50% from written exam required for attending oral exam
semester	Animalian of 50% from written examined in attending of a exam.
	less than 50 % (1)
	from 50 to 62 % (2)
	from 62 to 73 % (3)
	from 73 to 88 % (4)
	from 89 to 100 % (5)
	Optional seminar work.
Student activities:	Aktivnost ECTS
	(Experimental work) 1
	(Constantly tested knowledge) 5
	(Classes attendance) 1
Remark	This course can be used for final thesis theme
Prerequisites:	No prerequisites.
ISVU equivalents:	22743;
Proposal made by	Zeljko Stojanović

Code WEB/ISVU	23070/84849	ECTS	3.0	Academic year	2018/2019
Name	English for Computing				
Status	1st semester - Undergr	aduate professional stud	ly in computing (Redovr	ni raarstvo) - elective cou	urse
Teaching mode	Lectures + exercises (a work at home	auditory + laboratory + s	seminar + metodology +	- construction)	30+30 (30+0+0+0) 30
Teachers	Lectures:1. dr.sc. Biljan Auditory exercises:dr.s Auditory exercises: Zor	na Stojaković ,prof.v.š. u c. Ivana Špiranec prof. vi ran Vulelija	trajnom zvanju isoke škole		-
Course objectives	To develop language sl	kills related to developing	g skills of understanding	native and non-native	English speakers and
	1 ability to apply on the	now to use various diction	onnaries; developing cor	mmunicating skills. To d	evelop students
Leanning outcomes.	global communication. 2.ability to generate in: 3.ability to generate in: 3.ability to be skilled in 4.to translate texts rela 5.ability to categorize t 6.ability to give comme 7.ability to distinguish l English. Level:6 8.ability to give comme the field of expertise. L 9.ability to analyse onli 10.ability to present in 11.ability to devise dial	Level:6 dividually oral and writte reading texts related to ated to the field of experi- the computing terminologents on various issues ari- between the vocabulary ents on the quality of the evel:6 ine translators. Level:6 English the content relat logues related to the End	en communication in Eng the field of expertise. L tise. Level:6,7 gy in both English and C ising in the English of co and grammar structures English language on th ted to computing . Level Jish of computing . Level	glish. Level:6,7 evel:6,7 croatian. Level:6 omputing, both in English s in the English of compo e Internet, especially of l:6,7 l:6,7	n and in Croatian. Level:6 uting and in standard the content related to
	12.to analyse various t 13.to make a difference 14.to generate sentence 15.to identify both regu 16.to analyse the Engli	ypes of dictionary. Level e between the Croatian f ces applying the sequenc ular and irregular forms o sh verb aspect. Level:6	6 ree word order and the re of tenses. Level:6,7 of English plural. Level:6	English fixed word order	r. Level:6
Methods of carrying out lectures	Ex cathedra teaching Guest lecturer Case studies Demonstration Discussion Questions and answers Seminar, students pres Homework presentation	s sentation and discussion n			
Methods of carrying out auditory exercises	Group problem solving Traditional literature ar Data mining and knowl Essay writing Discussion, brainstormi Interactive problem sol Workshop	nalysis edge discovery on the W ing ving	/eb		
Course content lectures	1.English as a lingua fra 2.English in IT and Corr 3.Computing and IT ter 4.Croatiian computing 1 5.English language on 1 6.Machine translation, 7 7.Online Machine Trans 8.Dictionary, 2h, Learni 9.Learning foreign lang 10.Preliminary exam, 2 11.Direct/Indirect Spee 12.Sequence of tenses, 13.Croatian and English 14.English verb tense a 15.Preliminary exam, 2	anca, 2h, Learning outco oputing, 2h, Learning out minology, 2h, Learning terminology, 2h, Learning the Internet, 2h, Learning 2h, Learning outcomes:7 slators, 2h, Learning outco ing outcomes:3,12 juages online, 2h, Learni th, Learning outcomes:1, ch, 2h, Learning outcomes: , 2h, Learning outcomes: h noun plurals, 2h, Learni aspect, 2h, Learning outco th, Learning outcomes:1	mes:1 comes:1,4,5 g outcomes:4,5 g outcomes:1,2,3,4,5,6 g outcomes:1,4,5,6,7 ,8,9 comes:7,8,9 ng outcomes:6 2,3,5,6,7,8,9,10 es:13 13,14 ing outcomes:15 comes:16 1,12,13,14,15,16		
Course content auditory	1.Computer application 2.Types of computer; E 3.Input devices; Active 4.Scanner; Active voice 5.Output devices; Com 6.Preliminary exam, 2h 7.Data storage; Conditi 8.Magnetic data storag 9.Optical storage; Moda 10.Flash memory; Moda 11.My ideal computer s 12.In a cybercafe; Sequ 13.Buying a computer; 14.Mobile phones; Engl	is; English verb tenses, 2 inglish verb tenses (exer voice/Passive voice, 2h, Lear parision of adjectives an t, Learning outcomes:2,3 ional clauses, 2h, Learnir e; Conditional clauses ar al verbs, 2h, Learning ou system; Direct/Indirect sp Jence of tenses, 2h, Lear Plural of nouns, 2h, Lear lish verb tense aspect, 21	th, Learning outcomes:2 cises), 2h, Learning outc Learning outcomes:2,3,4,6,1 d adverbs, 2h, Learning ,4,7,10 ng outcomes:2,4,10 nd sequence of tenses, 2 tcomes:2,3,4,7,10 ttcomes:2,3,4,7,10 ttcomes:2,3,4,10 peech, 2h, Learning outc ming outcomes:1,2,6,13 ming outcomes:2,3,10,1 h, Learning outcomes:1,	7,4,7,10 comes:2,4,6,10 4,7,10 0 outcomes:2,3,4,6,10 2h, Learning outcomes:2 comes:2,3,4,6,10,13 ,14 5 2,9,16	2,3,10

	15.Preliminary exam, 2h, Learning outcomes:2,3,4,7,10
Required materials	Basic: classroom, blackboard, chalk Whiteboard with markers Overhead projector Video equipment Operating supplies
Exam literature	1.Professional English in Use ICT, for Computer and Internet, Esteras, Fabre, Cambridge University Press 2. materijali s predavanja (objavljeni na web stranicama kolegija) sastavljeni od tekstova preuzetih iz suvremene stručne i metodičke literature 3. Kiš, M. Englesko-hrvatski, hrvatsko-engleski školski informatički rječnik. Naklada Ljevak, Zagreb, 2003. 4. Stojaković,B. Skripta English for computer users I 5. Mihaljević, M. Hrvatsko računalno nazivlje, 1993
Students obligations	Regular attendance in both lectures and exercies (maximum of 3 absences from exercises are tolerated).
Knowledge evaluation during semester	2 preliminary exams in both lectures and exercises; homework
Knowledge evaluation after semester	Written and oral exam.
Student activities:	AktivnostECTS(Oral exam)3
Remark	This course can be used for final thesis theme
Prerequisites:	No prerequisites.
ISVU equivalents:	22848;
Proposal made by	Professor Biljana Stojaković, PhD

Code WEB/ISVU	23096/91910	ECTS	19.0	Academic year	2018/2019			
Name	Final thesis				•			
Status	6th semester - Softwa engineering (Bedovni	are engineering (Redovn	i raarstvo) - elective cour	rse6th semester - Comp	outer systems and network			
Teaching mode	Lectures + exercises (auditory + laboratory + seminar + metodology + construction) work at home 15+225 (225+0+0+0) 330							
Teachers	Lectures:1. dr.sc. Željko Širanović prof.v.š.							
Course objectives	To teach students how to use the acquired knowledge in solving engineering tasks							
Learning outcomes:	 1.ability to identify a problem or a development area related to a subject assigned or approved by a mentor. Level:6 2.ability to analyse the achievements in the area. Level:6 3.ability to analyse a problem or a development area. Level:6 4. ability to devise a solution to a problem. Level:6,7 5.ability to provide a practical solution to a problem. Level:6,7 6.ability to reach a conclusion about the reaches made and the possibility of generalisation of work . Level:6,7 7.ability to present one's work results. Level:6,7 							
Methods of carrying out lectures	Simulations Modelling Questions and answe	rs						
Methods of carrying out auditory exercises	Other							
Course content lectures	1.General purpose of 2.The structure of the Learning outcomes:1, 3.Form thesis per cha (images, tables, diagu 4.Defining the prepar outcomes:1,2,3,4,5,6 5.Development of ma outcomes:1,2,3,4,5,6 6.Individual work with 7.Individual work with 8.Individual work with 10.Individual work with 11.Individual work with 12.Individual work with 13.Individual work with 13.Individual work with 14.Individual work with 15.Individual work with	the thesis, broader and e final thesis: introductio ,2,3,4,5,6,7 upter, guidance and refer rams, etc.), 2h, Learning ation and planning of the ,7 tetrials for public present ,7 n students (individual con studentima prema dogovon studentis (individual con th students (individual con	a narrower scope of work n, theoretical and practic rence to the literature, m outcomes:1,2,3,4,5,6 e thesis, research relevan tation and preparation fo nsultation by appointmer yoru, 2h nsultation by appointmer onsultation by appointme onsultation by appointme	 c, 2h, Learning outcome al, work results, conclu anufacture and labeling nt sources (literature), 2 r a public presentation, nt), 2h nt), 2h ent), 2h 	es:1,2,3,4,5,6,7 sion, summary, 2h, g of graphical components 2h, Learning . 2h, Learning			
Course content auditory	1.The agreement with 2.Student independer 2h 3.Student independer 2h 4.Student independer 2h 5.Student independer 2h 6.Student independer 2h 7.Student independer 2h 9.Student independer 2h 10.Student independer 2h 11.Student independer 2h 13.Student independer 2h 13.Student independer 2h 13.Student independer 2h 14.Student independer 2h	the mentor and define ntly develops his/her the ntly develops his/her the ently develops his/her the	specific issues (engineer oretical and practical the oretical and practical the eoretical and practical the eoretical and practical th eoretical and practical th	ing area and topic nam isis (the guidance and s isis (the guidance and isis (the guidance and	e) for the final work, 2h supervision by a mentor), supervision by a mentor),			
Required materials	Overhead projector							



Exam literature	Konzultacije sa mentorom ovisn o području i temi rada					
Students obligations	Regular class attendance 10% Made final project according to the instructions on the final paper 90% Signature "Applications for the evaluation and defense of final thesis" signed by the mentor					
Knowledge evaluation during semester	Regular attendance of lectures and consultations 10% Made final project according to the instructions on the final paper 90%					
Knowledge evaluation after semester	Regular attendance of lectures and consultations 10% Made final project according to the instructions on the final paper 90%					
Student activities:	Aktivnost ECTS (Project) 19					
Remark	This course can not be used for final thesis theme					
Prerequisites:	Students cannot enroll in this course unless they have passed Fizika Students cannot enroll in this course unless they have passed Objektno orijentirano programiranje Students cannot enroll in this course unless they have passed Uvod u web tehnologije Students cannot enroll in this course unless they have passed Matematika II Students cannot enroll in this course unless they have passed Programiranje Students cannot enroll in this course unless they have passed Programiranje Students cannot enroll in this course unless they have passed Osnove elektrotehnike i elektronike Students cannot enroll in this course unless they have passed Primjena računala Students cannot enroll in this course unless they have passed Kineziološka kultura II Students cannot enroll in this course unless they have passed Kineziološka kultura II					
ISVU equivalents:	39173;39692;200088;					

Code WEB/ISVU	23071/85203 ECTS	3.0	Academic year	2018/2019					
Name	German for computing								
Status	1st semester - Undergraduate pro	fessional study in computir	ng (Redovni raarstvo) - elective co	ourse					
Teaching mode	Lectures + exercises (auditory + work at home	aboratory + seminar + me	todology + construction)	30+30 (30+0+0+0) 30					
Teachers	Lectures:2. Doc. dr. sc. Lidija Tepeš Golubić v. pred. Auditory exercises:1. Doc. dr. sc. Lidija Tepeš Golubić v. pred.								
Course objectives	Language skills, german language for specific purposes								
Learning outcomes:	 ability to be skilled in reading texts related to the field of expertise, to find relevant information in a text. Level: ability to demonstrate the knowledge of computing terminology and the ability to use it in communication. Level: ability to demonstrate the knowledge of grammar structures. Level: ability to present a text related to the field of expertise and provide an opinion on it. Level: ability to use properly all of 4 language skills. Level: ability ability to use dictionaries (monolingual and bilingual). Level: ability to translate specific professional papers from German into Croatian. Level: 								
Methods of carrying out lectures	Ex cathedra teaching Discussion Questions and answers Homework presentation Other								
Methods of carrying	Group problem solving								
out auditory exercises	Discussion, brainstorming Interactive problem solving Other								
Course content lectures	1.Introductory lecture, 2h, Learnir 2.Importance of foreign language 3.Grammar of the German langua 4.New media, 2h, Learning outcor 5.Grammar of the German langua 6.Computer and Network Technol 7.Colloquium 1, 2h, Learning outc 8.Social networks, 2h, Learning ou 9.Social networks, 2h, Learning ou 10.Grammar of the German langu 11.Computer Basics, 2h, Learning 12.Curriculum vitae, 2h, Learning 13.Dictionary and vocabulary, 2h, 14.German literature, 2h, Learning out	ig outcomes:1,5 study , 2h, Learning outcor ge - Nouns, 2h, Learning ou nes:2,3,4,5 ge - Verbs, 2h, Learning ou ogy , 2h, Learning outcome omes:1,2,3,4,5,6,7 itcomes:2,3,4,5,7 itcomes:4,5,7 age - Verbs with separable outcomes:4,5,7 outcomes:2,3 Learning outcomes:3,4,5,6 g outcomes:3,6,7 comes:1,2,3,4,5,6,7	mes:1,5 utcomes:2,3,4 itcomes:2,3 is:2,3,4,5,7 prefixes, 2h, Learning outcomes:	2,3					
Course content auditory	1.Introductory lecture, 2h, Learnir 2.Importance of foreign language 3.Grammar of the German langua 4.New media, 2h, Learning outcor 5.Grammar of the German langua 6.Grammar of the German langua 7.Colloquium 1, 2h, Learning out 8.Social networks, 2h, Learning ou 9.Computer Basics, 2h, Learning ou 9.Computer Basics, 2h, Learning 11.Curriculum vitae, 2h, Learning 12.Dictionary and vocabulary, 2h, 13.German literature, 2h, Learnin 14.German literature, 2h, Learning 15.Colloquium 2, 2h, Learning out	ig outcomes:1,5 study, 2h, Learning outcon ge - Nouns, 2h, Learning ou nes:2,3,4,5 ge - Verbs, 2h, Learning ou ge - Verbs, 2h, Learning ou omes:1,2,3,4,5,6,7 utcomes:1,2,4,5,7 outcomes:1,2,5,6 outcomes:1,2,5,6 Learning outcomes:3,4,5,6 g outcomes:1,3,6,7 comes:1,2,3,4,5,6,7	nes:1,5 utcomes:2,3,4 itcomes:2,3						
Required materials	Basic: classroom, blackboard, cha Whiteboard with markers Overhead projector Special equipment	lk							
Exam literature	Basic literature: 1. Marčetić, T.: Pregled gramatike 2. Hansen-Kokoruš R., Matešić J., 3. izbor tekstova objavljenih na w suvremene stručne literature, ča	njemačkoga jezika, Školsk Pečur-Medinger Z., Znika M eb stranicama kolegija, tek sopisa i s Interneta	a knjiga, Zagreb L: Njemačko-hrvatski univerzalni r stovi preuzeti iz	ječnik, Zagreb, 2005.					
Students obligations	Attending classes and participatio	n in the process							
Knowledge evaluation during semester	Preliminary exam; seminar paper								



Zagreb University of Applied Sciences

Knowledge evaluation after semester	Written and/or oral exam						
Student activities:	Aktivnost (Activity in class) (Written exam) (Report)	ECTS 1 1 1					
Remark	This course can be used for final thesi	This course can be used for final thesis theme					
Prerequisites:	No prerequisites.						
ISVU equivalents:	24374;						
Proposal made by	PhD. Lidija Tepeš Golubić, senior lectu	irer, 1st of June 2015					

Code WEB/ISVU	23633/156980	ECTS	4.0	Academic year	2018/2019			
Name	Introduction to Artificia	al Intelligence						
Status	4th semester - Softwa	re engineering	(Redovni raarstvo) - electiv	e course4th semester - Com	puter systems and network			
Teaching mode		raarstvo) - elec	ctive course	$alogy \pm construction)$	30+30 (0+30+0+0)			
	work at home		oratory + seminar + metou	ology + construction)	60			
Teachers	Lectures:1. Dr. sc. Mar Laboratory exercises:1 Laboratory exercises: Laboratory exercises:	rko Horvat v. p Dr. sc. Marko H Tamara Ivelja I Domagoj Tuliči	red. orvat v. pred. mag. ing. geod. et. geoinf. ić	1100	in the first of th			
Course objectives	understand the advantages and disadvantages of different approaches and identify problems to properly apply various artificial intelligence methods. Students will gain hands-on experience in developing software solutions for various problems of artificial intelligence within actual applications, including knowledge representation, automated reasoning, problems optimization, image recognition and scene understanding.							
Learning outcomes:	1.ability to discern the 2.ability to discern syr 3.ability to solve simp 4.ability to solve simp 5.ability to design and 6.ability to compare d 7.ability to compare a 8.ability to assess phil	 basic concept basic concept bolic, connect le logical proble le logic probler l develop a sim ifferent approa pplicability of c osophical aspe 	s of artificial intelligence. Le tivistic and probabilistic app ems by applying logic progr ms using automatic reasonin ple image recognition syste ches to representation of cr ertain approaches in artific cts of artificial intelligence.	evel:6 proaches to artificial intelliger amming. Level:6 m procedures. Level:6 em for a particular applicatior risp and fuzzy knowledge. Le ial intelligence to a real probi Level:7	nce. Level:6 n. Level:6 vel:6,7 lem. Level:7			
Methods of carrying out lectures	Ex cathedra teaching Guest lecturer Case studies Demonstration Modelling Discussion Questions and answer Seminar, students pre Homework presentation	's sentation and (on	discussion					
Methods of carrying out laboratory exercises	Laboratory exercises of Group problem solving Data mining and know Discussion, brainstorn	on laboratory e g vledge discover ning	quipment y on the Web					
Course content lectures	1.Overview of artificia with other areas. The 2.Solving problems by 3.Symbolic logic. Logic 4.First-order logic. Pre 5.Prolog computer lan 6.Advanced topics in F 7.Optimization probler 8.Uncertain knowledg 9.Machine learning. St 10.Computer vision. D 11.Advanced topics in outcomes:5,7 12.Computer applicati 13.Advanced computer 14.Information retriev 15.Future of artificial i	I intelligence a concept of inte searching the c programming dicate calculus guage. SWI-Pro Prolog., 2h, Lei ms. Evolutional e and reasonin upervised, unsu ligital camera a computer visio tons for image er applications al. Text represent ntelligence. Su	reas. Historical developmen Iligence and the Turing Tes state space. Search strateg . Proposition logic., 2h, Lea ., 2h, Learning outcomes:1, log., 2h, Learning outcomes:3,4 ry computing. Genetic algor g. Fuzzy logic and fuzzy rea upervised and reinforcemen and multispectral image ana on. Image compression, train processing and analysis., 2h for image processing and an entation and categorization mmary., 2h, Learning outcoments	it. Development trends and t t., 2h, Learning outcomes:1 jies., 2h, Learning outcomes: rning outcomes:1,2,3 2,3 s:2,3 ithm. , 2h, Learning outcome soning., 2h, Learning outcome it learning., 2h, Learning outcome sformation and classification n, Learning outcomes:5,7 nalysis., 2h, Learning outcom ., 2h, Learning outcomes:6,7 omes:8	he latest trends. Relations 1,2 es:3,4,7 hes:6,7 comes:6,7 s:5,7 h., 2h, Learning hes:5,7			
Course content laboratory	1.No lab, 2h 2.No lab, 2h 3.Lab 1: Proposition lo 4.Lab 2: Prolog, 2h, Le 5.Lab 3: Prolog, 2h, Le 6.Lab 4: Genetic algor 7.Lab 5: Genetic algor 8.Lab 6: Fuzzy logic, 2 9.Lab 7: Fuzzy logic, 2 10.Lab 8: Image proce 11.Lab 9: Image proce 12.Lab 10: Image proce 13.Lab 11: Text analys 14.Lab 12: Text analys	egic, 2h, Learnin earning outcom ithm, 2h, Learn ithm, 2h, Learn ithm, 2h, Learn ith, Learning ou essing and com essing and com essing and com sis and retrieva sis and retrieva arning outcome	ng outcomes:1,3 es:2,3,4 es:2,3,4 hing outcomes:2,4 tcomes:4,6 tcomes:4,6 puter vision, 2h, Learning o puter vision, 2h, Learning o mputer vision, 2h, Learning o nputer vision, 2h, Learning o l, 2h, Learning outcomes:2 il, 2h, Learning outcomes:2 es:1,2,3,4,5,6,7,8	utcomes:5,7 utcomes:5,7 outcomes:5,7 ,7 ,7				
Required materials	Basic: classroom, blac General purpose comp Whiteboard with mark Overhead projector	kboard, chalk outer laborator ers	y					

Exam literature	Basic literature:					
	1. S. Russell, P. Norvig, "Artificial Intelligence: A Modern Approach", Prentice Hall, 3. izdanje, 2009.					
	2. George F. Luger. Artificial Intelligence: Structures and Strategies for Complex Problem Solving. Addison-Wesley,					
	2005.					
	3. K. Demaagd, A. Oliver, N. Oostendorp, K. Scott: "Practical Computer Vision with SimpleCV", O'Reilly Media, 2012.					
Students obligations	Attendance of lectures and laboratory exercises on a regular basis. Maximum of 50% absences from lectures.					
	Minimum of 50% points from laboratory exercises.					
Knowledge	Midterm exam: 50 points					
evaluation during						
semester						
Knowledge	Attendance of lectures and laboratory exercises on a regular basis. Maximum of 50% absences from lectures.					
evaluation after	Minimum of 50% points from laboratory exercises.					
semester						
Student activities:	Aktivnost ECTS					
	(Classes attendance) 1					
	(Written exam) 1					
	(Oral exam) 1					
	(Project) 1					
Remark	This course can be used for final thesis theme					
Prerequisites:	Students cannot enroll in this course unless they have passed Programiranje					
ISVU equivalents:	111518;200080;					
Proposal made by	dr.sc. Marko Horvat, pred., 05.06.2017.					

