Semester 1		
Compulsory courses		
dr.sc. Igor Urbiha prof.vis.šk.	Mathematics I	ECTS:6
Prof. dr. sc. Miroslav Slamić profesor visoke škole Prof.dr.sc. Slavica Ćosović Bajić	Programming Basics	ECTS:6
Pred. Maja Turčić dipl.ing. dr.sc. Vilko Žiljak	Computer Typography	ECTS:6
pred. Valter Perinović mag. kineziologije	Physical Education I	ECTS:1
mr.sc. Tomislav Stojanov Sanja Duk , dipl.ing.	Introduction to (X)HTML and CSS	ECTS:4
dr.sc. Alen Šimec predavač	Introduction to Office Automation	ECTS:6

Semester 2		
	Compulsory courses	
prof.vis.šk. Ivica Levanat	Physics	ECTS:6
mr.sc. Darko Lukša dipl.ing dr.sc. Žarko Nožica	Digital Circuits and Devices Design	ECTS:5
dr.sc. Igor Urbiha prof.vis.šk.	Mathematics II	ECTS:6
Prof. dr. sc. Miroslav Slamić profesor visoke škole Prof.dr.sc. Slavica Ćosović Bajić	Programming	ECTS:7
pred. Valter Perinović mag. kineziologije	Physical Education II	ECTS:1
Mr.sc. Olivia-Silvana Prlić viši predavać	Introduction to e-Business	ECTS:6

Semester 3		
Compulsory courses		
v.pred. Davor Cafuta ,dipl.ing.rač. Ivica Dodig ,dipl.ing.rač.	Operating Systems	ECTS:5
pred. Valter Perinović mag. kineziologije	Physical Education III	ECTS:1
dr.sc. Igor Urbiha prof.vis.šk.	Probability and Statistics	ECTS:4
Elective courses		
Mr.sc. Vladimir Lebinac dipl.ing. dr.sc. Predrag Valožić prof. vis. šk.	Communication Systems and Networks	ECTS:6
dr.sc. Oliver Hip prof. v. š.	Work Environment and Ergonomics	ECTS:4
prof. dr. sc. Petar Jandrić	Communication Skills	ECTS:4
Elective courses		
dr.sc. Biljana Stojaković , prof.v.š.	English Language for IT	ECTS:3
Lidija Tepeš Golubić pred.	German for IT	ECTS:3
Compulsory courses - Office Organization and Informatization		
Mr.sc. Olivia-Silvana Prlić viši predavać	Advanced e-Business	ECTS:4
Prof. dr. sc. Miroslav Slamić profesor visoke škole	Object Oriented Programming I	ECTS:5
Compulsory courses - E-business		
Mr.sc. Olivia-Silvana Prlić viši predavać	Advanced e-Business	ECTS:4
Prof. dr. sc. Miroslav Slamić profesor visoke škole	Object Oriented Programming I	ECTS:5
Ivan Rajković dr.sc. Vilko Žiljak	Picture, Sound and Video Processing	ECTS:4
Compulsory courses - IT Design		
dr.sc. Tomislav Kosić Pred. Maja Turčić dipl.ing.	Graphics Techniques	ECTS:4
Pred. Maja Turčić dipl.ing.	Graphics Programming Languages	ECTS:5
dr.sc. Mladen Lovreček Aleksandra Bernašek Pred. Maja Turčić dipl.ing.	Graphics Reproduction Processes	ECTS:4

Semester 4		
Compulsory courses		
mr.sc. Tomislav Stojanov dr. sc. Roman Domović , prof.	Computational Linguistics	ECTS:2
pred. Valter Perinović mag. kineziologije	Physical Education IV	ECTS:1
dr.sc. Alen Šimec predavač	Introduction to XML Programming	ECTS:6
Elective courses		
Dunja Bjelobrk Knežević dipl.ing dr.sc. Željko Širanović	Information Technique	ECTS:4
prof. dr. sc. Jana Žiljak Vujić , voditelj studija Informatike	Innovations in information technology	ECTS:5
dr.sc. Alen Šimec predavač	Web programming	ECTS:5
Elective courses - IT Design		
Prof.dr.sc. Siniša Fajt Prof.dr.sc. Slavica Ćosović Bajić Milan Bajić ing.	Electroaccoustics	ECTS:4
dr.sc. Tomislav Kosić Pred. Maja Turčić dipl.ing.	Graphics Products	ECTS:3
Ivan Rajković dr.sc. Vilko Žiljak	Picture, Sound and Video Processing	ECTS:4
Elective courses		
dr.sc. Biljana Stojaković , prof.v.š.	Business English for IT	ECTS:3
Lidija Tepeš Golubić pred.	Business German for IT	ECTS:3
Compulsory courses - Office Organization and Informatization		
Tin Kramberger Ivica Dodig ,dipl.ing.rač.	Databases	ECTS:5
dr.sc. Goran Salamunićcar	Object Oriented Programming II	ECTS:5
Danijela Pongrac , prof.	Spreadsheets	ECTS:3
dr.sc. Željko Širanović	Introduction to Computer Networks	ECTS:4
Compulsory courses - E-business		
Tin Kramberger Ivica Dodig ,dipl.ing.rač.	Databases	ECTS:5
dr.sc. Goran Salamunićcar	Object Oriented Programming II	ECTS:5
dr.sc. Vilko Žiljak	Web Browsers and Navigation	ECTS:3
dr.sc. Dorian Marjanović	Technical Information Systems	ECTS:4
Compulsory courses - IT Design		
prof. dr. sc. Jana Žiljak Vujić , voditelj studija Informatike	Graphics Design	ECTS:6

Semester 5		
Compulsory courses		
dr.sc. Alen Šimec predavač	XML Programming	ECTS:6
Compulsory courses - Office Organization and Informatization		
dr.sc Sonja Zentner Pilinsky prof.v.š.	Mobile Communications	ECTS:3
Sanja Duk , dipl.ing. dr. sc. Roman Domović , prof.	Advanced Databases	ECTS:5
dr.sc. Željko Širanović	Advanced Internet Technologies	ECTS:3
Lidija Tepeš Golubić pred.	Word Processing	ECTS:3
dr. sc. Roman Domović , prof. dr.sc. Krunoslav Antoliš	IT Systems Security and Protection	ECTS:5
Ivica Dodig ,dipl.ing.rač. v.pred. Davor Cafuta ,dipl.ing.rač.	Introduction to UNIX Systems	ECTS:5
Compulsory courses - E-business		
Ivan Rajković Vjeran Bušelić viši predavač	Media Integration	ECTS:6
dr.sc Sonja Zentner Pilinsky prof.v.š.	Mobile Communications	ECTS:3
Sanja Duk , dipl.ing. dr. sc. Roman Domović , prof.	Advanced Databases	ECTS:5
dr. sc. Roman Domović , prof. dr.sc. Krunoslav Antoliš	IT Systems Security and Protection	ECTS:5
dr.sc. Mladen Mauher prof.v.šk.	e-Business Systems	ECTS:5
Compulsory courses - IT Design		
prof. dr. sc. Jana Žiljak Vujić , voditelj studija Informatike	Visual Communication Design	ECTS:6
dipl. ing. Ognjen Staničić v.pred. Davor Cafuta ,dipl.ing.rač.	Web Interactive Programming	ECTS:4
Krešimir Štih Prof.dr.sc. Slavica Ćosović Bajić	Computer Graphics	ECTS:5
Darko Agić	Reprophotography	ECTS:5
Prof.dr.sc. Siniša Fajt dr.sc. Žarko Nožica	Sound and Computer	ECTS:4

Semester 6		
Compulsory courses - Office Organization and Informatization		
Dunja Bjelobrk Knežević dipl.ing dr.sc. Željko Širanović	Computer Network Administration	ECTS:4
v.pred. Davor Cafuta ,dipl.ing.rač. Ivica Dodig ,dipl.ing.rač.	UNIX System Administration	ECTS:5
Nositelj predmeta nije poznat	Computers and Software Installation	ECTS:3
dr.sc. Mladen Mauher prof.v.šk.	Office Organisation and Informatisation	ECTS:3
prof. dr. sc. Jana Žiljak Vujić , voditelj studija Informatike	Practical Work	ECTS:3
Bojan Nožica dipl. ing, v.pred.	Final Thesis - A	ECTS:12
Compulsory courses - E-business		
dipl. ing. Ognjen Staničić v.pred. Davor Cafuta ,dipl.ing.rač.	Web Interactive Programming	ECTS:4
Vjeran Bušelić viši predavač Ivan Rajković	Multimedia Marketing	ECTS:5
Pred. Maja Turčić dipl.ing.	Web Design	ECTS:6
prof. dr. sc. Jana Žiljak Vujić , voditelj studija Informatike	Practical Work	ECTS:3
Bojan Nožica dipl. ing, v.pred.	Final Thesis - A	ECTS:12
Compulsory courses - IT Design		
Pred. Maja Turčić dipl.ing.	eBook design	ECTS:5
Pred. Maja Turčić dipl.ing.	Web Design	ECTS:6
prof. dr. sc. Jana Žiljak Vujić , voditelj studija Informatike	IT Design - Practicum	ECTS:5
prof. dr. sc. Jana Žiljak Vujić , voditelj studija Informatike	Practical Work	ECTS:3
Bojan Nožica dipl. ing, v.pred.	Final Thesis - A	ECTS:12

Code WEB/ISVU	19058/85268	**ECTS**	5	**Department**	
Name	Advanced Databases				
Status	5th semester - Compulsory courses - Office Organization and Informatization 5th semester - Compulsory courses - E-business				
Teaching mode	Lectures + exercises (auditory + laboratory + seminar + metodology + construction) work at home				15+45 (15+30+0+0) 90
Teachers	course coordinator dr. sc. Roman Domović , prof., predavač, class type:Lectures course coordinator Sanja Duk , dipl.ing., predavač, class type:Lectures Sanja Duk , dipl.ing., predavač, class type:Auditory exercises Sanja Duk , dipl.ing., predavač, class type:Laboratory exercises				
Course objectives	To introduce students to objects and control of data access , the basics of programming MySQL servers and implementation of a database into an information system				
Learning outcomes:	1.ability to compare different types of server-client architectures. Level:6,7 2.ability to remove database malfunctions. Level:6 3.ability to estimate the efficiency of a database model in an information system. Level:6,7 4.ability to distinguish between the structures of a centralised and a distributed database. Level:6 5.ability to compare the mechanisms used in database management. Level:6,7 6.ability to create objects by using a query language (SQL). Level:6 7.ability to develop the stored data (functions, procedures, triggers) by using advanced SQL techniques . Level:6,7 8.ability to control the flow and redirection of the SQL code flow. Level:6,7 9.ability to devise the control of a parallel data access by using various techniques: data locking, locking granularity and defining a level of data isolation. Level:6,7 10.ability to control the permissions to and levels of data access . Level:6,7 11.ability to distinguish between the requests of a transaction system and those of a data warehouse system. Level:6 12.ability to identify the necessity for getting prompt information by using systems of business intelligence. Level:6				
Methods of carrying out lectures	Ex cathedra teaching Case studies Demonstration Discussion Questions and answers Lectures will be given using blackboard, personal computer and LCD projector.				
Methods of carrying out auditory exercises	Group problem solving Discussion, brainstorming Computer simulations Interactive problem solving				
Methods of carrying out laboratory exercises	Laboratory exercises on laboratory equipment Laboratory exercises, computer simulations Group problem solving Discussion, brainstorming Interactive problem solving During the practical classes students will be actively involved in work on personal computers. LCD projector will be also used.				
Course content lectures	1.Introductory lecture, 2h, Learning outcomes:1,3 2.DDL, DML, embedded functions, Cartesian / JOIN, 2h, Learning outcomes:2 3.Aliases, subqueries, indexes, normalization, 2h, Learning outcomes:5 4.Database transactions, 2h, Learning outcomes:5,6 5.Procedures and functions, 2h, Learning outcomes:6,7 6.Cursors, flow control, 2h, Learning outcomes:7,8 7.Preparation for the first mid-term exam, 2h, Learning outcomes:1,2,3,4,5,6 8.First mid-term exam, 2h, Learning outcomes:1,2,3,4,5,6 9.Triggers, 2h, Learning outcomes:7,9 10.Data locking, 2h, Learning outcomes:9 11.Grant, 2h, Learning outcomes:10 12.Join, 2h, Learning outcomes:8,9,10 13.Data warehouse, 2h, Learning outcomes:11,12 14.Preparation for the second mid-term exam, 2h, Learning outcomes:7,8,9,10,11,12 15.Second mid-term exam, 2h, Learning outcomes:7,8,9,10,11,12				
Course content auditory	1.No classes 2.No classes 3.No classes 4.No classes 5.No classes 6.No classes 7.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, 2h 2.No classes, 2h 3.Repetition, short exam, 2h, Learning outcomes:1,2,3,4,5 4.Repetition, short exam, 2h, Learning outcomes:1,2,3,4,5 5.No classes, 2h 6.Transactions, procedures, functions, 2h, Learning outcomes:5,6,7 7.Transactions, procedures, functions, 2h, Learning outcomes:5,6,7 8.Cursors, flow control, 2h, Learning outcomes:7,8 9.Cursors, flow control, 2h, Learning outcomes:7,8 10.Triggers, 2h, Learning outcomes:7 11.Triggers, 2h, Learning outcomes:7 12.Lock, grant, 2h, Learning outcomes:9,10 13.Lock, grant, 2h, Learning outcomes:9,10 14.Join, 2h, Learning outcomes:11,12 15.Join, 2h, Learning outcomes:11,12
Required materials	Basic: classroom, blackboard, chalk... General purpose computer laboratory Whiteboard with markers Overhead projector Tools During the practical classes students will be actively involved in work on personal computers. LCD projector will be also used.
Exam literature	Basic literature: 1. Skripta za predavanje 2. MySQL Documentation: MySQL Reference Manuals Additional literature: 1. Manger; R.: Baze podataka, skripta, Sveučilište u Zagrebu, Prirodoslovno Matematički fakultet, drugo izdanje, Zagreb, 2011. 2. Balling, D. J. ; Zawodny, J.: High Performance MySQL, O'Reilly, 2004. 3. Vaswani, V.; MySQL Database Usage Administration, McGraw-Hill Osborne Media, 2009. 4. Jarger, R. J.; Reese, G.; King, T; Williams, H. E.: Managing and Using MySQL, 2nd Edition, O'Rilley, 2002. 5. Ramakrishnan, R.; Gehrke, J.: Database Management Systems, 3rd Edition, McGraw- Hill, New York, 2002. 6. Sumathi, S.; Esakkirajan, S.: Fundamentals of Relational Database Management Systems, Springer, Verlag Berlin Heidelberg, 2007. 7. Cabral, S.; Murphy, K.: MySQL Administrator's Bible, Wiley Publishing, Inc., Indianapolis, Indiana, 2009.
Students obligations	1. Done laboratory exercises (tolerance 1/6 absences). 2. Achieved minimum of 15 points of laboratory exercises (out of 40).
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.
Remark	This course can be used for final thesis theme
Prerequisites:	No prerequisites.
Proposal made by	Sanja Duk, dipl. ing.

Code WEB/ISVU	19080/22419	**ECTS**	4	**Department**	
Name	Advanced e-Business				
Status	3rd semester - Compulsory courses - Office Organization and Informatization 3rd semester - Compulsory courses - E-business				
Teaching mode	Lectures + exercises (auditory + laboratory + seminar + metodology + construction) work at home				15+30 (30+0+0+0) 75
Teachers	course coordinator Mr.sc. Olivia-Silvana Prlić viši predavać, viši predavač, class type:Lectures Mr.sc. Olivia-Silvana Prlić viši predavać, viši predavač, class type:Auditory exercises				
Course objectives	The course enables student understanding problems related with electronic business in tactical, and operative aspects.				
Learning outcomes:	1.Analyze, classify, integrate strategies and systems of Advanced e-business that affect market leadership. Level:6 2.present architectures of ERP, CRM, DSS, SCM, BI. Level:6,7 3.Ability to define the key categories of tools used in the DW process of business intelligence. Level:6,7 4.ability to categorize the OLAP tools (DOLAP, ROLAP, MOLAP, HOLAP). Level:6 5.Ability to develop data mining methods through case studies; memory based deduction, clustering, decision trees, Bayesian networks, neural networks, genetic algorithms, cart method. Level:6 6.bility to manage Web analyses in making business decisions; Web mining. Level:6,7 7.analyzing models of e-marketing in E-Management. Level:6 8.comment and analyze business on social networks. Level:6 9.categorize and analyze mobile business and business in cloud. Level:6 10.calculation and analysis of performance metrics in mobile business based on ROI method and B2B goals in mobile marketing. Level:6 11.analyze and present mobile marketing and mobile apps, comment and show CRM in mobile technology through Case studies . Level:6 12.analyze and design web pages using WordPress. Level:6				
Methods of carrying out lectures	Case studies Discussion Seminar, students presentation and discussion Lectures are presented as combination of the theoretical frame with large number of practical casers. The students are motivated to express their own either positive or negative cases				
Methods of carrying out auditory exercises	Laboratory exercises, computer simulations Traditional literature analysis Data mining and knowledge discovery on the Web Discussion, brainstorming				
Course content lectures	1.Strategy of e-business and conquesting e-market. System analysis in e-business. System integration., 1h, Learning outcomes:1 2.DSS architecture, 1h, Learning outcomes:1,2 3.ERP architecture, 1h, Learning outcomes:1,2 4.CRM architecture, CRM system as strategy in communication with clients, 1h, Learning outcomes:1,2 5.SCM architecture standards and systems in value chain, 1h, Learning outcomes:1,2 6.Business Intelligence, Data Warehousing, 1h, Learning outcomes:1,2,3 7.ETL processes and OLAP tools (DOLAP, ROLAP, MOLAP, HOLAP), 1h, Learning outcomes:1,2,3,4 8.Data mininig methods (Consumer basket method and others), 1h, Learning outcomes:4,5,6 9.Text mininig WEB mininig, Data scientist, Big data, 1h, Learning outcomes:4,5,6 10.Colloquium 1, 1h, Learning outcomes:1,2,3,4,5,6 11. E management E marketing, Business on social networks., 1h, Learning outcomes:7,8 12.Mobile e - business (Technologies, models and types of platforms in Mobile business), 1h, Learning outcomes:9 13.Cloud Computing, 1h, Learning outcomes:9,10,11 14.Performance analysis of E-mobile business - ROI, 1h, Learning outcomes:10,11 15.Colloquium 2, 1h, Learning outcomes:7,8,9,10,11				
Course content auditory	1.Analysis of terms in Advanced e-business through modules, 2h, Learning outcomes:1,2,3,4,5,6,7 2.Dynamic Web pages, Content management system (CMS), Fundamentals of PHP, 2h, Learning outcomes:12 3.WordPress installation and creation of database., 2h, Learning outcomes:12 4.Review of the administration interface, Primary settings, Work with text content, 2h, Learning outcomes:12 5.Work with multimedia content, Plug-in, menu and gadget (widgets) organizing, 2h, Learning outcomes:12 6.Template creation, Functions inside and outside of loop, How to create WordPress theme, 2h, Learning outcomes:12 7.Use of social networks in business, 2h, Learning outcomes:6,8 8.Google AdWords, Google AdSense, Pay Per Click ads, Affiliate marketing, 2h, Learning outcomes:7,8 9.Viral marketing, Usage of newsletters in promotional purposes, 2h, Learning outcomes:7 10.Guerilla marketing, 2h, Learning outcomes:7 11.Mobile marketing and mobile applications, CRM in mobile telephony, 2h, Learning outcomes:9 12.Business in cloud - Google app, 2h, Learning outcomes:9 13.Case study , 2h, Learning outcomes:11 14.Case study, 2h, Learning outcomes:11 15.Case study, 2h, Learning outcomes:11				
Required materials	Basic: classroom, blackboard, chalk... Special purpose laboratory General purpose computer laboratory Special purpose computer laboratory Whiteboard with markers Overhead projector Video equipment				

Exam literature	Basic literature: 1. mr.sc.Olivia-Silvana Prlić: sadržaj predavanja(PPT prezentacija(u repozitoriju predmeta Napredno elektroničko poslovanje Tehničkog veleučilišta u Zagrebu, 2013, www.tvz.hr)) 2. Panian, Ž., (2013): "Elektroničko poslovanje druge generacije", udžbenik Sveučilišta u Zagrebu, Biblioteka INFORMATIKA, Ekonomski fakultet Sveučilišta u Zagrebu (naglasak na drugi dio knjige) 3. Jelassi, T.; Enders, A.:" Strategies for E-Business: Creating Value through Electronic and Mobile Commerce (Concept and Cases)",(2nd Edition), Prentice Hall, 2008. 4. Dave Chaffey: "E-Business and E-Commerce Management" - Strategy, Implementation and Practice (5th Edition), Prentice Hall, 2011. 5. Paul R. Niven: "Balanced scorecard korak po korak", Masmedia, 2007. 6. Goran Klepac, Leo Mršić: "Poslovna inteligencija kroz poslovne slučajeve", TIM press, Lider press, 2006. 7. George Plumley: "WORDPRESS", DOBAR PLAN d.o.o., Zagreb, 2012. 8. Perry Marshall: "GOOGLE ADWORDS" - kako doprijeti do milijuna klijenata za 20 sekundi, MASMEDIA, Zagreb, 2008. 9. Guy Kawasaki: "What the Plus! Google+ for the Rest of Us", 2012. Additional literature: 1. Praćenje stručnih časopisa i izazova u novim tehnologijama na Internetu 2. Frada Burstein, Clyde W. Holsapple: "Handbook on Decision Support Systems 1 - Basic Themes", Springer,2008. 3. Frada Burstein, Clyde W. Holsapple: "Handbook on Decision Support Systems 2 - Variations", Springer,2008. 4. Michael H. Hugos, Derek Hulitzky: "Business in the Cloud" - What Every Business Needs to Know About Cloud Computing, Wiley, 2010. 5. Jeanne Hopkins, Jamie Turner: "Go Mobile" - Location-Based Marketing,Apps,Mobile Optimized Ad Campaigns,2D Codes and Other Mobile Strategies to Grow Your Business, Wiley, 2012.
Students obligations	Regular attending on lectures and exercises. Maximum of 2 absences from exercises.
Knowledge evaluation during semester	Colloquium#2#60#30$Seminar#1#10#100$Case study#3#30#15
Knowledge evaluation after semester	Written exam#2#50#70$Oral exam#2#50#70$
Remark	This course can be used for final thesis theme
Prerequisites:	No prerequisites.
Proposal made by	mr.sc.Olivia-Silvana Prlić Senior lecturer Course director