Code WEB/ISVU	23014/63200	ECTS	4.0	Academic year	2018/2019			
Name	Introduction to Unix Sy	/stems						
Status	4th semester - Softwar network engineering (I	re engineering (Redovni ı Redovni raarstvo) - obliga	raarstvo) - obligatory cou atory course	ırse4th semester - Comp	outer systems and			
Teaching mode	Lectures + exercises (auditory + laboratory + seminar + metodology + construction) 30+30 (0+30+0+0) work at home 60							
Teachers	Lectures:1. dr.sc.rač. Ivica Dodig , prof.v.š. Lectures:2. dr.sc.rač. Davor Cafuta , prof.v.šk.							
Course objectives	Enable students to practically resolve tasks in relation to office informatization on various operating systems							
Learning outcomes:	1.ability to create files	and directories on a UNI	X server through a comr	nand line. Level:6.7	ting systems.			
	 2.ability to generate summarized data through a command line on a UNIX server. Level:6,7 3.ability to rearrange files on a UNIX server to make the service run smoothly through a command line. Level:6,7 4.abilityto create the permissions necessary to work with files and directories on UNIX through a command line. Level:6,7 5.ability to build a virtual UNIX based server. Level:6 6.ability to set the UNIX core in order to improve the hardware performance. Level:6,7 7.ability to design a network for a small-sized office with a UNIX based server . Level:6 8.ability to integrate the work of the Windows clients and of a UNIX server. Level:6,7 9.ability to create a service on a UNIX server to assign IP addresses to clients. Level:6 10.ability to combine the work of the Windows programs and of UNIX OS. Level:6,7 							
Methods of carrying out lectures	Ex cathedra teaching Case studies Demonstration Modelling Discussion Questions and answers	s						
Methods of carrying out laboratory exercises	Laboratory exercises o Laboratory exercises, o	n laboratory equipment computer simulations						
Course content	1.History and instalation	on of open source operat	ing system, 2h, Learning	outcomes:4				
	3.Advanced usage of t 4.Specific UNIX comma 5.Multiuser administra 6.Permitions in open so 7.Command line text e 8.Basic shell scripting. 9.Organization of the c 10.Process managemer 11.Packet managemer 12.Kernel compiling, 2 13.Network administar 14.DHCP service admin 15.Theoretical exam, 1	he UNIX shell., 2h, Learning he UNIX shell., 2h, Learn ands., 2h, Learning outcor ource operating systems. aditors., 2h, Learning outcor , 2h, Learning outcomes: operating system., 2h, Le ent., 2h, Learning outcomes t., 2h, Learning outcomes h, Learning outcomes:6, rtion and basic firewall op nistration, 2h, Learning o 1h, Learning outcomes:1,	ing outcomes:2,3 imes:2,3 mes:3,4 ., 2h, Learning outcomes comes:2 3 arning outcomes:6,11 ies:6,11 55:6,11 11 ptions., 2h, Learning outco utcomes:9,10 2,3,4,5,6,7,8,9,10,11	::3,4 comes:7,8				
Course content laboratory	 , 2h Basic commands in L Advanced usage of t Specific UNIX comma Snultiuser administrations in open su Command line text e Basic shell scripting. , 2h Process manageme Pracket managemer Skernel compiling, 2 Network administar DPCP service administar 	JNIX shell., 2h, Learning he UNIX shell., 2h, Learni ands., 2h, Learning outcor ource operating systems. editors., 2h, Learning outcor , 2h, Learning outcomes: ent., 2h, Learning outcomes h, Learning outcomes h, Learning outcomes istration, 2h, Learning o Learning outcomes:1,2,2	outcomes:1 ing outcomes:2,3 mes:2,3 mes:3,4 ., 2h, Learning outcomes comes:2 3 mes:7,11 es:6,11 11 ptions., 2h, Learning outcomes:9,10 3,4,5,6,7,8,9,10,11	::3,4 :omes:7,8				
Required materials	Special purpose compu Whiteboard with marke Overhead projector Special equipment	uter laboratory ers						
Exam literature	Basic literature: 1. Materijali uz predme 2. C. Hunt,TCP/IP Netw 3. S. Pritchard, et.all, L Additional literature: 1. Linux Magazin (izdv	et (internet stranice) ork Administration, 3rd e PI Linux Certification, 2n ojeni brojevi)	dition, O'Reilly, 2002. d edition, O'Reilly, 2006.					

Study programme	for academic	year 2018/2019
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Students obligations	Minimum of 13 point from laboratory work.					
Knowledge evaluation during semester	Course is divided into 7 parts. Upon every part last one is checked with theoretical exam (3points x 6 parts) and practical work (1 point). At the end of the semester theoretical exam (21 point) and practical exam (54 point) checks all 7 parts. More information in first lecture in repository of the course.					
Knowledge evaluation after semester	Laboratory points are obtained during semester. Additionaly, theoretical exam (21 point) and practical exam (54 point) checks all 7 parts. More information in first lecture in repository of the course.					
Student activities:	Aktivnost ECTS (Written exam) 4					
Remark	This course can be used for final thesis theme					
Prerequisites:	Students cannot enroll in this course unless they have passed Operacijski sustavi					
ISVU equivalents:	22717;					
Proposal made by	lvica Dodig, Davor Cafuta (08.01.2014)					

Code WEB/ISVU	23094/91686	ECTS	5.0	Academic year	2018/2019		
Name	Introduction to WEB Te	chnologies					
Status	2nd semester - Underg	raduate professional stu	ıdy in computing (Redovr	ni raarstvo) - obligatory c	ourse		
Teaching mode	Lectures + exercises (a	auditory + laboratory +	seminar + metodology +	construction)	30+30 (0+30+0+0)		
T I	work at home	d Called term an energy			90		
Teachers	Lectures: Sanja Kraljev	lic , alpl.ing., v. prea. Ir sc. Roman Domović	prof				
	Laboratory exercises: §	Sanja Kraljević , dipl.ing.	, v. pred.				
	Laboratory exercises: F	Petar Osterman	•				
Course objectives	To introduce students to practical and theoretical aspects of using HTML and CSS, the basic markup languages for						
	making the Web based	I content and layout. Stu	Idents will learn how to d	esign and code Web pag	es. The process of		
	adopt the course mate) site will be presented (vrial does not require priv	from buying a domain na	me to web site finalization	on). [10 successfully ilding software]		
Learning outcomes:	1 ability to distinguish	hetween different langu	ages used for designing \	Web sites (HTML 4 and 5	CSS 2 and 3): to get		
Leaning outcomes	familiar with the langu	ages through their theor	etical and practical usage	e, in the ability context o	of markup languages i		
	upoznati ih kroz njihovu teoretsku i praktičnu dimenziju te u širem kontekstu jezika za obilježavanje (markup						
	languages). Level:6						
	2.ability to write a code	e in (X)HIML and in CSS	and design a web page t	to meet the requests of to ity and standards of a se	mantic Web Level 6 7		
	3.ability to design a we	ebpage and to arrange the	he code elements of a We	eb page using various te	chniques: tables.		
	frames, margins, positi	ioning, floating and grids	s Level:6		,		
	4.ability to understand	why in certain cases on	e and the same code is s	hown differently in differ	ent browsers; to		
	understand the way in	which a browser display	s a Web page; to underst	tand how to avoid proble	ms. Level:7		
	Level:6.7		termine the quality of we	Siles (Deficilitatik allu	valluation tests)		
	6.ability to evaluate to	ols used for Web site de	sign (browsers, plugins, c	code editors, office applic	cations and packages,		
	graphical user interface	es, etc.) Level:7					
	7.ability to take a critic	al attitude towards tech	nologies used in the Web	site design (videocodec	s, audiocodecs, open-		
	8 ability to anticipate t	the direction of the devel	L and CSS, etc.) Level: / lonment of the technolog	y of data display on the '	Web using HTMI 5 and		
	CSS3 Level:6,7			y of data display of the	thes using minutes und		
	9.identify future techno	ologies on Web (operatir	ng systems on the Interne	et, a close connection be	tween application		
	software and Web sites	s, design with multi-reso	lution interfaces etc Lev	/el:6			
	10.ability to identify a l	constancy of contempor	ter literacy Level:6 arv web technologies and	d identify a need for cont	inuous improvement		
	Level:6	constancy of contempor	ary web technologies and	ridentity a need for cont	indous improvement.		
	12.ability to give stude	ents directions on which	knowledge sources to use	e (printed materials, Inte	rnet sources, turorials,		
	etc.) Level:7						
	13.ability to plan one's own advancement in JavaScript, server-oriented programming languages and other						
	14.suggest to plan bus	iness career by opening	own startup company L	_evel:6,7			
	15.ability to integrate more Web pages into Web site and connect them with absolute and relative links Level:6,7						
	16.ability to prepare and optimize images and photos for Web site; choose a suitable format Level:6,7						
	17.ability to formulate	webpage key words and rizontal or vertical navig	I to set metadata Level: ation bar, adjust it to a w	6,/ ebnage content and abil	ity to know how to code		
	it Level:6			copuge content and abin			
	19.ability to create a W	Veb page adapted to the	needs of different brows	er width layout or media	Level:6,7		
	20.ability to link multin	nedia elements into a W	eb page (audio, video, we	eb mapping services) Le	evel:6,7		
	21.create visual effects	s for enriching user expe	enence of web site. Level	:0,7			
Methods of carrying	Ex cathedra teaching						
out lectures	Case studies						
	Demonstration						
Methods of carrying	Laboratory exercises, on Discussion brainstorm	ing					
exercises		ing					
Course content	1.Motivational lecture a	and introduction to mark	up languages. Future of	web. Internet startups., 2	2h, Learning		
lectures	outcomes:1,9,10,11,12	2,13,14,15					
	2.Web development an	id markup languages. Va	alidation. Webpage devel	opment fundamentals. V	Vebpage design		
	3. Basic web statistical	indicators. Header and relati	netadata, Strict, transitio	inal and frame work mod	es. End of line. Byte-		
	order mark (BOM). Wor	rk with images. Text ima	ige layout. External links	(anchors). Frames. Favio	cons. Paragraphs. Lists.,		
	2h, Learning outcomes	;:5,6					
	4.Character representa	ation and characters sup	port for Croatian. Redired	tions. iFrames. Anchora	ge in different frames.		
	5 Features of semantic	Web content and lavou	it aspects Introduction to	, LD o CSS Position of a code	in CSS and the relation		
	to HTML. Classes. Iden	tifiers. Background, text	, font, link and list selector	ors. Rising and falling line	e., 2h, Learning		
	outcomes:7,8,12	5		5 5	5		
	6.Box model. Block and	d inline elements. div an	d span. Cursors. Borders,	, margins, paddings. CSS	Media Types. CSS		
	priorities. Webpage qui	ality benchmarks: ACID,	Pingdom, W3 Validator, I	NIDDIEr, GTmetrix. Nonbr	eaking space.		
	7.CSS units and measure	Jres. Dimensioning. Klass	sification. Relative, absolu	ute and fixed positioning	. Conditional comments		
	for Internet Exporer., 2	h, Learning outcomes:1	.4	, and mea positioning			
	8.Webpage elements c	composition and structur	e. Basic design. Horizont	al and vertical navigatior	n bar coding. Link		
	stylization and roll-over	r menu effects., 2h, Lear	rning outcomes:3,4,12				
	Shi loating - basic alla a	auvanceu aspects., ZII, L	earning outcomes:2,3,7				

	 10.Responsive web design technology (RWD). Pseudoclasses and i pseudoelements. Lorem ipsum., 2h, Learning outcomes:2,3,8,9 11.Navigation bar using images and image sprites. Corner rounding. Shadows. Code and image optimization. Selector combination. Centering. URI., 2h, Learning outcomes:1,2,3,12 12.Introduction to HTML5, browser support and future of web structure coding. Videocodecs and videoformats. Audiocodecs and audioformats. Flash to HTML5 conversion. Inserting video, audio and geolocation frames., 2h, Learning outcomes:1,4,6,7,8,9,12 13.Introduction to CSS3, browser support and future of web design coding. Browser prefixes. Shadowing, corner rounding, transparency, text effects, gradience. CSS3 navigation bar development., 2h, Learning outcomes:1,3,5,6,7,8,9,12 14.Grid positioning. Webpage validations. Modernizr. Web fonts and formats. Technologies for further study (JavaScript, Dart, Spark, server-oriented programming languages, SEO)., 2h, Learning outcomes:3,9,12,13 15.Final exam preparation., 2h
Course content laboratory	1.no class, 2h 2.First HTML code writing. Exercise related to relative and absolute links, character representation and metadata., 2h, Learning outcomes:2,3,6,16 3.Exercise related to external links (anchors) and frames. Work with pictures and favicons. Text markup., 2h, Learning
	outcomes:2,3,17 4.Exercise related to tables, HTML forms and DOCTYPE., 2h, Learning outcomes:2,3,18 5.First CSS code writing. CSS and HTML linking. CSS markup of background, text, font, links and lists. Building a CSS selectors e-textbook., 2h, Learning outcomes:2,3 6.Exercise related to negative margins positioning. Gradient picture generation., 2h, Learning outcomes:2,3,17 7.Exercise related to relative and absolute positioning., 2h, Learning outcomes:2,3 8.Exercise related to horizontal and vertical navigation with text hover effect., 2h, Learning outcomes:2,3,19 9.Exercise related to floating elements positioning., 2h, Learning outcomes:2,3 10.Exercise related to responsive webpage design (RWD) depending on webpage width and media., 2h, Learning outcomes:2,3,19 11.Exercise related to complete webpage designing, coding and development., 2h, Learning outcomes:2,3 13.Exercise related to making navigation bar with images and image sprites., 2h, Learning outcomes:2,3 13.Exercise related to making shadows and transparency, rounded corners, text effects and inserting YouTube, Google Maps and audio frames., 2h, Learning outcomes:2,3,20 14.Exercise related to frameworks, grid layout, webpage validation, using browser development tools Mozilla Firebug and Chrome Inspect Elements., 2h, Learning outcomes:2,6,9 15.Final exam preparation., 2h
Required materials	Basic: classroom, blackboard, chalk General purpose computer laboratory Whiteboard with markers Overhead projector Special equipment
Exam literature	Recenzirana skripta iz kolegija. Prezentacijska skripta s predavanja objavljena na stranicama kolegija. Poglavlja W3Schoolsa s e-tutorijalima o HTML-u, XHTML-u i CSS-u (http://www.w3schools.com/). M. MacDonald, HTML5 - The Missing Manual, O'Reilly, 2014.; 2. D.S.McFarland, CSS3 - The Missing Manual, O'Reilly, 2013. (eng: Reviewed course textbook. Lecture presentation notes (PDF) downloadable on course webpage. W3Schools e- tutorial chapters about HTML, XHTML and CSS (http://www.w3schools.com/ M. MacDonald, HTML5 - The Missing Manual, O'Reilly, 2014. D.S.McFarland, CSS3 - The Missing Manual, O'Reilly, 2013.).
Students obligations	Done laboratories, collected 18 points from 28 possible during the exercises. - 12 exercises * 2 points - 2 short test * 2 points
Knowledge evaluation during semester	40% of the grade is lab (evaluation form of points collected during the exercises) 30% score is first mid-term exam, 30% score is first mid-term exam.
Knowledge evaluation after semester	Lab exercises carries 40% marks. Written exam carries 60% marks.
Student activities:	Aktivnost ECTS (Written exam) 5
Remark	This course can be used for final thesis theme
Prerequisites:	No prerequisites.
ISVU equivalents:	22747;
Proposal made by	Sanja Duk, dipl.ing., 25.5.2016

Code WEB/ISVU	23372/154961	ECTS	5.0	Academic year	2018/2019			
Name	Java Programming							
Status	3rd semester - Software engineering (Redovni raarstvo) - obligatory course3rd semester - Computer systems and network engineering (Redovni raarstvo) - obligatory course							
Teaching mode	Lectures + exercises (work at home	auditory + laboratory +	seminar + metodology +	construction)	30+60 (30+30+0+0) 60			
Teachers	Lectures:1. v.pred. Aleksander Radovan , dipl. ing. Auditory exercises:v.pred. Aleksander Radovan , dipl. ing. Laboratory exercises: Tin Kramberger struč. spec. ing. techn. inf., pred. Laboratory exercises: Davor Lozić pred.							
Course objectives	To introduce students programming; to quali	To introduce students to Java; to enable enable students to acquire the principles and techniques of advanced Java programming; to gualify students to develop an application with a GUI and a database integrated						
Learning outcomes:	 1.ability to write a code of an application containing a GUI, business logic and a database. Level:6,7 2.ability to organise a program code into classes and interfaces according to the principles of OOP. Level:6,7 3.ability to design an application which is easily upgradable and adjusted to easy maintenance. Level:6 4.ability to solve various types of practical problems by using the Java FX applications. Level:6 5.ability to design a Java FX application, from a database to a GUI. Level:6 6.ability to give comments on the Java code by means of Javadoc documentation. Level:6 7.ability to relate the knowledge gained in using other programming languages to Java. Level:6,7 8.ability to easily to test the proper operation of an application during its 'life'. Level:6 11.ability to develop a Java FX application by using open source tools and libraries. Level:6,7 12.ability to organise a development environment Eclipse for an efficient development of Java FX applications. Level:6,7 							
Methods of carrying out lectures	Ex cathedra teaching Case studies Demonstration Interactive lectures wit complex projects. Inde database. Documentat	th lots of practical exam pendently planning and tion of ready-made solut	oles. The adoption of prac implementation of a Java ions with Javadoc docume	ctical knowledge and teo application with a grap entation.	chniques used in hical interface and			
Methods of carrying out auditory exercises	Group problem solving Computer simulations	I						
Methods of carrying out laboratory exercises	Laboratory exercises, o Interactive problem so	computer simulations lving						
Course content lectures	1. Java programming la 2. Simple Java program 3. Classes and objects i 4. Object oriented prog 5. Exceptions in Java, 2 6. Writing Javadoc docu 7. Dinamic data structu 8. Generics in Java and 9. Working with files in 10. Programming user 11. Programming user 12. Connecting Java ap 13. Multithreading in Ja 14. Regular expression 15. Annotations in Java	Inguage basics, 2h, Learn Is, 2h, Learning outcome in Java, 2h, Learning out ramming in Java, 2h, Lear h, Learning outcomes:2, imentation, 2h, Learning ures in Java, 2h, Learning lambda expressions, 2h Java, 2h, Learning outcom interfaces in Java - simpl interfaces in Java - comp plications to databases, va, 2h, Learning outcom s in Java, 2h, Learning out , 2h, Learning outcomes	ning outcomes:8 s:8 comes:3,8,9,10,12 arning outcomes:2,3,8,9,3 3,7,8,9,10,11 outcomes:6 outcomes:3,7,10 , Learning outcomes:2,3, mes:3,7,8,9,10,11 e components, 2h, Learn lex components, 2h, Learn l	10 7,8,9,10,11,13 ing outcomes:2,3,4,7,8, rning outcomes:2,3,4,7,8 ,2,3,4,5,7,8,9,10,11	9,10,11,12 8,9,10,11,12			
Course content auditory	1.No classes, 2h 2.No classes, 2h 3.Classes and objects i 4.Object oriented prog 5.Exceptions in Java, 2 6.First partial exam, 2l 7.Dynamic data struct 8.Generics in Java and 9.Using files in Java, 2l 10.Using graphical use 11.Using graphical use 12.Connecting Java ap 13.Multithreading in Ja 14.Second partial exar 15.No classes	in Java, 2h, Learning out ramming in Java, 2h, Lea h, Learning outcomes:2, h, Learning outcomes:2, ures in Java, 2h, Learning lambda expressions, 2h h, Learning outcomes:2, er interface in Java - simp er interface in Java - com plications to databases, va, 2h, Learning outcome n, 2h, Learning outcome	comes:3,7,8,9,10,11,12 arning outcomes:2,3,6,8,9 3,6,8,9,10,12 3,6,7,8,9,10,11,12 g outcomes:2,3,6,8,9,10,7 g outcomes:2,3,6,8,9,10,7 g, Learning outcomes:2,3, 3,7,8,9,10,11,12 ole components, 2h, Learn plex components, 2h, Learn plex components, 2h, Learn plex components, 2h, Learn s:1,2,3,4,6,7,8,9,10,11,12	9,10,12 11,12 7,8,9,10,11,12,13 ning outcomes:2,3,6,7,8 arning outcomes:2,3,4,6 ,2,3,4,5,6,7,8,9,10,11,12 12	,9,10,11,12 ,7,8,9,10,11,12 2			
Course content laboratory	1.No classes, 2h 2.No classes, 2h 3.Classes and objects i 4.Object oriented prog 5.Exceptions in Java, 2 6.Dynamic data struct 7.Generics in Java and	in Java, 2h, Learning out ramming in Java, 2h, Lea h, Learning outcomes:2, ures in Java, 2h, Learning lambda expressions, 2h	comes:3,7,8,9,10,11,12 arning outcomes:2,3,6,8, 3,6,8,9,10,12 g outcomes:2,3,6,7,8,9,10 , Learning outcomes:2,3,	9,10,12 0,11,12 7,8,9,10,11,12,13				

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	8.Compensation of missed exercises, 2h, Learning outcomes:2,3,6,7,8,9,10,11,12							
	9.No Classes, 2h 10 Lleing files in Java 2h, Learning outcomes: 2,3,7,8,9,10,11,12							
	11.Koritenje grafig suja u Javi - jednostavne komponente, 2h, Learning outcomes:2,3,4,6,7,8,9,10,11,12							
	12. Using graphical user interface in Java - complex components, 2h, Learning outcomes: 2, 3, 4, 6, 7, 8, 9, 10, 11, 12							
	13.Connecting Java applications to databases, 2h, Learning outcomes:1,2,3,4,5,6,7,8,9,10,11,12							
	14.Multithreading in Java, 2h, Learning outcomes:1,2,3,4,5,6,7,8,9,10,11,12							
	15.Compensation of missed exercises, 2n, Learning outcomes:1,2,3,4,5,6,7,8,9,10,11,12							
Required materials	Basic: classroom, blackboard, chalk							
	General purpose computer laboratory							
	Overhead projector							
Exam literature	Bruce Eckel: On Java 8, MidView LLC, 2017.							
	H. Schildt: Java: The Complete Reference, Ninth Edition, McGraw-Hill Osborne Media; 9 edition (March 11, 2014)							
	Java for Programmers: Deitel Developer Series, Prentice Hall, veljača, 2009.							
	A Programmer's Guide to Java SCP Certification: A Comprehensive Primer 3rd Edition, 2009.							
	Java Concurrency in Practice, Addion Wesley, svibanj, 2006.							
	nead Filist Java, zhu editurit, o Kelliy, veljača, z003. Java The Good Parte, O'Reilly, svibani 2010.							
	Java The Openarda Guide O'Reilly, soluting 2010.							
	Effective Java. 2nd edition. Prentice Hall svibani. 2008							
	Sprechen Sie Java?, dpunkt.verlag, Hanspeter Mssenbck, lipani 2011.							
	Grundkurs Programieren iz Java, Hanser, 6. Auflage, 2011							
1	orunukurs rrogrammeren iz java, hanser, o. Aunaye, zott.							
Students obligations	Solving ten laboratory exercices.							
Students obligations Knowledge	Solving ten laboratory exercices. Ten laboratory exams - 6 points each							
Students obligations Knowledge evaluation during	Solving ten laboratory exercices. Ten laboratory exams - 6 points each Two partial exams - 10 points each							
Students obligations Knowledge evaluation during semester	Solving ten laboratory exercices. Ten laboratory exams - 6 points each Two partial exams - 10 points each Final exam - 20 points							
Students obligations Knowledge evaluation during semester	Solving ten laboratory exercices. Ten laboratory exams - 6 points each Two partial exams - 10 points each Final exam - 20 points Optional points for additional effort							
Students obligations Knowledge evaluation during semester	Solving ten laboratory exercices. Ten laboratory exams - 6 points each Two partial exams - 10 points each Final exam - 20 points Optional points for additional effort Every partial exam has a correctional exam							
Students obligations Knowledge evaluation during semester	Solving ten laboratory exercices. Ten laboratory exams - 6 points each Two partial exams - 10 points each Final exam - 20 points Optional points for additional effort Every partial exam has a correctional exam Maximum 100 points							
Students obligations Knowledge evaluation during semester	Solving ten laboratory exercices. Ten laboratory exams - 6 points each Two partial exams - 10 points each Final exam - 20 points Optional points for additional effort Every partial exam has a correctional exam Maximum 100 points 0-49 - not good enough							
Students obligations Knowledge evaluation during semester	Solving ten laboratory exercices. Ten laboratory exams - 6 points each Two partial exams - 10 points each Final exam - 20 points Optional points for additional effort Every partial exam has a correctional exam Maximum 100 points 0-49 - not good enough 50-61 - sufficient							
Students obligations Knowledge evaluation during semester	Solving ten laboratory exercices. Ten laboratory exams - 6 points each Two partial exams - 10 points each Final exam - 20 points Optional points for additional effort Every partial exam has a correctional exam Maximum 100 points 0-49 - not good enough 50-61 - sufficient 62-74 - good							
Students obligations Knowledge evaluation during semester	Solving ten laboratory exercices. Ten laboratory exams - 6 points each Two partial exams - 10 points each Final exam - 20 points Optional points for additional effort Every partial exam has a correctional exam Maximum 100 points 0-49 - not good enough 50-61 - sufficient 62-74 - good 75-86 - very good							
Students obligations Knowledge evaluation during semester	Solving ten laboratory exercices. Ten laboratory exams - 6 points each Two partial exams - 10 points each Final exam - 20 points Optional points for additional effort Every partial exam has a correctional exam Maximum 100 points 0-49 - not good enough 50-61 - sufficient 62-74 - good 75-86 - very good 87-100 - excellent							
Students obligations Knowledge evaluation during semester Knowledge	Solving ten laboratory exercices. Ten laboratory exams - 6 points each Two partial exams - 10 points each Final exam - 20 points Optional points for additional effort Every partial exam has a correctional exam Maximum 100 points 0-49 - not good enough 50-61 - sufficient 62-74 - good 75-86 - very good 87-100 - excellent Written exam is evalued with 40 points, and remaining 60 points are transferred from the achievement on laboratory							
Students obligations Knowledge evaluation during semester Knowledge evaluation after	Solving ten laboratory exercices. Ten laboratory exams - 6 points each Two partial exams - 10 points each Final exam - 20 points Optional points for additional effort Every partial exam has a correctional exam Maximum 100 points 0-49 - not good enough 50-61 - sufficient 62-74 - good 75-86 - very good 87-100 - excellent Written exam is evalued with 40 points, and remaining 60 points are transferred from the achievement on laboratory exams during the semester time.							
Students obligations Knowledge evaluation during semester Knowledge evaluation after semester	Solving ten laboratory exercices. Ten laboratory exams - 6 points each Two partial exams - 10 points each Final exam - 20 points Optional points for additional effort Every partial exam has a correctional exam Maximum 100 points 0-49 - not good enough 50-61 - sufficient 62-74 - good 75-86 - very good 87-100 - excellent Written exam is evalued with 40 points, and remaining 60 points are transferred from the achievement on laboratory exams during the semester time.							
Students obligations Knowledge evaluation during semester Knowledge evaluation after semester Student activities:	Solving ten laboratory exercices. Ten laboratory exams - 6 points each Two partial exams - 10 points each Final exam - 20 points Optional points for additional effort Every partial exam has a correctional exam Maximum 100 points 0-49 - not good enough 50-61 - sufficient 62-74 - good 75-86 - very good 87-100 - excellent Written exam is evalued with 40 points, and remaining 60 points are transferred from the achievement on laboratory exams during the semester time. Aktivnost ECTS							
Students obligations Knowledge evaluation during semester Knowledge evaluation after semester Student activities:	Solving ten laboratory exercices. Ten laboratory exams - 6 points each Two partial exams - 10 points each Final exam - 20 points Optional points for additional effort Every partial exam has a correctional exam Maximum 100 points 0-49 - not good enough 50-61 - sufficient 62-74 - good 75-86 - very good 87-100 - excellent Written exam is evalued with 40 points, and remaining 60 points are transferred from the achievement on laboratory exams during the semester time. Aktivnost (Practical work) (Written exame)							
Students obligations Knowledge evaluation during semester Knowledge evaluation after semester Student activities:	Solving ten laboratory exercices. Ten laboratory exams - 6 points each Final exam - 20 points Optional points for additional effort Every partial exam has a correctional exam Maximum 100 points 0-49 - not good enough 50-61 - sufficient 62-74 - good 75-86 - very good 87-100 - excellent Written exam is evalued with 40 points, and remaining 60 points are transferred from the achievement on laboratory exams during the semester time. Aktivnost (Practical work) (Written exam) 1							
Students obligations Knowledge evaluation during semester Knowledge evaluation after semester Student activities: Remark	Solving ten laboratory exercices. Ten laboratory exams - 6 points each Two partial exams - 10 points each Final exam - 20 points Optional points for additional effort Every partial exam has a correctional exam Maximum 100 points 0-49 - not good enough 50-61 - sufficient 62-74 - good 75-86 - very good 87-100 - excellent Written exam is evalued with 40 points, and remaining 60 points are transferred from the achievement on laboratory exams during the semester time. Aktivnost (Practical work) (Written exam) This course can be used for final thesis theme Provide the semester time of the semester time.							
Students obligations Knowledge evaluation during semester Knowledge evaluation after semester Student activities: Remark Prerequisites:	Solving ten laboratory exercices. Ten laboratory exams - 6 points each Two partial exams - 10 points each Final exam - 20 points Optional points for additional effort Every partial exam has a correctional exam Maximum 100 points 0-49 - not good enough 50-61 - sufficient 62-74 - good 75-86 - very good 87-100 - excellent Written exam is evalued with 40 points, and remaining 60 points are transferred from the achievement on laboratory exams during the semester time. Aktivnost (Practical work) (Written exam) 1 This course can be used for final thesis theme Students cannot enroll in this course unless they have passed Programiranje							
Students obligations Knowledge evaluation during semester Knowledge evaluation after semester Student activities: Remark Prerequisites: ISVU equivalents:	Solving ten laboratory exercices. Ten laboratory exams - 6 points each Two partial exams - 10 points each Final exam - 20 points Optional points for additional effort Every partial exam has a correctional exam Maximum 100 points 0-49 - not good enough 50-61 - sufficient 62-74 - good 75-86 - very good 87-100 - excellent Written exam is evalued with 40 points, and remaining 60 points are transferred from the achievement on laboratory exams during the semester time. Aktivnost (Practical work) (Written exam) This course can be used for final thesis theme Students cannot enroll in this course unless they have passed Programiranje 22695;							

Code WEB/ISVU	23224/143073	ECTS	1.0	Academic year	2018/2019
Name	Kinesiology Education I				
Status	1st semester - Undergr	aduate professional stud	y in computing (Redovni	i raarstvo) - obligatory c	ourse
Teaching mode	Lectures + exercises (a	uditory + laboratory + s	eminar + metodology +	construction)	0+30 (30+0+0+0)
-	work at home				0
Teachers	Auditory exercises:1. M	arko Milanović			
Course objectives	To develop in students	the habit of practising sp	ports and improving thei	r psychophysical conditi	on and conduct
Learning outcomes:	1.ability to demonstrate	e how to perform properl	y technical elements of	certain sports. Level:	
	3 ability to explain the	basic rules of certain spo	irtain sports. Level:		
	4.ability to recognize th	ne muscle building exerci	ses. Level:		
	5.ability to explain the	importance of warming ι	p and stretching. Level:		
	6.ability to describe the	organisation of sport co	mpetitions. Level:		
	7.ability to understand	the importance of daily v	workout throughout one	s life. Level:	
Methods of carrying	Other				
out auditory exercises					
Course content	1.Repeating technical e	elements of a specific kin	esiologic activity, 2h, Le	arning outcomes:1	
auditory	2.Repeating technical e	elements of a specific kin	esiologic activity, 2h, Le	arning outcomes:1	
	3.Adopting new elemen	its of a specific kinesiolog	gic activity, 2h, Learning	j outcomes:2	
	5. Improving the element	nts of a specific kinesiolo	gic activity, 2n, Learning	outcomes:2	
	6.Improving the elemer	nts of a specific kinesiolo	gic activity, 2h, Learning	g outcomes:2	
	7.Adopting a set of war	m-up exercises for a spe	cific kinesiologic activity	, 2h, Learning outcome	s:3
	8.Adopting a set of stre	tching exercises for a sp	ecific kinesiologic activit	ty, 2h, Learning outcom	es:3
	9.Repeating the basic r	ules of a specific kinesio	logic activity, 2h, Learnii	ng outcomes:5	ity 2h Learning
	outcomes 5	elementary games in the	rearning process of a sp	Decinic kinesiologic activ	ity, Zh, Learning
	11.Adoption of basic te	chnical and tactical elem	ents of a specific kinesion	ologic activity, 2h, Learn	ing outcomes:6
	12.Adoption of basic te	chnical and tactical elem	ents of a specific kinesion	ologic activity, 2h, Learn	ing outcomes:6
	13.Competition and Ga	mes, 2h, Learning outcor	mes:4		
	14.Competition and Ga	mes, 2h, Learning outcor	mes:5	outcomos:5	
	15. Italiling and automa	acion of injury prevention	exercises, 211, Learning	outcomes.5	
Required materials	Special equipment				-
Exam literature	Basic literature:				
	1. M. Dodik, Tjelesna i z	zdravstvena kultura, Sve	učilište u Rijeci, Rijeka, 1	1992.	
	2. I. Belan, Aerobik, Ivo 3. I. Horvat. Pravila noo	iometne igre Novinsko-iz	zdavačko propagandno r	oduzeće Zagreh 1994	
	4. I. Tocigl, Taktika igre	u obrani, Novinsko-izdav	vačko propagandno pod	uzeće, Zagreb, 1989.	
	Additional literature:		1 1 5 1		
	 D. Milanović, Dopuns 	ski sadržaji sportske pripi	reme, Sportska tribina i I	Kineziološki fakultet Zag	reb, Zagreb, 2002.
Chudanta aklinatiana	Chudombo and naminad b	a anti-rali - na uticina ta in .	averaises during 20 hour		faur annachara First
Students obligations	semester students mus	t actively participate in a	ing test (non-swimmers	have to attend the swim	ming school during the
	second semester). Seco	and semester students m	iust be present at both l	ectures and exercises. S	Students who are not
	required to attend beca	ause of active participation	on in sports are however	required to attend all le	ectures, assist in the
	organization and imple	mentation of lectures, ar	nd attend a specially dev	ised program if permitte	ed to do so by the sports
	doctor.				
Knowledge	Practical test				
evaluation during					
semester					
Knowledge	The exam is not graded	d but the knowledge is ch	ecked at the beginning	of the new semester.	
evaluation after					
Student activities:	Aktivnost		FCTS		
	(Practical work)		1		
Remark	This course can not be	used for final thesis then	ne		
Prerequisites:	No prerequisites.				
ISVU equivalents:	22745;83777;				
Proposal made by	Marko Milanović, prof.				

Code WEB/ISVU	23225/143075	ECTS	1.0	Academic year	2018/2019
Name	Kinesiology Educati	on II	I		•
Status	2nd semester - Und	lergraduate profe	ssional study in computing	(Redovni raarstvo) - obligato	rv course
Teaching mode	Lectures + exercise	es (auditory + lab	oratory + seminar + metod	dology + construction)	0+30 (30+0+0+0)
	work at home		,		0
Teachers	Auditory exercises:	1. Marko Milanovi	ć		
Course objectives	To develop in stude	nts the habit of p	ractising sports and improv	ving their psychophysical con	dition and conduct
Learning outcomes:	 ability to demonst ability to organise ability to distingui capabilities. Level:6 4.ability to compare 5.ability to explain 6.ability to distingui 7.ability to explain to 	trate how to perfo e exercises for gro ish between differ e various body act the basic facts ab ish between differ the basic facts ab	orm properly technical elem oups of muscles. Level: rent types of workout carrie tivities and their influences out the influence of daily w rent nutrients and their effe out the relation between w	nents of certain sports. Level: ed out to achieve different mo on anthropological features vorkout on one's health . Leve ects on a body. Level:6 vorkout and a body volume. L	otoric and functional . Level:6,7 el: evel:
Methods of carrying out auditory exercises	Other				
Course content auditory	1.Repeating technic 2.Repeating technic 3.Adopting new elei 4.Adopting new elei 5.Adopting a set of 6.Adopting a set of 7.Establishing the r 8.Adopting different 9.Adopting different 10.Implementation 11.Training of injury 12.Adoption of basi 13.Adoption of basi 14.Competition and 15.Competition and	cal elements of a cal elements of a specifi ments of a specifi exercises for eac exercises for eac exercises for eac ules of a specific t training method t training method of the elements or y prevention exer c technical and ta c technical and ta l Games, 2h, Lear Games, 2h, Lear	specific kinesiologic activity specific kinesiologic activity ic kinesiologic activity, 2h, ic kinesiologic activity, 2h, h muscle group, 2h, Learnin kinesiologic activity, 2h, Le s, 2h, Learning outcomes: s, 2h, Learning outcomes: of various sporting activities cises, 2h, Learning outcome actical elements of a specifi actical elements of a specifi actical elements of a specifi ning outcomes:6 ning outcomes:5	y, 2h, Learning outcomes:1 y, 2h, Learning outcomes:1 Learning outcomes:2 Learning outcomes:2 ng outcomes:3 ng outcomes:3 arning outcomes:4 4 5 s, 2h, Learning outcomes:5 nes:6 ic kinesiologic activity, 2h, Le ic kinesiologic activity, 2h, Le	arning outcomes:7 arning outcomes:7
Required materials	Special equipment				
Exam literature	Basic literature: 1. M. Dodik, Tjelesn 2. I. Belan, Aerobik, 3. I. Horvat, Pravila 4. I. Tocigl, Taktika Additional literature 1. D. Milanović, Dog	a i zdravstvena k Ivo Balen, Kopriv nogometne igre, igre u obrani, Nov 2: Junski sadržaji sp	ultura, Sveučilište u Rijeci, nica, 1988. Novinsko-izdavačko propag vinsko-izdavačko propagan ortske pripreme, Sportska t	Rijeka, 1992. gandno poduzeće, Zagreb, 19 dno poduzeće, Zagreb, 1989. rribina i Kineziološki fakultet 2	194. Zagreb, Zagreb, 2002.
Students obligations	Students are requirs semester students second semester). S required to attend t organization and im doctor.	ed to actively par must go through Second semester pecause of active plementation of	ticipate in exercises during the swimming test (non-sw students must be present a participation in sports are lectures, and attend a spec	30 hours per semester, duri immers have to attend the su at both lectures and exercise however required to attend a ially devised program if perm	ng four semesters. First vimming school during the s. Students who are not Il lectures, assist in the iitted to do so by the sports
Knowledge evaluation during semester	Prakti ispit#1#1#1	00\$			
Knowledge evaluation after semester	The exam is not gra	aded but the know	vledge is checked at the be	ginning of the new semester	
Student activities:	Aktivnost (Practical work)		ECT 1	ſS	
Bomark	This course can act	ha used for first	thosis thoma		
Remark	No proroquicitos	be used for final	thesis theme		
rierequisites:	no prerequisites.				
ISVU equivalents:	22/32;83//8;	- f			
Proposal made by	Marko Milanovic, pr	ot.			

Study programme	for academic year	2018/2019
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Code WEB/ISVU	23226/143076	ECTS	1.0	Academic year	2018/2019		
Name	Kinesiology Education II	1	•	•	•		
Status	3rd semester - Software network engineering (R	e engineering (Redovni r edovni raarstvo) - obliga	aarstvo) - obligatory cou tory course	rse3rd semester - Comp	outer systems and		
Teaching mode	Lectures + exercises (a work at home	uditory + laboratory + s	eminar + metodology +	construction)	0+30 (30+0+0+0) 0		
Teachers	Auditory exercises:1. M	arko Milanović					
Course objectives	To develop in students	the habit of practising s	ports and improving their	r psychophysical conditi	on and conduct		
Learning outcomes:	1.ability to demonstrate 2.ability to explain the p 3.ability to provide an e 4.ability to group the ba 5.ability to explain the p 6.ability to provide an e 7.ability to describe how	ability to demonstrate how to perform properly technical elements of certain sports. Level: 2ability to explain the purpose of applying tactical elements in certain sports. Level: 3ability to provide an example on how to organise a student sport competition . Level: 4ability to group the basic kinesiological programs based on their influences on a body . Level: 5ability to explain the possibilities of taking part in sport activities in Croatia. Level: 5ability to provide an example on how to plan a personal workout program for a week/a month/a year. Level: 7ability to describe how to give first aid to a person injured while doing a sport activity. Level:					
Methods of carrying out auditory exercises	Other						
Course content auditory	 1.Improving the technical elements of a specific kinesiologic activity, 2h, Learning outcomes:1 2.Improving the technical elements of a specific kinesiologic activity, 2h, Learning outcomes:1 3.Establishing the rules of a specific kinesiologic activity, 2h, Learning outcomes:2 4.Establishing the rules of a specific kinesiologic activity, 2h, Learning outcomes:2 5.Improving the basic technical and tactical elements of a specific kinesiologic activity, 2h, Learning outcomes:3 6.Improving the basic technical and tactical elements of a specific kinesiologic activity, 2h, Learning outcomes:3 7.Game systems and tactics of a specific kinesiologic activity, 2h, Learning outcomes:4 9.Team leadership, officiating, organization of competitions, 2h, Learning outcomes:4 10.Training structure (content and organization) of a specific kinesiologic activity, 2h, Learning outcomes:6 12.Learning outcomes:6 13.Adoption of exercises for each muscle group for the prevention of occupational injuries, 2h, Learning outcomes:5 14.Strength and mobility exercises for the prevention of injuries, First aid, 2h, Learning outcomes:6 15.Basic characteristics of different kinesiologic activities and their impact on anthropological characteristics, 2h, Learning outcomes:6 						
Required materials	Special equipment						
Exam literature	Basic literature: 1. M. Dodik, Tjelesna i z 2. I. Belan, Aerobik, Ivo 3. I. Horvat, Pravila nog 4. I. Tocigl, Taktika igre Additional literature: 1. D. Milanović, Dopuns	dravstvena kultura, Sve Balen, Koprivnica, 1988 ometne igre, Novinsko-i: u obrani, Novinsko-izda ki sadržaji sportske prip	učilište u Rijeci, Rijeka, 1 zdavačko propagandno p vačko propagandno podi reme, Sportska tribina i ł	.992. poduzeće, Zagreb, 1994 uzeće, Zagreb, 1989. Kineziološki fakultet Zag	Ireb, Zagreb, 2002.		
Students obligations	Students are required to semester students mus second semester). Seccor required to attend beca organization and impler doctor	o actively participate in t go through the swimm and semester students m use of active participation mentation of lectures, ar	exercises during 30 hour ing test (non-swimmers hust be present at both lo on in sports are however nd attend a specially dev	s per semester, during have to attend the swirr ectures and exercises. S required to attend all le ised program if permitte	four semesters. First ming school during the students who are not ectures, assist in the ed to do so by the sports		
Knowledge	Prakti ispit#1#1#100\$						
evaluation during							
Knowledge evaluation after semester	The exam is not graded	l but the knowledge is ch	necked at the beginning	of the new semester.			
Student activities:	Aktivnost (Practical work)		ECTS 1				
Remark	This course can not be	used for final thesis ther	ne				
Prereguisites:	No prerequisites.						
ISVU equivalents:	22736;83779:						
Proposal made by	Marko Milanovic, prof.						