Code WEB/ISVU	19079/22421	**ECTS**	3	**Department**	
Name	Advanced Internet Technologies				
Status	5th semester - Compulsory courses - Office Organization and Informatization				
Teaching mode	Lectures + exercises (auditory + laboratory + seminar + metodology + construction) work at home				30+30 (0+30+0+0) 30
Teachers	course coordinator dr.sc. Željko Širanović , viši predavač, class type:Lectures dr.sc. Željko Širanović , viši predavač, class type:Laboratory exercises				
Course objectives	To transfer the basic knowledge related to switching and switching devices				
Learning outcomes:	1.ability to create Internet services (DNS, e-mail, FTP, TFTP, SNMP, www). Level:6,7 2.ability to distinguish between static and dynamic routing. Level:6 3.ability to set up a static configuration of a router. Level:6,7 4.ability to set up a dynamic configuration of a router by using the RIP and OSPF routing protocols. Level:6,7 5.ability to set up and configure a functional router network . Level:6,7 6.ability to create basic security mechanisms on a router to check the user identity (AAA). Level:6,7 7.ability to create simple router access lists. Level:6,7 8.ability to plan the security policy of an Intranet connected to the Internet. Level:6,7				
Methods of carrying out lectures	Ex cathedra teaching Case studies Demonstration Simulations Modelling Discussion Questions and answers Frontally, oral presentations illustrated with presentations about actual solutions, numerical examples, along with the application of contemporary presentation technologies. Multi-media teaching material will be used with screen projections, also available online.				
Methods of carrying out laboratory exercises	Laboratory exercises on laboratory equipment Laboratory exercises, computer simulations Group problem solving Discussion, brainstorming Interactive problem solving Workshop Familiarization with components, device configuration, hooking up measuring, management and communication elements, putting network into operation, signal and traffic measuring. Analyzing obtained data.				
Course content lectures	1.Creation and implementation of security policy through security technologies, products and solutions , 2h, Learning outcomes:8 2.Creation and implementation of security policy through security technologies, products and solutions , 2h, Learning outcomes:8 3.Router design, installation, configuration and maintenance , 2h, Learning outcomes:2,3,4,5 4.Router design, installation, configuration and maintenance , 2h, Learning outcomes:2,3,4,5 5.Application of systems for identity and users rights verification (AAA) on routers , 2h, Learning outcomes:6,8 6.Application of systems for identity and users rights verification (AAA) on routers , 2h, Learning outcomes:3,4,6,8 7.Control lists , 2h, Learning outcomes:4,6,7 8.Control lists , 2h, Learning outcomes:3,4,5,8 9.Security of IP protocol , 2h, Learning outcomes:5,7 10.Security of IP protocol , 2h, Learning outcomes:5,6,8 11.Utilization of routers in the construction of virtual private networks (VPN) , 2h, Learning outcomes:1,5,6 12.Utilization of routers in the construction of virtual private networks (VPN) , 2h, Learning outcomes:4,5,6 13.Internet network services , 2h, Learning outcomes:1,4,5,6 14.Internet network services , 2h, Learning outcomes:1 15.Internet network services , 2h, Learning outcomes:1,4,5				
Course content laboratory	1.Configurin routers , 2h, Learning outcomes:2,3,4,5 2.Configurin routers , 2h, Learning outcomes:2,3,4,5 3.Configuration of basic security settings on routers , 2h, Learning outcomes:2,3,4,5,8 4.Colloquium I., 2h, Learning outcomes:2,3,4,5,8 5.AAA configuration , 2h, Learning outcomes:3,4,6,8 6.Authentication and filtering , 2h, Learning outcomes:3,4,6,8 7.Control lists , 2h, Learning outcomes:4,6,7 8.Control lists , 2h, Learning outcomes:4,7 9.Colloquium II., 2h, Learning outcomes:3,4,6,8 10.Configuring virtual private networks (VPN) , 2h, Learning outcomes:3,4,7 11.Configuring virtual private networks (VPN) , 2h, Learning outcomes:4,5,8 12.Konfiguriranje mrenih internetskih servisa - DNS, SNMP, 2h, Learning outcomes:1,4 13.Configure network Internet services - FTP, TFTP, 2h, Learning outcomes:4,5 14.Configuring Internet telephony, 2h, Learning outcomes:5 15.Colloquium III. , 2h				
Required materials	Basic: classroom, blackboard, chalk... General purpose computer laboratory Special purpose computer laboratory Whiteboard with markers Overhead projector Familiarization with components, device configuration, hooking up measuring, management and communication elements, putting network into operation, signal and traffic measuring. Analyzing obtained data.				

Exam literature	Basic literature: 1. Conlan, P., J.,(2009), Cisco Network Profesional's - Advanced Internetworking Guide,Wiley Publiching Inc. 2. Halsall, F., (2005), Computer Networking and the Internet, Addison-Wesley. Dodatna: 1. Douglas E. Comer: Computer Networks and Internets, Prentice Hall, 2009. 2. 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#8#5#0$Mini-test#5#10#60$Kolokvij, numeri zadaci#3#20#60$Kolokvij, teorijska pitanja#3#20#60$Prakti rad#10#30#60$Prakti ispit#1#15#60$
Knowledge evaluation after semester	10 colloquiums. Attending laboratory exercises is a prerequisite for signature. The practical part of the exam contains one real-life problem on the basis of the covered material. Oral exam, if student passes the practical part of the exam.
Remark	This course can be used for final thesis theme
Prerequisites:	No prerequisites.

Code WEB/ISVU	19062/85215	**ECTS**	3	**Department**	
Name	Business English for IT				
Status	4th semester - Elective courses				
Teaching mode	Lectures + exercises (auditory + laboratory + seminar + metodology + construction) work at home				30+30 (30+0+0+0) 30
Teachers	course coordinator dr.sc. Biljana Stojaković , prof.v.š., profesor visoke škole, class type:Lectures Lamia Egartner prof., nastavnik strani jezik, class type:Auditory exercises Zoran Vulelija , nastavnik strani jezik, class type:Auditory exercises				
Course objectives	To develop students				
Learning outcomes:	1.ability to analyse the position of the English language in the business world. Level:6 2.to compare Croatian and English non-finite forms. Level:6,7 3.to identify various non-finite forms in English. Level:6 4.to integrate IT terminology into new contexts. Level:6,7 5.ability to generate a business letter, a business e-mail, an order, an invoice, etc. . Level:6,7 6.to make a difference between formal an informal email. Level:6 7.ability to relate the levels of ICT education in the English speaking countries and in Croatia. Level:6,7 8.ability to relate jobs in ICT in the English speaking countries and in Croatia. Level:6,7 9.ability to relate academic degrees in ICT education in the English speaking countries and in Croatia. Level:6,7 10.ability to distinguish between high and low quality of business correspondence in English. Level:6 11.ability to give a presentation of a company in English. Level:6,7 12.to make a difference between various forms of word formation in English. Level:6 13.ability to analyse the characteristics of a job interview. Level:6 14.ability to present in English content related to the field of expertise . Level:6,7 15.ability to generate a job application letter and a CV. Level:6,7 16.ability to analyse the differences between oral and written business communication (verbal/nonverbal; synchronous/asynchronous) . Level:6 17.to analyse various types of business correspondence. Level:6 18.to analyse phraseology in communication via phone. Level:6				
Methods of carrying out lectures	Ex cathedra teaching Case studies Demonstration Discussion Questions and answers Seminar, students presentation and discussion Homework presentation - Lectures are given in an interactive way: students are constantly asked questions on the subject being taught; they are asked to give comments and examples of their own and to draw conclusions. - Straightforward presentations, involving writing on the board, and using key examples from the reading and listening texts. - Teaching equipment: board, overhead projector, LCD projector, tape-recorder.				
Methods of carrying out auditory exercises	Group problem solving Traditional literature analysis Data mining and knowledge discovery on the Web Essay writing Discussion, brainstorming Interactive problem solving Workshop Exercising language patterns through various types of tasks:Reading for information; Listening for specific information;The opinion exchange tasks;Asking and answering the questions; Fill in the most appropriate tense..;. Translation exercises; Vocabulary exercises (crosswords, word games);Comparing various sources of information, Writing descriptions of computing processes; Writing dialogues (group work); Keeping their own vocabulary notebooks				
Course content lectures	1.Non-finite forms, 2h, Learning outcomes:2,14 2.Croatian and English non-finite forms, 2h, Learning outcomes:2,3,14 3.Business correspondence, 2h, Learning outcomes:1,9,14,16,17 4.Formal and informal email, 2h, Learning outcomes:6,10,14,16 5.Types of business letter , 2h, Learning outcomes:10,14,16,17 6.Job application letter, 2h, Learning outcomes:10,14,16,17 7.CV, 2h, Learning outcomes:10,14,16,17 8.Business Offer, 2h, Learning outcomes:10,14,16,17 9.Preliminary exam, 2h, Learning outcomes:3,15 10.IT education levels in the world, 2h, Learning outcomes:7,8,9 11.Presenting a company, 2h, Learning outcomes:11,14 12.Phraseology in communicatin via phone, 2h, Learning outcomes:14,16,18 13.Job interview, 2h, Learning outcomes:13,14 14.Job interview, 2h, Learning outcomes:13,14 15.Preliminary exam, 2h, Learning outcomes:7,8,9,11,13,14,16,18				
Course content auditory	1.Operating systems; non-finite forms (introduction), 2h, Learning outcomes:2,3,4,14 2.Word processing; non-finite forms (exercises), 2h, Learning outcomes:2,3,4,14 3.Spreadsheets and databases; vocabulary exercises, 2h, Learning outcomes:4,5,14 4.Internet and email; writing business email, 2h, Learning outcomes:4,5,6,9,14,15 5.The Web; word formation; writing a business letter (basics), 2h, Learning outcomes:4,5,8,14,15 6.Jobs in ICT; prefixation in IT terminology; applying for a job, 2h, Learning outcomes:3,4,8,14,15 7.Graphics and design; writing a CV, 2h, Learning outcomes:4,5,8,14,15 8.Dtp and multimedia; writing a business offer, 2h, Learning outcomes:4,5,9,14,15 9.Preliminary exam, 2h, Learning outcomes:4,14 10.Web design; word formation, 2h, Learning outcomes:4,11,14				

	11.Program design and computer languages; Java; prefixation in IT terminology, 2h, Learning outcomes:4,11,14 12.Internet security; suffixation in IT terminology, 2h, Learning outcomes:4,11,14 13.Networks; compunding in IT terminology, 2h, Learning outcomes:4,11,14 14.New technologies; vocabulary exercises, 2h, Learning outcomes:4,11,14 15.Preliminary exam, 2h, Learning outcomes:4,11,13,14
Required materials	Basic: classroom, blackboard, chalk... Whiteboard with markers Overhead projector Video equipment Exercising language patterns through various types of tasks:Reading for information; Listening for specific information;The opinion exchange tasks;Asking and answering the questions; Fill in the most appropriate tense..;. Translation exercises; Vocabulary exercises (crosswords, word games);Comparing various sources of information, Writing descriptions of computing processes; Writing dialogues (group work); Keeping their own vocabulary notebooks
Exam literature	Basic literature: 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 classes (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
Remark	This course can be used for final thesis theme
Prerequisites:	Students cannot enroll in this course unless they have enrolled Engleski jezik za IT
Proposal made by	Professor Biljana Stojaković, PhD

Code WEB/ISVU	19082/85217	**ECTS**	3	**Department**	
Name	Business German for IT				
Status	4th semester - Elective courses				
Teaching mode	Lectures + exercises (auditory + laboratory + seminar + metodology + construction) work at home				30+30 (30+0+0+0) 30
Teachers	course coordinator Lidija Tepeš Golubić pred., predavač, class type:Lectures Lidija Tepeš Golubić pred., predavač, class type:Auditory exercises				
Course objectives	To develop students language skills, use basic business terminology				
Learning outcomes:	1.ability to formulate a CV and a job application letter in English. Level:6,7 2.ability to analyse texts related to the field of expertise and check the predefined theses in order to motivate students to take a critical attitude toward the texts. Level:6 3.ability to give a task based presentation in German. Level:6,7 4.ability to write a summary and a report of a text . Level:6,7 5.ability to write a business letter, application letter, etc. . Level:6,7 6.ability to give a task based presentation in German. Level:6,7 7.ability to develop language skills in business communication; to use basic business terminology. Level:6,7 8.ability to combine the previously acquired knowledge with the language in IT. Level:6,7				
Methods of carrying out lectures	Ex cathedra teaching Questions and answers Seminar, students presentation and discussion Homework presentation Other The course is intercultural and interdisciplinary. Students are introduced to scientific and technical achievements of the people whose language they study (especially in the specialism area).				
Methods of carrying out auditory exercises	Group problem solving Interactive problem solving Other The student does various types of exercises in auditory recitations, being continuously warned of cognitive, metacognitive and social and affective learning strategies which make individual learnig easier. The student is trained for using dictionaries (bilingual, unilingual) and other manuals (in a traditional form or those mediated by electronic media), in order to be able to use manuals, professional literature, documentation and other knowledge sources in German, all related to the profession they are trained for.The student is trained for using various reading techniques, to write short summaries and use the basic business correspondence and to communicate about everyday issues.				
Course content lectures	1.Introductory lecture, 2h, Learning outcomes:7 2.Texts related to the field of IT expertise understanding and analysis, 2h, Learning outcomes:2,7 3.Texts related to the field of IT expertise understanding and analysis, 2h, Learning outcomes:2,7 4.German grammar 1, 2h, Learning outcomes:2,7,8 5.Job application letter, 2h, Learning outcomes:1,2,5,7,8 6.Job interview, 2h, Learning outcomes:1,2,5,7,8 7.Colloquium 1, 2h, Learning outcomes:1,2,3,4,5,6,7,8 8.Creating a PowerPoint Presentation, 2h, Learning outcomes:1,2,3,6,7,8 9.Task based presentation in German, 2h, Learning outcomes:4,6,7,8 10.Task based presentation in German, 2h, Learning outcomes:4,6,7,8 11.German grammar 2, 2h, Learning outcomes:2,7,8 12.Jobs of the future, 2h, Learning outcomes:2,4,7,8 13.Busines English, 2h, Learning outcomes:2,4,7,8 14.Future for the Information Technology (IT) Industry, 2h, Learning outcomes:2,4,7,8 15.Colloquium 2, 2h, Learning outcomes:1,2,3,4,5,6,7,8				
Course content auditory	1.Introductory lecture, 2h, Learning outcomes:7 2.Texts related to the field of IT expertise understanding and analysis, 2h, Learning outcomes:2,7 3.Texts related to the field of IT expertise understanding and analysis, 2h, Learning outcomes:2,7 4.A Review of German Grammar 1, 2h, Learning outcomes:2,6,7 5.Job application letter, 2h, Learning outcomes:1,2,5,7,8 6.Job interview, 2h, Learning outcomes:1,2,5,7,8 7.Colloquium 1, 2h, Learning outcomes:1,2,3,4,5,6,7,8 8.Creating a PowerPoint Presentation, 2h, Learning outcomes:1,2,3,6,7,8 9.Task based presentation in German, 2h, Learning outcomes:4,6,7,8 10.Task based presentation in German, 2h, Learning outcomes:4,6,7,8 11.German grammar 2, 2h, Learning outcomes:2,7,8 12.Jobs of the future, 2h, Learning outcomes:2,4,7,8 13.Busines English, 2h, Learning outcomes:2,4,7,8 14.Future for the Information Technology (IT) Industry, 2h, Learning outcomes:2,4,7,8 15.Colloquium 2, 2h, Learning outcomes:1,2,3,4,5,6,7,8				
Required materials	Basic: classroom, blackboard, chalk... Whiteboard with markers Overhead projector Operating supplies The student does various types of exercises in auditory recitations, being continuously warned of cognitive, metacognitive and social and affective learning strategies which make individual learnig easier. The student is trained for using dictionaries (bilingual, unilingual) and other manuals (in a traditional form or those mediated by electronic media), in order to be able to use manuals, professional literature, documentation and other knowledge sources in German, all related to the profession they are trained for.The student is trained for using various reading techniques, to write short summaries and use the basic business correspondence and to communicate about everyday issues.				

Exam literature	Basic literature: 1. Marčetić, T.: Pregled gramatike njemačkoga jezika, Školska knjiga, Zagreb 2. Hansen-Kokoruš R., Matešić J., Pečur-Medinger Z., Znika M.: Njemačko-hrvatski univerzalni rječnik, Zagreb, 2005. 3. odabrani tekstovi bjavljeni na web stranicama kolegija, recentni tekstovi preuzeti iz suvremene stručne literature, časopisa i s Interneta
Students obligations	maximum of 3 absences from exercises
Knowledge evaluation during semester	Attendance, Colloquium 1 and 2
Knowledge evaluation after semester	Preliminary written and oral exam 3.
Remark	This course can be used for final thesis theme
Prerequisites:	Students cannot enroll in this course unless they have completed Njemaki jezik za IT
Proposal made by	Lidija Tepeš Golubić, 11th of March 2014

Code WEB/ISVU	19120/75874	**ECTS**	4	**Department**	
Name	Communication Skills				
Status	3rd semester - Elective courses				
Teaching mode	Lectures + exercises (auditory + laboratory + seminar + metodology + construction) work at home				45+30 (30+0+0+0) 45
Teachers	course coordinator prof. dr. sc. Petar Jandrić , viši predavač, class type:Lectures Maruša Biliško prof., asistent, class type:Auditory exercises Ida Popčević prof., asistent, class type:Auditory exercises				
Course objectives	To promote humanistic values such as mutual responsibility, the rights to being included and accepted, to freedom of speech, tolerating the different				
Learning outcomes:	1.ability to formulate the basics of successful communication. Level:6,7 2.ability to identify obstacles to successful communication, understanding conflicts, the basic features of group processes and rules of public presentation . Level:6 3.ability to classify techniques and skills needed for successful communication with individuals, in groups and in front of audience. Level:6,7 4.ability to devise clear expressing and active listening; to provide feedback with respect. Level:6,7 5.ability to solve communication issues and conflicts. Level:6 6.ability to present various business plans, problems and solutions. Level:6,7 7.ability to estimate the influence of gender based attitudes on work with persons of the same or opposite gender. Level:6,7 8.ability to compare the intercultural differences for better communication with people belonging to various cultures. Level:6,7 9.ability to formulate a leader's roles and functions directed towards social and emotional relations between members of a group and performance of individual and group goals . Level:6 10.ability to develop humanistic values, such as mutual responsibility, the rights to inclusion and to being accepted, expressing freely one's ideas, tolerance of the different. Level:6,7				
Methods of carrying out lectures	Ex cathedra teaching Guest lecturer Case studies Discussion Questions and answers Seminar, students presentation and discussion Homework presentation				
Methods of carrying out auditory exercises	Group problem solving Discussion, brainstorming Interactive problem solving Workshop Other				
Course content lectures	1.Communication process (1). , 2h, Learning outcomes:1,10 2.Communication process (2). , 2h, Learning outcomes:1,3,10 3.Verbal Communication. , 2h, Learning outcomes:2,3,4,10 4.Non-verbal Communication. , 2h, Learning outcomes:2,3,10 5.Foundations of feminism. , 2h, Learning outcomes:7,8,10 6.The influence of gender based opinions on work with persons of the same or the opposite gender., 2h, Learning outcomes:7,8,10 7.Foundations of multiculturalism. , 2h, Learning outcomes:7,8,10 8.Intercultural differences more successful communication with people from other cultures. , 2h, Learning outcomes:6,7,10 9.Negative and positive aspects of conflict., 2h, Learning outcomes:3,4,5,10 10.Constructive and destructive interaction and communication. , 2h, Learning outcomes:3,4,5,10 11.Communication in small groups., 2h, Learning outcomes:3,4,5,10 12.Communication in large groups., 2h, Learning outcomes:3,4,5,10 13.Group structure and process specificities. , 2h, Learning outcomes:3,4,5,9,10 14.Public presentation (1) , 2h, Learning outcomes:3,4,5,9,10 15.Public presentation (2). , 2h, Learning outcomes:3,4,5,8,9,10				
Course content auditory	1.Introduction. , 2h, Learning outcomes:2,3,4,5,6,9,10 2.Non-verbal communication., 2h, Learning outcomes:2,3,4,5,6,9,10 3.Advanced non-verbal communication. , 2h, Learning outcomes:2,3,4,5,6,9,10 4.Improvising. , 2h, Learning outcomes:2,3,4,5,6,9,10 5. Advanced improvising. , 2h, Learning outcomes:2,3,4,5,6,9,10 6.Improvising a discussion., 2h, Learning outcomes:2,3,4,5,6,9,10 7.Discussion prepared in advance., 2h, Learning outcomes:2,3,4,5,6,9,10 8.Karl Popper debate. , 2h, Learning outcomes:2,3,4,5,6,9,10 9.Karl Popper with a debate plan., 2h, Learning outcomes:2,3,4,5,6,9,10 10.World Schools debate. , 2h, Learning outcomes:2,3,4,5,6,9,10 11.British Parliament debate. , 2h, Learning outcomes:2,3,4,5,6,9,10 12.Individual debate. , 2h, Learning outcomes:2,3,4,5,6,9,10 13.Group exercises. , 2h, Learning outcomes:1,2,3,4,5,6,7,8,9,10 14.Group exercises. , 2h, Learning outcomes:1,2,3,4,5,6,7,8,9,10 15.Group exercises. , 2h, Learning outcomes:1,2,3,4,5,6,7,8,9,10				
Required materials	Basic: classroom, blackboard, chalk...				

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 evaluation during semester	Redovitost pohaa#10#10#50$Kolokvij, teorijska pitanja#3#90#50$
Knowledge evaluation after semester	Oral exam
Remark	This course can be used for final thesis theme
Prerequisites:	No prerequisites.