Study programme	for academic	year 2018/2019
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Name Knewski Status Htt senselver. Software engineering (Redowni raarstvo) - obligatory course. Teaching mode Lectures + sortraises (Ladikov + laboratory + seninar + metodology + construction) 0.+30 (30+0+0+0) Teachers Auditory exercises (Ladikov + laboratory + seninar + metodology + construction) 0.+30 (30+0+0+0) Teachers Auditory exercises (Ladikov + laboratory + seninar + metodology + construction) 0.+30 (30+0+0+0) Status Lability to demonstrate how to perform properly technical elements of certain sports. Level: Sability to explain how to take part in student sport competitions organisation. Level: Sability to explain how to take part in student sport competitors organisation. Level: Sability to provide an example on how to plan a personal workout program for a week/a montha year. Level: Sability to arrowide an example on how to plan a personal workout program for a week/a montha year. Level: Methods of carrying Other Carres content Judpring and improving the technical elements of a chosen kinesiologic activity. Th, Learning outcomes: 3 Statusitism ther uses of a specific kinesiologic activity. Th, Learning outcomes: 3 Scatabilishing the rules of a specific kinesiologic activity. Th, Learning outcomes: 4 Jumproving the technical and tactical elements of a chosen kinesiologic activity. Th, Learning outcomes: 3 Scatabilishing the rules of a specific kinesiologic acti	Code WEB/ISVU	23227/143077	ECTS	1.0	Academic year	2018/2019		
Status 4th semester - Software engineering (Redown raastvo - Obligatory course4th semester - Computer systems and network engineering (Redown raastvo - Obligatory course4) 9 - 30 (30-0-0-0-0) Teaching mode Lectures + exercises (auditory + laboratory + seminar + metodology + construction) 9 - 30 (30-0-0-0-0) Course object/teaching To develop in students the habit of practicing sports and improving their psychophysical condition and conduct Learning outcomes: Lability to demonstrate how to perform properly technical elements in certain sports. Level: 2.ability to benjoin the importance of taking proper food and carrying out daily workput throughout one's life. Level: 2.ability to explain the importance of one's being physically active and thus preventing professional illnesses of the locomotor system. Jevel: 3.ability to destinguish between different professional illnesses of the locomotor system of persons employed in civil engineering. Level: 7.ability to explain the importance of one's being physically active and thus preventing professional illnesses of the locomotor system. Jevel: 8.ability to demonstrate how to perform properly technical elements of a chosen kinesiologic activity, 2h. Learning outcomes:1 8.aditory 1.Adopting and improving the technical elements of a chosen kinesiologic activity, 2h. Learning outcomes:2 9.ability to demonstrate how to perform a specific kinesiologic activity, 2h. Learning outcomes:1 8.aditory 1.Adopting and improving the technical	Name	Kinesiology Educatior	n IV	•				
Teaching mode Lectures + exercises (auditory + laboratory + seminar + metodology + construction) 0+30 (30+0+0+0) Teachers Auditory exercises: L. Marko Milanović Course objective 1 Course objective To develop in students the habit of practising sports and improving their psychophysical condition and conduct Learning outcomes: Lability to demonstrate how to perform properly technical elements in certain sports. Level: 3. ability to explain the importance of taking proper food and training outcomes system of persons employed in civil or provide an example on how to plan a personal workout program for a weekla monthy sper. Level: 3. ability to explain the importance of taking the technical elements of a chosen transiologic activity. 2h. Learning outcomes:1 7. ability to explain the importance of one's being physically active and thus preventing professional illnesses of the locomotor system. Level: 7. ability to explain the importance of one's being physically active and thus preventing professional illnesses and the independent regular exercises Course content 1. Adopting and improving the technical elements of a chosen transiologic activity. 2h. Learning outcomes:1 2. Monproving the technical elements of a specific kinesiologic activity. 2h. Learning outcomes:3 6. Establishing the rules of a specific kinesiologic activity. 2h. Learning outcomes:3 6. Establishing the rules of a specific kinesiologic activity. 2h. Learning outcomes:6 17. Analysis and methods of kinesiologi	Status	4th semester - Softwa network engineering	are engineering ((Redovni raarstv	(Redovni raarstvo) - obliga o) - obligatory course	atory course4th semester - Cor	nputer systems and		
Teachers Auditory exercises: 1. Marko Milanović Course objective To develop in students the habit of practising sports and improving their psychophysical condition and conduct Learning outcomes: Lability to demonstrate how to perform properly technical elements of certain sports. Level: 3. ability to explain the purpose of applying total carrying out dainy workout throughout one's life. Level: 4. ability to explain the purpose of applying top proof food and carrying out dainy workout throughout one's life. Level: 5. ability to explain the importance of taking top proof food and top workout throughout one's life. Level: 5. ability to explain the importance of taking top proof food and top workout throughout one's life. Level: 7. ability to explain the importance of taking top provide and thus preventing professional illnesses of the locomotor system. Level: 7. ability to explain the importance of one's being physically active and thus preventing professional illnesses of the locomotor system. Level: 2. Adopting and improving the technical elements of a chosen kinesiologic activity, 2h, Learning outcomes:1 2. Adopting and the provide and tactical elements of a specific kinesiologic activity, 2h, Learning outcomes:3 6. Establishing the rules of a specific kinesiologic activity, 2h, Learning outcomes:3 7. Analysis and methods of takensida elements of a specific kinesiologic activity, 2h, Learning outcomes:4 7. Analysis and methods of kinesiologic activity, 2h, Learning outcomes:5 <th>Teaching mode</th> <th>Lectures + exercises work at home</th> <th>(auditory + labo</th> <th>ratory + seminar + meto</th> <th>dology + construction)</th> <th>0+30 (30+0+0+0) 0</th>	Teaching mode	Lectures + exercises work at home	(auditory + labo	ratory + seminar + meto	dology + construction)	0+30 (30+0+0+0) 0		
Course objectives To develop in students the habit of practising sports and improving their psychophysical condition and conduct Learning outcomes: Lability to explain how to bar part properly technical elements of certain sports. Level: Lability to explain how to bake part in student sport competitions organisation. Level: Lability to explain how to take part in student sport competitions organisation. Level: Lability to explain how to take part in student sport competitions organisation. Level: Lability to explain the importance of one's being physically active and thus preventing professional illnesses of the locomotor system of persons employed in civil ocomotor system. Level: Methods of carrying out a auditory LAdopting and improving the technical elements of a chosen kinesiologic activity. 2h. Learning outcomes:1 auditory LAdopting and improving the technical elements of a specific kinesiologic activity. 2h. Learning outcomes:1 auditory LAdopting and improving the technical elements of a specific kinesiologic activity. 2h. Learning outcomes:2 a improving the technical and tactical elements of a specific kinesiologic activity. 2h. Learning outcomes:3 To Analysis and methods of teaching a specific kinesiologic activity. 2h. Learning outcomes:4 B Applicitation of a specific kinesiologic activity of the purpose of independent regular exercise during free time. 2h. Learning outcomes:5 10. Team leadomes:5 11. Training structivic (orintent and organization of competitions. 2h. Learnin	Teachers	Auditory exercises:1.	Marko Milanović					
Learning outcomes: Lability to demonstrate how to perform properly technical elements of certain sports. Level: Zability to explain the propose of applying batical elements in certain sports. Level: Sability to explain the importance of taking proper food and carrying out daily workout throughout one's life. Level: Sability to provide an example on how to plan a personal workout program for a week'a month's year. Level: Sability to explain the importance of taking proper food and carrying out daily workout throughout one's life. Level: Sability to provide an example on how to plan a personal workout program for a week'a month's year. Level: Sability to explain the importance of one's being physically active and thus preventing professional illnesses of the locomotor system. Level: Methods of carrying Other Adopting and improving the technical elements of a chosen kinesiologic activity. 2h. Learning outcomes:1 J. Morpring the technical and tactical elements of a specific kinesiologic activity. 2h. Learning outcomes:2 S. Estabilishing the rules of a specific kinesiologic activity. 2h. Learning outcomes:2 S. Estabilishing the rules of a specific kinesiologic activity. 2h. Learning outcomes:3 P. Analysis and methods of teaching a specific kinesiologic activity. 2h. Learning outcomes:4 S. Estabilishing the rules of a specific kinesiologic activity. 2h. Learning outcomes:6 12. Training structure (content and organization of a specific kinesiologic activity. 2h. Learning outcomes:6 J. Analysis and methods of teaching a specific kinesiologic activity. 2h. Learning	Course objectives	To develop in studen	s the habit of pr	actising sports and impro-	ving their psychophysical cond	lition and conduct		
Methods of carrying over auditory Other out auditory Adopting and improving the technical elements of a chosen kinesiologic activity, 2h, Learning outcomes:1 auditory 3Improving the technical and tactical elements of a specific kinesiologic activity, 2h, Learning outcomes:2 4Improving the technical and tactical elements of a specific kinesiologic activity, 2h, Learning outcomes:3 7Analysis and methods of teaching a specific kinesiologic activity, 2h, Learning outcomes:4 8.Application of a specific kinesiologic activity, 7h, Learning outcomes:4 9.Application of a specific kinesiologic activity for the purpose of independent regular exercise during free time., 2h, Learning outcomes:4 9.Application of a specific kinesiologic activity for the purpose of independent regular exercise during free time., 2h, Learning outcomes:5 10.Team leadership, officiating, organization of a specific kinesiologic activity, 2h, Learning outcomes:6 12.Training structure (content and organization) of a specific kinesiologic activity, 2h, Learning outcomes:7 14.Basic characteristics of different kinesiologic activities and their impact on anthropological characteristics, 2h, Learning outcomes:7 15.Basic characteristics of different kinesiologic activities and their impact on anthropological characteristics, 2h, Learning outcomes:7 15.Basic characteristics of different kinesiologic activities and their impact on anthropological characteristics, 2h, Learning outcomes:7 15.Basic characteristics of d	Learning outcomes:	1.ability to demonstra 2.ability to explain th 3.ability to explain ho 4.ability to explain th 5.ability to provide ar 6.ability to distinguisl engineering. Level:6 7.ability to explain th locomotor system. Le	ability to demonstrate how to perform properly technical elements of certain sports. Level: ability to explain the purpose of applying tactical elements in certain sports. Level: ability to explain how to take part in student sport competitions organisation. Level: ability to explain the importance of taking proper food and carrying out daily workout throughout one's life. Level: ability to provide an example on how to plan a personal workout program for a week/a month/a year. Level: ability to distinguish between different professional illnesses of the locomotor system of persons employed in civil ngineering. Level:6 ability to explain the importance of one's being physically active and thus preventing professional illnesses of the pocomotor system. Level:					
Course content auditory 1.Adopting and improving the technical elements of a chosen kinesiologic activity, 2h, Learning outcomes:1 3.Improving the technical and tactical elements of a specific kinesiologic activity, 2h, Learning outcomes:2 4.Improving the technical and tactical elements of a specific kinesiologic activity, 2h, Learning outcomes:3 6.Establishing the rules of a specific kinesiologic activity, 2h, Learning outcomes:3 7.Analysis and methods of teaching a specific kinesiologic activity, 2h, Learning outcomes:3 7.Analysis and methods of teaching a specific kinesiologic activity, 2h, Learning outcomes:3 8.Application of a specific kinesiologic activity for the purpose of independent regular exercise during free time., 2h, Learning outcomes:4 9.Application of a specific kinesiologic activity for the purpose of independent regular exercise during free time., 2h, Learning outcomes:5 10.Training structure (content and organization) of a specific kinesiologic activity, 2h, Learning outcomes:6 12.Training structure (content and organization) of a specific kinesiologic activity, 2h, Learning outcomes:7 14.Basic characteristics of different kinesiologic activities and their impact on anthropological characteristics, 2h, Learning outcomes:7 15.Basic characteristics of different kinesiologic activities and their impact on anthropological characteristics, 2h Learning outcomes:7 15.Basic literature: 1.M. Dodik, Tjelesna i zdravstvena kultura, Sveučilište u Rijeci, Rijeka, 1992. 2. I. Belan, Aerobik, Ivo Balen, Koprivnica, 1988. 3. I. Hovat, Pravia nagometne igre, Novinsko-izdavačko propagandno poduzeće, Zagreb, 1994. 4. I. Torigi, Taktika igre u obrani, Novinsko-izdavačko propagandno poduzeće, Zagreb, 1994. 4. I. Torigi, Taktika igre u obrani, Novinsko-izdavačko propagandno poduzeće, Zagreb, 2002. 1. D. Milanović, Dopunski sadržaji sportske pripreme, Sportska tribina i Kineziološki fakultet Zagreb, Zagreb, 2002. 1. D. Milanović, Dopunski sadržaji sportske pripzemes, Sportsk	Methods of carrying out auditory exercises	Other						
Exam literature Basic literature: 1. M. Dodik, Tjelesna i zdravstvena kultura, Sveučilište u Rijeci, Rijeka, 1992. 2. I. Belan, Aerobik, Ivo Balen, Koprivnica, 1988. 3. I. Horvat, Pravila nogometne igre, Novinsko-izdavačko propagandno poduzeće, Zagreb, 1994. 4. I. Tocigl, Taktika igre u obrani, Novinsko-izdavačko propagandno poduzeće, Zagreb, 1989. Additional literature: 1. D. Milanović, Dopunski sadržaji sportske pripreme, Sportska tribina i Kineziološki fakultet Zagreb, Zagreb, 2002. Students obligations Students are required to actively participate in exercises during 30 hours per semester, during four semesters. First semester students must go through the swimming test (non-swimmers have to attend the swimming school during the second semester). Second semester students must go through the swimming test (non-swimmers have to attend all lectures, assist in the organization and implementation of lectures, and attend a specially devised program if permitted to do so by the sports doctor. Knowledge evaluation during semester Prakti ispit#1#1#100\$ Student activities: Aktivnost (Practical work) Student activities: Aktivnost (Practical work) Remark This course can not be used for final thesis theme Prerequisites: No prerequisites. ISVU equivalents: 22716.83780;	Course content auditory Reguired materials	1.Adopting and impro 2.Adopting and impro 3.Improving the techn 5.Establishing the rul 6.Establishing the rul 7.Analysis and metho 8.Application of a spe Learning outcomes:4 9.Application of a spe Learning outcomes:5 10.Team leadership, 11.Training structure 13.Selection of exerc 14.Basic characterist Learning outcomes:7 15.Basic characterist	ving the technic ving the technic ving the technic ving the technic ving the technic ving the technic es of a specific k ds of teaching a cific kinesiologic officiating, organ (content and org (content and org ses for each mu cs of different ki	al elements of a chosen k al elements of a chosen k elements of a specific kir inesiologic activity, 2h, Le inesiologic activity, 2h, Le specific kinesiologic activity activity for the purpose of activity for the purpose of ization of competitions, 2 ganization) of a specific ki ganization) of a specific ki scle group for the prevent nesiologic activities and t	inesiologic activity, 2h, Learnin inesiologic activity, 2h, Learnin hesiologic activity, 2h, Learnin hesiologic activity, 2h, Learnin earning outcomes:3 aarning outcomes:3 rity, 2h, Learning outcomes:4 of independent regular exercise h, Learning outcomes:5 nesiologic activity, 2h, Learnin nesiologic activity, 2h, Learnin cion of occupational injuries, 2h heir impact on anthropological	ng outcomes:1 ng outcomes:2 g outcomes:2 g outcomes:2 e during free time., 2h, e during free time., 2h, ng outcomes:6 ng outcomes:6 n, Learning outcomes:7 l characteristics, 2h,		
Exam literature Basic literature: I. M. Dodik, Tjelesna i zdravstvena kultura, Sveučilište u Rijeci, Rijeka, 1992. 2. I. Belan, Aerobik, Ivo Balen, Koprivnica, 1988. 3. I. Horvat, Pravila nogometne igre, Novinsko-izdavačko propagandno poduzeće, Zagreb, 1994. 4. I. Tocigl, Taktika igre u obrani, Novinsko-izdavačko propagandno poduzeće, Zagreb, 1989. Additional literature: 1. D. Milanović, Dopunski sadržaji sportske pripreme, Sportska tribina i Kineziološki fakultet Zagreb, Zagreb, 2002. Students obligations Students are required to actively participate in exercises during 30 hours per semester, during four semesters. First semester students must go through the swimming test (non-swimmers have to attend the swimming school during the second semester). Second semester students must be present at both lectures and exercises. Students who are not required to attend because of active participation in sports are however required to attend all lectures, assist in the organization and implementation of lectures, and attend a specially devised program if permitted to do so by the sport: doctor. Knowledge Prakti ispit#1#1100\$ Student activities: Aktivnost ECTS (Practical work) 1 Remark This course can not be used for final thesis theme Prerequisites: No prerequisites. Students activities: No prerequisites.								
Students obligations Students are required to actively participate in exercises during 30 hours per semester, during four semesters. First semester students must go through the swimming test (non-swimmers have to attend the swimming school during the second semester). Second semester students must be present at both lectures and exercises. Students who are not required to attend because of active participation in sports are however required to attend all lectures, assist in the organization and implementation of lectures, and attend a specially devised program if permitted to do so by the sports doctor. Knowledge Prakti ispit#1#1#100\$ evaluation during The exam is not graded but the knowledge is checked at the beginning of the new semester. evaluation after Aktivnost gemeater I Remark This course can not be used for final thesis theme Prerequisites: No prerequisites. ISVU equivalents: 22716;83780;	Exam literature	Basic literature: 1. M. Dodik, Tjelesna 2. I. Belan, Aerobik, Iv 3. I. Horvat, Pravila n 4. I. Tocigl, Taktika ig Additional literature: 1. D. Milanović, Dopu	i zdravstvena ku vo Balen, Koprivr ogometne igre, N re u obrani, Novi nski sadržaji spo	Iltura, Sveučilište u Rijeci, nica, 1988. Jovinsko-izdavačko propa insko-izdavačko propagan rtske pripreme, Sportska	Rijeka, 1992. gandno poduzeće, Zagreb, 199 dno poduzeće, Zagreb, 1989. tribina i Kineziološki fakultet Z	94. agreb, Zagreb, 2002.		
Knowledge evaluation during semester Prakti ispit#1#1#100\$ Knowledge evaluation after semester The exam is not graded but the knowledge is checked at the beginning of the new semester. Student activities: Aktivnost (Practical work) ECTS 1 Remark This course can not be used for final thesis theme Prerequisites: No prerequisites. ISVU equivalents: 22716;83780;	Students obligations	Students are required semester students m second semester). Se required to attend be organization and imp doctor.	I to actively part ust go through th cond semester s cause of active p lementation of le	icipate in exercises during ne swimming test (non-sw students must be present participation in sports are ectures, and attend a spec	g 30 hours per semester, durin rimmers have to attend the sw at both lectures and exercises however required to attend all cially devised program if perminant cially devised perminant cial	g four semesters. First imming school during the . Students who are not I lectures, assist in the itted to do so by the sports		
Knowledge The exam is not graded but the knowledge is checked at the beginning of the new semester. evaluation after The exam is not graded but the knowledge is checked at the beginning of the new semester. semester ECTS Student activities: Aktivnost (Practical work) 1 Remark This course can not be used for final thesis theme Prerequisites: No prerequisites. ISVU equivalents: 22716;83780;	Knowledge evaluation during semester	Prakti ispit#1#1#10()\$					
Student activities: Aktivnost (Practical work) ECTS Remark This course can not be used for final thesis theme Prerequisites: No prerequisites. ISVU equivalents: 22716;83780;	Knowledge evaluation after semester	The exam is not grad	ed but the know	ledge is checked at the be	eginning of the new semester.			
Remark This course can not be used for final thesis theme Prerequisites: No prerequisites. ISVU equivalents: 22716;83780;	Student activities:	Aktivnost (Practical work)		EC 1	TS	-		
Prerequisites: No prerequisites. ISVU equivalents: 22716;83780;	Remark	This course can not b	e used for final t	hesis theme				
ISVU equivalents: 22716;83780;	Prereguisites:	No prereguisites.						
	ISVU equivalents:	22716;83780;						
Proposal made by Marko Milanović, prof.	Proposal made by	Marko Milanović, prof						

Code WEB/ISVU	22969/22742	ECTS	7.0	Academic year	2018/2019	
Name	Mathematics I					
Status	1st semester - Undergra	aduate professional stud	y in computing (Redovn	i raarstvo) - obligatory c	ourse	
Teaching mode	Lectures + exercises (a	uditory + laboratory + s	eminar + metodology +	construction)	30+45 (45+0+0+0)	
	work at home				135	
Teachers	Lectures:1. Tihana Strmečki					
a	Auditory exercises: Tiha	ana Strmečki				
Course objectives	To enable students to s	olve mathematical probl	ems related to engineer	ing practice	· · · · · · · · · · · · · · · · · · ·	
Learning outcomes:	 1.ability to calculate the value of units containing basic arithmetic operations consisting of complex numbers. Level:6 2.ability to draw the position of a complex number in gaussian plane. Level:6 3.ability to calculate the determinants and simple matrix units. Level:6 4.ability to calculate vector units. Level:6 5.ability to solve linear equations . Level:6 6.ability to understand the definition and composition of a function; to understand inverse functions. Level:6,7 7.ability to classify functions: even functions/odd functions, injections/surjections/bijections. Level:6,7 8.ability to classify basic types of elementary function: exponential functions, polynomials, logarithm functions. Level:6,7 9.ability to sketch graphs of polynomials, trigonometric functions and rational functions without using derivatives. Level:6 10.ability to calculate the limit of a function. Level:6 11.ability to calculate the derivative of a function. Level:6 12.ability to sketch function graphs by means of derivatives and critical points. Level:6 					
Methods of carrying out lectures	Ex cathedra teaching Case studies Discussion Questions and answers Other The chalkboard lectures	s include theory and mar	ny examples clearly anal	lyzed step by step, in co	operation with students.	
out auditory exercises	Discussion, brainstormi Other Exercises are solved on	ng the blackboard in coope	eration with students.			
Course content	1 Complex numbers al	ehraic and trigonometr	ic form basic arithmetic	operations with complete	x numbers (addition	
lectures	subtraction, multiplicati Learning outcomes:1,2 2.Determinant (2nd ord expansion nad using ele 3.System of linear equa outcomes:5 4.Vectors, 2h, Learning 5.Functions, definition, f functions, monotonicity 6.Elementary functions: functions, hyperbolic fu 7.1. exam, 2h, Learning 8.Limit, sequence, 2h, L 9.Sketching graphs of s 10.Problem of finding a functions, 2h, Learning 11.Differential, implicit 12.Derivative of compoo 13.LHopitals rule, 2h, Learning 15.2. exam, 2h, Learning	on, division, raising to a ler - by formula, 3rd orde ementary transformation titons, solving by Cramer outcomes:4,5 domain, range, codomai , composition, inverse, e : power functions, polyno nctions, 2h, Learning ou outcomes:1,2,3,4,5,6,7 Learning outcomes:10 ome functions (polynom tangent, derivative of fu outcomes:9,12 differentiation, parameter site function, derivative earning outcomes:11 a function centered at zri go outcomes:9,10,11,12	n integer power, and tak er - by rule of Sarrus and as), 2h, Learning outcom rs rule and by Gauss-Jord n, injection, surjection, k even and odd functions, 2 omials, exponential func- tcomes:6,7,8 ,8 ials, trigonometric funct inction, rules for derivati ric differentiation, 2h, Le of function f(x)=x^x, 2h ero, 2h, Learning outcom	ing roots (fractional pow Laplaces expansion, 4th es:3,5 Jan elimination method , bijection, graph, increasin 2h, Learning outcomes:6 tions), 2h, Learning outcomes:6 tions), 2h, Learning outcomes:10 ive of a sum, product and arning outcomes:10,11 , Learning outcomes:10,11 hes:11	rer)), Gauss plane, 2h, n order - by Laplaces . 2h, Learning ng and decreasing i,7 ons, trigonometric omes:9 d quotient of two	
auditory	L.Complex numbers, alg subtraction, multiplicati Learning outcomes:1,2 2.Determinant (2nd ord expansion and using ele 3.System of linear equa outcomes:6 4.Vectors, 3h, Learning 5.Functions, definition, functions, monotonicity 6.Elementary functions: functions, hyperbolic fu 7.1. exam, 3h, Learning 8.Limit, sequence, 3h, L 9.Sketching graphs of s 10.Problem of finding a functions, 3h, Learning 11.Differential, implicit 12.Derivative of compos 13.LHopitals rule, 3h, Le 14.Taylor polinomial of	separate and trigonometri ion, division, raising to a der - by formula, 3rd orde ementary transformation itions, solving by Cramer outcomes:4,5 domain, range, codomai , composition, inverse, e power functions, polynom nctions, 3h, Learning ou outcomes:1,2,3,4,5,6,7 .earning outcomes:10 ome functions (polynom tangent, derivative of fl outcomes:9,12 differentiation, parametri site function, derivative earning outcomes:11 a function centered at ze	n integer power, and tak er - by rule of Sarrus and as), 3h, Learning outcom rs rule and by Gauss-Jord n, injection, surjection, b even and odd functions, 2 omials, exponential funct toomes:6,7,8 ,8 ials, trigonometric funct inction, rules for derivati ric differentiation, 3h, Le of function f(x)=x^x, 3h	Laplaces expansion, 4th es:3,5 Jan elimination method , bijection, graph, increasin 3h, Learning outcomes:6 tions, logarithmic functio ions), 3h, Learning outco ive of a sum, product an earning outcomes:10,11 , Learning outcomes:11 mes:11	numbers (addition, ver)), Gauss plane, 3h, n order - by Laplaces . 3h, Learning ng and decreasing i,7 ons, trigonometric omes:9 d quotient of two	

ΤVŻ

	15.2. exam, 3h, Learning outcomes:9,10,11,12
Required materials	Basic: classroom, blackboard, chalk
	Whiteboard with markers
	Special equipment
	Some of the problems are solved using the appropriate software Mathematica.
Exam literature	Basic literature:
	1. P. Javor: Uvod u matematicku analizu, Skolska knjiga, Zagreb, 1983.
	2. S. Suljagić: Matematika I, skripta, Zagreb, 2005
	2. i. Japinical, Materinauka I, Skipia, Spiit, 2002. A. B. D. Deminovič, Zadaci i riečeni nrimjeri iz viče matematike. Daniar. Zagreh. 1005.
	5. N. Elezović i ingerna elnebra. Element Zarreb 1905
	Additional literature:
	1. L. Krnić, Z. Šikić: Račun diferencijalni i integralni. I dio. Školska knjiga. Zagreb. 1992.
	2. V. Devide: Riješeni zadaci iz više matematike, svezak i i II, Školska knjiga, Zagreb, 1985.
	3. T. Bradić, R. Roki, J. Pečarić, M. Strunje: Matematika za tehničke fakultete, Multigraf, Zagreb, 1994.
Students obligations	No special requirements
Knowledge	Two exams during semester
evaluation during	
semester	Ratings by the outcome: maximum 100 points
	50-62 sufficient (2)
	63-75 good (3)
	76-88 Very good (4)
	89-100 excellent (5)
Knowledge	Written exam 60% of mark
evaluation after	Detring of written next of the average maximum 100 points
semester	Ratings of written part of the exam: maximum 100 points
	05-75 good (5) 76-88 very good (4)
	Oral exam 40% of mark
Student activities:	Aktivnost ECTS
	(Written exam) 7
Remark	This course can be used for final thesis theme
Prerequisites:	No prerequisites.
Proposal made by	dipl.ing.mat Tihana Strmečki., 19.05.2016.