Code WEB/ISVU	19074/22395	**ECTS**	6	**Department**	
Name	Communication Systems and Networks				
Status	3rd semester - Elective courses				
Teaching mode	Lectures + exercises (auditory + laboratory + seminar + metodology + construction) work at home				45+30 (15+15+0+0) 105
Teachers	course coordinator Mr.sc. Vladimir Lebinac dipl.ing., viši predavač, class type:Lectures course coordinator dr.sc. Predrag Valožić prof. vis. šk., profesor visoke škole, class type:Lectures Lea Gagulić , asistent, class type:Auditory exercises Vjeran Šimunić , asistent, class type:Auditory exercises Vjeran Šimunić , asistent, class type:Laboratory exercises				
Course objectives	To introduce students to the services, architecture and resources of a telecommunication system; to transfer to students the knowledge related to signal processing and encryption				
Learning outcomes:	1.ability to analyse the communication needs of small and mid-sized business systems. Level:6 2.ability to propose a system of optimal configuration of information and communication subsystems. Level:6,7 3.ability to analyse the functionality and cost-effectiveness of the existing communication solutions. Level:6,7 4.ability to compare the alternatives offered to improve the communication of business systems. Level:6,7 5.ability to formulate the requests to the communication subsystem of a business information system. Level:6,7 6.ability to organise setting up, implementation and maintenance and of communications in a business system. Level:6,7 7.ability to manage the maintenance of a communication subsystem. Level:6,7 8.ability to combine parts and processes into an information and communication system. Level:6,7				
Methods of carrying out lectures	Ex cathedra teaching Case studies Demonstration Simulations Discussion Questions and answers Oral lecturing supported with a modern presentation technology. Theoretical explanation is followed by multimedia interactive demonstrations of the information coding algorithm or real telecommunication signals analysis and processing. Traffic simulation and analysis.				
Methods of carrying out auditory exercises	Laboratory exercises, computer simulations Computer simulations Other Single and simple numerical problem solving on the blackboard and in notebooks is multiplied by a spreadsheet MS Excel and MatLab solution. The solution discussion follows.				
Methods of carrying out laboratory exercises	Laboratory exercises, computer simulations Computer simulations Interactive problem solving Other Laboratory with 15 workplaces equipped with certain specialized measurement instruments and PC-s for data analysis and reporting. Working in the pairs of students.				
Course content lectures	1.Introduction to the course; history of telecommunications, 3h, Learning outcomes:3 2.The telecommunication system; Terminals, 3h, Learning outcomes:1,3 3.telecommunication signals, 3h, Learning outcomes:2 4.Signal analysis and presentation, Fourier analysis and FFT, 3h, Learning outcomes:5 5.A / D conversion and Shannon sampling theorem, 3h, Learning outcomes:4 6.Information; definition and description., 3h, Learning outcomes:3,5 7.Measure of information, entropy of the information source., 3h, Learning outcomes:2,4 8.Uniform and statistical coding, 3h, Learning outcomes:4 9.Terminals; properties of the signal and the information content of the message, 3h, Learning outcomes:2,4 10. The characteristics of the transmission system, 3h, Learning outcomes:6 11.Modulations, 3h, Learning outcomes:7 12.The impact of noise in the channel and the channel capacity. Security and encryption, 3h, Learning outcomes:7 13.cryptography, 3h, Learning outcomes:8 14.Multiplex and switching, 3h, Learning outcomes:6,7 15.Traffic Analysis, 3h, Learning outcomes:5,8				
Course content auditory	1.Examples of communications and systems, 1h, Learning outcomes:3 2.Description of some communication terminals, 1h, Learning outcomes:4 3.Examples of spectra characteristic signals, 1h, Learning outcomes:1,4 4.Conditions of quality A / D conversion, 1h, Learning outcomes:2,4 5.The entropy and the amount of information, 1h, Learning outcomes:2,4 6.Examples of uniform coding, 1h, Learning outcomes:3,5 7.The first colloquium, 1h, Learning outcomes:1,2,3,4,5 8.The statistical encoding algorithm, 1h, Learning outcomes:3 9.Examples of telecommunication lines and their characteristics, 1h, Learning outcomes:6 10.The impact on the transmission system signals; impact of noise in the channel, 1h, Learning outcomes:7 11.Errors in transmission, 1h, Learning outcomes:6,8 12.Security coding, 1h, Learning outcomes:5,7 13.Analysis of the modulated signal, 1h, Learning outcomes:8 14.Traffic Analysis, 1h, Learning outcomes:6,8 15.Second colloquium, 1h, Learning outcomes:5,6,7,8				
Course content laboratory	1.no exercises 2.no exercises 3.The first exercise, 3h, Learning outcomes:3,5				

	4.The second exercise, 3h, Learning outcomes:3,5 5.no exercises 6. The third exercise, 3h, Learning outcomes:4,5 7.no exercises 8.The fourth exercise, 3h, Learning outcomes:4,5 9.The fifth exercise, 3h, Learning outcomes:5,6 10.no exercises 11.no exercises 12.no exercises 13.no exercises 14.no exercises 15.no exercises
Required materials	Basic: classroom, blackboard, chalk... Overhead projector Laboratory with 15 workplaces equipped with certain specialized measurement instruments and PC-s for data analysis and reporting. Working in the pairs of students.
Exam literature	Basic literature: 1. P. Valožić: Komunikacijski sustavi i mreže, skripta, TVZ 2005. 2. P. Valožić: Komunikacijski sustavi i mreže, zbirka riješenih zadataka, TVZ 2005. 3. P. Valožić: Komunikacijski sustavi i mreže, laboratorijske vježbe, TVZ 2005. Additional literature: 1. V. Matković, V. Sinković: Teorija informacija, Školska knjiga, Zagreb,1984. 2. Simon Haykin: Communication Systems, John Wiley Sons, Inc. New York, 3. Željko Pauše: Vjerojatnost, informacija, stohastički procesi, Školska knjiga, Zagreb, 2003. 4. Vjekoslav Sinković, Informacija, simbolika, semantika, Školska knjiga, Zagreb, 1997. 5. William Stallings: Data Computer Communications, Prentice Hall, Inc. London, 2000.
Students obligations	maximum of 3 absences from exercises
Knowledge evaluation during semester	Regular attendance at 10% Colloquium, numerical assignments 50% Colloquium, theoretical issues 40%
Knowledge evaluation after semester	Written exam 80% Oral exam 20%
Remark	This course can be used for final thesis theme
Prerequisites:	No prerequisites.
Proposal made by	Mr.sc. Vladimir Lebinac,viši predavač

Code WEB/ISVU	19073/63155	**ECTS**	2	**Department**	
Name	Computational Linguistics				
Status	4th semester - Compulsory courses				
Teaching mode	Lectures + exercises (auditory + laboratory + seminar + metodology + construction) work at home				15+15 (0+15+0+0) 30
Teachers	course coordinator dr. sc. Roman Domović , prof., predavač, class type:Lectures course coordinator mr.sc. Tomislav Stojanov , viši predavač, class type:Lectures dr. sc. Roman Domović , prof., predavač, class type:Laboratory exercises mr.sc. Tomislav Stojanov , viši predavač, class type:Laboratory exercises				
Course objectives	To introduce students to technologies and products of computational linguistics; to qualify students to formulate basic and advanced queries for browsing various ecosystems (programming environment of Javascript, Java, PHP etc., or a non-programming environment of wordprocessing applications, databases, etc.)				
Learning outcomes:	1.ability to discover computing linguistics as a highly propulsive discipline whose findings are wanted in various IT areas (SEO, NLP, IR, AI, TTS, STT, etc.). Level:6,7 2.ability to apply regular search in various ecosystems: programming languages, word processing applications, databases, search engines, etc.. Level:6,7 3.ability to plan a type of search and make a query by using regular or non regular operators. Level:6,7 4.ability to formulate expressions for both basic and advanced search of strings. Level:6,7 5.ability to understand the evolution of computer encoding (ASCII, ANSI, ISO 646, ISO 8859, unicode), especially in regard to the importance of technical advancements and standardisation process . Level:6,7 6.ability to understand the text storage formats, their purpose, advantages and limitations (TXT, RTF, DOC, DOCX, PS, PDF, PCL, ODF, DocBook, LaTeX, AZW, CHM, EPUB, etc.). Level: 7.ability to understand the criteria which determine the quality of search engines (Google, Wolfram Alpha, EyePlorer, etc.). Level:6,7 8.ability to connect computer technologies with the process of building the Croatian language corpus at the Institute of Croatian Language and Linguistics. Level:6,7 9.ability to support students and help them develop interest in general computer literacy (to be familiar with IT terminology, to be informed about the issues related to the field of expertise, to develop ability to read online and offline texts, either related to the field of expertise, or publicistic ones. Level:7				
Methods of carrying out lectures	Ex cathedra teaching Demonstration Seminar, students presentation and discussion Homework presentation Other				
Methods of carrying out laboratory exercises	Laboratory exercises on laboratory equipment Essay writing Discussion, brainstorming Other				
Course content lectures	1.Motivational lecture and introduction to computational linguistics., 3h, Learning outcomes:1,8,9 2.Computer character representation. ASCII. Code tables., 2h, Learning outcomes:5 3.Unicode. UTF. Layout and content. Byte-order mark (BOM)., 2h, Learning outcomes:5 4.Languages and text formats (TXT, XML, ODT, OOXML, RTF, DocBook, LaTeX etc.). Document markup languages (PS, PDF, PCL etc.). Work in LaTeX, MikTex, JabRef and TexMaker., 2h, Learning outcomes:6 5.Search query languages. Desktop and web search. Advanced search in Word and Excel., 2h, Learning outcomes:2,3 6.Advanced search and work in mobile operating systems. Siri, Google Now. Search engines (Google, Yahoo, Bing). Language technology tools., 2h, Learning outcomes:3,7 7.Aplication data search and database search. Introduction to regular languages. Ecosystems, flavors and syntaxes. Operators. SQL and regex. Javascript and regex. Regular languages online and desktop search., 2h, Learning outcomes:3,4 8.no lecture 9.no lecture 10.no lecture 11.no lecture 12.no lecture 13.no lecture 14.no lecture 15.no lecture				
Course content laboratory	1.no class 2.no class 3.no class 4.no class 5.no class 6.no class 7.no class 8.Advanced search in Word and Excel., 2h, Learning outcomes:2,3 9.Advanced search on web, in search engines and in browsers. Google, Yahoo, Bing, Wolfram Alpha., 2h, Learning outcomes:2,3 10.Online and desktop regular language search. Operators and syntax. PCRE, POSIX etc., 2h, Learning outcomes:3,4 11.A widened set of operators. Croatian characters support. Shortening syntax., 2h, Learning outcomes:3,4 12.Replacement functions. Referencing. Lookahead lookbehind., 2h, Learning outcomes:3,4 13.Greediness laziness. Backtracking., 2h, Learning outcomes:3,4 14.Regex search support in SQL., 2h, Learning outcomes:2 15.Final exam preparation., 1h, Learning outcomes:9				

Required materials	Basic: classroom, blackboard, chalk... General purpose computer laboratory Whiteboard with markers Overhead projector Tools Special equipment Software installed: RegexBuddy, Microsoft Word and Excel, NetSupport School). Internet connection.
Exam literature	Osnovna: 1) Prezentacijska skripta s predavanja objavljena na stranicama kolegija. 2) Goyvaerts, J., RegexBuddy help file: Chapter 2. Regular Expression Tutorial Dodatna: 1) Goyvaerts, J., RegexBuddy help file: Chapter 5. Regular Expression Reference 2) The Unicode Standard. Version 5.2. Unicode Consortium (http://www.unicode.org/versions/Unicode5.2.0/ch02.pdf), Chapter 2: Unicode: General Structure. 3) Jurafsky, D. Martin, James M., Speech and Language Processing, An Introduction to Natural Language Processing, Computational Linguistics and Speech Recognition, ISBN 978-0-13-187321-6, Pearson 2009 (2. izdanje). Drugo poglavlje: "Chapter 2. Regular Expressions and Automata", str. 17-44 4) Goyvaerts, J. Levithan, S., Regular Expressions Cookbook, O'Reilly 2009, First Edition, ISBN 978-0-596-52068-7 5) Friedl, Jeffrey E. F., Mastering Regular Expressions, O'Reilly, 2006, 3rd Edition, ISBN 978-0-59-652812-6 6) Forta, Ben, Sams Teach Yourself Regular Expressions in 10 Minutes, Sams Publishing 2004., ISBN 0-672-32566-7 7. LaTeX for Complete Novices, v1.3, Jan 2008, http://theoval.cmp.uea.ac.uk/nlct/latex/novices/ 8. LaTeX by Wikibooks Contributors 2005-2008, http://www.statslab.cam.ac.uk/elie/ext/tex/LatexWKI.pdf 9. Bolshakov, Igor A. Gelbukh, Alexander, Computational Linguistics. Models, Resources, Applications. http://www.gelbukh.com/clbook/. 2004. ISBN 970-36-0147-2 10. Haralambous, Y., Fonts and Encodings, O'Reilly 2007. ISBN: 978-0-596-10242-5
Students obligations	Maximum of 3 absences from exercises. Active work on labs. Two quick theoretical online exams with positive marks.
Knowledge evaluation during semester	Two mid-term exams. Essay or seminar.
Knowledge evaluation after semester	Final exam.
Remark	This course can be used for final thesis theme
Prerequisites:	No prerequisites.
Proposal made by	Tomislav Stojanov, MA, 2014-01-27

Code WEB/ISVU	19096/22759	**ECTS**	5	**Department**	
Name	Computer Graphics				
Status	5th semester - Compulsory courses - IT Design				
Teaching mode	Lectures + exercises (auditory + laboratory + seminar + metodology + construction) work at home				30+30 (0+30+0+0) 90
Teachers	course coordinator Prof.dr.sc. Slavica Ćosović Bajić , izvanredni profesor, class type:Lectures course coordinator Krešimir Štih , predavač, class type:Lectures Krešimir Štih , predavač, class type:Laboratory exercises				
Course objectives	To transfer to students the basic knowledge related to computer graphics; to qualify them to understand the implementation of segments on specific practical solutions				
Learning outcomes:	1.ability to categorize types and models used in a computer graphics solution. Level:6 2.ability to organise a project in which solutions to computer graphics are used, including the preparations of the work place, equipment and applications. Level:6,7 3.ability to formulate the ways in which a specific type of computer graphics task is solved: picture, video, CAD, animation, Web, model design. Level:6,7 4.ability to reach a conclusion about the right method to be used in choosing a graphic application. Level:6,7 5.ability to integrate projects of computer graphics carried out by using various methods and applications into a predefined whole. Level:6,7 6.ability to determine the optimal way of choosing an application or a method, in accordance with the resources available (computer equipment, applications). Level:6 7.ability to make an individual design of 2D models, 3D models, animations, interactions among objects, graphic databases, 3Dvideo. Level:6 8.ability to generate engineering CAD models, 3D models to be used in animations or in computer games. Level:6,7 9.ability to design complex CAD models in space ready for further processing (making a prototype). Level:6,7 10.ability to analyse complex templates to be used for 3D models . Level:6 11.ability to prepare pictures, photographs and videos for integration into a whole. Level:6,7 12.ability to arrange the 3D virtual scene light resources used in animations and complex video effects. Level:6,7 13.ability to prepare the parameters necessary in using effects which are usually used for processing videos and animations. Level:6,7				
Methods of carrying out lectures	Ex cathedra teaching Case studies Demonstration Modelling Discussion Questions and answers Other The subject matter is taught by using a great number of drawings, pictures, animations and films, in order to facilitate understanding. Students are constantly asked questions in order to motivate them to take an active part in class. Teaching equipment: board, notebook and video projector.				
Methods of carrying out laboratory exercises	Laboratory exercises, computer simulations Group problem solving Discussion, brainstorming Mind mapping Computer simulations Workshop Other The topic-related tasks students solve on the PCs with help of assisstant and digital step-by-step tutorials.				
Course content lectures	1.History of Computer Graphics (CG), 2h, Learning outcomes:1 2.Representative usages of CG, classification of applications(, 2h, Learning outcomes:1,2 3.Engineering Design Graphics, CAD, CAM(, 2h, Learning outcomes:4 4.Graphics hardver, 2h, Learning outcomes:6 5.Geometrical transformations, 2h, Learning outcomes:5 6.Viewing in 3D, object hierarchy, 2h, Learning outcomes:6 7.Input devices, interaction techniques and tasks, 2h, Learning outcomes:7 8.Dialogue design, user interface software, 2h, Learning outcomes:1,3,7 9.Representing curves and surfaces, solid modelling, 2h, Learning outcomes:8,9,10 10.Achromatic and coloured light, the quest for visual realism, 2h, Learning outcomes:3,4,6 11.Visible-surface determination, illumination and shading, Image manipulation and storage, 2h, Learning outcomes:3,6,7 12.Advanced modelling techniques, 2h, Learning outcomes:3,10,11 13.Animation, 2h, Learning outcomes:3,4,5,13 14.Digital cinematography, 2h, Learning outcomes:3,4,11,12,13 15.Computer game design and analysis, 2h, Learning outcomes:1,2				
Course content laboratory	1.Autocad - basics and user interface, 2h, Learning outcomes:1,3 2.CAD modeling - 2D, 2h, Learning outcomes:2,3 3.CAD modeling - 3D, 2h, Learning outcomes:2,3 4.Complex 3D models, 2h, Learning outcomes:7,8,9,10 5.CAD production preparation, 2h, Learning outcomes:6,7,9,11 6.3D modeling aplications, 2h, Learning outcomes:1 7.User interface and main topics of the aplication, 2h, Learning outcomes:1,2 8.3D modeling from scrachpad, 2h, Learning outcomes:4,5 9.solids, textures, materials, surface mapping, 2h, Learning outcomes:4,5,6,10,11 10.Rigging, 2h, Learning outcomes:4,5,6,10 11.Lighting, 2h, Learning outcomes:4,5,6,12 12.Skinning, 2h, Learning outcomes:4,5,6				

	13.Scene, 2h, Learning outcomes:3,10,11,13 14.Animation, 2h, Learning outcomes:3,6,10,11,13 15.Effects, 2h, Learning outcomes:10,11,13
Required materials	Special purpose computer laboratory Whiteboard with markers Overhead projector The topic-related tasks students solve on the PCs with help of assisstant and digital step-by-step tutorials.
Exam literature	1. Foley, J., van Dam, A., Hughes, J., Phillips, R., Introduction to Computer Graphics, Addison-Wesley, 1997. 2. Pandžić, I.S., Virtualna okruženja, Udžbenici Sveučilišta u Zagrebu, Element, Zagreb, 2004. 3. Bjelovučić Kopilović, S., Riješeni primjeri i zadaci iz tehničkog crtanja i nacrtne geometrije u AutoCADu 2004, Digitalni priručnik, 32 bita d.o.o., Zagreb, 2004. 4. The Art of Maya, An Introduction to 3D Computer Graphics, Alias/Wavefront Education, 2002. 5. Cogner, D., Physics Modelling for Game Programmers, Thomson Course Technology, Boston, 2004. Additional literature: 1. Masson, T., Cg 101, A Computer Graphics Industry Reference, New Riders Publishing, USA, 1999. 2. Kerlow. I.V., The Art of 3-D : Computer Animation and Imaging, 2nd Edition, John Wiley Sons, 2000
Students obligations	Up to 1 absence without excuse, maximum of 3 absences from exercises, minimum of 33% of total of both tests during the term, minimum of 10% of each test
Knowledge evaluation during semester	Regular attendance, colloquium, numerical assignments, homework, written test, examination
Knowledge evaluation after semester	a seminar paper chosen in consultation with the teacher the written part of the exam consists of solving problems similar to those solved on laboratory exercises, on PC, in AutoCAD and Blender (3D modelling and animation tools) the oral part of the exam, if the student earned 60% of points or more in the written part of the exam, consists of questions related to all the matter from lectures
Remark	This course can be used for final thesis theme
Prerequisites:	No prerequisites.
Proposal made by	Krešimir Štih

Code WEB/ISVU	19056/22422	**ECTS**	4	**Department**	
Name	Computer Network Administration				
Status	6th semester - Compulsory courses - Office Organization and Informatization				
Teaching mode	Lectures + exercises (auditory + laboratory + seminar + metodology + construction) work at home				30+30 (0+30+0+0) 60
Teachers	course coordinator dr.sc. Željko Širanović , viši predavač, class type:Lectures course coordinator Dunja Bjelobrk Knežević dipl.ing, predavač, class type:Laboratory exercises Ognjen Mitrović , asistent, class type:Laboratory exercises dr.sc. Željko Širanović , viši predavač, class type:Laboratory exercises				
Course objectives	To transfer to students the basic knowledge related to switching, switching devices, network protection and maintenance				
Learning outcomes:	1.ability to integrate IP telephony into a LAN. Level:6,7 2.ability to integrate a wireless network into a LAN. Level:6,7 3.ability to to give comments on IT terms related to the security of computer networks (firewall, demilitarised zones (DMZ), intrusion detection systems (IDS), intrusion prevention systems (IPS), . Level:6 4.ability to to set up basic types of firewall in a computer network. Level:6,7 5.ability to set up virtual LANs and interconnect them via a router. Level:6,7 6.ability to set up the access lists used to control the traffic between VLANs. Level:6,7 7.ability set up both a local and a distant network identification and authorisation. Level:6,7 8.ability to solve problems occurring typically in computer networks. Level:6 9.ability to set up both a logical and a physical mid-size computer network, to anticipate the key security aspects and test it on a simulator. Level:6,7				
Methods of carrying out lectures	Ex cathedra teaching Guest lecturer Case studies Demonstration Simulations Modelling Discussion Questions and answers Seminar, students presentation and discussion Homework presentation Frontally, oral presentations illustrated with presentations about actual solutions, along with the application of contemporary presentation technologies. Multi-media teaching material will be used with screen projections, also available online.				
Methods of carrying out laboratory exercises	Laboratory exercises on laboratory equipment Laboratory exercises, computer simulations Group problem solving Data mining and knowledge discovery on the Web Essay writing Discussion, brainstorming Mind mapping Computer simulations Interactive problem solving Workshop Familiarization with components, device configuration, hooking up measuring, management and communication elements. Putting network into operation, signal and traffic measuring. Analyzing obtained data.				
Course content lectures	1.Introduction to VLAN networks, 2h, Learning outcomes:2,5 2.VLAN Trunk i STP protocol, 2h, Learning outcomes:2,5 3.Security of switch devices in the VLAN , 2h, Learning outcomes:2,5 4.Introduction to firewalls , 2h, Learning outcomes:4 5.Operating principles and how to connect firewalls to networks , 2h, Learning outcomes:4 6.Control lists on firewalls , 2h, Learning outcomes:4,5,6 7.Control lists on firewalls , 2h, Learning outcomes:5,6,7 8.Firewall maintenance and problem-solving , 2h, Learning outcomes:3,4,5,6,7 9.Firewall maintenance and problem-solving , 2h, Learning outcomes:3,4,5,6,7 10.IP telephony , 2h, Learning outcomes:1,2 11.Intrusion detection (IDS) with the help of firewalls , 2h, Learning outcomes:3,4,5,6,7,8,9 12.Intrusion detection (IDS) with the help of firewalls , 2h, Learning outcomes:3,4,5,6,7,8,9 13.Performance management and configuration of computer networks, 2h, Learning outcomes:1,4,5,6,7,8,9 14.Performance management and configuration of computer networks, 2h, Learning outcomes:1,4,5,6,7,8,9 15.The final exam, 2h, Learning outcomes:1,2,3,4,5,6,7,8,9				
Course content laboratory	1.Configure the ports on the switch, 2h, Learning outcomes:5,8 2.Creating and maintaining VLANs on a switch, 2h, Learning outcomes:5,8 3.Configuring VLAN Trunk Protocol, 2h, Learning outcomes:5,8 4.Setting the basic security mechanisms on switching devices, 2h, Learning outcomes:2,3,5,6,7 5.Configuration of basic security settings on firewalls, 2h, Learning outcomes:2,3,4,5,6,7,8,9 6.Setting firewalls for to protect the computer network by using the access list, 2h, Learning outcomes:2,3,4,5,6,7,8,9 7.Configuring the DMZ, 2h, Learning outcomes:3,6 8.Configuring the DMZ, 2h, Learning outcomes:3,6 9.Configuring the wireless LAN, 2h, Learning outcomes:2,5 10.Integrating IP telephony into a LAN, 2h, Learning outcomes:1,5 11.Configuring Virtual private networks (VPN), 2h, Learning outcomes:7,8,9 12.Debugging and troubleshooting of computer networks , 2h, Learning outcomes:2,3,4,5,6,7,8,9 13.Debugging and troubleshooting of computer networks , 2h, Learning outcomes:2,3,4,5,6,7,8,9				

	14.Debugging and troubleshooting of computer networks , 2h, Learning outcomes:1,2,3,4,5,6,7,8,9 15.The final practical exam, 2h, Learning outcomes:1,2,3,4,5,6,7,8,9
Required materials	Basic: classroom, blackboard, chalk... General purpose computer laboratory Special purpose computer laboratory Whiteboard with markers Overhead projector Video equipment Familiarization with components, device configuration, hooking up measuring, management and communication elements. Putting network into operation, signal and traffic measuring. Analyzing obtained data.
Exam literature	Basic literature: 1. Conlan, P., J.,(2009), Cisco Network Profesional's - Advanced Internetworking Guide,Wiley Publiching Inc. Dodatna: 1. Douglas E. Comer: Computer Networks and Internets, Prentice Hall, 2009. 2. 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#8#5#0$Mini-test#6#10#60$Kolokvij, numeri zadaci#3#20#60$Kolokvij, teorijska pitanja#3#20#60$Prakti rad#10#30#60$Prakti ispit#1#15#60$
Knowledge evaluation after semester	10 colloquiums. Attending laboratory exercises is a prerequisite for signature. The practical part of the exam contains one real-life problem on the basis of the covered material. Oral exam, if student passes the practical part of the exam.
Remark	This course can be used for final thesis theme
Prerequisites:	Students cannot enroll in this course unless they have passed Uvod u mree raunala

Code WEB/ISVU	19097/22405	**ECTS**	6	**Department**	
Name	Computer Typography				
Status	1st semester - Compulsory courses				
Teaching mode	Lectures + exercises (auditory + laboratory + seminar + metodology + construction) work at home				30+30 (0+30+0+0) 120
Teachers	course coordinator Pred. Maja Turčić dipl.ing., predavač, class type:Lectures course coordinator dr.sc. Vilko Žiljak , redoviti profesor, class type:Lectures Aleksandra Bernašek , asistent, class type:Laboratory exercises Ana Herold Šopar dipl.ing., asistent, class type:Laboratory exercises Ana Hoić , asistent, class type:Laboratory exercises mag.des. Ulla Leiner Maksan , asistent, class type:Laboratory exercises				
Course objectives	To transfer to students the knowledge related to computer typography; to qualify students to integrate image and text in individual raster procedures; to introduce students to typography databases, text and image databases, archiving of the layout of books and newspapers				
Learning outcomes:	1.ability to prepare a specific book page/magazine page for printing. Level:6 2.ability to create one's own font and characters by using various tools and languages. Level:6,7 3.ability to distinguish between different categories of fonts and font types in their families. Level:6 4.ability to design complex formulae in LaTex. Level:6,7 5.ability to plan the ways and types of tools to be used in typography design. Level:6,7 6.ability to analyse the anatomy of a letter. Level:6 7.ability to develop procedures for splitting words. Level:6,7 8.ability to standardize the preparations for printing. Level:6,7 9.ability to distinguish between different code systems and font formats. Level:6 10.ability to create one's own digital typography language. Level:6,7				
Methods of carrying out lectures	Ex cathedra teaching Demonstration Simulations				
Methods of carrying out laboratory exercises	Laboratory exercises on laboratory equipment Laboratory exercises, computer simulations				
Course content lectures	1.PostScript typography. Font definition. The structure of commands., 2h, Learning outcomes:2,9,10 2.Bezier curve in shaping the font characters. The continuity of Bezier curves. , 2h, Learning outcomes:2 3.The differences between the definitions of PostScript commands in the current typographic commands, 2h, Learning outcomes:9,10 4.Controls for positioning, angle of writing, letter deformation in the original PostScript, 2h, Learning outcomes:2,9,10 5.Layout of continuous pages in PostScript, 2h, Learning outcomes:8,10 6.Bar code programming, 2h, Learning outcomes:9 7.Programming individualized data with links from the database, 2h, Learning outcomes:9 8.The development of the PDF formats. Printer calculation. Resolution., 2h, Learning outcomes:1,8 9.Commands of tabular syllable in different graphics programs that run under the PostScript, 2h, Learning outcomes:2,9 10.Preparing personal typographic language. Special purpose and protective syllable. Microtext., 2h, Learning outcomes:10 11.Words fragmenting in PostScript. Implantation of personal routines in Indesign., 2h, Learning outcomes:7 12.Three-dimensional shape in typography. Dynamic selection of fonts. Designing new fonts., 2h, Learning outcomes:2,3,5 13.Data generating, organizing of databases and typographic pages., 2h, Learning outcomes:4,8 14.Multicodes in PostScript. Comparasion unity and differences of PostScript, HTML programing languge, 2h, Learning outcomes:9 15.Planning typography for different operating systems, for different printing machines and technology, 2h, Learning outcomes:6,8,10				
Course content laboratory	1.Text formatting for books, 2h, Learning outcomes:1,8 2.Magazine page layout, 2h, Learning outcomes:1,8 3.The formulas in Latex, 2h, Learning outcomes:4 4.Word fragmenting, 2h, Learning outcomes:7 5.Font classification, 2h, Learning outcomes:3,9 6.FontLab letter anatomy, 2h, Learning outcomes:3 7.FontLab font adjusting, 2h, Learning outcomes:3 8.Typographic sizes, 2h, Learning outcomes:6 9.Proofreading, 2h, Learning outcomes:5 10.PostScript 1, 2h, Learning outcomes:9,10 11.PostScript 2, 2h, Learning outcomes:9,10 12.OCR fonts, 2h, Learning outcomes:9 13.Colloquium, 2h, Learning outcomes:1,2,3,4,5,6,7,8,9,10 14.Compensation of labs, 2h, Learning outcomes:1,2,3,4,5,6,7,8,9,10 15.There are no classes				
Required materials	Basic: classroom, blackboard, chalk... Special purpose computer laboratory Whiteboard with markers Overhead projector Solving of prepared tasks in the computer laboratory with the check of final solutions of every student.				
Exam literature	Basic literature: 1. V. Žiljak, K. Pap, POSTSCRIPT PROGRAMIRANJE GRAFIKE, FS, Zagreb, 1998. /2004. ISBN: 953 - 199 - 000, elektr. Izdanje: http://free-zg.htnet.hr/kpap/				

	2. V. Žiljak, TIPOGRAFIJA RAČUNALOM, str. 5 do 63 u kjizi Tiskarstvo 04, ISBN 953-199-0190, UDK 655(082) , 655.4.92>(082).738.5 2004. FS i Grafički fakultet, elektr. izdanje: www.grf.hr/vziljak/tiskarstvo033. 3. V. Žiljak, TIPOGRAFIJA, 2004. Zagreb, Grafički fakultet katedra za računala i slog, elektroničko izdanje,: http://public.carnet.hr/%7Eviziljak/predavanja/tipografija1/Tipografski rjecnik1.htm Additional literature: 1. Adobe Systems, PostScript (Computer program language), ISBN 0-201-37922-8, Addison-Wesley 1999.
Students obligations	maximum of 2 absences from exercises and colloquium
Knowledge evaluation during semester	Colloquium, theoretical issues #2#100#50$
Knowledge evaluation after semester	Tasks on the computer and the oral part of the exam
Remark	This course can be used for final thesis theme
Prerequisites:	No prerequisites.
Proposal made by	Prof. dr. sc. Vilko Žiljak

Code WEB/ISVU	19071/22413	**ECTS**	3	**Department**	
Name	Computers and Software Installation				
Status	6th semester - Compulsory courses - Office Organization and Informatization				
Teaching mode	Lectures + exercises (auditory + laboratory + seminar + metodology + construction) work at home				30+15 (0+15+0+0) 60
Teachers	dr. sc. Roman Domović , prof., predavač, class type:Lectures dr. sc. Roman Domović , prof., predavač, class type:Laboratory exercises				
Course objectives	To transfer to students the knowledge related to the architecture and functioning of a personal computer; to qualify students to install and maintain a computer, its components and software				
Learning outcomes:	1.ability to analyse the environment of an information system in regards to both hardware and software. Level:6 2.ability to identify needs and difficulties which occur when working with a computer. Level:6 3.ability to test the operability of both hardware and software of a computer. Level:6 4.ability to assemble a computer and configure the hardware and software components of an information system. Level:6,7 5.ability to set up the hardware of an information system. Level:6,7 6.ability to propose solutions related to information systems hardware, software and security together troubleshooting in case of computer malfunctioning. Level:6,7 7.ability to be familiar with various types of computer and computer components. Level:6 8.ability to propose solutions in case of computer malfunctioning. Level:6 9.ability to compare computers and computer components in order to optimize an information system hardware. Level:6,7 10.ability to anticipate requirements and difficulties which occur in computer functioning. Level:6,7				
Methods of carrying out lectures	Ex cathedra teaching Case studies Discussion Questions and answers				
Methods of carrying out laboratory exercises	Laboratory exercises on laboratory equipment Laboratory exercises, computer simulations Discussion, brainstorming Workshop				
Course content lectures	1.Introduction, 2h, Learning outcomes:1 2.High-performance computing, 2h, Learning outcomes:2,7 3.Computer hardware 1, 2h, Learning outcomes:2,3,7,9,10 4.Computer hardware 2, 2h, Learning outcomes:2,3,7,9,10 5.First mid-term exam, 2h, Learning outcomes:1,2,3,7,9,10 6.Servers, 2h, Learning outcomes:1,2,6,8,10 7.Malicious software, 2h, Learning outcomes:2,3,6,8,10 8.Data security and protection, 2h, Learning outcomes:2,3,6,8,10 9.Review and analysis of examples from IT area with guest speaker, 2h, Learning outcomes:1,2,3,4,5,6,7,8,9,10 10.Second mid-term exam, 2h, Learning outcomes:1,2,6,8,10 11.Computer installation, 2h, Learning outcomes:3,4,5 12.Computer installation, 2h, Learning outcomes:3,4,5 13.Computer installation, 2h, Learning outcomes:3,4,5 14.Computer installation, 2h, Learning outcomes:3,4,5 15.Computer installation, 2h, Learning outcomes:3,4,5				
Course content laboratory	1.Computer installation, 1h, Learning outcomes:3,4,5 2.Computer installation, 1h, Learning outcomes:3,4,5 3.Computer installation, 1h, Learning outcomes:3,4,5 4.Computer installation, 1h, Learning outcomes:3,4,5 5.Computer installation, 1h, Learning outcomes:3,4,5 6.Computer installation, 1h, Learning outcomes:3,4,5 7.Computer installation, 1h, Learning outcomes:3,4,5 8.Computer installation, 1h, Learning outcomes:3,4,5 9.Computer installation, 1h, Learning outcomes:3,4,5 10.Computer installation, 1h, Learning outcomes:3,4,5 11.Computer installation, 1h, Learning outcomes:3,4,5 12.Computer installation, 1h, Learning outcomes:3,4,5 13.Computer installation, 1h, Learning outcomes:3,4,5 14.Computer installation, 1h, Learning outcomes:3,4,5 15.Computer installation, 1h, Learning outcomes:3,4,5				
Required materials	Basic: classroom, blackboard, chalk... General purpose computer laboratory Whiteboard with markers Overhead projector Tools Operating supplies Special equipment Computers, computer components, tools for servicing computers, screws for fixing computer components.				
Exam literature	Basic literature: 1. Skripte voditelja predmeta Dodatna:				

	1. Ribarić, Slobodan. Građa računala - arhitektura i organizacija računarskih sustava. Algebra, 2011.
Students obligations	Done laboratory exercises.
Knowledge evaluation during semester	Two mid-term exams, each carries 50% of the total grade. Condition for the passage is 60 total points and 30 points from each mid-term exam. Final distribution of points and grades: PointsGrade 0-59 1 60-63 2 64-75 3 76-87 4 88-100 5
Knowledge evaluation after semester	Written and oral exam. Final distribution of points and grades of written exam: PointsGrade 0-59 1 60-63 2 64-75 3 76-87 4 88-100 5
Remark	This course can be used for final thesis theme
Prerequisites:	No prerequisites.
Proposal made by	Roman Domović, prof.

Code WEB/ISVU	19057/85254	**ECTS**	5	**Department**	
Name	Databases				
Status	4th semester - Compulsory courses - Office Organization and Informatization 4th semester - Compulsory courses - E-business				
Teaching mode	Lectures + exercises (auditory + laboratory + seminar + metodology + construction) work at home				15+45 (15+30+0+0) 90
Teachers	course coordinator Ivica Dodig ,dipl.ing.rač., viši predavač, class type:Lectures course coordinator Tin Kramberger , asistent, class type:Auditory exercises Tin Kramberger , asistent, class type:Laboratory exercises				
Course objectives	To introduce students to the concept, possibilities and role of databases in information retrieval process in an information system. Through practical work, the student will become familiar with different methods				
Learning outcomes:	1.ability to understand basic terms related to databases. Level:6 2.ability to create basic SQL queries . Level:6,7 3.ability to control SQL functions. Level:6,7 4.ability to create SQL queries with a WHERE clause. Level:6,7 5.ability to relate SQL queries through multiple tables . Level:6,7 6.ability to compare an outer SQL query with an inner SQL query . Level:6,7 7.ability to sort and group data generated by a query . Level:6 8.ability to build the ER database model. Level:6,7 9.ability to build a database. Level:6				
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 equipment Laboratory exercises, computer simulations Interactive problem solving				
Methods of carrying out laboratory exercises	Laboratory exercises on laboratory equipment Laboratory exercises, computer simulations Interactive problem solving				
Course content lectures	1.Introduction, create, insert, update, delete, 2h, Learning outcomes:1 2.Data types, model, select where, 2h, Learning outcomes:1,2 3.String functions, agregate functions, 2h, Learning outcomes:1,2,3 4.Update where, date and time functions, NULL, 2h, Learning outcomes:4 5.Cartesian product, natural join, 2h, Learning outcomes:4,5 6.Join, 2h, Learning outcomes:4,5 7.Alias, 2h, Learning outcomes:5 8.Group by, having, 2h, Learning outcomes:7 9.Subselect, 2h, Learning outcomes:6 10.Repeat for the Colloquium, 2h, Learning outcomes:1,2,3,4,5,6,7 11.ER and models in detail, 2h, Learning outcomes:8,9 12.Indexes, primary and foreign keys, 2h, Learning outcomes:8,9 13.Normalization, 2h, Learning outcomes:8,9 14.Working with another database system and tools, 2h, Learning outcomes:1,8,9 15.Repeat for the final exam, 2h, Learning outcomes:1,2,3,4,5,6,7,8,9				
Course content auditory	1.Database import, working with SQLyog, 2h, Learning outcomes:1 2.Basic DDL and DML clauses, 2h, Learning outcomes:1,2 3.Functions, 2h, Learning outcomes:2,3 4.Where clause, 2h, Learning outcomes:2,3,4 5.Date and time functions, 2h, Learning outcomes:2,3,4 6.Cartesian product, natural join, 2h, Learning outcomes:2,5 7.Join, 2h, Learning outcomes:2,5 8.Aliases, 2h, Learning outcomes:2,5 9.No classes, 2h 10.Group by and order by clauses, 2h, Learning outcomes:7 11.Having clause, 2h, Learning outcomes:7 12.Subselect, 2h, Learning outcomes:6 13.Indexes, 2h, Learning outcomes:8,9 14.No classes, 2h 15.No classes, 2h				
Course content laboratory	1.Database import, working with SQLyog, 2h, Learning outcomes:1 2.Basic DDL and DML clauses, 2h, Learning outcomes:1,2 3.Functions, 2h, Learning outcomes:2,3 4.Where clause, 2h, Learning outcomes:2,3,4 5.Date and time functions, 2h, Learning outcomes:2,3,4 6.Cartesian product, natural join, 2h, Learning outcomes:2,5 7.Join, 2h, Learning outcomes:2,5 8.Aliases, 2h, Learning outcomes:2,5				

9.Colloquium, 2h, Learning outcomes:1,2,3,4,5
10.Group by and order by clauses, 2h, Learning outcomes:7
11.Having clause, 2h, Learning outcomes:7
12.Subselect, 2h, Learning outcomes:6
13.Indexes, 2h, Learning outcomes:8,9
14.Compensation of laboratory exercises, 2h, Learning outcomes:1,2,3,4,5,6,7,8,9
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
During the practical classes students will be actively involved in work on personal computers. LCD projector will be also used.

Exam literature
Basic literature:
1. Abraham Silberschatz: DATABASE SYSTEM CONCEPTS SIXTH EDITION, 2011
2. Radovan, M.: Baza podataka, Informator, Zagreb, 1993.
3. Date, C.J.: An Introduction to Database Systems, Addison-Wesley publishing Company, New York. 1994.
Additional literature:
1. Tkalac, S.: Relacijski model podataka, Informator, Zagreb, 1988.
2. Ullman, D.,J.: Database and Knowledge - base Systems, Computer Science Press, 1999.

Students obligations
Presence at all laboratory exercises with a minimum of 10% points

Knowledge evaluation during semester

Code WEB/ISVU	19064/22397	**ECTS**	5	**Department**	
Name	Digital Circuits and Devices Design				
Status	2nd semester - Compulsory courses				
Teaching mode	Lectures + exercises (auditory + laboratory + seminar + metodology + construction) work at home				30+30 (22+8+0+0) 90
Teachers	course coordinator mr.sc. Darko Lukša dipl.ing, predavač, class type:Lectures course coordinator dr.sc. Žarko Nožica , profesor visoke škole, class type:Lectures mr.sc. Darko Lukša dipl.ing, predavač, class type:Auditory exercises mr.sc. Darko Lukša dipl.ing, predavač, class type:Laboratory exercises				
Course objectives	To introduce students to the structure of computer systems.				
Learning outcomes:	1.ability to distinguish between between digital and analogueue circuits. Level:6 2.ability to analyse simple digital circuits. Level:6 3.ability to compose complex logic structures by using the simple ones. Level:6,7 4.ability to make connection between a computer system and logical algebra as its basis. Level:6,7 5.ability to extract certain components of a device following the principle of logic modules and circuits. Level:6 6.ability to compare components of various digital devices. Level:6,7 7.ability to test the operability of simple logic structures. Level:6 8.ability to integrate simple logic structures into more complex ones. Level:6,7 9.ability to test both the design and operability of digital circuits. Level:6 10.ability to write documentation on digital circuits functioning. Level:6,7				
Methods of carrying out lectures	Ex cathedra teaching Case studies Discussion The lectures are based on presentations of particular circuits and computer structures.				
Methods of carrying out auditory exercises	Group problem solving Particular problems are solved with the full participation of students.				
Methods of carrying out laboratory exercises	Laboratory exercises, computer simulations The exercises are done in PC laboratories by using various programmes for testing the quality features of a computer.				
Course content lectures	1.Fundamentals of digital technology., 2h, Learning outcomes:1,2 2. Analog and digital value., 2h, Learning outcomes:1,2 3.Logical algebra and logical functions., 2h, Learning outcomes:1,10 4.Numeric systems and codes., 2h, Learning outcomes:9 5.Basic combination circuits., 2h, Learning outcomes:1,3,10 6.Basic combination circuits., 2h, Learning outcomes:1,3,7,10 7.Basic sequential circuits., 2h, Learning outcomes:1,3,7,10 8.Basic sequential circuits., 2h, Learning outcomes:1,3,7,10 9.Computer design principles., 1h, Learning outcomes:4,7,8,10 Fundamental parts of computer; CPU, memory subsystem, input-output devices. , 1h, Learning outcomes:5,6,8,10 10.Fundamental parts of computer; CPU, memory subsystem, input-output devices., 2h, Learning outcomes:5,6,8,10 11.Fundamental parts of computer; CPU, memory subsystem, input-output devices., 1h, Learning outcomes:8,9 Microprocessor and microcomputer., 1h, Learning outcomes:4,8,9,10 12.Assembler programm., 2h, Learning outcomes:7,9 13.BIOS program. , 2h, Learning outcomes:7,9 14.Structure and features of input/output devices. , 2h, Learning outcomes:5,6,9 15.Types of communication between computer units., 2h, Learning outcomes:5,6,9				
Course content auditory	1.Logical algebra., 2h, Learning outcomes:1,2 2.Logical algebra., 1h, Learning outcomes:1,2 Logical functions., 1h, Learning outcomes:2,7,9,10 3.Logical functions., 2h, Learning outcomes:2,7,9,10 4.Logical circuits analysis and synthesis., 2h, Learning outcomes:3,7,10 5.Logical circuits analysis and synthesis., 2h, Learning outcomes:3,7 6.Basic sequential circuits analysis and synthesis., 2h, Learning outcomes:3,7,8 7.Basic sequential circuits analysis and synthesis., 2h, Learning outcomes:3,5,7,8 8.Configuring a computer. , 2h, Learning outcomes:4,5,6,8 9.Configuring a computer. , 2h, Learning outcomes:4,5,6,8 10.The bus traffic analysis. , 2h, Learning outcomes:5,6,10 11.The bus traffic analysis. , 2h, Learning outcomes:5,6,10 12.x 13.x 14.x 15.x				
Course content laboratory	1.Circuit simulation basics., 2h, Learning outcomes:2,10 2.Combinatoral circuit simulation., 2h, Learning outcomes:2,8,10 3.Sequential circuit simulation., 2h, Learning outcomes:5,10 4.Assembler programming., 2h, Learning outcomes:9,10 5.x 6.x 7.x 8.x 9.x 10.x 11.x				

	12.x 13.x 14.x 15.x
Required materials	General purpose computer laboratory Overhead projector The exercises are done in PC laboratories by using various programmes for testing the quality features of a computer.
Exam literature	Basic literature: 1. U. Peruško: Digitalna elektronika, Školska knjiga, Zagreb 1991. 2. S. Ribarić: Arhitektura računala, Školska knjiga, Zagreb 1996. 3. U. Peruško, V. Glavinić: Digitalni sustavi, Školska knjiga, Zagreb 2005. 3. Tehnička dokumentacija računala. Additional literature:
Students obligations	Attendance 80% lectures and auditory exercises. All laboratory exercises.
Knowledge evaluation during semester	Two written exams.
Knowledge evaluation after semester	Written and oral exam.
Remark	This course can be used for final thesis theme
Prerequisites:	No prerequisites.
Proposal made by	mr.sc. Darko Lukša dipl.ing