Code WEB/ISVU	22967/22730	ECTS	7.0	Academic year	2018/2019
Name	Mathematics II	I		I	
Status	2nd semester - Unde	ergraduate profes	sional study in computing	g (Redovni raarstvo) - obligato	ry course
Teaching mode	Lectures + exercises	s (auditory + labo	pratory + seminar + meto	odology + construction)	30+45 (45+0+0+0)
	work at home				135
Teachers	Lectures:1. Tihana S	trmečki			
Course objectives	Auditory exercises:	nana Strmecki	tical problems related to	anging practice	
Learning outcomes:	1 ability to calculate				
Learning outcomes.	2.ability to calculate 3.ability to calculate 4.ability to calculate 5.ability to solve bas 6.ability to solve diff 7.ability to solve diff	definite integrals improper integrals integrals by usin ic types of differe erential equation	s. Level:6 Ils. Level:6 g numerical methods. Level:6 s by using Laplace transfi s by using numerical met	vel:6 ormation. Level:6 hods . Level:6	
Methods of carrying out lectures Methods of carrying	Ex cathedra teaching Case studies Discussion Questions and answe Other The chalkboard lectu Group problem solvi	g ers ures include theoi ng	ry and many examples clo	early analyzed step by step, in	cooperation with students.
out auditory exercises	Discussion, brainstor Other Exercises are solved	rming	rd in cooperation with stu	dents	
Course content	1 Indefinite integrals		n hasic integrals 26 Lo	arning outcomes:1	
Course content lectures	 I.Indefinite integrals 2.Solving indefinite i 3.Solving indefinite i outcomes:1 4.Definite integrals, 5.Improper integrals 6.Application of definisurfaces of revolutio 7.Numerical method 8.1. exam, 2h, Learn 9.Ordinary differenti 10.First order ODE will.Solving ODEs by 12.Linear ODEs, hom 	c, primitive function, primitive function, ntegrals by substimategrals by integrals by integrals by integrals are not integrals: are not integrals: are not	on, basic integrals, 2, 1, Le itution and using partial f ration by parts, by compl formula, Mid value theore id hyperbolic supstitution was of plane figures, the a utcomes:1,2,3 efinite integrals, 2h, Lear 2,3 roduction, 2h, Learning or iables, homogenous ODE ion (homogeneous diff. e nhomogenous, variation of	arning outcomes:1 fractions, 2h, Learning outcome eting the square of second deg em for integrals, 2h, Learning o s, 2h, Learning outcomes:1,2 rc length of a curve, volumes o ning outcomes:1,2,3,4 utcomes:5 s, 2h, Learning outcomes:5 qs., ode of form y=f(ax+by+c) of constant method, integrating	es:1 pree trinomial, 2h, Learning putcomes:1,2 of solids and areas of p), 2h, Learning outcomes:5 g factor method, 2h,
	13.Linear ODEs of se 14.Solving ODEs by 15.2. exam, 2h, Lear	econd order with Laplaces transfor ming outcomes:5	constant coefficients, hon mation; Numerical metho ,6,7	nogenous and nonhomogenou: ds of solving ODEs, 2h, Learni	s, 2h, Learning outcomes:5 ng outcomes:5,6,7
Course content auditory	1.Indefinite integrals 2.Solving indefinite i 3.Solving indefinite i outcomes:1 4.Definite integrals, 5.Improper integrals 6.Application of defin surfaces of revolutio 7.Numerical method 8.1. exam, 3h, Learn 9.Ordinary differenti 10.First order ODE w 11.Solving ODEs by 12.Linear ODEs, hon Learning outcomes: 13.Linear ODEs of se 14.Solving ODEs by	c, primitive function ntegrals by substitute ntegrals by integrals by integrals by integrals network. The prime substitute n, 3h, Learning of s of calculating during outcomes: 1,2 al equations - inti- variable substitute ogenous and notestitute ogenous and notestitute of the prime substitute of the prim substitute	on, basic integrals, 3h, Le itution, and using partial ration by parts, by compl formula, 3h, Learning out d hyperbolic supstitution e areas of plane figures, th utcomes:1,2,3 efinite integrals, 3h, Lear 2,3,4 roduction, 3h, Learning out iables, 3h, Learning out in (homogeneous diff. e nhomogenous, variation co constant coefficients, hon mation; Numerical method	earning outcomes:1 fractions, 3h, Learning outcom eting the square of second deg comes:1,2 s, 3h, Learning outcomes:1,2 he arc length of a curve, volum ning outcomes:1,2,3,4 utcomes:5 omes:5 qs., ode of form y=f(ax+by+c) of constant method, integrating nogenous and nonhomogenous ds of solving ODEs, 3h, Learni	es:1 pree trinomial, 3h, Learning les of solids and areas of), 3h, Learning outcomes:5 g factor method, 3h, s, 3h, Learning outcomes:5 ng outcomes:6,7
Required materials	15.2. exam, 3h, Lear Basic: classroom, bla	ning outcomes:5	,6,7		
	Whiteboard with ma Special equipment Some of the problem	rkers ns are solved usir	ng the appropriate softwa	re Mathematica.	
Exam literature	Basic literature: 1. P. Javor: Uvod u m 2. S. Suljagić: Maten 3. I. Slapničar: Mater 4. B. P. Deminovič: Additional literature: 1. L. Krnić, Z. Šikić: F 2. I. Ivanšić: Fouriero 3. T. Bradić, R. Roki,	natematičku anali natika II, skripta, matika 2, skripta, Zadaci i rješeni pr Račun diferencijal pv red i integral, c J. Pečarić, M. Stri	zu, Školska knjiga, Zagre Zagreb, 2006. Split, 2008. imjeri iz više matematike ni i integralni, I dio, Škols liferencijalne jednadžbe, unje: Matematika za tehn	b, 1983. , Danjar, Zagreb, 1995. ka knjiga, Zagreb, 1992. skripta, FER, Zagreb, 1997. ičke fakultete, Multigraf, Zagre	



Zagreb University of Applied Sciences

Students obligations	No special requirements.	
Knowledge	Two exams during semester	
evaluation during		
semester	Ratings by the outcome: maximum 100 points	
	50-62 sufficient (2)	
	63-75 good (3)	
	76-88 very good (4)	
	89-100 excellent (5)	
Knowledge	Written exam 60% of mark	
evaluation after		
semester	Ratings of written part of the exam: maximum 100 points	
	50-62 sufficient (2)	
	63-75 good (3)	
	76-88 very good (4)	
	89-100 excellent (5)	
	Oral exam 40% of mark	
Student activities:	Aktivnost	ECTS
	(Written exam)	7
Remark	This course can be used for final thesis theme	
Prerequisites:	No prerequisites.	
Proposal made by	dipl.ing.mat Tihana Strmečki., 19.05.2016.	

Code WEB/ISVU	22965/22720	ECTS	5.0	Academic year	2018/2019		
Name	Network Services				i		
Status	5th semester - Softw engineering (Redovi	vare engineering ni raarstvo) - eleci	(Redovni raarstvo) - elect tive course	ive course5th semester - Com	puter systems and network		
Teaching mode	Lectures + exercise work at home	s (auditory + labo	pratory + seminar + meto	dology + construction)	15+45 (0+45+0+0) 90		
Teachers	Lectures:1. Ognjen I Lectures:2. dr.sc. Že Laboratory exercise Laboratory exercise	Mitrović struč. spe eljko Širanović pro s: Ognjen Mitrović s:dr.sc. Željko Šira s: Vedran Tadić st	ec. ing. techn. inf., pred. if.v.š. ś struč. spec. ing. techn. ir anović prof.v.š. ruč spec ing techn inf	nf., pred.			
Course objectives	To introduce studen	ts to the basic kn	owledge and skills related	l to configuration, administrat	ion and maintenance of		
Learning outcomes:	1.ability to plan and 2.ability to plan and 3.ability to manage 4.ability to create a Level:6,7 5.ability to plan a cc 6.ability to plan the 8.ability to create a 9.ability to plan the	basic network services, applications and computer systems 1.ability to plan and control the network VPN and WiFi access. Level:6,7 2.ability to plan and configure the network traffic security by means of the IPSec network service. Level:6,7 3.ability to manage and control the DNS service dissolution on a server. Level:6,7 4.ability to create a computer name dissolution system in computer networks by using the available server tools. Level:6,7 5.ability to plan a computer name dissolution in LANs by means of the DNS network service. Level:6,7 6.ability to plan a computer name dissolution in LANs by means of the available server tools. Level:6,7 7.ability to plan the IP addressing of hosts in a LAN by means of the DHCP network service. Level:6,7 8.ability to create a service for routing the network traffic by means of the RAS network service . Level:6,7 9.ability to plan the security policy of an Intranet connected to the Internet. Level:6,7					
Methods of carrying out lectures	Ex cathedra teachin Case studies Demonstration Simulations Discussion Questions and answ	g vers					
Methods of carrying out laboratory exercises	Laboratory exercise Laboratory exercise Computer simulatio Interactive problem Workshop Other	s on laboratory ec s, computer simu ns solving	quipment lations				
Course content lectures	1.Overview of netwo 2.The need for stand 3.Static and dynami 4.Static and dynami 5.I. Colloquium, 1h, 6.Host name resolut 7.Host name resolut 8.directory service, 9.Remote Access Se 10.Remote Access Se 11.Data transmissio 12.Data transmissio 13.Data transmissio 14.Messaging servic 15.IP security service	ork services and a dardization of net ic allocation of IP a c allocation of IP a Learning outcome cion , 1h, Learning outcome tervices, 1h, Learning outcome services, 1h, Learning on services, 1h, Learning on services - VPN, ces, 1h, Learning of ces, 1h, Learning of	pplications, 1h, Learning work services, 1h, Learning o addresses, 1h, Learning o addresses, 1h, Learning o es:6,7,9 outcomes:4,5 outcomes:3,4,5 ong outcomes:1,8,9 narning outcomes:1,8,9 arning outcomes:1,8,9 h, Learning outcomes:1,8,9 butcomes:1,2,9 poutcomes:1,2,8,9	outcomes:1,2,3,4,5,6,7,8,9 ig outcomes:1,2,3,4,5,6,7,8 utcomes:7,9 utcomes:6,7,9			
Course content laboratory	1.Settings Dynamic 2.Monitoring DHCP 9 3.Configuration nam 4.Monitoring names 5.VPN connection, 3 6.Configuring dial-u, 7.Configuring dial-u, 7.Configuring dial-u, 9.Network security t 9.Network security t 10.II. Colloquium , 3 11.Configuration of 12.Configuration of 13.Configuration of 14.Configuring secu 15.III. Colloquium , 3	Host Configuratio service , 3h, Learr res resolution service h, Learning outco p remote access , ss access , 3h, Le traffic -IPSec , 3h, L traffic -IPSec , 3h, L traffic -IPSec , 3h, L traffic -IPSec , 3h, L traffic alpSec , 3h, L traffic application data transfer serv data transfer serv data transfer serv rity mechanisms i 3h, Learning outco	n protocol - DHCP, 3h, Leaning outcomes:6,7 vices - DNS, 3h, Learning es - DNS, 3h, Learning out mes:1,8,9 3h, Learning outcomes:1,8,9 Learning outcomes:2,8,9 Learning outcomes:2,8,9 mes:1,3,4,5,6,7 vices FTP, HTTP, POP, SMT vices FTP, HTTP, POP, SMT vices FTP, HTTP, POP, SMT for access to network, 3h, pmes:2,8,9	arning outcomes:6,7 outcomes:3,4,5 comes:3,4,5 ,8,9 P, IMAP, 3h, Learning outcom P, IMAP, 3h, Learning outcom P, IMAP, 3h, Learning outcom Learning outcomes:2,8,9	es:9 es:9 es:9		
Required materials	Basic: classroom, bl Special purpose lab Special purpose con Whiteboard with ma Overhead projector	ackboard, chalk oratory nputer laboratory ırkers					

Exam literature	 J.C. Mackin, T. Northrup: Configuring Windows Server 2008 Network Infrastructure, Microsoft Press, 2008. B. Sosinsky: Networking Bible, Wiley Publishing, Inc.,2009. Additional literature: Douglas E. Comer: Computer Networks and Internets, Prentice Hall, 2009. L. Parziale, D.T. Britt, C. Davis, J. Forrester, W. Liu, C. Matthews, N. Rosselot: TCP/IP Tutorial and Technical Overview (IBM Redbooks), IBM Corporation, 2006. (http://ibm.com/redbooks)
Students obligations	maximum of 3 absences from exercises
Knowledge evaluation during semester	Redovitost pohaa#6#5#0\$Kolokvij, numeri zadaci#3#25#60\$Kolokvij, teorijska pitanja#3#25#60\$Prakti rad#10#35#60\$Prakti ispit#1#10#60\$
Knowledge evaluation after semester	written and oral exams, seminar work
Student activities:	AktivnostECTS(Written exam)5
Remark	This course can be used for final thesis theme
Prerequisites:	Students cannot enroll in this course unless they have completed Računalne mreže
Proposal made by	dr.sc. Željko Širanović

Code WEB/ISVU	23047/81892	ECTS	7.0	Academic year	2018/2019
Name	Object Oriented Progra	mming			
Status	2nd semester - Underg	raduate professional stu	dy in computing (Redovi	ni raarstvo) - obligatory	course
Teaching mode	Lectures + exercises (a work at home	auditory + laboratory + s	eminar + metodology +	- construction)	30+30 (0+30+0+0) 150
Teachers	Lectures:1. Prof. dr. sc. Miroslav Slamić profesor visoke škole Laboratory exercises: Ivan Cesar mag. ing. Laboratory exercises: Željko Kovačević , struč.spec.ing.techn.inf. Laboratory exercises: Martina Petrovečki struč.spec.ing.techn.inf. Laboratory exercises:Prof. dr. sc. Miroslav Slamić profesor visoke škole Laboratory exercises:Dr. sc. Aleksandar Stojanović pred.				
Course objectives	To transfer to students the basic principles of the OO paradigm and the knowledge of C++ which will enable them to handle successfully other programs in engineering practice				
Learning outcomes:	 ability to identify fundamental differences between procedural and object-oriented paradigm and understand the basic features of objects. Level:6 ability to to form a class based on the definition of the properties and behavior of the object. Level:6 ability to give a software solution in C++ by means of classes and by using a paradigm developed by OOP. Level:6 ability to devise operators in C++ based classes. Level:6,7 ability to design an OOP based solution by using templates from STL C++ libraries. Level:6 ability to create one's own class and function templates in solving OOP based problems. Level:6,7 ability to relate the knowledge gained in basic OO paradigms to different solutions to API classes in C++ for developing a GUI. Level:6,7 				
out lectures	Case studies Discussion				
Methods of carrying out laboratory exercises	Laboratory exercises o	n laboratory equipment			
Course content lectures	1. History and concept of outcomes:1 2.U/I in C++ and other 3. Object, object mode 4.Classes, instances, ar 5. Constructor, destruc 2h, Learning outcomes 6.Copying of objects, c 7. Constant members a 8.Operators overloadin 9.Inheritance, deklarat 10.Access to functions, 11.Polymorphism., 2h, 12.Virtual member func 13.Function templates 14.Use of the STL librai 15.Solving the exceptio outcomes:3,4,5,6,7,8	specific features of the C , properties and behavio ccess permission, public tor, functions, function o :2,3,7 opy constructor, associat and objects. References. g., 2h, Learning outcome ion, implementation of c ancestors, overload. Rul Learning outcomes:3,4,7 ctions, virtual classes, 21 and class templates., 2h ry. Use of templates., 2h ons. Editing a named spa	A as opposed to C. Adva C++ syntax, 2h, Learnin ur of objects , 2h, Learn interface, 2h, Learning of verload.Static and dyna ring objects., 2h, Learnin Friend functions, 2h, Learning ses:3,4,7 asses, the rights issued les for the constructor ir h, Learning outcomes:3,6 , Learning outcomes:3,5 ce. Carrying out a project	ntages of the OO paradi g outcomes:1 ing outcomes:1,2 mic object instances (ne ng outcomes:2,3,7 arning outcomes:2,3,7 by inheritance., 2h, Lea n a class, 2h, Learning ou 4 5,7 ,6,7 ct by means of MFC clas	gm, 2h, Learning w and delete operators), rning outcomes:3,4,7 utcomes:3,4,7 ses , 2h, Learning
Course content laboratory	1.The preparation prac 2.Introduction to work Learning outcomes:1 3.Exercise 1: Object cla 4.Exercise 2: Methods, 5.Exercise 3: Access m 6.Exercise 3: Access m 6.Exercise 4: : Copy co 7.Exercise 5: Friend fur 8.The first mid-term ex 9.Exercise 5: Operator 10.Exercise 6: Operator 10.Exercise 7: Inheritar 11.Exercise 8: Polymor 12.Exercise 9: Templat 13.Exercise 10: Names 14.Preparation for secc 15.The second mid-term	tice for introduction to C on exercises using Mood asses, attributes, 2h, Lea constructor, destructor, odifiers, types of function nstructor, assignment op nctions, const. restriction am., 2h, Learning outcor overloading, 2h, Learning outcor phism, 2h, Learning outcor phism, 2h, Learning outcor pace, exception, 2h, Learning and mid-term., 2h, Learning m., 2h, Learning outcor	+ + and specific feature le LMS and tool for autor rning outcomes:1,2 2h, Learning outcomes: hs, passing arguments th verator, 2h, Learning out s, 2h, Learning outcome nes:1,2 g outcomes:2,3,4 nes:3,4,7 omes:4,5,7 ing outcomes:4,5,6,7 rning outcomes:3,4,5,6, ng outcomes:1,2,3,4,5,6 es:1,2,3,4,5,6,7,8	es I / O access., 2h, Lear matic evaluation of softw 1,2 o the function, 2h, Learn comes:1,2,7 es:1,2,7	ning outcomes:1 ware solutions., 2h, ning outcomes:1,2
Required materials	General purpose comp Whiteboard with marke Overhead projector	uter laboratory ers			
Exam literature	Basic literature: 1. M. Slamić: Elektronič Zagrebu, 2012., www.t 2. Boris Motik,Julijan Šr Additional literature: 3. D. Radošević, Progra	ki sadržaji predavanja (F vz.hr. ibar:Demistificirani C++, miranje 2, TIVA Tiskara V	PT prezentacije) na wet treće dopunjeno izdanje Varaždin, 2007.	o stranici predmeta na To e,m Zagreb, Element , 20	ehničkom veleučilištu u 010.

	4. Eckel Thinking in C++ Vol 1 i Vol 2, Prentice Hall, 2003. http://www.mindview.net/Books/TICPP/ThinkingInCPP2e.html				
	5. Stroustrup The C++ Programming Language, Addison-Wesley, Third edition, 2004.				
	6. Željko Kovačević, C++ Analiza i primjena, Školska knjiga, 2004.				
Students obligations	The presence of the exercises 80%. Presence in classes 70%.				
Knowledge	The course is rated a total of 100 points . Way of acquiring points is as follows :				
evaluation during	first mid-term - solving tasks on the computer and test : max . 30 points				
semester	second mid-term - solving tasks on the computer and test : max . 30 points				
	laboratory exercises : max . 40 points				
	Points for laboratory exercises : Each exercise is scored with 10 bodova. Zbroj all points will be scaled to 40 points .				
	- 2 points for the preparation of the performed exercises				
	If you do the first two prepare for it gets 0 points, and for each subsequent preparation needs to be done is removed by				
	1 point .				
	Rewrite tasks preparation is punishable with negative points (a system for evaluating the task of preparing checks				
	automatically plagiarism solutions).				
	- 5 points for a solution to the problem in exercises				
	- 3 points for a test that is handled in the system MOODLE				
	Based on the points score is determined as follows :				
	90.01 to 100.00 points : excellent (5)				
	80.01-90.00 points : very good (4)				
	65.01-80.00 points : good (3)				
	55.01-65.00 points : sufficient (2)				
	Each learning outcome must be accomplished with a minimum of 50 % .				
Knowledge	The course is rated a total of 100 points . Way of gaining points is as follows :				
evaluation after	Written exam - solving tasks on the computer and test, max, 60 points				
semester	Laboratory: max, 40 points				
	Points for laboratory exercises : Each exercise is scored with 10 bodova.ZBroj all points will be scaled to 40 points .				
	- 2 points for the preparation of the performed exercises				
	Based on the points score is determined as follows :				
	90.01 to 100.00 points : excellent (5)				
	80.01-90.00 points : very good (4)				
	65.01-80.00 points : good (3)				
	55.01-65.00 points : sufficient (2)				
Student activities:	Aktivnost ECTS				
	(Written exam) 3				
	(Oral exam) 2				
	(Practical work) 2				
Remark	This course can be used for final thesis theme				
Prerequisites:	Students cannot enroll in this course unless they have completed Programiranje				
ISVU equivalents:	22650;75228;				
Proposal made by	Dr. sc. Miroslav Slamić prof. vis. šk.,15.4.2014				
Code WEB/ISVU	23107/111724	ECTS	5.0	Academic year	2018/2019
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Name	Open Development Plat	tforms for Embedded Sy	stems	-	
Status	4th semester - Software	e engineering (Redovni r	aarstvo) - elective cours	e4th semester - Comput	er systems and network
	engineering (Redovni ra	aarstvo) - elective course	e		
Teaching mode	Lectures + exercises (a work at home	uditory + laboratory + s	seminar + metodology +	construction)	15+30 (0+30+0+0) 105
Teachers	Lectures:dr.sc.rač. Dav	or Cafuta , prof.v.šk.			
	Lectures:dr.sc.rač. lvica) Dodig , prot.v.š. r se rač Davor Cafuta - r	vrof v čk		
	Laboratory exercises:dr	r.sc.rač. lvica Dodig . pro	if.v.š.		
Course objectives	To qualify students to k	ouild a fast prototype of a	an embedded system		
Learning outcomes:	1.to formulate the purp	ose and possibilities of u	ising embedded systems	s . Level:6,7	
	 2.to design an embedded system and formalise the needs for it, depending on a task . Level:6 3.to analyse a methodology used in the design of an embedded system. Level:6 4.to design the hardware section of an embedded system. Level:6,7 5.to develop a prototype of an embedded system in both the hardware and software sections. Level:6,7 6.to integrate the censors and environment necessary for the proper operation of an embedded . Level:6,7 7.to test the proper operation of an embedded system. Level:6 8.to generalise the possibility of a design for the entire production. Level:6,7 				
	9.to write proper docun	nentation of the solution	. Level:6,7		
Mothoda of comulas	Casa studios				
out lectures	Demonstration Simulations				
Methods of carrying	Laboratory exercises or	n laboratory equipment			
out laboratory	Other				
exercises	Specific equipment				
Course content	1.Bools algebra, 1h, Lea	arning outcomes:1	456789		
lectures	3.Input/output device.	1h. Learning outcomes:1,2,3	.2.3.4.5.6.7.8.9		
	4.Display, 1h, Learning	outcomes:1,2,3,4,5,6,7,	8,9		
	5.Complex input/output	t solutions, 1h, Learning	outcomes:1,2,3,4,5,6,7,	8,9	
	6.Analog inputs, 1h, Lea	arning outcomes:1,2,3,4	,5,6,7,8,9		
	8.12C. OneWire interfac	rning outcomes:1,2,3,4,5 re. 1h. Learning outcome	9,0,7,0,9 9:1.2.3.4.5.6.7.8.9		
	9.RTC-Real time clock,	1h, Learning outcomes:1	1,2,3,4,5,6,7,8,9		
	10.Sensors: distance, li	ght, IR, 1h, Learning out	comes:1,2,3,4,5,6,7,8,9		
	11.Sensors: temepratur	re, virbration, water leve	I, 1h, Learning outcome	s:1,2,3,4,5,6,7,8,9	
	12.Sensors: gyroscope, 13 Output devices: rela	av motor 1h Learning o	, In, Learning outcomes	1,2,3,4,3,0,7,8,9 9	
	14.SPI interface, 1h, Le	arning outcomes:1,2,3,4	,5,6,7,8,9	5	
	15.Final exam, 1h, Lear	rning outcomes:1,2,3,4,5	6,6,7,8,9		
	1.11				
Course content	1.No exercises	Learning outcomes:1.2.3	456780		
	3.LED. lovstick. Capacit	tive touch, keyboard, 2h	Learning outcomes:1.2	.3.4.5.6.7.8.9	
	4.Display, 2h, Learning	outcomes:1,2,3,4,5,6,7,	8,9		
	5.Complex program, 2h	1, Learning outcomes:1,2	2,3,4,5,6,7,8,9		
	6.Linear potenciometer	[•] , 2h, Learning outcomes	:1,2,3,4,5,6,7,8,9		
	8.Temperature sensor	. 2h. Learning outcomes:	1.2.3.4.5.6.7.8.9		
	9.RTC, 2h, Learning out	tcomes:1,2,3,4,5,6,7,8,9			
	10.Sensors, 2h, Learnin	ng outcomes:1,2,3,4,5,6,	7,8,9		
	11.Sensors, 2h, Learnin	10 outcomes: 1,2,3,4,5,6,7	7,8,9		
	13.Relay, MOC, Motor.	2h. Learning outcomes:1	2.3.4.5.6.7.8.9		
	14.RFID SPI, 2h, Learnir	ng outcomes:1,2,3,4,5,6	,7,8,9		
	15.No exercises				
Describer description		le e e vel se le e II e			
Required materials	Special purpose laborat	torv			
	General purpose compi	uter laboratory			
	Operating supplies	-			
Exam literature	1. http://arduino.cc 2. Morgolis M., Arduino	Cookbook 2nd edition, C	P'Reilly media,2011.		
Students obligations	maximum of 2 absence	s from exercises.			
Knowledge evaluation during semester	Partial and final practic	al exam.			
Knowledge	Final practical exam an	d oral exam.			
evaluation after semester					