Code WEB/ISVU	19101/39179	**ECTS**	5	**Department**	
Name	e-Business Systems				
Status	5th semester - Compulsory courses - E-business				
Teaching mode	Lectures + exercises (auditory + laboratory + seminar + metodology + construction) work at home				30+30 (30+0+0+0) 90
Teachers	course coordinator dr.sc. Mladen Mauher prof.v.šk., profesor visoke škole, class type:Lectures prof. Marta Alić , asistent, class type:Auditory exercises				
Course objectives	To transfer to students the basic knowledge related to e-business systems				
Learning outcomes:	1.ability to identify basic elements and interactions of e-business systems. Level:6 2.ability to present models of e-business. Level:6,7 3.ability to relate shopping life cycles of a buyer and a seller . Level:6,7 4.ability to present electronic registers, their structure and interactions. Level:6,7 5.ability to sort groups of processes and data exchange processes in business communication. Level:6,7 6.ability to present standardised electronic documents used in business. Level:6,7 7.ability to identify standards of and recommendations for e-business. Level:6 8.ability to relate processes and technologies of business management. Level:6,7 9.ability to distinguish between different types of e-markets. Level:6 10.ability to formulate/design a system of electronic business transactions security. Level:6,7				
Methods of carrying out lectures	Ex cathedra teaching Case studies Modelling Discussion Questions and answers Other Course materials are exposed by the use of technologies for the structural visual presentation for elements and interaction of electronic business systems. Drawings to analyze and explain key relations and corresponding technological solutions is done. Beside the board the notebook computer and LCD projector are used.				
Methods of carrying out auditory exercises	Laboratory exercises, computer simulations Essay writing Workshop				
Course content lectures	1.New paradigms of electronic business: holonic business systems, virtual organizations, semantic collaborative environments, intelligent organizations), 2h, Learning outcomes:1 2.Basic elements of electronic business: product/service (classification, identification, cost and price structure), 2h, Learning outcomes:1 3.Basic elements of electronic business: product/service (producer, supplier, merchant, customer, buying types), 2h, Learning outcomes:1 4.Basic elements of electronic business: product/service (delivery, marketing, claims/services/consumer protection), 2h, Learning outcomes:1 5.Electronic business models: generic business model, B2x models, electronic business in ambient intelligence, security and trust in electronic business, 2h, Learning outcomes:2 6.Buying processes: product selection, buying parties, shopping preparation, buying, payment, delivery, ussage, recycling), 2h, Learning outcomes:3 7.Selling processes: customer identification and CRM, order identification, payment authorization, delivery logistics), 2h, Learning outcomes:3 8.Colloquium 1, 2h, Learning outcomes:1,2,3 9.Interaction and integration of distributed systems: collaboration models of distributed business processes, electronic business registers, product data exchange and business communication, business-collaborative associations, universal business collaboration language, 2h, Learning outcomes:4,5 10.Business documents: areas and groups of standardized business documents, standardized documents in business processes, 2h, Learning outcomes:6 11.Electronic business recomendations and standards: electronic business standardization areas, institutions and standards (UN, EU/CEN, ISO/IEC, OASIS), standard models and processes (business process modeling standards, rules, web services), 2h, Learning outcomes:7 12.Electronic business recomendations and standards: Universal Business Language (UBL), Business Process Execution Language (BPEL), Case Study, 2h, Learning outcomes:7 13.Processes and technologies of business management: generic business technologies (strategic, tactical, operational), 2h, Learning outcomes:8 14.Electronic markets: vertical electronic markets, horizontal electronic markets, contextual electronic markets (On-Demand), electronic market strategies (national, EU); Security and protection of electronic business systems: electronic identity, electronic business transactions, legal framework of security and protection in electronic business , 2h, Learning outcomes:9,10 15.Colloquium 2, 2h, Learning outcomes:4,5,6,7,8,9,10				
Course content auditory	1.Defining product properties, 2h, Learning outcomes:1 2.Defining product properties, 2h, Learning outcomes:1 3.Product categories , 2h, Learning outcomes:1 4.Product categories , 2h, Learning outcomes:1 5.Product definition , 2h, Learning outcomes:1 6.Product definition , 2h, Learning outcomes:1 7.Product definition , 2h, Learning outcomes:1,7 8.Catalogue, 2h, Learning outcomes:7 9.Catalogue, 2h, Learning outcomes:7 10.Virtual catalogue , 2h, Learning outcomes:7 11.Virtual catalogue , 2h, Learning outcomes:7 12.XML code , 2h, Learning outcomes:7				

	13.XML code , 2h, Learning outcomes:7 14. Documentation - seminar , 2h 15. Documentation - seminar , 2h
Required materials	Basic: classroom, blackboard, chalk... General purpose computer laboratory Whiteboard with markers Overhead projector
Exam literature	Basic literature: 1.Mladen Mauher: Sustavi elektroničkog poslovanja - sadržaji u elektroničkoj mapi, 2012; Sadržaji u sustavu Moodle 2014. Additional literature: 1.Schneider, G.P.: Electronic Commerce, Publication Date: May, 2012 ISBN-13: 978-1133526827, Edition: 10 2. Studija normizacije u e-Poslovanju, ver. 2.4, FER, 2009. 3.Core Components Technical Specification, v.3.0, United Nations Centre for Trade Facilitation and Electronic Business, 2009. 4.OASIS Universal Business Language Version 2.1, 2012.
Students obligations	maximum of 30% absences from lectures maximum of 20% absences from exercises
Knowledge evaluation during semester	Lectures based learning outcomes, max 70 points Colloquium 1: Total of 35 outcome points, based on % of adequate answers to exam questions: 91%-100% = 35 points(5) 81%-90% = 31,5 points(4) 71%-80%= 28 points(3) 61%-70%=24,5 points(2) Less of 60% = inadequate outcomes Colloquium 2: Total of 35 outcome points, based on % of adequate answers to exam questions: 91%-100% = 35 points(5) 81%-90% = 31,5 points(4) 71%-80%= 28 points(3) 61%-70%=24,5 points(2) Less of 60% = inadequate outcomes
Knowledge evaluation after semester	Documented product catalog 10 points Oral exame 20 points Total of max. 100 points 91-100 = 5 81-90 = 4 71-80 = 3 61-70 = 2 Less of 60% = inadequate outcomes
Remark	This course can be used for final thesis theme
Prerequisites:	No prerequisites.
Proposal made by	Prof. Mladen Mauher, Ph.D.

Code WEB/ISVU	19124/91954	**ECTS**	5	**Department**	
Name	eBook design				
Status	6th semester - Compulsory courses - IT Design				
Teaching mode	Lectures + exercises (auditory + laboratory + seminar + metodology + construction) work at home				30+30 (0+30+0+0) 0
Teachers	course coordinator Pred. Maja Turčić dipl.ing., predavač, class type:Lectures Mario Janković mag. ing., laborant, class type:Laboratory exercises Vesna Uglješić dipl. dizajner, asistent, class type:Laboratory exercises				
Course objectives	To transfer to students the knowledge related to e-literature design				
Learning outcomes:	1.ability to design construction elements: home page, content, headlines, links, multimedia forms. Level:6 2.ability to design e-book files. Level:6,7 3.ability to distinguish between different formats of e-books. Level:6 4.ability to integrate multimedia elements: video, animation, audio. Level:6,7 5.ability to understand the advantages and disadvantages of e-books. Level:6 6.ability to design typography for e-readability. Level:6 7.ability to present solutions. Level:6,7 8.integrate interactive scripting possibilities. Level:6,7 9.devise different ways of inclusivity and accessibility in epub . Level:6,7				
Methods of carrying out lectures	Ex cathedra teaching Case studies Seminar, students presentation and discussion				
Methods of carrying out laboratory exercises	Laboratory exercises on laboratory equipment Laboratory exercises, computer simulations Group problem solving				
Course content lectures	1.Formats of e-literature e-readers: EPUB, PDF, mobi, 2h, Learning outcomes:3 2.Advantages and disadvantages of e-literature, different approaches to design, static and dynamic page, 2h, Learning outcomes:5 3.Design of EPUB formats: metadata, 2h, Learning outcomes:1,2 4.Design of EPUB formats: xhtml, CSS, 2h, Learning outcomes:1,2 5.Book cover design, 2h, Learning outcomes:1,2 6.Interactive table of contents design, 2h, Learning outcomes:1,2 7.Design of headlines, pagination, links, 2h, Learning outcomes:1,2,6 8.Video and audio in epub, 2h, Learning outcomes:4 9.E-book animation, 2h, Learning outcomes:4 10.Scripting in e-books, 2h, Learning outcomes:8 11.inclusive design and accessibility, 2h, Learning outcomes:9 12.Fallback content of specific e-book elements, 2h, Learning outcomes:2 13.Media overlays, 2h, Learning outcomes:9 14.different presentation techniques of final projects, 2h, Learning outcomes:7 15.no lesson, 2h				
Course content laboratory	1.Design of EPUB formats, 2h, Learning outcomes:1,2,3 2.Comprehension and formulating of metadata, 2h, Learning outcomes:1,2 3.Content construction in e-books (xhtml), 2h, Learning outcomes:1,2 4.Content design: css, 2h, Learning outcomes:1,2,6 5.project assesment, 2h, Learning outcomes:1,2,3,6,7 6.E-book cover composition in SVG, 2h, Learning outcomes:1,6 7.Making of table of contents in EPUB , 2h, Learning outcomes:1,2 8.Constructing necessary content for communication between e-readers and e-books , 2h, Learning outcomes:1,2,5 9.project assesment, 2h, Learning outcomes:1,2,5,6,7 10.implementing multimedia elements, 2h, Learning outcomes:4 11.making content accessible for all readers , 2h, Learning outcomes:9 12.Interactivity and animation, 2h, Learning outcomes:8 13.project assesment, 2h, Learning outcomes:1,4,7,8,9 14.no lessons, 2h 15.no lessons, 2h				
Required materials	Basic: classroom, blackboard, chalk... General purpose computer laboratory Whiteboard with markers Overhead projector Tools e-readers				
Exam literature	1. EPUB Straight to the point, Elizabeth Castro, Peachpit Press, ISBN-13: 978-0-321-73468-6 2. The Elements of Typographic Style, Robert Bringhurst, Hartley Marks Publishers, ISBN: 0-88179-110-5 3. Tipografski prirucnik, Franjo Mesaros, Graficki obrazovni centar 4. EPUB 3 Best Practices, Matt Garrish, Markus Gylling, O'Reilly Media Inc., 2013, ISBN: 978-1-449-32914-3				
Students obligations	Mandatory lab attendance Project completion Positive review of project assesments				
Knowledge evaluation during	Lab attendance Project assessment progress				

semester	
Knowledge evaluation after semester	Oral exam Completed project
Remark	This course can be used for final thesis theme
Prerequisites:	No prerequisites.
Proposal made by	pred. Maja Turčić, dipl.ing.

Code WEB/ISVU	19060/22757	**ECTS**	4	**Department**	
Name	Electroaccoustics				
Status	4th semester - Elective courses - IT Design				
Teaching mode	Lectures + exercises (auditory + laboratory + seminar + metodology + construction) work at home				30+30 (30+0+0+0) 60
Teachers	course coordinator Prof.dr.sc. Slavica Ćosović Bajić , izvanredni profesor, class type:Lectures course coordinator Prof.dr.sc. Siniša Fajt , izvanredni profesor, class type:Lectures course coordinator Milan Bajić ing., laborant, class type:Auditory exercises Prof.dr.sc. Siniša Fajt , izvanredni profesor, class type:Auditory exercises				
Course objectives	To introduce students to acoustics and electroacoustics				
Learning outcomes:	1.ability to analyse sound diffusion . Level:6 2.ability to estimate the acoustic properties of a space. Level:6,7 3.ability to estimate the electroacoustic quality of devices. Level:6,7 4.ability to design electroacoustic systems. Level:6 5.ability to define the use of specific acoustic materials. Level:6,7 6.ability to integrate electroacoustic components. Level:6,7 7.ability to identify noise impact on humans. Level:6 8.ability to analyse the properties of both speech and music. Level:6 9.ability to differentiate electroacoustic converters. Level:6 10.ability to propose an acoustics system. Level:6,7				
Methods of carrying out lectures	Ex cathedra teaching Case studies Demonstration Simulations Discussion Seminar, students presentation and discussion Theme is presenting by using audio and video equipment, so it can be demonstrate characteristics of audio equipments and audio systems. It shows various kind of audio equipment and audio systems for sound recording, storing, transmiting and processing. Beside black board, PC, projector, and acoustic system are needed.				
Methods of carrying out auditory exercises	Laboratory exercises on laboratory equipment Laboratory exercises, computer simulations Group problem solving				
Course content lectures	1.Basics of acoustics. Sound. , 2h, Learning outcomes:1 2.Phenomenon of the sound propagation. Theory and characteristics of the sound field. , 2h, Learning outcomes:1 3.Sound wave indoors. Spatial acoustics., 2h, Learning outcomes:2 4.Electro-mechanical analogy. Acoustic signals. , 2h, Learning outcomes:3 5.Music and speech. Sound sources and properties (point, dipole). , 2h, Learning outcomes:7 6.Resonators, filters and absorbers. , 2h, Learning outcomes:4 7.Hearing Acoustics. Psychoacoustics. , 2h, Learning outcomes:7 8.Architectural and building acoustics. Absorbent materials and structures., 2h, Learning outcomes:2,5 9.Noise and vibration. , 2h, Learning outcomes:6 10.The application of electroacoustics in technology and medicine. , 2h, Learning outcomes:4 11. Electroacoustical transducers: microphones. , 2h, Learning outcomes:4,6,9,10 12. Electroacoustical transducers: speakers and headphones. , 2h, Learning outcomes:4,6,9,10 13. Electroacoustical transducers: speaker boxes. , 2h, Learning outcomes:4,6,9,10 14.Sound reinforcement system., 2h, Learning outcomes:4,6,9,10 15.Acoustic and electroacoustic measurements., 2h, Learning outcomes:3				
Course content auditory	1.Basics of acoustics. Sound. , 2h, Learning outcomes:1 2.Phenomenon of the sound propagation. Theory and characteristics of the sound field. , 2h, Learning outcomes:1 3.Sound wave indoors. Spatial acoustics., 2h, Learning outcomes:2 4.Electro-mechanical analogy. Acoustic signals. , 2h, Learning outcomes:3 5.Music and speech. Sound sources and properties (point, dipole). , 2h, Learning outcomes:7 6.Resonators, filters and absorbers, 2h, Learning outcomes:4 7.Hearing Acoustics. Psychoacoustics. , 2h, Learning outcomes:7 8.Architectural and building acoustics. Absorbent materials and structures., 2h, Learning outcomes:2,5 9.Noise and vibration. , 2h, Learning outcomes:6 10.The application of electroacoustics in technology and medicine. , 2h, Learning outcomes:4 11. Electroacoustical transducers: microphones. , 2h, Learning outcomes:4,6,9,10 12. Electroacoustical transducers: speakers and headphones. , 2h, Learning outcomes:4,6,9,10 13. Electroacoustical transducers: speaker boxes. , 2h, Learning outcomes:4,6,9,10 14.Sound reinforcement system., 2h, Learning outcomes:4,6,9,10 15.Acoustic and electroacoustic measurements., 2h, Learning outcomes:3				
Required materials	Basic: classroom, blackboard, chalk... Special purpose laboratory General purpose computer laboratory Whiteboard with markers Overhead projector Tools				
Exam literature	1. B. Ivančević: Elektroakustika, Sveučilište u Zagrebu Ur. br.: 380-2/6-07-4, 2007. 2. T. Jelaković: Zvuk, sluh i arhitektonska akustika Zagreb, 1978, Školska knjiga,				

	3. H. Kuttruff. Room Acoustics, Elsevier applied science, London, 2000. 4. M. Talbot-Smith: Audio Engineers Reference Book, Focal Press, 2001.
Students obligations	maximum of 3 absences from exercises
Knowledge evaluation during semester	Kolokvij, teorijska pitanja#2#70#50$Seminarski rad#1#30#50$
Knowledge evaluation after semester	seminar work choosed in arrangement with professor two preliminary exam with more than 60% for exempt from taking writen exam the student have to earned 60 % of points or more in the written part of the exam for the oral part of the exam, the oral partof the exam
Remark	This course can be used for final thesis theme
Prerequisites:	No prerequisites.
Proposal made by	Prof.dr.sc. Siniša Fajt

Code WEB/ISVU	19061/85213	**ECTS**	3	**Department**	
Name	English Language for IT				
Status	3rd semester - Elective courses				
Teaching mode	Lectures + exercises (auditory + laboratory + seminar + metodology + construction) work at home				30+30 (30+0+0+0) 30
Teachers	course coordinator dr.sc. Biljana Stojaković , prof.v.š., profesor visoke škole, class type:Lectures Lamia Egartner prof., nastavnik strani jezik, class type:Auditory exercises Zoran Vulelija , nastavnik strani jezik, class type:Auditory exercises				
Course objectives	To develop students				
Learning outcomes:	1.ability to analyse the position of the English language in the field of IT and in global communication. Level:6 2.ability to generate oral and written communication in English. Level:6,7 3.ability to develop individual reading skills related to texts referring to the field of expertise. Level:6,7 4. to translate texts related to the field of expertise. Level:6,7 5.ability to categorize the IT terminology in both English and Croatian. Level:6 6.tability o give comments on characteristics of both professional English and professional Croatian. Level:6 7.ability to make difference between the vocabulary and the grammar structures in standard language and in professional language. Level:6 8.ability to give comments on the quality of the English language on the Internet, especially of the content related to the field of expertise. Level:6 9.ability to analyse online translators. Level:6 10.ability to give English presentations on various subjects related to the field of expertise. Level:6,7 11.ability to create dialogues related to the field of expertise. Level:6,7 12.to analyse types of dictionary. Level:6 13.to make a difference between the Croatian language free word order and the English language fixed word order. Level:6 14.to generate sentences appying sequence of tenses. Level:6,7 15.to identify both regular and irregular plural forms in English. Level:6 16.to analyse the aspect of English verb tenses. Level:6				
Methods of carrying out lectures	Ex cathedra teaching Case studies Demonstration Discussion Questions and answers Seminar, students presentation and discussion Homework presentation - Lectures are given in an interactive way: students are constantly asked questions on the subject being taught; they are asked to give comments and examples of their own and to draw conclusions. - Straightforward presentations, involving writing on the board, and using key examples from the reading and listening texts. - Teaching equipment: board, overhead projector, LCD projector, tape-recorder.				
Methods of carrying out auditory exercises	Group problem solving Traditional literature analysis Data mining and knowledge discovery on the Web Essay writing Discussion, brainstorming Interactive problem solving Workshop Exercising language patterns through various types of tasks:Reading for information; Listening for specific information;The opinion exchange tasks;Asking and answering the questions; Fill in the most appropriate tense..;. Translation exercises; Vocabulary exercises (crosswords, word games); Writing short descriptions of computing processes; Writing short dialogues (group work); Keeping their own vocabulary notebooks.				
Course content lectures	1.English as a lingua franca, 2h, Learning outcomes:1 2.English in ITand computing, 2h, Learning outcomes:1 3.IT terminology, 2h, Learning outcomes:4,5 4.Croatian IT terminology , 2h, Learning outcomes:1,2,3,4,5,6 5.English on the Internet, 2h, Learning outcomes:1,4,5,6,7 6.Machine translation, 2h, Learning outcomes:7,8,9 7.Online machine translators, 2h, Learning outcomes:7,8,9 8.Dictionary, 2h, Learning outcomes:3,11 9.Learning English Online, 2h, Learning outcomes:6 10.Preliminary exam, 2h, Learning outcomes:1,2,3,4,5,6,7,8,9,10 11.Direct/Indirect Speech and Reported Questions, 2h, Learning outcomes:12 12.Sequence of tenses, 2h, Learning outcomes:12,13 13.English and Croatian Plural of Nouns, 2h, Learning outcomes:14 14.English verb tense aspect, 2h, Learning outcomes:15 15.Preliminary exam, 2h, Learning outcomes:11,12,13,14,15				
Course content auditory	1.Computer applications; English verb tenses (revision), 2h, Learning outcomes:2,4,7,10 2.Types of computer; English verb tenses (exercises), 2h, Learning outcomes:2,4,7,10 3.Input devices; Active voice/Passive voice, 2h, Learning outcomes:2,3,4,7,10 4.Scanner; Active voice/Passive voice, 2h, Learning outcomes:2,3,4,6 5.Output devices; Comparison of adjectives and adverbs, 2h, Learning outcomes:2,3,4,6,10 6.Preliminary exam, 2h, Learning outcomes:2,3,4,7,10 7.Storage devices; Conditional clauses, 2h, Learning outcomes:2,4,10 8.Magnetski ure za pohranjivanje podataka; Conditional Clauses in Sequence of Tenses, 2h, Learning outcomes:2,3,10 9.Opti ure za pohranjivanje podataka; Modal verbs, 2h, Learning outcomes:2,3,4,7,10 10.Flash memory; Modal verbs, 2h, Learning outcomes:2,3,4,10				

	11.My ideal computer system; Direct/Indirect Speech, 2h, Learning outcomes:2,3,4,7,10 12.In a cybercafe; Sequence of Tenses, 2h, Learning outcomes:1,2,6 13.Buying a computer; Plural of Nouns, 2h, Learning outcomes:2,3,10 14.Mobile phones; English Verb Tense Aspect, 2h, Learning outcomes:1,3,7,9 15.Preliminary exam, 2h, Learning outcomes:2,3,4,7,10
Required materials	Basic: classroom, blackboard, chalk... Whiteboard with markers Overhead projector Video equipment Exercising language patterns through various types of tasks:Reading for information; Listening for specific information;The opinion exchange tasks;Asking and answering the questions; Fill in the most appropriate tense..;. Translation exercises; Vocabulary exercises (crosswords, word games); Writing short descriptions of computing processes; Writing short dialogues (group work); Keeping their own vocabulary notebooks.
Exam literature	1. Infotech, English for Computer Users (2008), S.R.Esteras, Cambridge University Press 2. Stojaković, B. Skripta English for computer users 1, 3. Mihaljević, M. Hrvatsko računalno nazivlje, 1993 4. materijali s predavanja (objavljeni na web stranicama kolegija) sastavljeni od tekstova preuzetih iz suvremene stručne i metodičke literature 5. Kiš, M. Englesko-hrvatski, hrvatsko-engleski školski informatički rječnik. Naklada Ljevak, Zagreb, 2003.
Students obligations	Regular attendance in both lectures and exercises (maximum of 3 absences from exercises is tolerated).
Knowledge evaluation during semester	2 preliminary exams in both lectures and exercises; Homework
Knowledge evaluation after semester	Written and oral exams.
Remark	This course can be used for final thesis theme
Prerequisites:	No prerequisites.
Proposal made by	Professor Biljana Stojaković, prof.v.šk.