 •••••	•••• ••• ••••••	

Student activities:	Aktivnost ECTS (Written exam) 5
Remark	This course can be used for final thesis theme
Prerequisites:	Students cannot enroll in this course unless they have passed Operacijski sustavi Students cannot enroll in this course unless they have passed Arhitektura računala
Proposal made by	v.pred. Davor Cafuta ,dipl.ing.rač. v.pred. Ivica Dodig ,dipl.ing.rač, 10.01.2014

Code WEB/ISVU	22968/22735	ECTS	6.0	Academic year	2018/2019
Name	Operating Systems				
Status	3rd semester - Softwar	re engineering (Redovni	raarstvo) - obligatory cou	irse3rd semester - Comp	outer systems and
Teaching mode	lectures ± exercises (auditory + laboratory + (atory course	construction)	$130 \pm 30 (0 \pm 30 \pm 0 \pm 0)$
reaching mode	work at home		seminar + metodology +	construction	120
Teachers	Lectures:1. dr.sc.rač. [Davor Cafuta , prof.v.šk.			
	Lectures:2. dr.sc.rac. l Laboratory exercises:1	vica Dodig , prot.v.š. dr sc rač Davor Cafuta	nrof v šk		
	Laboratory exercises:2	. dr.sc.rač. Ivica Dodig ,	prof.v.š.		
Course objectives	Understand and learn	how to use the functiona	lity of a modern operatin	ig system.	
Learning outcomes:	1.ability to extract the	basic elements of a com	puter in FN model. Level	:6 in functions as well I ave	216
	3.ability to analyse the	e interruptions and interr	uptions routines; to distir	nguish between interrup	tions and exceptions.
	Level:6				
	4.ability to categorize	the conditions of certain between a thread and a	processes and their impl	ementation. Level:6	well Level.6
	6.ability to write a prog	gram which solves the pr	oblem of one or more th	reads. Level:6,7	
	7.ability to compare th	e forced and unforced al	gorithms to organise the	work of a processor. Le	vel:6,7
	9.ability to calculate th	he size of a disk by mean	s of basic parameters an	d compare the strategie	s of positioning the disk
	head. Level:6				
	10.ability to check whi	ch RAID field is used in a ecurity aspects of the cor	ssembling disks. Level:6		
	12.ability to identify so	cheduling algorithms in n	nultimedia system. Level	:6	
out lectures	Ex cathedra teaching Case studies				
	Demonstration				
	Simulations				
	Questions and answers	S			
Methods of carrying	Group problem solving	l			
exercises					
Course content	1.Operating system co	mponents , 2h, Learning	outcomes:1		
lectures	2.Input/output operation	ons, 2h, Learning outcom 2h. Learning outcomes:1	ies:1,2 3		
	4.Task, process and th	read. Synchronisation .,	2h, Learning outcomes:1	,2,4,5	
	5.Mutual exclusion in s	single and multiprocesso	r systems., 2h, Learning	outcomes:4,5,6	
	7.Operating system ke	ernel. Semaphores. Produ	cer and consumer proble	em. Deadlock., 2h, Learr	ning outcomes:4,5,7
	8.Partial exam., 2h, Le	arning outcomes:1,2,3,4	,5,6,7		
	9.Paging., 2n, Learning 10.File system., 2h. Le	arning outcomes:8			
	11.Multimedia in opera	ating system., 2h, Learni	ng outcomes:12		
	12.Security., 2h, Learn	ing outcomes:11	nes:1/15		
	14.Vitualization., 2h, L	earning outcomes:1,11	1103.1,4,5		
	15.Final exam, 2h, Lea	rning outcomes:1,2,3,4,	5,6,7,8,9,10,11,12		
Course content	1.No exercises, 2h				
laboratory	2.No exercises, 2h				
	3.Interrupts, 2h, Learn 4 No exercises 2h	ing outcomes:1,3			
	5.CPU scheduling algo	ritms., 2h, Learning outc	omes:1,2,4,5		
	6.No exercises, 2h				
	8.No exercises, 2h				
	9.Paging, 2h, Learning	outcomes:8			
	10.No exercises, 2h 11 Disk reading manag	nement algorithms 2h l	earning outcomes 8.9.1	0	
	12.No exercises, 2h	gement algentimes,,		•	
	13.Multimedia algorith	ms, 2h, Learning outcom	les:12		
	15.No exercises, 2h				
Required materials	Basic: classroom, black General purpose comp	kboard, chalk wter laboratory			
	Whiteboard with mark	ers			
	Overhead projector				
Exam literature	Basic literature				
	1. Silberschatz, S. Galv	vin, Operating System Co	ncepts, Addison Wesley	Publishing Company, Re	ading, Mass., forth
	edition, 1994.		Zagrah 2000		
I	12. видин, Орегасіјски се 19. видина, орегасијски се 19. видина, орегас	ustavi, izdavač Element,	∠agreb, 2000.		

	Additional literature:			
	1. A Tanenbaum: Modern Operating Systems, Prentice Hall, 2001			
Students obligations	Positive number of points from laboratory exercises.			
	All other informations is in repository on course page.			
Knowledge	Partial and final exam. One of the exam can be repeated in case of weak results.			
evaluation during	All other informations is in repository on course page.			
semester				
Knowledge	Written and oral exam. Number of points from laboratory exercises are used in mark calculation.			
evaluation after	All other informations is in repository on course page.			
semester				
Student activities:	Aktivnost ECTS			
	(Written exam) 6			
Remark	This course can be used for final thesis theme			
Prerequisites:	Students cannot enroll in this course unless they have passed Programiranje			
Proposal made by	Davor Cafuta , lvica Dodig (10.01.2014)			

Code WEB/ISVU	23368/154955	ECTS	7.0	Academic year	2018/2019
Name	Physics				
Status	1st semester - Undergr	aduate professional stud	dy in computing (Redovn	i raarstvo) - obligatory c	ourse
Teaching mode	Lectures + exercises (a	auditory + laboratory + s	seminar + metodology +	construction)	45+30 (30+0+0+0)
	work at home				135
Teachers	Lectures:1. Alemka Kna	app			
	Lectures:2. prof.vis.sk.	Ivica Levanat			
	Auditory exercises: Ale	ina Šaponia-Milutinović c	lipl.ing.fizike. pred.		
Course objectives	To introduce students t	o phenomena in Physics	and values that can be	used in the study progra	mme in computing, in a
-	broader sense of the la	ws of Physics			
Learning outcomes:	1.ability to make simple	e calculations of linear m	notions, motions on a cire	cle, and a launch at an a	ngle. Level:6
	2.ability to analyse kine	ematic values of motions	s on a curve. Level:6	forco is overted, to cal	sulata cimpla avamplas
	of angle acceleration .	Level:6	in or a body upon which a		ulate simple examples
	4.ability to relate the w	ork of forces to kinetic a	nd potential energy of a	body. Level:6,7	
	5.ability to distinguish I	between a classical mec	hanical description of mo	otion and special relativit	ty. Level:6
	6.ability to analyse har	monic oscillation without	t damping. Level:6 (namic values: to disting)	lich botwoon different m	ochanisms of heat
	ransfer. Level:6				
	8.ability to relate Bohr's	s model of atom to a qua	ality description of electr	on shells and ribbons. Le	evel:6,7
	9.ability to make simple	e calculations of emissio	n/absorption of photons	and photoelectric effect.	Level:6
	10.ability to relate the l	knowledge about the de	sign of an atomic core co	ontaining radioactive fea	tures. Level:6,/
Methods of carrying	Ex cathedra teaching				
out lectures	Case studies				
	Demonstration				
	Discussion				
	Other) 			
	Oral presentation, inclu	uding communication wit	h students; their active p	participation is stimulate	d during formulation
	and analysis of physica	I laws. Physical phenom	ena and laws are illustrat	ted by familiar examples	s or improvised
	demonstrations, and by	y simple experiments wh	iere possible. Equations a	and their derivations are	fully outlined on the
Methods of carrying	Group problem solving	by sketches and diagram	ns as appropriate.		
out auditory	Discussion, brainstormi	ing			
exercises	Interactive problem sol	ving			
	Other Calving circular archier			•• :	
	and their interrelations	Calculations include nu	merical values which ap	pear in technical applica	tions. Teacher explains
	and illustrates the proc	edure, students solve th	e problems on the black	board and in their noteb	ooks.
Course content	1.Physical quantities ar	nd units., 2h, Learning or	utcomes:1,2		
lectures	Polynomial derivative.,	1h, Learning outcomes:	1,2		
	Rectilinear motion. free	e fall., 2h. Learning outco	mes:1		
	3.Motion along curve a	nd circle., 3h, Learning c	outcomes:1,2		
	4.Newton axioms, mom	nentum, 3h, Learning ou	tcomes:3		
	5.Work, power and ene 6 Bigid body rotation	rgy., 3h, Learning outco	mes:4		
	7.Motion in gravitationa	al field., 3h, Learning out	tcomes:5		
	8.Relativity of motion, i	inertial forces., 2h, Learr	ning outcomes:6		
	The absolute and great	est speed c., 1h, Learnir	ng outcomes:6		
	10.Harmonic oscillation	is 3h. Learning outcom	es:7		
	11. Wave optics, photo	electric effect., 3h, Lear	ning outcomes:8,9		
	12.Atomic structure, wa	ave properties of particle	es., 3h, Learning outcom	es:8,9	
	Semiconductors 2h L	Learning outcomes:8			
	14.Elementary particles	s, nuclear structure., 2h,	Learning outcomes:10		
	Unstable nuclei., 1h, Le	arning outcomes:10			
	15.Radioactive decay, i	nuclear energy., 3h, Lea	rning outcomes:10		
Course content	1.Rectilinear motion2	h. Learning outcomes:1			
auditory	2.Rectilinear motion., 2	h, Learning outcomes:1			
	3.Projectile motion., 2h	, Learning outcomes:1,2			
	4.Circular motion., 2h, I	Learning outcomes:1,2			
	6.Newton axioms., 2h,	Learning outcomes:3			
	7.Work and power, ene	ergy., 2h, Learning outco	mes:4		
	8.Collisions., 2h, Learni	ing outcomes:4			
	9.1. partial exam, 2h, L	earning outcomes:1,2,3	,4 ·2 3		
	11.Motion in gravitation.	, 20, Learning outcomes nal field., 2h. Learning or	utcomes:5		
	12.Special theory of rel	lativity., 2h, Learning ou	tcomes:6		
	13.Bohr model of atom	., 2h, Learning outcome	s:8		
	14.Photoelectric effect.	, 1h, Learning outcomes	::9		
	Radioactivity., In, Lear	ming outcomes:10			

	15.2. partial exam, 2h, Learning outcomes:5,6,7,8,9		
Required materials	Basic: classroom, blackboard, chalk Whiteboard with markers Overhead projector		
Exam literature	Basic literature: 1. Levanat, I., Fizika za TVZ: Kinematika i dinamika, TVZ, Zagreb, 2010; Additional literature: 1. Young and Freedman, University Physics, Addison Wesley, San Francisco, 2007; 2. Kulišić, P., Mehanika i toplina, Školska knjiga, Zagreb, 2005		
Students obligations	none		
Knowledge evaluation during semester	Two partial exams, each with numerical problems and theoretical questions. Minimum to pass each partial exam: theory 40%, problems 50%. For attending lectures up to 10% of theory maximum added.		
Knowledge evaluation after semester	Full exam, with numerical problems and theoretical questions. Minimum to pass: 40% problems and 40% theory.		
Student activities:	AktivnostECTS(Written exam)4(Oral exam)3		
Remark	This course can not be used for final thesis theme		
Prerequisites:	No prerequisites.		
ISVU equivalents:	22682;		
Proposal made by	prof.vis.šk. Ivica Levanat , 19. 01. 2014		

Code WEB/ISVU	23420/155826	ECTS	6.0	Academic year	2018/2019
Name	Probability and Statistic	cs	I		I
Status	3rd semester - Softwar	e engineering (Red	ovni raarstvo) - oblig	atory course3rd semester - Co	mputer systems and
	network engineering (R	(edovni raarstvo) -	obligatory course		
Teaching mode	Lectures + exercises (a work at home	uditory + laborato	ry + seminar + meto	dology + construction)	30+30 (30+0+0+0) 120
Teachers	Lectures:1. dr.sc. Igor L Auditory exercises:dr.s	Jrbiha prof.vis.šk. c. Igor Urbiha prof.v	vis.šk.		
Course objectives	To teach students how	to use the acquired	d knowledge in Statis	tics in solving engineering pro	blems
Learning outcomes:	Lability to reach a con- 2.ability to calculate pr- Level:6 3.ability to reach a con- 4.ability to organise the 5.ability to relate the n- 6.ability to reach a con- 7.identify whether a dis	clusion about a ran obability according clusion about the b e implementation o otion of independer clusion about a dise screte random varia	dom event, accordin to the traditional for asic properties of the f conditional probabi nce of an event to th crete variable and its able has an uniform,	g to a definition. Level:6,7 mula "a priori" and through the e probability function. Level:6,7 lity. Level:6,7 e solution to a problem. Level: s distribution, according to a de Bernoulli or some other distrib	e axiom based probability . 7 6,7 efinition. Level:6,7 ution. Level:6
	8.ability to reach a con- regard with normal dist 9.ability to reach a con	clusion about a con ribution . Level:6,7 clusion about the v	itinuous random vari ' 'alidity of a hypothes	able and its distribution of prob is based on statistical tests. Le	oability, especially in vel:6,7
Methods of carrying out lectures	Ex cathedra teaching Discussion Questions and answers				
Methods of carrying out auditory exercises	Other				
Course content lectures	1.Descriptive statistics: 2.Arithmetic mean, mor 3.Variance, standard de results, 2h 4.Linear regression, 2h 5.1st exam, 2h 6.Random event, proba 7.Discrete random varia 8.Probability density fu discrete random variab 9.Discrete uniform distr outcomes:7 10.2nd exam, 2h, Learr 11.Continuous random 12.Normal (Gaussian) c 13.Testing a hypothesis 14.Chi squared test, 2h 15.3rd exam, 2h, Learr	frequency tables, de, median, quartil- eviation, Chebysher ability , 2h, Learning able, distribution of nction, probability of le, 2h, Learning ou ribution, Bernoulli t ning outcomes:1,2, variable, 2h, Learn distribution, standar s for expectation w h, Learning outcomes:8,9	histogram, cumulativ e, percentile, quantil v theorem, comparis g outcomes:1,2,3,4,5 f a discrete random v distribution function, tcomes:6 :rial, Bernoulli schem 3,4,5,6,7 ning outcomes:8 rd normal distributio ith known variance, 2 es:9	ve function, 2h e, 2h ion of different measurement, variable, 2h, Learning outcome expectation, variance and star e, binomial distribution, Poisso n, chi squared distribution, 2h, 2h, Learning outcomes:9	comparision of different s:6 ndard deviation of a n distribution, 2h, Learning Learning outcomes:8
Course content auditory	1.Descriptive statistics: 2.Arithmetic mean, mo 3.Variance, standard de results, 2h 4.Linear regression, 2h 5.1st exam, 2h 6.Random event, proba 7.Discrete random variab 9.Discrete random variab 9.Discrete uniform distri outcomes:7 10.2nd exam, 2h, Learr 11.Continuous random 12.Normal (Gaussian) c 13.Testing a hypothesis 14.Chi squared test, 2h 15.3rd exam, 2h, Learr	frequency tables, de, median, quartil- eviation, Chebysher ability , 2h, Learning able, distribution of nction, probability of le, 2h, Learning ou ribution, Bernoulli t ning outcomes:1,2, variable, 2h, Learn distribution, standa s for expectation w b, Learning outcome ing outcomes:8,9	histogram, cumulativ e, percentile, quantil v theorem, comparis g outcomes:1,2,3,4,5 f a discrete random v distribution function, itcomes:6 :rial, Bernoulli schem 3,4,5,6 ing outcomes:8 rd normal distribution ith known variance, 2 es:9	/e function, 2h e, 2h ion of different measurement, / /ariable, 2h, Learning outcome expectation, variance and star e, binomial distribution, Poisso n, chi squared distribution, 2h, 2h, Learning outcomes:9	comparision of different s:6 ndard deviation of a n distribution, 2h, Learning Learning outcomes:8
Required materials	Basic: classroom, black	board, chalk	<u> </u>		
Exam literature	Basic literature: 1. G. Ugrin-Šparac: Vjer 2. M. Ilijašević, Ž. Pauše Zagreb, 1990. Additional literature: 1. Ž. Pauše: Uvod u ma 2. I. Pavlić: Statistička t	rojatnost, Tehničko e: Rješeni primjeri i tematičku statistik teorija i primjena, T	veleučilište u Zagrel zadaci iz vjerojatnos u, Školska knjiga, Za ehnička knjiga, Zagr	bu, Elektrotehnički odjel, Zagre sti i statistike, Zagreb poduzeće greb, 1993. eb, 1988.	ıb, 1999. ⊇ za grafičku djelatnost,



Students obligations	No special requirements		
Knowledge evaluation during semester	Exams during semester		
Knowledge evaluation after semester	There are three preliminary exams (three questions each), and if a student correctly solved at least one problem of each preliminary exam and correctly solved at least four problems of all three preliminary exams, it makes the student exempt from taking the written exam. The written part of the exam consists of five problems to be solved within 2 hours. A student may attempt to the oral part of the exam, if he has two correctly solved problems in the written part of the exam.		
Student activities:	Aktivnost ECTS (Written exam) 6		
Remark	This course can be used for final thesis theme		
Prerequisites:	No prerequisites.		
ISVU equivalents:	22737;		

Code WEB/ISVU	23371/154960	ECTS	7.0	Academic year	2018/2019
Name	Programming	·			-
Status	1st semester - Undergr	aduate professional stud	ly in computing (Redovn	i raarstvo) - obligatory co	ourse
Teaching mode	Lectures + exercises (a	auditory + laboratory + s	seminar + metodology +	construction)	45+45 (15+30+0+0)
	work at home				120
Teachers	Lectures:1. Ivan Cesar	mag. ing.			
	Lectures: 2. Mia Carapii	ha dipi. ing., pred. n Cesar mag, ing			
	Auditory exercises: Na	a Čarapina dipl. ing., pred	ł.		
	Laboratory exercises: I	van Cesar mag. ing.			
	Laboratory exercises: I	Mia Čarapina dipl. ing., p	red.		
	Laboratory exercises:d	r.sc.rač. lvica Dodig , pro	of.v.š.		
Course objectives	To teach students how	to solve simple problem	s and implement compu	ting algorithms by using	contemporary
	structural and procedu	C codo Lovolió	yes		
Learning outcomes:	2 ability to analyse the	basic programming too	ls (text editor, compiler	connector debugger) L	evel:67
	3.ability to design a sir	nple algorithm by using i	programming tools (flow	chart, pseudo code, struc	ctogram). Level:6
	4.ability to anticipate t	he result of carrying out	a segment of the C code	, with predefined data in	iput. Level:6,7
	5.ability to design one	s own programs with bas	sic data types and struct	ures. Level:6	
	6.ability to present the	types and structures of	files in everyday usage.	Level:6,7	
	/.ability to design one'	ty to design one's own programs with basic data types and structures. Level:6			
	9 ability to redesign th	e C code according to an	additional functional re	quest Level:67	
	10.ability to redesign o	ne's own program accor	ding to a default file and	operating system . Leve	1:6,7
	11.ability to develop an	n algorithm for solving a	simple task. Level:6,7		
	12.ability to write a det	fault or predefined simpl	e algorithm in C. Level:6	,7	
Methods of carrying	Ex cathedra teaching				
out lectures	Demonstration				
	Discussion				
Methods of carrying	Group problem solving				
out auditory	Discussion, brainstorm	ing			
exercises	Computer simulations	h dina ar			
	Algorithm and problem so	iving Ltasks solving Demonsti	ration of progarmming to	ools based on typical alg	orithm examples
Methods of carrying	l aboratory exercises, o	computer simulations	actor of progarming a		shann examples.
out laboratory	Individual student work	c on algorithm developm	ent and implementation	, as well as existing code	e modification
exercises		5		5	
Course content	1.Introduction, 3h, Lea	rning outcomes:2			
lectures	2.Programming langua	ges history, first C-progr	am, variables, 3h, Learni	ing outcomes:1,2,3,4,5,6	
	3.Number systems, vai	riable types, 3h, Learning	y outcomes:1,2,3,4,5,6,7	,8 	1
	5 Program flow control	3h Learning outcomes	1 2 3 4 5 6 7 8 9 10 11 1	25:1,2,3,4,3,0,7,0,9,10,1. 12	1
	6.Loops, 3h, Learning o	outcomes:1,2,3,4,5,6,7,8	,9,10,11,12		
	7.Arrays, 3h, Learning	outcomes:1,2,3,4,5,6,7,8	3,9,10,11,12		
	8.Functions, 3h, Learni	ng outcomes:1,2,3,4,5,6	,7,8,9,10,11,12		
	9.Pointers, 3h, Learning	g outcomes:1,2,3,4,5,6,7	,8,9,10,11,12	1 1 2	
	11 Pointers and function	dynamic memory alloca	es:1,2,3,4,3,0,7,8,9,10,1 ation recursion 3h Lear	ning outcomes:12345	6789101112
	12.Character arrays (st	rings), formatted input a	ind output. 3h. Learning	outcomes:1.2.3.4.5.6.7.8	8.9.10.11.12
	13.Formatted files and	structures, 3h, Learning	outcomes:1,2,3,4,5,6,7,	8,9,10,11,12	
	14.Unformatted files an	nd unions, 3h, Learning o	outcomes:1,2,3,4,5,6,7,8	,9,10,11,12	
	15.Advanced program	ning techniques (functio	n pointers, variable num	ber of parameters, impo	rtant algorithms
	overview), 3h, Learning	g outcomes:1,2,3,4,5,6,7	,8,9,10,11,12		
Course content	1.Introduction. 1h. Lea	rning outcomes:1			
auditory	2.First C-program, 1h,	Learning outcomes:1,2,3	,4,5		
	3.Number systems, 1h	, Learning outcomes:1,2,	3		
	4.Operators and expres	ssions, 1h, Learning outo	omes:1,2,3,4,5,6,7,8,9,1	.0,11,12	
	5.Program flow control	, In, Learning outcomes:	1,2,3,4,5,6,7,8,9,10,11,.	LZ	
	7.Arrays, 1h, Learning C	outcomes:1,2,3,4,5,6,7,8	,9,10,11,12 8,9,10,11,12		
	8.Functions, 1h, Learni	ng outcomes:1,2,3,4,5,6	,7,8,9,10,11,12		
	9.Pointers, 1h, Learning	g outcomes:1,2,3,4,5,6,7	,8,9,10,11,12		
	10.Pointers and function	ons, 1h, Learning outcom	es:1,2,3,4,5,6,7,8,9,10,1	.1,12	
	11.Pointers and arrays	, dynamic memory alloca	ition, recursion, 1h, Lear	ning outcomes:1,2,3,4,5	,6,7,8,9,10,11,12
	12.Character arrays (si 13 Formatted files and	structures 1h Learning	outcomes 1 2 3 4 5 6 7	0utcomes:1,2,3,4,5,6,7,8 8 9 10 11 12	3,9,10,11,12
	14.Unformatted files a	nd unions. 1h. Learning	outcomes:1.2.3.4.5.6.7.8	.9.10.11.12	
	15.Practicing and repe	atition, 1h, Learning out	comes:1,2,3,4,5,6,7,8,9,1	10,11,12	
Course content	1.Number systems, 2h	, Learning outcomes:1,2,	3,4,5,6,7,8,9,10,11,12		
laboratory	2.Operators and expres	ssions, 2h, Learning outc	omes:1,2,3,4,5,6,7,8,9,1	.0,11,12	
	4.1 oops. 2h. Learning o	111119 outcomes: 1, 2, 3, 4, 3 outcomes: 1, 2, 3, 4, 5, 6, 8, 9	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,		
I		Jacconico, 1,2,0,7,0,0,9	, ,		