Code WEB/ISVU	19115/22409	**ECTS**	12	**Department**	
Name	Final Thesis - A				
Status	6th semester - Compulsory courses - Office Organization and Informatization 6th semester - Compulsory courses - E-business 6th semester - Compulsory courses - IT Design				
Teaching mode	Lectures + exercises (auditory + laboratory + seminar + metodology + construction) work at home				0+90 (90+0+0+0) 270
Teachers	course coordinator Bojan Nožica dipl. ing, v.pred., predavač, class type:Auditory exercises				
Course objectives	To teach students how to relate the knowledge acquired to 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 the parts of a problem area. Level:6 4.ability to propose a solution to a problem. Level:6,7 5.ability to give 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 auditory exercises	Other Individual work				
Course content auditory	1.no classes 2.no classes 3.no classes 4.no classes 5.no classes 6.no classes 7.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				
Required materials	Tools Computer with MS Word or Open Office installed				
Exam literature	Konzultacije s mentorom.				
Students obligations	Final thesis writen in MS Word or Open Office				
Knowledge evaluation during semester	Prakti rad#1#1#100$				
Knowledge evaluation after semester	Oral examination of the thesis				
Remark	This course can not be used for final thesis theme				
Prerequisites:	Students cannot enroll in this course unless they have passed Tjelesna i zdravstvena kultura II Students cannot enroll in this course unless they have passed Fizika Students cannot enroll in this course unless they have passed Matematika I Students cannot enroll in this course unless they have passed Osnove programiranja Students cannot enroll in this course unless they have passed Raunalna tipografija Students cannot enroll in this course unless they have passed Tjelesna i zdravstvena kultura I Students cannot enroll in this course unless they have passed Uvod u uredsko poslovanje Students cannot enroll in this course unless they have passed Gra0a digitalnih sklopova i ure0aja Students cannot enroll in this course unless they have passed Matematika II Students cannot enroll in this course unless they have passed Uvod u (X)HTML i CSS Students cannot enroll in this course unless they have passed Uvod u elektroniko poslovanje Students cannot enroll in this course unless they have passed Programiranje				

Code WEB/ISVU	19081/85216	**ECTS**	3	**Department**	
Name	German for IT				
Status	3rd semester - Elective courses				
Teaching mode	Lectures + exercises (auditory + laboratory + seminar + metodology + construction) work at home				30+30 (30+0+0+0) 30
Teachers	course coordinator Lidija Tepeš Golubić pred., predavač, class type:Lectures Lidija Tepeš Golubić pred., predavač, class type:Auditory exercises				
Course objectives	Develop students language knowledge				
Learning outcomes:	1.ability to read texts related to the field of expertise, to find relevant information in a text. Level: 2.ability to demonstrate the knowledge of IT terminology and the ability to use it in communication. Level: 3.ability to demonstrate the knowledge of grammar structures. Level: 4.ability to present a text related to the field of expertise and provide an opinion on it. Level: 5.ability to use properly all of 4 language skills. Level: 6.ability to use dictionaries (monolingual and bilingual). Level: 7.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 The course is intercultural and interdisciplinary. Students are introduced to scientific and technical achievements of the people whose language they study (especially in the specialism area).				
Methods of carrying out auditory exercises	Group problem solving Interactive problem solving Other The student does various types of exercises in auditory recitations, being continuously warned of cognitive, metacognitive and social and affective learning strategies which make individual learning easier. The student is trained for using dictionaries (bilingual, unilingual) and other manuals (in a traditional form or those mediated by electronic media), in order to be able to use manuals, professional literature, documentation and other knowledge sources in German, all related to the profession they are trained for.The student is trained for using various reading techniques, to write short summaries and use the basic business correspondence and to communicate about everyday issues.				
Course content lectures	1.Introductory lecture, 2h, Learning outcomes:1,3 2.Importance of German language study, 2h, Learning outcomes:1,5 3.German language grammar - Nouns, 2h, Learning outcomes:2,3,4 4.New media, 2h, Learning outcomes:2,6,7 5.Information technology (IT), 2h, Learning outcomes:2,6,7 6.Information technology (IT), 2h, Learning outcomes:2,6,7 7.Colloquium 1, 2h, Learning outcomes:1,2,3,4,5,6,7 8.Social networks, 2h, Learning outcomes:2,4,5,7 9.Curriculum vitae, 2h, Learning outcomes:1,2,6 10.Curriculum vitae, 2h, Learning outcomes:1,2,6 11.IT jobs, 2h, Learning outcomes:1,2,3,4,5 12.Job interview, 2h, Learning outcomes:1,2,5,6 13.German Literature and Culture, 2h, Learning outcomes:1,2,3,4,5,6,7 14.Dictionary and vocabulary, 2h, Learning outcomes:3,4,5,6 15.Colloquium 2, 2h, Learning outcomes:1,2,3,4,5,6,7				
Course content auditory	1.Introductory lecture, 2h, Learning outcomes:1,3 2.Importance of German language study, 2h, Learning outcomes:1,5 3.German language grammar - Nouns, 2h, Learning outcomes:2,3,4 4.New media, 2h, Learning outcomes:2,6,7 5.Information technology (IT), 2h, Learning outcomes:2,6,7 6.Information technology (IT), 2h, Learning outcomes:2,6,7 7.Colloquium 1, 2h, Learning outcomes:1,2,3,4,5,6,7 8.Social networks, 2h, Learning outcomes:2,4,5,7 9.Curriculum vitae, 2h, Learning outcomes:1,2,6 10.Curriculum vitae, 2h, Learning outcomes:1,2,6 11.IT jobs, 2h, Learning outcomes:1,2,3,4,5 12.Job interview, 2h, Learning outcomes:1,2,5,6 13.German Literature and Culture, 2h, Learning outcomes:1,2,3,4,5,6,7 14.Dictionary and vocabulary, 2h, Learning outcomes:3,4,5,6 15.Colloquium 2, 2h, Learning outcomes:1,2,3,4,5,6,7				
Required materials	Basic: classroom, blackboard, chalk... Whiteboard with markers Overhead projector Operating supplies The student does various types of exercises in auditory recitations, being continuously warned of cognitive, metacognitive and social and affective learning strategies which make individual learning easier. The student is trained for using dictionaries (bilingual, unilingual) and other manuals (in a traditional form or those mediated by electronic media), in order to be able to use manuals, professional literature, documentation and other knowledge sources in German, all related to the profession they are trained for.The student is trained for using various reading techniques, to write short summaries and use the basic business correspondence and to communicate about everyday issues.				
Exam literature	Basic literature: 1. T. Marčetić, T.: Pregled gramatike njemačkoga jezika, Školska knjiga, Zagreb 2. Hansen-Kokoruš R., Matešić J., Pečur-Medinger Z., Znika M.: Njemačko-hrvatski univerzalni rječnik, Zagreb, 2005. 3. odabrani tekstovi objavljeni na web stranicama kolegija, recentni preuzetih iz				

	suvremene stručne literature, časopisa ili s Interneta
Students obligations	maximum of 3 absences from exercises
Knowledge evaluation during semester	Redovitost pohaa#30#0#80$Mini-test#3#10#55$Domazada3#5#100$Pisana provjera znanja#3#85#55$
Knowledge evaluation after semester	Written and oral exam
Remark	This course can be used for final thesis theme
Prerequisites:	No prerequisites.
Proposal made by	Lidija Tepeš Golubić, 11th of March 2014

Code WEB/ISVU	19066/63168	**ECTS**	6	**Department**	
Name	Graphics Design				
Status	4th semester - Compulsory courses - IT Design				
Teaching mode	Lectures + exercises (auditory + laboratory + seminar + metodology + construction) work at home				30+60 (0+60+0+0) 90
Teachers	course coordinator prof. dr. sc. Jana Žiljak Vujić , voditelj studija Informatike, profesor visoke škole, class type:Lectures Vesna Uglješić dipl. dizajner, asistent, class type:Laboratory exercises				
Course objectives	To transfer the basic concepts related to graphic design				
Learning outcomes:	1.integrating basic elements of design - form, composition, colour, typography, illustration, photography . Level:6,7 2.to conceive visual solution to given problem or topic through sketches. Level:6,7 3. to recognize important elements and reduce and simplify complex forms. Level:6 4.to integrate creativity, innovativity and originality into author work. Level:6,7 5.to develop design concepts further by using vector and pixel graphics editors and page layout programs. Level:6,7 6.prepress in pdf form. Level:6,7 7.to critically evaluate, establish and comment on advantages and disadvantages of specific designs. Level:7 8.to conceive, prepare and give a presentation of a project. Level:6,7 9.to present in front of audience and answer the questions put by fellow students and the examiner. Level:6,7				
Methods of carrying out lectures	Ex cathedra teaching Case studies Demonstration Discussion Questions and answers Seminar, students presentation and discussion Homework presentation				
Methods of carrying out laboratory exercises	Laboratory exercises, computer simulations Discussion, brainstorming Computer simulations				
Course content lectures	1.Basic terms and definitions related to graphic design, 2h, Learning outcomes:1 2.History of graphic design, 2h, Learning outcomes:1,4,7 3.Theory of design, gestalt, psychology and perception, 2h, Learning outcomes:1,2,3 4.Composition, form and space, 2h, Learning outcomes:1,2 5.Colour theory and using colour in design, 2h, Learning outcomes:1,2 6.Letter, typography, calligraphy, 2h, Learning outcomes:1,2 7.Image, drawing, illustration and photography, 2h, Learning outcomes:1,2 8.Student projects presentation with discussion, 2h, Learning outcomes:7,8,9 9.Problem-solving approach, analizing and defining a problem, 2h, Learning outcomes:2,3,7 10.Creating a solution concept and making sketches, 2h, Learning outcomes:2,4 11.Developing a design solution, 2h, Learning outcomes:5,6 12.Originality, innovativity and creativity in design, 2h, Learning outcomes:4,7 13.Analizing and discussing relevant design solutions, 2h, Learning outcomes:7 14.Significance of presentation and methods used in its preparation, 2h, Learning outcomes:8 15.Student projects presentation with discussion, 2h, Learning outcomes:7,8,9				
Course content laboratory	1.Reducing complex image to the level of graphic symbol, 2h, Learning outcomes:1,2,3 2.Various visual styles of representing the same object, 2h, Learning outcomes:1,2,3 3.Decomposing given form to its basic elements, modifying and rearranging them to get a new shape, 2h, Learning outcomes:1,2,3 4.Designing a simple shape according to given requirements, 2h, Learning outcomes:1,2,3,5 5.Arranging visual compositions by duplicating, moving, rotating and mirroring of basic symbol, 2h, Learning outcomes:1,5 6.Visual presentation of abstract concept by arranging simple shapes, 2h, Learning outcomes:1,2,3,4,5 7.Letterform as symbol, 2h, Learning outcomes:1,2,3,4,5 8.Typographic associations - direct, 2h, Learning outcomes:1,2,3,4,5 9.Typographic associations - indirect, 2h, Learning outcomes:1,2,3,4,5 10.Typographic associations - rhythm, 2h, Learning outcomes:1,2,3,4,5 11.The analysis of given problem and setting verbal concept, 2h, Learning outcomes:2,7 12.Visualizing the concept by means of sketches, 2h, Learning outcomes:2,7 13.Elaborating the sketches by using computer, 2h, Learning outcomes:4,5 14.Assembling the presentation and prepress, 2h, Learning outcomes:6,8 15.Student projects presentation with discussion, 2h, Learning outcomes:7,8,9				
Required materials	Basic: classroom, blackboard, chalk... Special purpose computer laboratory Whiteboard with markers Overhead projector Operating supplies papers, markers, pencils				
Exam literature	Basic literature: 1. V. Papanek: Dizajn za stvarni svjet 2. Lucienne Roberts/Julia Thrift: The designer and the grid 3. Charlotte Rivers: Identify (Building brand through letterheads, logos and business cards 4. Michael Johnson: Problem solved Additional literature:				

Students obligations	Mandatory laboratory exercises (80%), project completion (100%)
Knowledge evaluation during semester	Kolokvij, numeri zadaci#1#30#30$Kolokvij, teorijska pitanja#1#30#30$Prakti rad#1#40#40$
Knowledge evaluation after semester	Defence and presentation of a designer's concept based on a set topic, with elaboration on the problem, concept, and manner of work execution.
Remark	This course can be used for final thesis theme
Prerequisites:	No prerequisites.
Proposal made by	Jana Žiljak Vujić, PhD

Code WEB/ISVU	19069/22756	**ECTS**	3	**Department**	
Name	Graphics Products				
Status	4th semester - Elective courses - IT Design				
Teaching mode	Lectures + exercises (auditory + laboratory + seminar + metodology + construction) work at home				30+0 (0+0+0+0) 60
Teachers	course coordinator dr.sc. Tomislav Kosić , profesor visoke škole, class type:Lectures course coordinator Pred. Maja Turčić dipl.ing., predavač, class type:Lectures				
Course objectives	Introducing students to graphic elements (rules, goals, features) and the ways of connecting them to printing substrates and printing techniques				
Learning outcomes:	1.ability to classify graphic products by groups. Level:6,7 2.ability to classify traditional books and e-books. Level:6,7 3.ability to classify graphic products by quality. Level:6,7 4.ability to plan how to make a book according to quality parameters. Level:6,7 5.ability to plan how to make a poster. Level:6,7 6.ability to define products with visible (under certain conditions) and invisible protection. Level:7 7.creating graphical products according to the principles of golden ratio. Level:6,7 8.ability to carry out the process of making various types of catalogues, calendars, etc. . Level:6,7 9.ability to create various graphic products. Level:6,7 10.ability to propose materials and graphic techniques to be used in making graphic products. Level:6,7 11.ability to carry out the processes of making graphic products . Level:6,7				
Methods of carrying out lectures	Ex cathedra teaching Other				
Course content lectures	1.Designer and graphic products, 2h, Learning outcomes:1 2.Groups of graphic products, 2h, Learning outcomes:1 3.The book as a graphic product, 2h, Learning outcomes:1,2 4.The book classification, 2h, Learning outcomes:2 5.Quality requirements, 2h, Learning outcomes:3,4 6.The technological processes of book manufacturing, 2h, Learning outcomes:3,4,7 7.Basic components of hardcover (hadrback) and softcover (softback) books, 2h, Learning outcomes:10 8.Making of hardcover , 2h, Learning outcomes:4 9.Softcover books, 2h, Learning outcomes:4 10.Posters, prospectuses and calendars, 2h, Learning outcomes:5 11.The accidence, 2h, Learning outcomes:5,6,10 12.Products with protective graphic elements, 2h, Learning outcomes:6 13.The Golden ratio, 2h, Learning outcomes:7 14.Checking the quality of making hardcover and softcover, 2h, Learning outcomes:3 15.Standard formats of books and appropriate/proper grammages, 2h, Learning outcomes:4				
Required materials	Basic: classroom, blackboard, chalk...				
Exam literature	Basic literature: 1. Stjepan Malović, Novine, Copigraf, 1995. Zagreb 2. Grupa autora, Uvod u novinarstvo, Izvori, 1996. Zagreb 3. Nenad Strikoman, Suvremena ambalaža 1, Školska knjiga, 1983. Zagreb 4. Nenad Strikoman, Suvremena ambalaža 2, Školska knjiga, 1983. Zagreb 5. Darko Babić, Uvod u grafičku tehnologiju, GC, 1998. Zagreb Additional literature: 1. www.ambalaža. com www.studijdizajna.com/tkosic				
Students obligations	maximum of 3 absences from lectures				
Knowledge evaluation during semester	Regular attendance #10#10#70$Colloquium, theoretical issues#1#40#50$				
Knowledge evaluation after semester	Oral exam#1#0#0$				
Remark	This course can be used for final thesis theme				
Prerequisites:	No prerequisites.				
Proposal made by	Tomislav Kosić				

Code WEB/ISVU	19068/22753	**ECTS**	5	**Department**	
Name	Graphics Programming Languages				
Status	3rd semester - Compulsory courses - IT Design				
Teaching mode	Lectures + exercises (auditory + laboratory + seminar + metodology + construction) work at home				30+60 (0+60+0+0) 60
Teachers	course coordinator Pred. Maja Turčić dipl.ing., predavač, class type:Lectures Pred. Maja Turčić dipl.ing., predavač, class type:Laboratory exercises				
Course objectives	To transfer the basic knowledge related to graphic programming languages				
Learning outcomes:	1.ability to develop complex graphic applications in PostScript. Level:6,7 2.ability to distinguish between a transformation of a coordinate system and a deformation of graphic characters. Level:6 3.ability to develop programs for lines, curves, arcs and other types of vector paths . Level:6,7 4.ability to create graphic elements in various colour systems and under various graphic conditions. Level:6 5.ability to define user procedures for individual usage. Level:6,7 6.create complex typographic designs using masks and loops. Level:6,7 7.construct graphics with different kinds of loops (for, repeat, if-else). Level:6,7 8.manage a stack oriented programming language. Level:6,7				
Methods of carrying out lectures	Ex cathedra teaching Case studies Demonstration Simulations Discussion Lectures are with the interactive projection with the computer. Studies theoretical structures and uses in practice.				
Methods of carrying out laboratory exercises	Laboratory exercises, computer simulations Group problem solving Interactive problem solving Solving of prepared tasks in the computer laboratory with the check of final solutions of every student.				
Course content lectures	1.introduction to the possibilities of graphic programming languages, 2h, Learning outcomes:1 2.PDL languages. PostScript language for the page description., 2h, Learning outcomes:1 3.Creation of paths. Programming lines, their way of connecting and closed surfaces., 2h, Learning outcomes:3 4.Rendering lightness, filling closed areas. , 2h, Learning outcomes:4 5.programming arc shapes, rounded corners and dashed lines, 2h, Learning outcomes:3 6.Bezier curve, 2h, Learning outcomes:3 7.Programming in various color systems., 2h, Learning outcomes:4 8.Rotation, translation and transformation of forms, 2h, Learning outcomes:2 9.User procedures , 2h, Learning outcomes:5 10.Different kinds of stacks, working with a stack, 2h, Learning outcomes:5,8 11.Different kinds of loops: for, repeat, if-else, 2h, Learning outcomes:6,7 12.Programming of typography, 2h, Learning outcomes:6 13.Masks and glyph manipulation, 2h, Learning outcomes:6 14.controlling the character widths and spaces between words, 2h, Learning outcomes:6,7 15.no lessons, 2h				
Course content laboratory	1.Defining the graphic coordinate space, 2h, Learning outcomes:1,3 2.Arc, dashed lines and line endings manipulation, 2h, Learning outcomes:1,3 3.Creating Bezier curves, 2h, Learning outcomes:1,3 4.quiz, 2h, Learning outcomes:1,3 5.User coordinate space transformations and working with different colour systems, 2h, Learning outcomes:1,2,4 6.stack manipulation, 2h, Learning outcomes:1,5,8 7.programming graphics with for and if else loops, 2h, Learning outcomes:7 8.quiz, 2h, Learning outcomes:1,2,4,5,7,8 9.basic typography in Postscript language, 2h, Learning outcomes:1,4,6 10.masks and creating paths out of glyphs, 2h, Learning outcomes:1,6,7 11.controling glyph widths, 2h, Learning outcomes:1,6,7 12.quiz, 2h, Learning outcomes:1,4,6,7 13.no lesson, 2h 14.no lesson, 2h 15.no lesson, 2h				
Required materials	General purpose computer laboratory Whiteboard with markers Overhead projector Solving of prepared tasks in the computer laboratory with the check of final solutions of every student.				
Exam literature	Basic literature: 1. V. Žiljak, K. Pap, POSTSCRIPT PROGRAMIRANJE GRAFIKE, FS, Zagreb, 1998. /2004. ISBN: 953 - 199 - 000, elektr. Izdanje: http://free-zg.htnet.hr/kpap/ 2. PostScript Language Reference, Adobe System Incorporated, ISBN 0-201-37922-8, Adison-Wesley Publishing Company, 1999 3. Postscript Language Tutorial and Cookbook, Adobe System incorporated, ISBN 0-201-10179-3, Adison-Wesley Publishing company, 1985				
Students obligations	Regular attendance (maximum of 2 absences from exercises)				
Knowledge evaluation during semester	Regular attendance 3 Quizes				

	knowledge assessment of 3 previous lessons Quiz efficacy leads directly to oral part of the exam (minimum grade average of 3), rest of the students attend the written and the oral exam.
Knowledge evaluation after semester	Written exam 50% of grade Tasks on the computer Oral part of the exam 50 % of grade Oral assessment of theory knowledge
Remark	This course can be used for final thesis theme
Prerequisites:	Students cannot pass this course unless they have passed Osnove programiranja
Proposal made by	lecturer Maja Turčić, dipl.ing.

Code WEB/ISVU	19094/22760	**ECTS**	4	**Department**	
Name	Graphics Reproduction Processes				
Status	3rd semester - Compulsory courses - IT Design				
Teaching mode	Lectures + exercises (auditory + laboratory + seminar + metodology + construction) work at home				30+60 (0+60+0+0) 30
Teachers	course coordinator dr.sc. Mladen Lovreček , izvanredni profesor, class type:Lectures course coordinator Pred. Maja Turčić dipl.ing., predavač, class type:Lectures course coordinator Aleksandra Bernašek , asistent, class type:Laboratory exercises dr.sc. Mladen Lovreček , izvanredni profesor, class type:Laboratory exercises				
Course objectives	To introduce students to basic principles of graphic reproduction, record definition and image transfer through all phases of the process of reproduction, printing machines and materials				
Learning outcomes:	1.ability to formulate printing substrates. Level:6,7 2.ability to design graphic products. Level:6 3.ability to classify printing techniques. Level:6,7 4.ability to create and prepare a repro template. Level:6,7 5.ability to prepare photo mechanic printing procedures. Level:6,7 6.ability to test the devices used for measurements in and control of reproduction. Level:6,7				
Methods of carrying out lectures	Ex cathedra teaching Demonstration Simulations Oral presentations				
Methods of carrying out laboratory exercises	Laboratory exercises on laboratory equipment Laboratory exercises, computer simulations Laboratory excercises				
Course content lectures	1.Definition and classification of graphic products (publications), 2h, Learning outcomes:2 2.The phases graphic reproduction: prepress, printing and graphic finishing, 2h, Learning outcomes:3,4,6 3.Conventional and NIP techniques of graphic reproduction, 2h, Learning outcomes:3,6 4.Text and images as input informations, 2h, Learning outcomes:2 5.graphic reproduction as a form of transfer, processing and storing of information, 2h, Learning outcomes:6 6.The role of computers in graphic reproduction, 2h, Learning outcomes:2,5 7.Interaction of graphic communication with other forms of communication, 2h, Learning outcomes:3 8.Printing and printing machines, 2h, Learning outcomes:1,3 9.Printing forms, 2h, Learning outcomes:1,3 10.Materials (printing surface), 2h, Learning outcomes:1,4 11.Methods of measurement and control in printing reproduction, 2h, Learning outcomes:1,4,6 12.Transformation in forms suitable for graphic reproduction, 2h, Learning outcomes:1,2 13.Photomechanical and digital processes of generating and transmitting images, 2h, Learning outcomes:5 14.Structure and use of laser devices, 2h, Learning outcomes:5 15.Areas of spectral sensitivity and spectral emission, 2h, Learning outcomes:5				
Course content laboratory	1.Printing forms, 2h, Learning outcomes:5 2.Distinguishing of printing techniques, 2h, Learning outcomes:3 3.Introducing of printing substrates, 2h, Learning outcomes:1 4.Characteristics and preparation of reproduction templates, 2h, Learning outcomes:4 5.Photomechanical processes, 2h, Learning outcomes:5 6.Methods and devices for measuring and reproduction control, 2h, Learning outcomes:6 7.Introducing of graphic products, 2h, Learning outcomes:2 8.Colloquium 1, 2h, Learning outcomes:1,2,3,4,5,6 9.Exercises in printing house, 4h, Learning outcomes:2,6 10.Exercises in printing house, 4h, Learning outcomes:1,3,4 11.Exercises in printing house, 4h, Learning outcomes:4,5,6 12.Colloquium 2, 2h, Learning outcomes:1,2,3,4,5,6 13.No classes 14.No classes 15.No classes				
Required materials	Special purpose computer laboratory Laboratory excercises				
Exam literature	Basic literature: 1. W. Sobotka, Printing beyond 2000, Intergrafika Proceedings, Zagreb, 1998 2. Tehnička enciklopedija svezak XIII, Leksikografski zavod, Zagreb, 1998 3. D. Babić, Uvod u Grafičku tehnologiju, Grafički centar, Zagreb 1998. 4. Almanah hrvatskog tiskarstva i nakladništva, Horizont press, Zagreb, 1997 5. H. Kipphan: Handbook of Print Media, Heidelberg-Springer Verlag, 2002 (eng.) Additional literature:				
Students obligations	maximum of 2 absences from exercises				
Knowledge evaluation during semester	Colloquium #2#50#100$				
Knowledge evaluation after semester	Written and oral exam.				
Remark	This course can be used for final thesis theme				
Prerequisites:	No prerequisites.				

Code WEB/ISVU	19065/22755	**ECTS**	4	**Department**	
Name	Graphics Techniques				
Status	3rd semester - Compulsory courses - IT Design				
Teaching mode	Lectures + exercises (auditory + laboratory + seminar + metodology + construction) work at home				30+30 (30+0+0+0) 60
Teachers	course coordinator dr.sc. Tomislav Kosić , profesor visoke škole, class type:Lectures course coordinator Pred. Maja Turčić dipl.ing., predavač, class type:Lectures dr.sc. Tomislav Kosić , profesor visoke škole, class type:Auditory exercises				
Course objectives	To introduce students to the origin and use of printing substrates, graphic colours and graphic varnish, printing techniques and advantages of printing substrates and colours in regard to printing techniques, computer systems used to control printing				
Learning outcomes:	1.ability to present the history of printing substrates. Level:6,7 2.ability to analyse the raw materials used in paper, carton and cardboard manufacturing. Level:6 3.ability to identify the types of printing substrates. Level:6 4.ability to estimate the effects of microclimatic conditions on printing substrates. Level:6,7 5.ability to analyse the printing substrates parameters. Level:6 6.ability to analyse the theory of colours. Level:6 7.ability to define components of graphic colours. Level:6,7 8.ability to distinguish between different mechanisms used for drying colour. Level:6 9.ability to be familiar with basic printing techniques. Level:6 10.monitoring of control pegs during the printing. Level:6 11.determine the tasks of graphical industry and errors that occur during the printing process. Level:7				
Methods of carrying out lectures	Ex cathedra teaching Questions and answers Other Lectures and analyzing of existing techniques in the printing industry with presentation of the material in digital form.				
Methods of carrying out auditory exercises	Other Laboratory exercises on the field.				
Course content lectures	1.Historical overview and basic informations about graphical materials, 2h, Learning outcomes:1,3 2.Basic raw materials for production of fibrous materials; Fillers, binders, a milling processes and dyes as components for paper making, 2h, Learning outcomes:2 3.Characteristics of papre making machine, 2h, Learning outcomes:5 4.Properties and testing of paper, 2h, Learning outcomes:2,5 5.Basic graphic colors; Color theory, 2h, Learning outcomes:6 6.Components for printing ink formulating: fillers, pigments, binders, solvents, resins and desiccants or driers, 2h, Learning outcomes:6,7 7.Thickness of paint on the printing surface and basic characteristics and properties of color, 2h, Learning outcomes:6 8.Drying process in color printing, 2h, Learning outcomes:8 9.Thermo colors, 2h, Learning outcomes:6,7 10.History and fundamentals of printing, 2h, Learning outcomes:3,9 11.Tasks of graphical industry and printing functions, 2h, Learning outcomes:11 12.Basic printing techniques: high, offset, intaglio, screen, flexo and digital printing, 2h, Learning outcomes:9 13.Control pegs in the press, 2h, Learning outcomes:10 14.Varnishing of prints, 2h, Learning outcomes:4 15.The errors in the printing process, 2h, Learning outcomes:11				
Course content auditory	1.Visit to Printing house Zagreb, 3h, Learning outcomes:3,5,9,10 2.Visit to Graphical institute of Croatia, 3h, Learning outcomes:3,4,6,7,8,9,11 3.Visit to Printing house Printera, 3h, Learning outcomes:3,5,10 4.Visit to Printing house Lana, 3h, Learning outcomes:1,2,3,4,10,11 5.Visit to Printing house Kerch, 3h, Learning outcomes:3,7,10 6.There are no classes 7.There are no classes 8.There are no classes 9.There are no classes 10.There are no classes 11.There are no classes 12.There are no classes 13.There are no classes 14.There are no classes 15.There are no classes				
Required materials	Basic: classroom, blackboard, chalk... Overhead projector Laboratory exercises on the field.				
Exam literature	Basic literature: 1. Helmut Kipphan, HANDBOOKOF PRINTMEDIJA, Springer, 2001. Germany 2. Nikola Tanhofer, O boji na filmu i srodnim medijima, Novi liber, 2000. Zagreb 3. Andrijano Golubović, Tehnologija izrade i svojstva papira, VGŠ, 1984. Zagreb Additional literature: 1. www. iarigai.com www. Imaging.org www. ambalaza.com www. studijdizajna.com/tkosic				

Students obligations	maximum of 2 absences from exercises and lectures
Knowledge evaluation during semester	Regular attendance#10#10#70$Colloquium, theoretical issues #1#40#50$
Knowledge evaluation after semester	Oral exam#1#100#60$
Remark	This course can be used for final thesis theme
Prerequisites:	No prerequisites.
Proposal made by	Tomislav Kosić

Code WEB/ISVU	19070/22396	**ECTS**	4	**Department**	
Name	Information Technique				
Status	4th semester - Elective courses				
Teaching mode	Lectures + exercises (auditory + laboratory + seminar + metodology + construction) work at home				30+30 (15+15+0+0) 60
Teachers	course coordinator dr.sc. Željko Širanović , viši predavač, class type:Lectures course coordinator Dunja Bjelobrk Knežević dipl.ing, predavač, class type:Auditory exercises Dunja Bjelobrk Knežević dipl.ing, predavač, class type:Laboratory exercises				
Course objectives	To qualify students for retrieving information				
Learning outcomes:	1.ability to analyse signals and noise in a communication channel. Level:6 2.ability to design optimized source signals according to a predefined protection code. Level:6 3.ability to design signals of the information source according to a predefined optimal code. Level:6 4.ability to calculate the capacity of a binary symmetric channel according to predefined parameters. Level:6 5.ability to calculate the entropy of a communication channel. Level:6 6.ability to analyse the nature of the information source. Level:6				
Methods of carrying out lectures	Ex cathedra teaching Case studies Demonstration Discussion Questions and answers Seminar, students presentation and discussion Homework presentation The subject matter is taught by using graphs, drawings and tables. The electronic version of lectures is available in order to enable exact form of teaching. Students are constantly asked questions in order to take an active part in class. Teaching equipment: board, overhead projector and LCD projector.				
Methods of carrying out auditory exercises	Group problem solving Traditional literature analysis Data mining and knowledge discovery on the Web Discussion, brainstorming Interactive problem solving Workshop The topic-related tasks are solved on the board with students taking an active part				
Methods of carrying out laboratory exercises	Laboratory exercises, computer simulations Group problem solving Data mining and knowledge discovery on the Web Essay writing Computer simulations Workshop				
Course content lectures	1.Mathematical characteristics of of information and information entropy, 2h, Learning outcomes:5,6 2.Mathematical characteristics of of information and information entropy, 2h, Learning outcomes:5,6 3.Mathematical characteristics of of information and information entropy, 2h, Learning outcomes:5,6 4.Information and communication chanells, 2h, Learning outcomes:1 5.Information and communication chanells, 2h, Learning outcomes:1 6.Information source and source coding, 2h, Learning outcomes:6 7.Information source and source coding, 2h, Learning outcomes:6 8.Suboptimal and optimal coding, 2h, Learning outcomes:3 9.Suboptimal and optimal coding, 2h, Learning outcomes:3 10.Suboptimal and optimal coding, 2h, Learning outcomes:3 11.Error-detection and error-correction coding, 2h, Learning outcomes:2 12.Error-detection and error-correction coding, 2h, Learning outcomes:2 13.Error-detection and error-correction coding, 2h, Learning outcomes:2 14.Channel coding and noisy channel, 2h, Learning outcomes:1,4 15.Channel coding and noisy channel, 2h, Learning outcomes:1,4				
Course content auditory	1.Calculating Probability and Describing a Discrete Information System , 1h, Learning outcomes:1,6 2.Calculating a Communication Channel Transfer Based on Predefined Transfer Values, 1h, Learning outcomes:1,6 3.Calculating a Communication Channel Transfer Based on Predefined Transfer Values, 1h, Learning outcomes:1,6 4.Calculating the Capacity of a Binary Symmetric Channel , 1h, Learning outcomes:4 5.Entropy and an Unexpected Event, Calculating Entropy, 1h, Learning outcomes:5 6.Entropy and an Unexpected Event, Calculating Entropy, 1h, Learning outcomes:5 7.Entropy and Markov Information Source, 1h, Learning outcomes:5 8.Techniques of Source Coding (Shannon-Fano, Huffman, Arithmetic Coding), 1h, Learning outcomes:3 9.Techniques of Source Coding (Shannon-Fano, Huffman, Arithmetic Coding), 1h, Learning outcomes:3 10.Techniques of Source Coding (Shannon-Fano, Huffman, Arithmetic Coding), 1h, Learning outcomes:2 11.Techniques of Channel Coding (Prefix, Parity, Hamming, Cyclic, BCH, Convolution codes), 1h, Learning outcomes:2 12.Techniques of Channel Coding (Prefix, Parity, Hamming, Cyclic, BCH, Convolution codes), 1h, Learning outcomes:2 13.Techniques of Channel Coding (Prefix, Parity, Hamming, Cyclic, BCH, Convolution codes), 1h, Learning outcomes:1,2,3,6 14.Signals and signal sampling, 1h, Learning outcomes:1,2,3,6 15.Final exam, 1h, Learning outcomes:1,2,3,4,5,6				
Course content laboratory	1.Communication channels and entropy, 1h, Learning outcomes:5,6 2.Communication channels and entropy, 1h, Learning outcomes:5,6 3.Communication channels and entropy, 1h, Learning outcomes:5,6 4.Communication channels and entropy, 1h, Learning outcomes:5,6				

	5.Implementation of source coding, 1h, Learning outcomes:3 6.Implementation of source coding, 1h, Learning outcomes:3 7.Implementation of source coding, 1h, Learning outcomes:3 8.Implementation of source coding, 1h, Learning outcomes:3 9.Implementation of Channel Coding, 1h, Learning outcomes:2 10.Implementation of Channel Coding, 1h, Learning outcomes:2 11.Implementation of Channel Coding, 1h, Learning outcomes:2 12.Implementation of Channel Coding, 1h, Learning outcomes:2 13.Signals and signal sampling, 1h, Learning outcomes:1,2,3,6 14.Signals and signal sampling, 1h, Learning outcomes:1,2,3,6 15.Final exam, 1h, Learning outcomes:1,2,3,4,5
Required materials	Basic: classroom, blackboard, chalk... General purpose computer laboratory Whiteboard with markers Overhead projector Video equipment
Exam literature	Basic literature: 1. Igor S. Pandžić i ostali: Uvod u teoriju informacija, Element, Zagreb, 2007. Additional literature: 1. Matković, Sinković: Teorija informacije, Školska knjiga, Zagreb, 1988. 2. Ž.Pauše: Vjerojatnost - Informacija, stohastički procesi, Školska knjiga, Zagreb, 1988.
Students obligations	maximum of 3 absences from exercises
Knowledge evaluation during semester	Redovitost pohaa#8#5#100$Mini-test#6#15#50$Kolokvij, numeri zadaci#3#35#50$Kolokvij, teorijska pitanja#3#35#50$Programski zadatak#1#5#50$Domazada5#5#50$
Knowledge evaluation after semester	Written and oral exam: four to five tasks, seninar task, understanding of basic theoretic terms.
Remark	This course can be used for final thesis theme
Prerequisites:	No prerequisites.
Proposal made by	Željko Širanović, Dunja Bjelobrk

Code WEB/ISVU	19380/111756	**ECTS**	5	**Department**	
Name	Innovations in information technology				
Status	4th semester - Elective courses				
Teaching mode	Lectures + exercises (auditory + laboratory + seminar + metodology + construction) work at home				30+30 (30+0+0+0) 0
Teachers	course coordinator prof. dr. sc. Jana Žiljak Vujić , voditelj studija Informatike, profesor visoke škole, class type:Lectures Ana Hoić , asistent, class type:Auditory exercises mag.des. Ulla Leiner Maksan , asistent, class type:Auditory exercises				
Course objectives	To transfer to students the basic knowledge related to the field of innovations and their significance in business processes and technological development. To qualify students to improve their ideas, procedures and processes for a more successful business environment. To introduce students to innovation patent application process.				
Learning outcomes:	1.ability to analyse the area of a specific task. Level:6 2.ability to highlight innovations with competitive advantages. Level:6 3.ability to prepare an innovation concept design . Level:6,7 4.ability to design a proposal for an innovation. Level:6,7 5.ability to formulate a solution to innovation. Level:6 6.ability to design an innovation. Level:6 7.ability to write documentation for the innovation proposal (diagram, graph, map). Level:6 8.ability to present the innovation project. Level:6,7				
Methods of carrying out lectures	Ex cathedra teaching Demonstration Discussion Questions and answers Seminar, students presentation and discussion				
Methods of carrying out auditory exercises	Laboratory exercises, computer simulations Group problem solving Discussion, brainstorming Interactive problem solving				
Course content lectures	1.The impact of innovation on the progress of the economy, originality as a result of their own intellectual effort of the inventor, 2h, Learning outcomes:1 2.Defining the theme of innovation and setting up task, 2h, Learning outcomes:1,2 3.Setting up a plan of development and realization of ideas, 2h, Learning outcomes:2,3 4.Testing innovative concept, selection phase and inner guidance to innovation, 2h, Learning outcomes:3,4,6 5.Planning and adjustment system in which innovative project find its application, 2h, Learning outcomes:3,4,5 6.Innovative concept presentation in front of a group, 2h, Learning outcomes:3,8 7.Process of registering a patent theoretical approach, intellectual property protection, 2h, Learning outcomes:5,6 8.Innovation project checking, project and compliance with the law and the market proposal, 2h, Learning outcomes:1,5 9.Possible market projection, areas of interest identifying and their solutions offering in a real environment, 2h, Learning outcomes:7 10.Project prezentation in front of a group, 2h, Learning outcomes:8 11.Innovations critical analysis- development planning and solutions correction, 2h, Learning outcomes:7 12.Critical issues setting -second checks and innovative solutions defining, 2h, Learning outcomes:7 13.Making of presentation final solution , 2h, Learning outcomes:6,7 14.Innovative products benefits and existing applications improvement, 2h, Learning outcomes:1,7 15.Innovative solutions exposure - innovation exhibition simulation,selection works jury , 2h, Learning outcomes:8				
Course content auditory	1.Introductory exercises and concept of innovation definition, problem solving innovative approach , 2h, Learning outcomes:1 2.Innovation topics defining and set up a task, 2h, Learning outcomes:1,2 3.Setting up a plan of development and realization of ideas, 2h, Learning outcomes:2,3 4.Testing innovative concept selection phase and inner guidance to innovation, 2h, Learning outcomes:3,4,6 5.Planning and adjustment system in which innovative project find its application, 2h, Learning outcomes:3,4,5 6.Innovative concept presentation in front of a group, 2h, Learning outcomes:3,8 7.Process of registering a patent practical approach, intellectual property protection, 2h, Learning outcomes:5,6 8.Innovation project checking, project and compliance with the law and the market proposal, 2h, Learning outcomes:1,5 9.Possible market projection, areas of interest identifying and their solutions offering in a real environment, 2h, Learning outcomes:7 10.Project prezentation in front of a group, 2h, Learning outcomes:8 11.Innovations critical analysis- development planning and solutions correction, 2h, Learning outcomes:7 12.Critical issues setting -second checks and innovative solutions defining, 2h, Learning outcomes:7 13.Making of presentation final solution , 2h, Learning outcomes:6,7 14.Innovative products benefits and existing applications improvement, 2h, Learning outcomes:1,7 15.Innovative solutions exposure - innovation exhibition simulation,selection works jury , 2h, Learning outcomes:8				
Required materials	Basic: classroom, blackboard, chalk... General purpose computer laboratory Whiteboard with markers Overhead projector				
Exam literature	Basic literature: 1.Juraj Božićević: Inovacijska kultura i tehnologijski razvoj, Hrvatsko društvo za sustave, Zagreb, 2009. 2.HRVATSKI GLASNIK INTELEKTUALNOG VLASNIŠTVA#8232;Službeno glasilo Državnog zavoda za intelektualno vlasništvo Additional literature:				

	1.Carmine Gallo: Steve Jobs tajne njegovih inovacija; Školska knjiga dd., Zagreb, 2011.
Students obligations	maximum of 3 absences from exercises
Knowledge evaluation during semester	Programski zadatak#1#60#60$Pisana provjera znanja#2#20#20$Usmena provjera znanja#1#20#20$
Knowledge evaluation after semester	written exams,oral exams, practical work
Remark	This course can be used for final thesis theme
Prerequisites:	No prerequisites.
Proposal made by	dr. sc. Jana Žiljak Vujić, prof. vis. šk.

Code WEB/ISVU	19119/63143	**ECTS**	4	**Department**	
Name	Introduction to (X)HTML and CSS				
Status	1st semester - Compulsory courses				
Teaching mode	Lectures + exercises (auditory + laboratory + seminar + metodology + construction) work at home				30+30 (0+30+0+0) 60
Teachers	course coordinator Sanja Duk , dipl.ing., predavač, class type:Lectures course coordinator mr.sc. Tomislav Stojanov , viši predavač, class type:Lectures dr. sc. Roman Domović , prof., predavač, class type:Laboratory exercises Sanja Duk , dipl.ing., predavač, class type:Laboratory exercises mr.sc. Tomislav Stojanov , viši predavač, class type:Laboratory exercises				
Course objectives	To introduce students to practical and theoretical aspects of using HTML and CSS, the basic markup languages for making the Web based content and layout. Students will learn how to design and code Web pages. The process of building a modern Web site will be presented (from buying a domain name to Web site finalization). [To successfully adopt the course material does not require prior knowledge of the Web development or Web building software.]				
Learning outcomes:	1.ability to distinguish between different languages used for designing Web sites (HTML 4.01, HTML5, CSS 2.1 and CSS3) and to get familiar with the languages through their theoretical and practical usage in the context of markup languages. Level:6 2.ability to write a code in (X)HTML and in CSS and design a Web page to meet the requests of the W3C validation, contemporary character code representation, basic design, functionality and standards of a semantic Web. Level:6,7 3.ability to design a webpage and to arrange the code elements of a Web page using various techniques 00 tables, frames, margins, positioning, floating and grids. Level:6 4.ability to understand why in certain cases one and the same code is shown differently in different browsers; to understand the way in which a browser displays a Web page; to understand how to avoid problems. Level:7 5.ability to compare different criteria which determine the quality of Web sites (benchmark and validation tests). Level:6,7 6.ability to evaluate tools used for Web site design (browsers, plugins, code editors, office applications and packages, graphical user interfaces, etc.). Level:7 7.ability to take a critical attitude towards technologies used in the Web site design (videocodecs, audiocodecs, open-source software or platform, the future of HTML and CSS, etc.) . Level:7 8.ability to anticipate the direction of the development of the technology of data display on the Web using HTML5 and CSS3. Level:6,7 9.identify future technologies on Web (operating systems on the Internet, a close connection between application software and Web sites, design with multi-resolution interfaces etc.. Level:6 10.ability to identify a need for general computer literacy. Level:6 11.ability to identify inconstancy of contemporary web technologies and identify a need for continuous improvement. Level:6 12.ability to give students directions on which knowledge sources to use (printed materials, Internet sources, turorials, etc.). Level:7 13.ability to plan one's own advancement in JavaScript, server-oriented programming languages and other technologies. Level:6,7 14.suggest to plan business career by opening own startup company. Level:6,7 15.support of computational terminology in Croatian language and to increase internet content with text written in Croatian language. Level:7 16.ability to integrate more Web pages into Web site and connect them with absolute and relative links. Level:6,7 17.ability to prepare and optimize images and photos for Web site; choose a suitable format. Level:6,7 18.ability to formulate webpage key words and to set metadata. Level:6,7 19.ability to design horizontal or vertical navigation bar, adjust it to a webpage content and ability to know how to code it. Level:6 20.ability to create a Web page adapted to the needs of different browser width layout or media. Level:6,7 21.ability to link multimedia elements into a Web page (audio, video, web mapping services). Level:6,7				
Methods of carrying out lectures	Ex cathedra teaching Demonstration Questions and answers Seminar, students presentation and discussion Other Talk and discussion. Public polling and voting. Answering to questions that are bonus marked.				
Methods of carrying out laboratory exercises	Laboratory exercises on laboratory equipment Essay writing Discussion, brainstorming Other Surveying and voting. Work in Moodle (e-learning portal).				
Course content lectures	1.Motivational lecture and introduction to markup languages. Future of web. Internet startups., 2h, Learning outcomes:1,9,10,11,12,13,14,15 2.Web development and markup languages. Validation. Webpage development fundamentals. Webpage design technologies. Basic syntax. Absolute and relative links. Downloads., 2h, Learning outcomes:4,5,6,7,8,9,15 3.Basic web statistical indicators. Header and metadata. Strict, transitional and frame work modes. End of line. Byte-order mark (BOM). Work with images. Text image layout. External links (anchors). Frames. Favicons. Paragraphs. Lists., 2h, Learning outcomes:5,6 4.Character representation and characters support for Croatian. Redirections. iFrames. Anchorage in different frames. Tables and their modifications. HTML forms., 2h, Learning outcomes:6,9,15 5.Features of semantic Web, content and layout aspects. Introduction to CSS. Position of a code in CSS and the relation to HTML. Classes. Identifiers. Background, text, font, link and list selectors. Rising and falling line., 2h, Learning outcomes:7,8,12 6.Box model. Block and inline elements. div and span. Cursors. Borders, margins, paddings. CSS Media Types. CSS priorities. Webpage quality benchmarks: ACID, Pingdom, W3 Validator, Nibbler, GTmetrix. Nonbreaking space. Browsers., 2h, Learning outcomes:4,5,6,7,12				