	 5.Arrays, 2h, Learning outcomes:1,2,3,4,5,6,7,8,9,10,11,12 6.First programming skills exam (exercises 1-5), 2h, Learning outcomes:1,2,3,4,5,6,7,8,9,10,11,12 7.Functions, 2h, Learning outcomes:1,2,3,4,5,6,7,8,9,10,11,12 8.Pointers and functions, 2h, Learning outcomes:1,2,3,4,5,6,7,8,9,10,11,12 9.Pointers and arrays, dynamic memory allocation, 2h, Learning outcomes:1,2,3,4,5,6,7,8,9,10,11,12 10.Formatted files and structures, 2h, Learning outcomes:1,2,3,4,5,6,7,8,9,10,11,12 11.Unformatted files, 2h, Learning outcomes:1,2,3,4,5,6,7,8,9,10,11,12 12.Second programming skills exam (exercises 6-10), 2h, Learning outcomes:1,2,3,4,5,6,7,8,9,10,11,12 13.Single exercise compensation, 2h, Learning outcomes:1,2,3,4,5,6,7,8,9,10,11,12 14.Not in program, 2h 15.Not in program, 2h
Required materials	Basic: classroom, blackboard, chalk General purpose computer laboratory Whiteboard with markers Overhead projector
Exam literature	Osnovna: 1. T. Tucaković: C programer za 15 dana, PRO-MIL 2. L. Ullman, M. Liyanage: C osnove programiranja, MIŠ Additional literature: 1. B.W. Kernighan, D.M. Ritchie: The C Programming Language, Prentice Hall
Students obligations	80% attendance rate in lab exercises, 1/3 points from lab exercises, 1/6 points from semestre.
Knowledge evaluation during semester	Redovitost pohaa#4#4#0\$Mini-test#3#5#0\$Kolokvij, numeri zadaci#2#16#0\$Programski zadatak#2#42#0\$Prakti rad#10#25#33\$Prakti ispit#5#8#0\$
Knowledge evaluation after semester	laboratory, written and oral exams
Student activities:	Aktivnost ECTS
	(Written exam) 7
Remark	This course can be used for final thesis theme
Prerequisites:	No prerequisites.
ISVU equivalents:	22731;
Proposal made by	dr.sc. Dalibor Grgec, 8.5.2012.

Study programme	for academic year	2018/2019
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Code WEB/ISVU	23095/91909	ECTS	6.0	Academic year	2018/2019
Name	Seminar Paper			·	
Status	5th semester - Softw	are engineering	(Redovni raarstvo) - obligat	ory course5th semester - Co	mputer systems and
	network engineering	(Redovni raarst	vo) - obligatory course		
Teaching mode	Lectures + exercises (auditory + laboratory + seminar + metodology + construction) $(15+75(0+0+75+0))$ work at home (0)				
Teachers	Lectures:1. Goran Belamarić viši predavač				
	Lectures:2. dr.sc. Že	ljko Širanović pro	of.v.š.		
	Lectures:4. dr.sc.rač.	. Davor Cafuta ,	prof.v.šk.		
	Lectures:5. dr.sc.rač.	. Ivica Dodig , pr	of.v.š.		
	Lectures:6. Vesna Ali	elobrk Knežević (ligistroj. liplina		
	Lectures:8. Mia Čara	pina dipl. ing., pi	red.		
	Lectures:9. dr. sc. Ro	oman Domović ,	prof.		
	Lectures:10. Sanja Ki	raljević , dipl.ing	., v. pred.		
	Lectures:12. Dr. sc. r	f. dr. sc. Petar la	ndrić prof. v. šk.		
	Lectures:14. Tin Krar	nberger struč. s	pec. ing. techn. inf., pred.		
	Lectures:15. mr.sc. S	Sergej Lugović M	BA		
	Lectures: 16. Nikola N	Majstorović dipl.i	ng.		
	Lectures:17. mr.sc. C	a Novinc	eu.		
	Lectures:19. Bojan N	ložica dipl. ing, v	.pred.		
	Lectures:21. Prof. dr.	. sc. Miroslav Sla	mić profesor visoke škole		
	Lectures:22. dr.sc. A	len Simec v. pred	davač je čk		
	Lectures:23. dr.sc. ig Lectures:24. Ognien	staničić dipl. ing	S.SK.		
	Lectures: Ivan Cesar	mag. ing.			
	Lectures: Mario Janko	ović mag. ing. gr	aph. techn.		
	Lectures: Zeljko Kova	ačević , struč.spo	ec.ing.techn.inf.		
	Lectures: Ognien Mit	rović struč, spec	.sk. . ing. techn. inf., pred.		
	Lectures: Danijela Po	ongrac , prof.			
	Lectures:Pred. Ida Po	opčević prof.			
	Lectures:v.pred. Alek	ksander Radovar	n, dipl. ing.		
	Lectures: dr.sc. Biljan	la Stojaković ,pro anović	or.v.s. u trajnom zvanju		
	Lectures:Dr. sc. Alek	sandar Stojanovi	ić pred.		
			•		
Course objectives	To teach students ho	ow to use the acc	uired knowledge in solving	engineering tasks	
Learning outcomes:	1.ability to analyse a	subject related	to the field of expertise. Lev	vel:6	
	3.ability to write a seminar paper related to the field of expertise. Level:6,7 4.ability to formulate conclusions. Level:6,7				
	5.ability to format ta	sk based docum	ent s. Level:6	6	
	6.ability to prepare a	a presentation of	a work related to the field of expertise to the	of expertise. Level:6,7	
	7.ability to present a	work related to	the field of expertise to the	addience. Level.0,7	
Methods of carrying	Case studies				
out lectures	Discussion				
	Other				
Methods of carrying	Traditional literature	analysis			
out seminars	Data mining and kno	wledge discover	y on the Web		
	Discussion, brainstor	rming			
	Computer simulation	IS			
	Other				
Course content	1.In cooperation with	n the mentor., 2h	, Learning outcomes:1,2,3,4	1,5,6,7	
lectures	2.In cooperation with	the mentor., 2h	, Learning outcomes:1,2,3,4	1,5,6,7	
	3.In cooperation with	the mentor., 2h	i, Learning outcomes:1,2,3,4	1,5,6,/ 1,5,6,7	
	5.In cooperation with	the mentor., 2h	. Learning outcomes:1,2,3,4	1.5.6.7	
	6.In cooperation with	h the mentor., 2h	, Learning outcomes:1,2,3,4	1,5,6,7	
	7.In cooperation with	the mentor., 2h	, Learning outcomes:1,2,3,4	1,5,6,7	
	8.In cooperation with	the mentor., 2h	, Learning outcomes:1,2,3,4	1,5,6,7	
	10.In cooperation with	th the mentor 2	h. Learning outcomes:1,2,3,2	.4.5.6.7	
	11.In cooperation wit	th the mentor., 2	h, Learning outcomes:1,2,3	,4,5,6,7	
	12.In cooperation wit	th the mentor., 2	h, Learning outcomes:1,2,3	,4,5,6,7	
	13.In cooperation with the mentor., 2h, Learning outcomes:1,2,3,4,5,6,7				
	15.In cooperation wit	th the mentor., 2	th, Learning outcomes:1,2,3	,4,5,6,7	
Course content	1.In cooperation with	n the mentor., 2h	, Learning outcomes:1,2,3,4	1,5,6,7	
seminars	2.In cooperation with	n the mentor., 2h	i, Learning outcomes:1,2,3,4	1,5,6,7	

Required materials	3.In cooperation with the mentor., 2h, Learning outcomes:1,2,3,4,5,6,7 4.In cooperation with the mentor., 2h, Learning outcomes:1,2,3,4,5,6,7 5.In cooperation with the mentor., 2h, Learning outcomes:1,2,3,4,5,6,7 6.In cooperation with the mentor., 2h, Learning outcomes:1,2,3,4,5,6,7 7.In cooperation with the mentor., 2h, Learning outcomes:1,2,3,4,5,6,7 8.In cooperation with the mentor., 2h, Learning outcomes:1,2,3,4,5,6,7 9.In cooperation with the mentor., 2h, Learning outcomes:1,2,3,4,5,6,7 10.In cooperation with the mentor., 2h, Learning outcomes:1,2,3,4,5,6,7 11.In cooperation with the mentor., 2h, Learning outcomes:1,2,3,4,5,6,7 12.In cooperation with the mentor., 2h, Learning outcomes:1,2,3,4,5,6,7 13.In cooperation with the mentor., 2h, Learning outcomes:1,2,3,4,5,6,7 14.In cooperation with the mentor., 2h, Learning outcomes:1,2,3,4,5,6,7 15.In cooperation with the mentor., 2h, Learning outcomes:1,2,3,4,5,6,7
Required materials	
Exam literature	Prema dogovoru sa mentorom
Students obligations	maximum of 3 absences from exercises
Knowledge evaluation during semester	maximum of 3 absences from exercises
Knowledge evaluation after semester	maximum of 3 absences from exercises
Student activities:	Aktivnost ECTS (Practical work) 3 (Seminar Work) 3
Remark	This course can not be used for final thesis theme
Prerequisites:	No prerequisites.
ISVU equivalents:	39172;39690;200082;
Proposal made by	Alen Šimec, PhD

Code WEB/ISVU	22966/22722	ECTS	6.0	Academic year	2018/2019
Name	Soft Computing Methor	ds			
Status	5th semester - Softwar engineering (Redovni r	e engineering (Redovni i aarstvo) - elective cours	raarstvo) - elective cours e	e5th semester - Comput	er systems and network
Teaching mode	Lectures + exercises (a work at home	auditory + laboratory + s	seminar + metodology +	construction)	30+30 (0+30+0+0) 120
Teachers	Lectures: Dunja Bjelobi Laboratory exercises: [rk Knežević dipl.ing Dunja Bjelobrk Knežević	dipl.ing		
Course objectives	To transfer to students computing methods	the knowledge and skill	s related to solving pract	ical problems by using r	onconventional
Learning outcomes:	1.ability to write a code 2.ability to combine va 3.ability to discover a c Level:6,7 4.abilityto solve a prob 5.ability to analyse the 6.ability to design a sy 7.abilityto identify a sc 8.ability to formulate ti	e of an application which rious non-conventional p configuration of genetic a lem which does not allow results gotten by using stem suitable for using n enario for using genetic he rules of fuzzy logic in pulse os a basic of nuzzy logic in	uses genetic algorithms orogramming techniques algorithms or neural network v using the usual method non-conventional ways of on-conventional ways of algorithms and neural ne a fuzzy system. Level 6, u potwork a two work of the system.	or neural networks. Lev . Level:6,7 vorks parameters which ds of code writing. Level: of programming. Level:6 tworks. Level:6 7	el:6,7 give the best results. .6
Methods of carrying	10.ability to prepare san 10.ability to make a re procedures. Level:6,7 Ex cathedra teaching	port which documents or	the results of a system	which uses non-convent	ional programming
out lectures	Case studies Demonstration Simulations				
Methods of carrying out laboratory exercises	Laboratory exercises, c Group problem solving Computer simulations	computer simulations			
Course content lectures	1.Introduction to soft c 2.Genetic algorithms, 2 3.Implementation of ge 4.Introduction to neura 5.Learning methods of 6.First partial exam, 1h 7.Using neural network 8.Analysis of image rec 9.Neuroph framework, 10.Second partial exan 11.Fuzzy logic, 2h, Lea 12.Problem solving usi 13.Fuzzy systems impl 14.Java implementatio 15.Final exam, 1h, Lea	omputing methods, 2h, 1 2h, Learning outcomes:1 enetic algorithms, 2h, Learning neural networks, 2h, Learning neural networks, 2h, Learning outcomes:1,2 with Encog framework a cognition example with n 2h, Learning outcomes: n, 1h, Learning outcomes: n, 1h, Learning outcomes: ng fuzzy logic, 2h, Learn ementation, 5h, Learning n of jFuzzyLogic library, 3 rning outcomes:1,2,3,4,5	earning outcomes:2,4,6 7 earning outcomes:1,3,7 outcomes:1,3,7 arning outcomes:1,2,3,7, 2,3,4,5,6,7 and Java programming la eural networks, 2h, Lear 2,3,4,5,6,9 s:1,2,3,4,5,6,7,9 3 ing outcomes:2,4,5,6,8 2 outcomes:2,4,5,6,8 2 h, Learning outcomes:2 5,6,7,8,9	9 inguage , 2h, Learning o ning outcomes:1,3,9 ,4,5,6,8	utcomes:1,3,9
Course content laboratory	1.No classes, 2h 2.No classes, 2h 3.No classes, 2h 4.Solving simple proble 5.Solving complex proble 6.Solving complex proble 7.Solving complex proble 9.Solving simple proble 10.Image recognition u 11.Image recognition u 12.Events prediction u 13.Events prediction u 14.Solving simple prob 15.Solving simple prob	ems using genetic algorit ems using genetic algorit olems using genetic algo olems using genetic algo ems using neural networ ems using neural netwoks, 2h using neural netwoks, 2h sing neural netwoks, 2h sing neural netwoks, 2h, lems using fuzzy logic, 2 lems using fuzzy logic, 2	thms , 2h, Learning outco thms , 2h, Learning outco rithms , 2h, Learning out rithms, 2h, Learning out ks, 2h, Learning outcome ks, 2h, Learning outcomes: 1, Learning outcomes: 1, Learning outcomes: 1,2, Learning outcomes: h, Learning outcomes:	Dmes:1,2,3,4,5,6,7,10 Dmes:1,2,3,4,5,6,7,10 comes:1,2,3,4,5,6,7,10 2000 2000 2000 2000 2000 2000 2000 20	
Required materials	Basic: classroom, black General purpose comp Whiteboard with marke Overhead projector	kboard, chalk uter laboratory ers			
Exam literature	Basic literature: 1. JS. literature: 1. M. Friedm approaches, World Scie Nostrand Reinhold, NY, Jeff Heaton, Programm	R. Jang, CT. Sun, E.Miz an, A. Kandel: Introducti entific Publishing Co., Sir , 1991. ing Neural Networks with	utani: Neuro-Fuzzy and S on to pattern recognitior gapore, 1999 2. L. Dawis n Encog 3 in Java, 2011.	oft Computing, Prentice 1: Statistical, structural, I s (ed.): Handbook of gen	Hall, 1997 Additional neural, and fuzzy logic letic algorithms, Van
Students obligations	Solving all six laborato	ry exercices.	-		
Knowledge	Six laboratory exams -	60 points			-

evaluation during semester	Two partial exams - 10 points each Final exam - 20 points Optional points for additional effort Maximum 100 points 0-49 - not good enough 50-61 - sufficient 62-74 - good			
	75-86 - very good 87-100 - excellent			
Knowledge evaluation after semester	Written exam is evalued with 40 points, and remaining 60 points are transferred from the achievement on laboratory exams during the semester time.			
Student activities:	Aktivnost ECTS (Constantly tested knowledge) 6			
Remark	This course can be used for final thesis theme			
Prerequisites:	Students cannot enroll in this course unless they have passed Programiranje u jeziku Java			
Proposal made by	Aleksander Radovan, BSc. engineer, lecturer, 16.12.2013.			

Code WEB/ISVU	23338/147088	ECTS	5.0	Academic year	2018/2019
Name	UNIX Systems Adminis	stration			
Status	5th semester - Softwar	re engineering (Redovni	raarstvo) - elective cou	rse5th semester - Comp	uter systems and network
Teaching mode	Lectures + exercises (; work at home	Lectures + exercises (auditory + laboratory + seminar + metodology + construction) 30+30 (0+30+0+0)			
Teachers	Lectures:1. dr.sc.rač. h Lectures:dr.sc.rač. Dav Laboratory exercises:d Laboratory exercises:d Laboratory exercises:	vica Dodig , prof.v.š. vor Cafuta , prof.v.šk. Jr.sc.rač. Davor Cafuta , Jr.sc.rač. Ivica Dodig , pr Andrei Vitez	prof.v.šk. of.v.š.		
Course objectives	To enable students to	practically solve office ir	formatization tasks on	various operating syster	ns.
Learning outcomes:	1.ability to build a DNS 2.ability to devise a We 3.ability to integrate a 4.ability to build a syst 5.ability to create a sh 6.ability to control pac 7.ability to create an e 8.ability to connect an 9.ability to analyse the 10.ability to identify er 11.ability to test the fu	server on UNIX OS. Lev eb server on UNIX OS. Lev database with a Web se tem for time based starti ared file system. Level:6 kages which pass throug mail server. Level:6,7 e-mail filtering service v a network traffic going the trors committed in settin anctioning of services on	el:6 el:6 ing of a service. Level: ing of a service. Level:6 i,7 gh a security network la with an e-mail service. I prough security layer or ig up UNIX system servi UNIX server. Level:6	i6,7 i,7 iyer on UNIX server. Leve Level:6,7 i UNIX OS. Level:6 ices. Level:6	el:6,7
out lectures	EX Catheora teaching Case studies Demonstration Simulations Discussion				
Methods of carrying out laboratory exercises	Laboratory exercises o Laboratory exercises, o	on laboratory equipment computer simulations			
Course content lectures	1.Doamin name syster 2.Domain name syster 3.Web server configura 4.Integration of server 5.Databases, 2h, Learr 6.Application schedule 7.E-mail systems., 2h, 8.E-mail server admini 9.E-mail server admini 9.E-mail server anti sp 10.Incoming mail serv 11.Windows to UNIX sł 12.Unix to Windows sh 13.Firewall, 2h, Learnii 14.Troubleshooting an 15.Theoretical exam, 1	m, 2h, Learning outcome m administration, 2h, Lea ation., 2h, Learning outco side languages into web ning outcomes:3,11 er., 2h, Learning outcome Learning outcomes:7,11 istration, 2h, Learning out am technologies., 2h, Learning haring, 2h, Learning outco naring, 2h, Learning outco nag outcomes:9,11 id backup, 2h, Learning outco 1h, Learning outcomes:1	s:1,11 arning outcomes:1,11 omes:2,11 o server., 2h, Learning o es:4,11 utcomes:7,11 earning outcomes:8,11 ng outcomes:7,8,11 comes:5,11 omes:5,11 outcomes:10,11 .,2,3,4,5,6,7,8,9,10,11	outcomes:2,11	
Course content laboratory	 , 2h 2.Domain name syster 3.Web server configura 4.Integration of server 5.Databases, 2h, Learr 6.Application schedule 7, 2h 8.E-mail server admini 9.E-mail server anti sp 10.Incoming mail server 11.Windows to UNIX sf 12.Unix to Windows sh 13.Firewall, 2h, Learnii 14.Troubleshooting an 15.Practical exam, 2h, 	m administration, 2h, Lea ation., 2h, Learning outc side languages into web ning outcomes:3 er., 2h, Learning outcome istration, 2h, Learning out am technologies., 2h, Le er protocols., 2h, Learning haring, 2h, Learning outc naring, 2h, Learning outc ng outcomes:9,11 d backup, 2h, Learning outcomes:1,2,	arning outcomes:1 omes:2 o server., 2h, Learning o es:5 utcomes:7 earning outcomes:8 ng outcomes:7,8 comes:5,11 omes:5,11 outcomes:10,11 3,4,5,6,7,8,9,10	outcomes:2	
Required materials	Special purpose compu Whiteboard with marke Overhead projector Special equipment	uter laboratory ers			
Exam literature	Basic literature: 1. Materijali uz predme 2. C. Hunt,TCP/IP Netw 3. S. Pritchard, et.all, L Additional literature: 1. Linux Magazin (izdv	et (internet stranice) /ork Administration, 3rd (.PI Linux Certification, 2r ojeni brojevi)	edition, O'Reilly, 2002. 1d edition, O'Reilly, 200	6.	

Students obligations	Minimum of 13 point from laboratory work.		
Knowledge evaluation during semester	Course is divided into 7 parts. Upon every part last one is checked with theoretical exam (3points x 6 parts) and practical work (1 point). At the end of the semester theoretical exam (21 point) and practical exam (54 point) checks all 7 parts. More information in first lecture in repository of the course.		
Knowledge evaluation after semester	Laboratory points are obtained during semester. Additionaly, theoretical exam (21 point) and practical exam (54 point) checks all 7 parts. More information in first lecture in repository of the course.		
Student activities:	Aktivnost ECTS (Written exam) 5		
Remark	This course can be used for final thesis theme		
Prerequisites:	Students cannot enroll in this course unless they have passed Uvod u UNIX sustave		
ISVU equivalents:	22655;63199;		
Proposal made by	lvica Dodig, Davor Cafuta (08.01.2014)		

Code WEB/ISVU	23038/75220	ECTS	5.0	Academic year	2018/2019
Name	Web application deve	elopment			
Status	4th semester - Softw engineering (Redovn	are engineering i raarstvo) - elec	(Redovni raarstvo) - electi tive course	ve course4th semester - Com	puter systems and network
Teaching mode	Lectures + exercises work at home	auditory + labo	pratory + seminar + meto	dology + construction)	30+30 (0+30+0+0) 90
Teachers	Lectures:1. dr.sc. Ale Laboratory exercises Laboratory exercises	en Šimec v. preda : Petar Ostermai ::dr.sc. Alen Šime	avač n ec v. predavač		
Course objectives	Acquisition of basic k	nowledge in the	design and development	of web applications	
Learning outcomes:	1.ability to prepare a 2.ability to distinguis applications. Level:6 3.ability to make a p 4.ability to combine to 5.ability to develop a 6.ability to develop a 7.ability to design a	computer for a h between differ roject plan for th the programming database mode program module Web page. Level	presentation of Web appli ent programming tools for e development of Web ap g tools used for the develo l. Level:6,7 of a Web application. Leve :6	cations. Level:6 the development of client-sit plications . Level:6,7 pment of Web applications. L el:6	e and server-site
Methods of carrying out lectures	Ex cathedra teaching Guest lecturer Simulations Modelling Discussion Questions and answe Seminar, students pr Lectures, examples f	ers resentation and o rom real life, cre	liscussion ation methodology, indep	endent work	
Methods of carrying out laboratory exercises	Laboratory exercises Group problem solvir Discussion, brainstor Interactive problem s Workshop Creating and solving	s, computer simu ng ming solving problems.	lations		
Course content lectures	1.Introductory lecturi 2.Introduction to HTM Learning outcomes:2 3.Formatting an HTM Examples from pract 4.HTML5 forms, when HTTP POST and GET. 5.A client-server arch Learning outcomes:3 6.Introduction to PHF 7.Examination of the language., 2h, Learn 8.PHP syntax and its 9.Data types and stri 10.Application of the outcomes:6 11.MySQL database, outcomes:6 12.Connecting PHP s change, and delete or 13.What is Javascript 14.Web application s applications, 2h, Lea 15.Examination of th queries to the databa	e and teach stud AL5 and what it i AL5 and what it i AL5 document an ice., 2h, Learning re they are used Examples from hitecture, the chas comparison comparison comparison ing outcomes:4 usage, the PHP ing outcomes:4 usage, the PHP ings, using operations loop in the prog its application a cripting languag lata from the dat c, which is its application a cripting languag is ecurity, how to pro- rining outcomes: e second part of ase, XML, RSS., 2	ents about the responsibil s. Examples from practice d create links. Definition o g outcomes:2 and what they do. Examp practice., 2h, Learning out aracteristics of the client a age, server side web applie theory, html, forms, CSS, I variables and labeling rule stors and loops., 2h, Learn ramming environment, da nd what they do. Example e with the database, query cabase through the form., plication and what it is use orotect yourself and which 6,7 the theory, php (syntax, o	ities and teaching material., 2 . The difference between HTM of CSS3 and how to use it with les from practice. Model exec comes:3 nd the server, Apache Web so cations., 2h, Learning outcom basic web server and its funct s., 2h, Learning outcomes:5 ta fields, require and include s of how to create a relationa y the database and display th 2h, Learning outcomes:6,7 d, examples in practice, 2h, L are the most common forms data types, data fields, loops),	 2h, Learning outcomes:1 1L and XHTML., 2h, the HTML document. uting scripts on the server. erver and how it works., 2h, es:4 :ion, php scripting commands., 2h, Learning I database., 2h, Learning e search results. Enter, .earning outcomes:6,7 of attacks on web , MySQL database, SQL
Course content laboratory	1.Introductory exerci with the scripting lan 2.Installing Virtual Se MySQL database and 3.Solving the task an UltraEdit, Notepad, V outcomes:2 4.Solving the task an programs that do noi verification and valid 5.Creating forms usir and print text on the Learning outcomes:3 6.Repetition of know PHP., 2h, Learning ou 7.Examination of the 2h, Learning outcom 8.Introducing the virt	ises teach studer guage., 2h, Lear erver on the com I FTP client., 2h, d making HTML5 Vordpad), the kn d making the HT t have a GUI (No lation code., 2h, ng a text editor. screen. Work or ledge and develout tromes:3 first part of prace es:4 tual environment	hts about the duties and en- ning outcomes:1 puter, learning about their Learning outcomes:2 5 pages. Using only simple owledge of writing HTML of TML5 code with the added tepad + +, UltraEdit, Note Learning outcomes:2 Check dunkcionalnosti for the local computer with w opment of Internet sites or ctice, HTML, forms, CSS, back t Xampp applications, run	ducational materials, and pre r work environment. It takes p programs that do not have a ode, verification and validatio document formatting using C pad, Wordpad), the knowledg HTTP POST and GET. Solving rirtual services in open source n a virtual server using HTML asic web server and its functio applications required for oper	pares the computer to work practice to install Apache, GUI (Notepad + +, on code., 2h, Learning SS tools. Using only simple je of writing CSS code, problems with the forms e environment., 2h, markup text, forms, CSS, on, php scripting language., ration of the virtual server,

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	solving tasks., 2h, Learning outcomes:4 9.Solving problems using PHP syntax, PHP variables and labeling rules in HTML, 2h, Learning outcomes:5 10.Solving problems in PHP, data types, strings, use the operator and the loop, 2h, Learning outcomes:5 11.Application of the loop in the programming environment, data fields, require and include commands, 2h, Learning outcomes:5 12.Using MySql database, creating databases, tables, fields in the table, define the fields, their values#8203;#8203;, the determination of the primary and secondary key., 2h, Learning outcomes:6 13.Connecting to MySQL database with the programming code in PHP, and the appointment of a query to the database (read data from the database, data modification and deletion of data), the print data from the database to display user, 2h, Learning outcomes:6,7 14.Using JavaScript in your application and protection of Web applications from attacks, web application security, 2h, Learning outcomes:6,7 15.Examination of the second part of the practice, php (syntax, data types, data fields, loops), MySQL database, SQL queries to the database, XML, RSS., 2h		
Required materials	Basic: classroom, blackboard, chalk Special purpose computer laboratory Overhead projector Tools Special equipment Web server package (Xampp application)		
Exam literature	Šimec, Alen; Programiranje i optimizacija Internet stranica u HTML5 okruženju; Tehničko veleučilište u Zagrebu; 2015; Šimec, Alen; Uvod u HTML, XHTML i CSS; Tehničko veleučilište u Zagrebu; 2011; Čarapina, M.: XAMPP - upute za instalaciju i korištenje, 2012., Tehničko veleučilište u Zagrebu; Nixon, Robin; Learning PHP, MySQL, JavaScript, CSS HTML5, 3rd Edition; O'Reilly Media; 2014.; Seyed M.M. "Saied Tahaghoghi; Hugh E. Williams; Learning MySQL; O'Reilly Media; 2007. PHP (www.php.net); Apache (www.apache.org) MySQL (www.mysql.com); W3C preporuke (www.w3c.org); W3Schools Online Web Tutorials (www.w3schools.com);		
Students obligations	Attendance and active participation in lectures 15 points Attendance and active participation in training 15 points Essay and project 20 points		
Knowledge evaluation during semester	1st Colloquium (theory and tasks) 25 points 2nd Colloquium (theory and tasks) 25 points		
Knowledge evaluation after semester	Written exam 100 points		
Student activities:	AktivnostECTS(Classes attendance)1(Project)2(Written exam)2		
Remark	This course can be used for final thesis theme		
Prerequisites:	Students cannot enroll in this course unless they have passed Uvod u web tehnologije		
ISVU equivalents:	22740;		
Proposal made by	Alen Šimec. PhD		

Code WEB/ISVU	23104/111517	ECTS	6.0	Academic year	2018/2019
Name	Web application de	velopment in AS	P.NET MVC technology		
Status	6th semester - Soft	ware engineering	g (Redovni raarstvo) - e	elective course6th semester - (Computer systems and network
Teaching mode	Lectures + exercise work at home	es (auditory + lat	poratory + seminar + r	netodology + construction)	30+30 (0+30+0+0) 120
Teachers	Lectures:1. Ivan Ces Laboratory exercise	sar mag. ing. es: Ivan Cesar ma	ag. ing.		
Course objectives	To introduce studer	nts to the ASP.NE	T MVC technology and a database.	qualify them for individual de	velopment of multilayer Web
Learning outcomes:	1.to analyse data fl	ow between a cli	ent and a server. Leve	1:6	
	3.to anticipate pote 4.to connect the UR 5.to design LINQ qu 6.to integrate the E 7.to control the aut 8.to combine client 9.o create mechani 10.API interface usi	Initial problems in such as the correspon- eries on collection ntity framework horization and an libraries with as sms of master-do- ng Web API 2 teo	the development of a inding actions on a ser ons and objects. Level: first into an ASP.NET M uthentication mechanis ynchronous requests to etail data binding in a s chnology. Level:6,7	o n application. Level:6,7 6 IVC application . Level:6,7 sms. Level:6,7 o the server. Level:6,7 single request to the server. Le	evel:6,7
Methods of carrying out lectures	Ex cathedra teachir Case studies Demonstration Discussion Seminar, students p	ng presentation and	discussion		
Methods of carrying out laboratory exercises	Laboratory exercise Data mining and kn	es on laboratory owledge discove	equipment ry on the Web		
Course content lectures	1.C# language basi 2.Http protocol prop 3.Model-view-contro outcomes:2,3,4 4.Connecting URL la areas., 2h, Learning 5.Authorization and 6.ASP.NET MVC raze 7.LINQ, 2h, Learning 8.Model binding in 7 9.Package manager code-first migration 10.Basic principles user controls., 2h, L 11.Validation. Cach 12.Testing controlle 13.Deployment to p 14.Integrating Web 15.User-defined mo outcomes:8,9,10	cs, 2h, Learning perties: request a oller paradigm co ocation with cont outcomes:2,3,4 authentification or nomenclature g outcomes:4,5,6 ASP.NET MVC teor r console usage. is., 2h, Learning of javascript and Learning outcome ing. Custom acti ers in ASP.NET MV production enviro API 2 interface i del binding. Bino	outcomes:1,2,3 and response. Html for oncept. Multi-layer ASP croller actions with add in ASP.NET MVC web a intro., 2h, Learning ou chnology., 2h, Learning Entity framework code outcomes:5,6,7 jQuery libraries. Princi es:6,7,8 on filters., 2h, Learning VC application., 2h, Learning vC application., 2h, Learning into application, 2h, Learning on the application, 2h, Learning of the application, 2h, Learning of the application, 2h, Learning of the application, 2h, Learning of the application app	ms, get, post., 2h, Learning ou .NET MVC application architec itional URL parameters transfe applications., 2h, Learning out tcomes:4,5,6 outcomes:5,6,7 -first technology and repositor ples of ASP.NET MVC ajax med outcomes:6,7,8 arning outcomes:7,8,9 potcomes:7,8,9 arning outcomes:8,9,10 a and collections (master-deta	itcomes:1,2,3 ture., 2h, Learning r (routing). URL appliaction comes:3,4,5 ry pattern, Entity framework chanisms. Partial views and il)., 2h, Learning
Course content laboratory	1.Introduction to de 2.Http protocol prop 3.Model-view-contro outcomes:2,3,4 4.Connecting URL ld areas., 2h, Learning 5.Authorization and 6.ASP.NET MVC raze 7.LINQ., 2h, Learnin 8.Model binding in / 9.Package manager code-first migration 10.Basic principles user controls., 2h, L 11.Validation. Cach 12.Testing controlle 13.Deployment to p 14.Integrating Web 15.User-defined mo	evelopment envir perties: request a oller paradigm co potation with cont g outcomes:2,3,4 authentification or nomenclature g outcomes:5,6, ASP.NET MVC teo r console usage. is., 2h, Learning of javascript and earning outcom ing. Custom acti ers in ASP.NET More production enviro API 2 interface i odel binding. Bino	onment (VS2013, chro and response. Html for oncept. Multi-layer ASP croller actions with add ,5 in ASP.NET MVC web a intro., 2h, Learning ou 7 chnology., 2h, Learning Entity framework code outcomes:3,4,5,6,7,8 jQuery libraries. Princi es:5,6,7,8 on filters., 2h, Learning VC application., 2h, Learning vC application., 2h, Learning into application, 2h, Learning con the application, 2h, Learning con the price of the set of the	me dev). C# basics., 2h, Learn ms, get, post., 2h, Learning ou .NET MVC application architec itional URL parameters transfe applications., 2h, Learning out tcomes:4,5,6,7 outcomes:3,4,5,6,7 -first technology and repositor ples of ASP.NET MVC ajax med outcomes:6,7,8,9 arning outcomes:7,8,9,10 putcomes:8,9,10 arning outcomes:9,10 a and collections (master-deta	ing outcomes:1 tcomes:1,2 ture., 2h, Learning r (routing). URL appliaction comes:3,4,5,6 ry pattern, Entity framework chanisms. Partial views and il)., 2h, Learning outcomes:10
Required materials	Basic: classroom, b Special purpose cor Overhead projector	lackboard, chalk nputer laborator	 y		
Exam literature	1. I. Cesar elektroni Zagrebu, 2013., ww	čki sadržaji pred vw.tvz.hr	avanja (PPT prezentaci	je) na web stranici predmeta ı	na Tehničkom veleučilištu u

	2. A. Freeman, Pro ASP.NET MVC 4, Apress, 4th edition, 2012			
Students obligations	Exercises and lectures attendance, 30% of maximum points in lab. exercises, project completeness.			
Knowledge evaluation during semester	Lab exercises#12#60#30\$Practical work#1#40#50\$			
Knowledge evaluation after semester	Oral exam#1#30#70\$Practical work#1#70#70\$			
Student activities:	AktivnostECTS(Written exam)6			
Remark	This course can be used for final thesis theme			
Prerequisites:	Students cannot enroll in this course unless they have passed Objektno orijentirano programiranje Students cannot enroll in this course unless they have passed Baze podataka			
Proposal made by	Ivan Cesar , 22.5.2013			

2. A. Fr Pro ASP NET MVC 4 An 4th edition, 2012

Study programme	for academic	year 2018/2019
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Code WEB/ISVU	23039/75223	ECTS	6.0	Academic year	2018/2019
Name	Web application in Java	1			
Status	6th semester - Softwar engineering (Redovni r	e engineering (Redovni i aarstvo) - elective cours	raarstvo) - elective cours e	se6th semester - Comput	er systems and network
Teaching mode	Lectures + exercises (auditory + laboratory + seminar + metodology + construction) 60+60 (0+60+0+0) work at home 60				
Teachers	Lectures:1. v.pred. Alel Laboratory exercises: N	ksander Radovan , dipl. i Matija Dujmović	ing.		-
Course objectives	Mastering advanced te	chniques of software dev	velopment and application	on frameworks in the Jav	a programming
Learning outcomes:	1.ability to write a lava	Web application code to	be executed on a serve	er and used by means of	a browser. Level:6.7
	2.ability to design a Java Web application code to be executed on a solver and used by means of a browser. Even.o, 7 3.ability to design a Java Web application which will use a 3Jayer (MVC) architecture. Level:6 3.ability to organise the application components on an interface, the business logic and data Jayer. Level:6,7 4.ability to relate elements of the application to new open source libraries. Level:6,7 5.ability to develop one's own components based on the OOP reusable principles . Level:6,7 6.ability to adjust integrated development environment Spring Tool Suite for effective development of Java web applications. Level:6 7.ability to analyse the functional elements of the application and adjust them to the MVC architecture. Level:6,7 8.ability to integrate a Java Web application with different software frameworks which speed up the development. Level:6 9.compare a development process of JavaFX applications with development process of web applications. Level:6,7 10.choose Spring boot framework for development process optimization. Level:7 11.choose Tyhmeleaf for developing a front end user interface. Level:7 12.Design internationalization in Java web applications. Level:6,7 13.Integrate scheduled jobs to Java web applications. Level:6,7				
Methods of carrying out lectures	Ex cathedra teaching Guest lecturer Case studies Demonstration Discussion Seminar, students presentation and discussion				
Methods of carrying out laboratory exercises	Laboratory exercises, c Computer simulations	computer simulations			
Course content lectures	 1.Introductory lecture, 2h 2.Java web application introduction, 2h, Learning outcomes:10 3.Introduction to Spring framework, 2h, Learning outcomes:2,3,4,5,6,7,8,10 4.Spring MVC, 2h, Learning outcomes:2,3,4,5,6,7,8,10 5.Java web application scopes, 2h, Learning outcomes:4,10 6.Thymeleaf, 2h, Learning outcomes:11 7.Spring Security, 2h, Learning outcomes:4,7 8.Web application and databases, 2h, Learning outcomes:4,7,10 9.Midterm Exam, 2h 10.Spring Data JPA, 2h, Learning outcomes:4,6,9,10 11.Hibernate, 2h, Learning outcomes:4,6,9,10 12.Spring MVC REST and Quartz scheduler, 2h, Learning outcomes:10,12 14.jUnit testing, 2h, Learning outcomes:4 				
Course content laboratory	 1.No classes, 2h 2.No classes, 2h 3.Simple Java web application with GET and POST requests, 2h, Learning outcomes:1,6 4.Application scopes in Java web application, 2h, Learning outcomes:1,4 5.Thymeleaf, 2h, Learning outcomes:1,4,6,10 7.Connecting Java web applications to database, 2h, Learning outcomes:1,2,3,4,5,7,9 8.Spring Data JPA, 2h, Learning outcomes:1,2,3,4,5,7,9 9.Hibernate, 2h, Learning outcomes:1,2,3,4,5,7,9 10.Spring Boot, 2h, Learning outcomes:10 12.jUnit testiranje, 2h, Learning outcomes:1,4,6,7 13.Final Exam, 2h 14.Laboratory exercises makeup, 2h 				
Required materials	Basic: classroom, black General purpose comp Whiteboard with marke Overhead projector	board, chalk uter laboratory ers			
Exam literature	Spring in Action, 5rd Ec Web development with Pro Apache Tomcat 6 A Head First Servlet and	dition, Manning, 2018. Java, using Hibernate, J press, 2007. JSP 2nd edition O'Reilly,	SPs and Servlets Springe 2008.	er 2007.	

	Next Generation Java Testing, Addison-Wesley, 2008. Spring Persistence with Hibernate, Packt Publishing, 2009. Java Persistence with Hibernate, Second Edition, Manning, 2015. Tutorial: Thymeleaf + Spring, 2016. Spring Security Essentials, 2016, Packt				
	Spring boot in Action, 2016, Manning				
Students obligations	tudents obligations Attendance on at least 60% of lectures and earning at least 40 points from the laboratory exercises.				
Knowledge evaluation during semester	Ten laboratory exercises per 6 points each = 60 points Partial Exams = 40 points Maximum 100 points Optional points for additional effort				
	Mark level thresholds: #8805; 50 60 : sufficient (2) > 60 72 : good (3) > 72 86 : very good (4) > 86 100 : excellent (5) 87-100 - excellent				
Knowledge evaluation after semester	The course consists of 100 points from which the exam carries 40 points, and the remaining 60 points are earned from the achievement on laboratory exams during the semester.				
Student activities:	AktivnostECTS(Practical work)4(Written exam)2				
Remark	This course can be used for final thesis theme				
Prerequisites:	Students cannot enroll in this course unless they have passed Baze podataka Students cannot enroll in this course unless they have passed Programiranje u jeziku Java				
Proposal made by	Aleksander Radovan MSc, v. pred., 03.06.2018.				

Code WEB/ISVU	23069/83677	ECTS	6.0	Academic year	2018/2019
Name	Web Design				
Status	5th semester - Softwar	re engineering (Redovni	raarstvo) - elective cours	e5th semester - Comput	er systems and network
Taa ahin u waada	engineering (Redovni raarstvo) - elective course				
reaching mode	Lectures + exercises (auditory + laboratory + seminar + metodology + construction) 30+60 (0+60+0+0) work at home 90				
Teachers	Lectures:2. dr.sc. Maja	Lectures:2. dr.sc. Maja Turčić pred.			
	Lectures: Mario Jankov	ić mag. ing. graph. techr	n.		
	Laboratory exercises: Mario Janković mag. ing. graph. techn. Laboratory exercises:dr.sc. Maia Turčić pred				
Course objectives	To transfer to students	the basic knowledge re	lated to Web design: con	cept, design and realisat	tion
Learning outcomes:	1.ability to distinguish	between different group	s of Web sites, dependin	g on a subject. Level:6	
	2.ability to give commo	ents on advantages of ce	ertain solutions, dependir	ig on their purpose. Leve	el:6
	4 ability to identify the	ents on imperfections of a	on the web and anticipation certain solutions to take	a critical attitude level	roups. Levei:6
	5.ability to create tend	ler documentation. Level	1:6		
	6.ability to design a tag	sk based Web page as a	n author work . Level:6		
	7.ability to test the fun	Ictionality of author work	(S. Level:6 able Web page Level:6	7	
	9.ability to check the f	unctionality . Level:6	ubie web puge : Leveno,		
	10.ability to present a	10.ability to present a project development. Level:6,7			
	11.ability to create inte	eractive graphic applicat	ions. Level:6,7	vrnot Loval:67	
	13.ability to devise a p	Sublic presentation . Leve	el:6,7	met. Level.0,7	
Methods of carrying	Ex cathedra teaching				
outlectures	Case studies				
	Lecturing and analysis	of the existing solutions	linked with the task, con	sideration of advantage	s and disadvantages of
	individual concepts, ac	quiring the knowledge n	ecessary for independen	t work.	
out laboratory	Group problem solving	computer simulations			
exercises	Discussion, brainstorming				
	Workshop	and the standard state at a state	(
Course content	Liaboration of prelimin	ary designs with the nei	p of computers	tomy 2h Learning outc	omoc:1 5
lectures	2.basic web design pri	nciples, the difference of	f media, 2h, Learning out	comes:2,12	omes.1,5
	3.wireframing, 2h, Lea	rning outcomes:3			
	4.static and dinamic la	yout, 2h, Learning outco	emes:4		
	6.designing and differe	entiating navigation elem	o nents. 2h. Learning outco	mes:6.8	
	7.web design typograp	7.web design typography, 2h, Learning outcomes:6,8			
	8.colour theory, 2h, Le	arning outcomes:9	2h Loorning outcomocul	11	
	9.preparation of images and graphics for web , 2h, Learning outcomes:11 10.background design and animation, 2h, Learning outcomes:8,11				
	11.forms, link and tabl	e design, 2h, Learning or	utcomes:8,9		
	12.user experience imp	portance, 2h, Learning o	utcomes:8,9		
	14.project presentation	n, 2h, Learning outcome	s:9,13		
	15.no lesson, 2h				
Course contout	1 familiariaina with tha	taala 26 Laamine auto			
laboratory	2.wireframe web desig	in . 2h. Learning outcom	es:6.8		
	3.making of the layout	gird , 2h, Learning outco	omes:6,8		
	4.navigation design, 2	h, Learning outcomes:6,8	8		
	6.choosing and editing	of images, 2h, Learning	outcomes:6,8		
	7.project assesment, 2	h, Learning outcomes:3,	4,6,7,8,9,10		
	8.color scheme selection	on, 2h, Learning outcom	es:6,8		
	10.transition design ar	nd interactivity design. 2	h. Learning outcomes:6.1	1	
	11.responsive web des	sign, 2h, Learning outcon	nes:6,11	-	
	12.responsive design c	continued, 2h, Learning c	outcomes:6,11		
	13.web page testing, 2	2n, Learning outcomes:7, 2h Learning outcomes:7	,9,12 4 6 7 8 9 10 11 12		
	15.project presentation	n, 2h, Learning outcome	s:5,13		
Required materials	Special purpose compu	uter laboratory			
	Video equipment				
Exam literature	Basic literature:	na Franulić Čarić i Tarsis	lay Polich Brimilaniana	ačupaletvo izebroni	miori (III pročirona i
	izmiienieno izdanie). G	Graphis, Zagreb , ISBN 95	3-6647-36-2. 2002. 204 s	str.	mjen, (m. prosireno i
	2. Nico MacDonald, Wh	nat Is Web Design, RotoV	ision SA, Mies CH, ISBN 2	2-88046-686-5 , 2003, 25	56 str.
	3. Robin Nixon, Learnir	ng PHP, MySQL, and Java	Script, O'Reilly Media, 20	09 ISBN 978-059615713	35 528 str.
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	Study programma for acadomic year 2018/2010

Students obligations	mandatory attendance of exercises (maximum of 2 absences from exercises) project development for the given assignement		
Knowledge evaluation during semester	Exercise attendance project development		
Knowledge evaluation after semester	Project presentation Oral exam		
Student activities:	Aktivnost (Written exam)	ECTS 6	
Remark	This course can be used for final thesis theme		
Prerequisites:	Students cannot enroll in this course unless they have completed Programiranje web aplikacija		
Proposal made by	pred. Maja Turčić, dipl.ing		