	7.CSS units and measures. Dimensioning. Klassification. Relative, absolute and fixed positioning. Conditional comments for Internet Exporer., 2h, Learning outcomes:1,4 8.Webpage elements composition and structure. Basic design. Horizontal and vertical navigation bar coding. Link stylization and roll-over menu effects., 2h, Learning outcomes:3,4,12 9.Floating - basic and advanced aspects., 2h, Learning outcomes:2,3,7 10.Responsive web design technology (RWD). Pseudoclasses and i pseudoelements. Lorem ipsum. Firebug add-on for Mozilla Firefox., 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.no class, 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:2,3,16 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. First mid-term exam., 2h, Learning outcomes:2,3 10.Exercise related to responsive webpage design (RWD) depending on webpage width and media., 2h, Learning outcomes:2,3,20 11.Exercise related to making navigation bar with images and image sprites., 2h, Learning outcomes:2,3 12.Exercise related to complete webpage designing, coding and development. Second mid-term exam., 2h, Learning outcomes:2,3 13.Exercise related to making picture shadows and transparency, rounded corners, text effects and inserting YouTube, Google Maps and audio frames., 2h, Learning outcomes:2,3,21 14.Exercise related to grid layout, webpage validation, using browser development tools Mozilla Firebug and Chrome Inspect Elements., 2h, Learning outcomes:2,3,6,9 15.Final exam preparation., 2h, Learning outcomes:2,3
Required materials	Basic: classroom, blackboard, chalk... General purpose computer laboratory Whiteboard with markers Overhead projector Special equipment Latest software version installed (Mozilla Firefox, Internet Explorer, Google Chrome, Firebug, Notepad++, NetSupport School). Internet connection. E-learning portal Merlin (http://merlin.srce.hr/).
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/). (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/).
Students obligations	Course e-learning portal (Moodle) enrollment. Twelve (12) points.
Knowledge evaluation during semester	Active work on exercises that are evaluated - 1 point (max. 11 points). Success on mid-term exam - 1 point (max. 6 points). Additional task done on mid-term exam - 1 point (max. 6 points). Quick theoretical online exam - 1 point (max. 2 points). Quick theoretical online exam with full score - 1 point (max. 2 points). Lecture attendance - 1 point (max. 1 point). Exceptional devotion and motivation - 1 point (max. 1 point). Essay or seminar - 1 point (max. 1 point).
Knowledge evaluation after semester	Webpage development that includes code markup of basic layout, navigation, background and front images, links, text and CSS design. With 20 points students do not have to take final exam and are given the highest mark (5).
Remark	This course can be used for final thesis theme
Prerequisites:	No prerequisites.
Proposal made by	Tomislav Stojanov, MA, 2014-01-21

Code WEB/ISVU	19105/22420	**ECTS**	4	**Department**	
Name	Introduction to Computer Networks				
Status	4th semester - Compulsory courses - Office Organization and Informatization				
Teaching mode	Lectures + exercises (auditory + laboratory + seminar + metodology + construction) work at home				30+30 (0+30+0+0) 60
Teachers	course coordinator dr.sc. Željko Širanović , viši predavač, class type:Lectures Ognjen Mitrović , asistent, class type:Laboratory exercises dr.sc. Željko Širanović , viši predavač, class type:Laboratory exercises				
Course objectives	To transfer to students the basic knowledge related to LAN technologies				
Learning outcomes:	1.ability to distinguish between a physical and a logical computer network. Level:6 2.ability to take a critical attitude towards LAN and WAN structures. Level:7 3.ability to distinguish between the ISO OSI i TCPIIP network models. Level:6 4.ability to choose the basic network components, such as a hub, a switch and a router. Level:7 5.ability to create IP addresses and network faceplates for a specific local area network by using the VLSM methodology. Level:6,7 6.ability to configure properly a router and network hosts in a local area network. Level:6,7 7.ability to connect two local area networks via a router. Level:6,7				
Methods of carrying out lectures	Ex cathedra teaching Case studies Demonstration Simulations Modelling Discussion Questions and answers Seminar, students presentation and discussion Homework presentation Frontally, oral presentations illustrated with presentations about actual solutions, numerical examples, along with the application of contemporary presentation technologies. Multi-media teaching material will be used with screen projections, also available online.				
Methods of carrying out laboratory exercises	Laboratory exercises on laboratory equipment Laboratory exercises, computer simulations Group problem solving Traditional literature analysis Data mining and knowledge discovery on the Web Discussion, brainstorming Computer simulations Interactive problem solving Workshop Familiarization with components, creation of a network installation. Putting the network into operation, signal and traffic measuring. Analyzing obtained data.				
Course content lectures	1.Computer network basics , 2h, Learning outcomes:1,2 2.The OSI model , 2h, Learning outcomes:3 3.TCP/IP model , 2h, Learning outcomes:3 4.Understanding the function of main protocols , 2h, Learning outcomes:3 5.Physical and logical topology , 2h, Learning outcomes:1,2 6.Numbering system , 2h, Learning outcomes:4 7.Classful IP adrdessing , 2h, Learning outcomes:5 8.Classless IP addressing , 2h, Learning outcomes:5 9.Media for connecting the networks and devices , 2h, Learning outcomes:2,3,4 10.Network devices and komponents, 2h, Learning outcomes:3,4,5 11.Understanding LAN operations , 2h, Learning outcomes:3,4 12.Basic configuring routers routers IOS , 2h, Learning outcomes:3,6 13.Basic configuring routers cabling, connecting and configuring interfaces , 2h, Learning outcomes:4,6 14.Configuring static and dynamic routing static routing , 2h, Learning outcomes:1,2,3,4,5,6,7 15.Configuring static and dynamic routing dynamic routing , 2h, Learning outcomes:1,2,3,4,5,6,7				
Course content laboratory	1.Designing and testing network cables , 2h, Learning outcomes:1,7 2.Cabling a local and a nonlocal network, 2h, Learning outcomes:1,2,7 3.Network Mathematics and network bandwidth, 2h, Learning outcomes:5 4.Calculating IP addresses and subnetworks, 2h, Learning outcomes:5 5.Calculating IP addresses and subnetworks, 2h, Learning outcomes:5 6.Setting up and connecting network components in a LAN, 2h, Learning outcomes:2,3,4,5 7.Setting up and connecting network components in a LAN, 2h, Learning outcomes:2,3,4,5 8.Collision and broadcasting domains, 2h, Learning outcomes:4,5 9.Collision and broadcasting domains, 2h, Learning outcomes:4,5 10.Ethernet traffic, 2h, Learning outcomes:2,3 11.Ethernet traffic, 2h, Learning outcomes:2,3 12.Basic configuration of a router, 2h, Learning outcomes:5,6 13.Basic configuration of a router, 2h, Learning outcomes:5,6 14.Basic configuration of a router, 2h, Learning outcomes:5,6 15.Connecting a LAN with the Internet, 2h, Learning outcomes:1,2,3,4,5,6,7				
Required materials	Basic: classroom, blackboard, chalk... Special purpose laboratory Special purpose computer laboratory Whiteboard with markers				

	Overhead projector Video equipment Tools Operating supplies Special equipment Familiarization with components, creation of a network installation. Putting the network into operation, signal and traffic measuring. Analyzing obtained data.
Exam literature	Basic literature: 1. McMillan, T.,(2012), Cisco Networking Essential, John Wiley Sons, Inc. Additional literature: Hartpence, B., (2011) Packet Guide to Core Network Protocols, O04Reilly Media, Inc.
Students obligations	maximum of 3 absences from exercises
Knowledge evaluation during semester	Redovitost pohaa#10#10#30$Kolokvij, numeri zadaci#1#10#60$Kolokvij, teorijska pitanja#3#30#60$Prakti rad#15#40#60$Prakti ispit#1#10#60$
Knowledge evaluation after semester	10 colloquiums. Attending laboratory exercises is a prerequisite for signature. The practical part of the exam contains one real-life problem on the basis of the covered material. Oral exam, if student passes the practical part of the exam.
Remark	This course can be used for final thesis theme
Prerequisites:	No prerequisites.
Proposal made by	Željko Širanović

Code WEB/ISVU	19104/22404	**ECTS**	6	**Department**	
Name	Introduction to e-Business				
Status	2nd semester - Compulsory courses				
Teaching mode	Lectures + exercises (auditory + laboratory + seminar + metodology + construction) work at home				30+30 (0+30+0+0) 120
Teachers	course coordinator Mr.sc. Olivia-Silvana Prlić viši predavać, viši predavač, class type:Lectures Mr.sc. Olivia-Silvana Prlić viši predavać, viši predavač, class type:Laboratory exercises				
Course objectives	The course enables student understanding problems related with electronic business in tactical, and operative aspects.				
Learning outcomes:	1.ability to develop the ability of understanding the issues related to the tactical and operating aspects of e-business . Level:6,7 2.ability to design a transition scheme of both the traditional and electronic business, to evaluate and apply the transition scheme . Level:6 3.ability to give comments on choosing a specific e-business model and a specific typology of e-business models. Level:6 4.ability to analyse e-business, e-commerce and e-market in today's economy. Level:6 5.ability to present today's systems, processes and instruments of both electronic and mobile payment. Level:6,7 6.ability to analyse the security policy and use of the public key infrastructure, standards of DES data encryption. Level:6,7 7.ability to analyse e-marketing and marketing tools. Level:6 8.Connect second generation of e-business Web 2.0. Level:6,7 9.Defend attitude of perspective develop of mobile bussines and cloud computing. Level:7 10.ability to sketch a design of a corporation Web site. Level:6 11.ability to create the organisation of a corporation Web site, headlines, navigation, online forms; to evaluate the design of a Web site. Level:6,7 12.ability to handle management and maintenance of a corporation Web site. Level:6 13.ability to create a plan of a corporation Web site marketing. Level:6,7 14.ability to design ads for marketing purposes. Level:6				
Methods of carrying out lectures	Ex cathedra teaching Guest lecturer Case studies Demonstration Discussion Seminar, students presentation and discussion Lectures are presented as combination of the theoretical frame with large number of practical casers. The students are motivated to express their own either positive or negative cases.				
Methods of carrying out laboratory exercises	Laboratory exercises, computer simulations Group problem solving Discussion, brainstorming Mind mapping Interactive problem solving Workshop Students develops own projects, commercial Web site example.				
Course content lectures	1.Introductory lecture. Representing moduls of E-business. Electronic business of first and second generation,, 2h, Learning outcomes:1 2.Concepts of first and second generation of e-business. Application areas of E-business concepts. Tactics and strategies in E-business., 2h, Learning outcomes:1 3.Business models in E-business and model selection in E-business. Porter, 2h, Learning outcomes:3 4.Digital marketplace. Software connections, interoperability and data exchange standards - electronic data exchange., 2h, Learning outcomes:6 5.E-commerce, CRM-customer relationship management. E-processes in E-marketing. E-bills and standards. Digital signature., 2h, Learning outcomes:4,6 6.Systems, processes and instruments of e-payment. Financial transactions - E-banking, M-banking. Tactics for solving security problems in E-business, using infrastructure of public key, DES standards for data encryption, e-business legislation., 2h, Learning outcomes:5,6 7.E-marketing. Viral marketing. Affiliate marketing. Tools in e-marketing. SEO and SEM, 2h, Learning outcomes:7 8.Colloquium 1, 2h, Learning outcomes:1,2,3,4,5,6,7 9.Second generation of e-business Web 2.0. Business models of second generation. Social business and social networking., 2h, Learning outcomes:8 10.Cloud computing. Developed models of cloud business., 2h, Learning outcomes:9 11.Mobile business. Developed models of mobile business., 2h, Learning outcomes:9 12.Business cases of business in cloud and mobile business. Examples of successful implementation., 2h, Learning outcomes:9 13.Developing perspectives of e-business Web3.0. Semantic web. New form in e-business 3D print - 3D print technology., 2h, Learning outcomes:8 14.Students presentations, 2h, Learning outcomes:10,11,12,13,14 15.Colloquium 2, 2h, Learning outcomes:8,9,10,11,12,13,14				
Course content laboratory	1.Creating dynamic corporate web page in teams. Web analytics related to last lecture., 2h, Learning outcomes:10,11,12,13,14 2.Sketch shapes of corporate web place.Web analytics related to last lecture., 2h, Learning outcomes:10 3.Create structure of corporate web place, home page, navigation, online forms. Web analytics related to last lecture., 2h, Learning outcomes:11 4.Web place design evalutaion. Web analytics related to last lecture., 2h, Learning outcomes:11 5.Solve handling and maintenance of corporate web. Web analytics related to last lecture., 2h, Learning outcomes:11,12 6.Marketing plan developing of corporate web place. Web analytics related to last lecture., 2h, Learning outcomes:13				

	7.Design of web ads in marketing. Web analytics related to last lecture., 2h, Learning outcomes:14 8.Team web site development. Web analytics related to last lecture., 2h, Learning outcomes:10,11,12,13,14 9.Team web site development. Web analytics related to last lecture., 2h, Learning outcomes:10,11,12,13,14 10.Team web site development. Web analytics related to last lecture., 2h, Learning outcomes:10,11,12,13,14 11.Team web site development. Web analytics related to last lecture., 2h, Learning outcomes:10,11,12,13,14 12.Team web site development. Web analytics related to last lecture., 2h, Learning outcomes:10,11,12,13,14 13.Project presentations and documentation handover., 2h, Learning outcomes:10,11,12,13,14 14.Business case in mobile business., 2h, Learning outcomes:9 15.Business case in cloud business., 2h, Learning outcomes:9
Required materials	Basic: classroom, blackboard, chalk... Special purpose laboratory General purpose computer laboratory Whiteboard with markers Overhead projector Video equipment Students develops own projects, commercial Web site example.
Exam literature	Basic literature: 1. mr.sc.Olivia-Silvana Prlić: Elektronički sadržaj predavanja (PPT prezentacije) i studentske prezetacije na Web stranici predmeta na Tehničkom veleučilištu u Zagrebu,,slajdovi i nastavni materijali dobivaju se tijekom nastave, www.tvz.hr 2.Panian, Ž., (2013): "Elektroničko poslovanje druge generacije", udžbenik Sveučilišta u Zagrebu, Biblioteka INFORMATIKA, Ekonomski fakultet Sveučilišta u Zagrebu 3. Spremić, M., (2004): "Menadžment i elektroničko poslovanje", Narodne novine, Zagreb, 2004. 4. Dave Chaffey (2011): "E-Business and E-Commerce Management" - Strategy, Implementation and Practice (4th Edition) 5. Ravi Kalakota,Marcia Robinson: "E-poslovanje 2.0" - Vodič ka uspjehu, Mate, Zagreb, 2002. 6. mr.sc.Tin Matić (2010): "Kako pribaviti i koristiti elektronički potpis" Narodne novine d.d. Zagreb ,prosinac 2010 pravna biblioteka priručnika 7. mr.sc.Tin Matić: "Ugovor o Elektroničkoj razmijeni podataka", Zagreb (2010) Nakladnik: Ministarstvo gospodarstva,rada i poduzetništva 8. Mario Brown: "The Ultimate SEO Machine" - Search Engine Optimization Made Easy, Royal Internet Marketing,2012. 9. Adobe Creative Team: "Adobe Dreamweaver CS6 Classroom in a Book", Adobe Press,2012. Preporučena: 1. Praćenje stručnih časopisa i izazova u novim tehnologijama na Internetu 2. Jonas Ridderstrale, Kjell Nordstrm (2002): "Funky Business", Differo d.o.o., Zagreb 3. Jonas Ridderstrale , Kjell A. Nordstrom (2004): "Karaoke kapitalizam", Differo d.o.o., Zagreb
Students obligations	Regular attendance of lectures and exercises. Maximum of 2 absences from exercises.
Knowledge evaluation during semester	Colloquium#2#100#60$
Knowledge evaluation after semester	Written exam#2#50#60$Oral exam#2#50#60$
Remark	This course can be used for final thesis theme
Prerequisites:	No prerequisites.
Proposal made by	mr.sc.Olivia-Silvana Prlić

Code WEB/ISVU	19106/22403	**ECTS**	6	**Department**	
Name	Introduction to Office Automation				
Status	1st semester - Compulsory courses				
Teaching mode	Lectures + exercises (auditory + laboratory + seminar + metodology + construction) work at home				30+30 (0+30+0+0) 120
Teachers	course coordinator dr.sc. Alen Šimec predavač, predavač, class type:Lectures Danijela Pongrac , prof., predavač, class type:Laboratory exercises dr.sc. Alen Šimec predavač, predavač, class type:Laboratory exercises				
Course objectives	To qualify student to organize and computerize an office by means of modern technologies				
Learning outcomes:	1.ability to distinguish between different types of business information systems. Level:6 2.ability to distinguish between different types of business information systems organisation. Level:6 3.ability to make a plan of an office organisation. Level:6,7 4.ability to distinguish between different types of documents, the ways of their storage and regulations defining their validity. Level:6 5.ability to relate data administration to data modelling; to manage cipher systems. Level:6,7 6.ability to define the differences between Internet, intranet and extranet. Level:6 7.ability to formulate the criteria of quality of an information system. Level:6,7 8.ability to organise a computerized workplace according to a regulation book on security and health in workplaces which include computers. Level:6,7 9.ability to identify levels of computer and data protection. Level:6 10.ability to write documentation by using word processing tools. Level:6,7 11.ability to create spreadsheets by using program tools. Level:6,7 12.ability to make a presentation by using program tools . Level:6,7				
Methods of carrying out lectures	Ex cathedra teaching Case studies Discussion Other Material is delivered with maximum use of drawings, tables and diagrams to facilitate understanding, but also provides the concrete practices. Encourages the active participation of students in the classroom. Teaching aids: plates, PPT presentations, LCD projector				
Methods of carrying out laboratory exercises	Laboratory exercises, computer simulations Group problem solving Discussion, brainstorming Workshop Other Students in the computer made #8203;#8203;examples and tasks with the help of teachers.				
Course content lectures	1.Introductory lecture and teach students about the responsibilities and teaching material., 2h, Learning outcomes:2 2.Information systems in everyday and business environment., 2h, Learning outcomes:2 3.The process of preparing an information system for decision making, working diagram, the IS structure., 2h, Learning outcomes:2 4.Computer hardware support for Information System., 2h, Learning outcomes:2 5.The use of smart phones and portable devices in modern business., 2h, Learning outcomes:2 6.Software Information System and Business Intelligence., 2h, Learning outcomes:2 7.Assessment of information systems, computer hardware and software support. Check store of E-learning system Moodle., 2h, Learning outcomes:2 8.Use of cloud technologies in the Microsoft environment (MS tools: Word, Excel, Powerpoint, Outlook, Access, Microsoft Dynamics CRM, Sharepoint)., 2h, Learning outcomes:2 9.Application of Cloud technology in a business environment, a practical example of Croatian Telecom. Formatting and document preparation for writing CVs., 2h, Learning outcomes:2 10.Computer networks in the modern business environment, and its application in daily life., 2h, Learning outcomes:2 11.Services on the TCP / IP protocols, computer networks and their links., 2h, Learning outcomes:2 12.Data warehouse, CRM and his philosophy, application and storage of data in the database, file structure and data dictionary., 2h, Learning outcomes:2 13.Human Resources (lifeware) in the IT sector, participation, responsibilities and tasks., 2h, Learning outcomes:2 14.Ergonomic workplace, and safe use of computer equipment in their daily operations, 2h, Learning outcomes:2 15.Assessment of network technology in a contemporary setting, the services on the TCP / IP protocol, data warehouse, database, human resources (lifeware), ergonomic workspace. Check store of E-learning system Moodle., 2h, Learning outcomes:2				
Course content laboratory	1.Understanding the operating environment, applications with user data on a computer network and work with your computer., 2h, Learning outcomes:2 2.Working with the computer program MS Powerpoint, exploring the tools and problem solving. Working with documents in the cloud environment., 2h, Learning outcomes:2 3.Working with the computer program MS Word document formatting and preparation of documents for operation (margins, styles, text formatting). Working with documents in the cloud environment., 2h, Learning outcomes:2 4.Working with the computer program MS Word formatting styles (font, paragraphs, indents), numbering titles, text formatting. Working with documents in the cloud environment., 2h, Learning outcomes:2 5.Working with the computer program MS Word, making graphs, tables, equations, caption images, graphs, tables, equations, production of contents and index structures. Working with documents in the cloud environment., 2h, Learning outcomes:2 6.Working with the computer program MS Word, collaborative approach to document, track changes, commenting on the document, mail merge. Working with documents in the cloud environment. Working with documents in the cloud environment., 2h, Learning outcomes:2 7.Examination on the computer, the practical part. Assessment work in Microsoft Word., 2h, Learning outcomes:2 8.Working with the computer program MS Excel, exploring the working environment, making tables and work with the document. Working with documents in the cloud environment. Working with Sharepoint tool., 2h, Learning outcomes:2				

	9.Working with the computer program MS Excel, data entry and calculation items, solve problems. Working with documents in the cloud environment. Working with Sharepoint tool., 2h, Learning outcomes:2 10.Working with the computer program MS Excel, work with formulas, charting, sorting data. Working with documents in the cloud environment. Working with Sharepoint tool., 2h, Learning outcomes:2 11.Working with the computer program MS Excel, solve problems, connect to the mail merge document, prepared for printing a document. Working with documents in the cloud environment. Working with Sharepoint tool., 2h, Learning outcomes:2 12.Working with MS Word document in a collaborative environment, save documents using cloud technology using Sharepoint., 2h, Learning outcomes:2 13.Connecting tools MS Word, MS Excel, MS Powerpoint, problem solving and preparation for the midterm., 2h, Learning outcomes:2 14.Examination on the computer, the practical part. Assessment work in Microsoft in Microsoft Excel., 2h, Learning outcomes:2 15.Examination on the computer, repeat exams of practical material., 2h, Learning outcomes:2
Required materials	Basic: classroom, blackboard, chalk... General purpose computer laboratory Overhead projector Video equipment Special equipment Students in the computer made #8203;#8203;examples and tasks with the help of teachers.
Exam literature	Basic literature: 1. Klasić, K.: Uvod u uredsko poslovanje,skripta, Zagreb, 2004. 2. Šimec, A.: Osnove primjene MS Office u uredskom poslovanju, skripta, Zagreb, 2009 3. Šimec, A.: Upotreba i integracija ms office alata u poslovanju, skripta, Zagreb, 2013 Additional literature: 1. Varga, Ćurko et al: Informatika u poslovanju, Element, Zagreb, 2007. 2. Srića, Kliment, Knežević: Uredsko poslovanje, Sinergija, Zagreb, 2003.
Students obligations	Minimum 3 points from the flash tests (regular attendance) from the theory. In the absence of exercises max 2 which must be compensated in consultation with the assistant. Required is a PPT presentation (practical work).
Knowledge evaluation during semester	Regular attendance#6#6#0$Colloquium, theoretical issues#2#51#0$Practical work#1#5#0$Practical Exam#2#40#0$
Knowledge evaluation after semester	Written Exam#1#51#51$Oral#1#9#9$Practical Exam#1#40#40$
Remark	This course can not be used for final thesis theme
Prerequisites:	No prerequisites.
Proposal made by	Ph.D. Alen Šimec

Code WEB/ISVU	19088/63204	**ECTS**	5	**Department**	
Name	Introduction to UNIX Systems				
Status	5th semester - Compulsory courses - Office Organization and Informatization				
Teaching mode	Lectures + exercises (auditory + laboratory + seminar + metodology + construction) work at home				30+30 (0+30+0+0) 90
Teachers	course coordinator v.pred. Davor Cafuta ,dipl.ing.rač., viši predavač, class type:Lectures course coordinator Ivica Dodig ,dipl.ing.rač., viši predavač, class type:Lectures v.pred. Davor Cafuta ,dipl.ing.rač., viši predavač, class type:Laboratory exercises				
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 UNIX server through a command line. Level:6,7 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.ability to 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 test the functioning of a network in a small-sized office. Level:6 11.ability to analyze application implemantation on UNIX system. Level:6				
Methods of carrying out lectures	Ex cathedra teaching Case studies Demonstration Modelling Discussion Questions and answers				
Methods of carrying out laboratory exercises	Laboratory exercises on laboratory equipment Laboratory exercises, computer simulations				
Course content lectures	1.History and instalation of open source operating system, 2h, Learning outcomes:4 2.Basic commands in UNIX shell., 2h, Learning outcomes:1 3.Advanced usage of the UNIX shell., 2h, Learning outcomes:2,3 4.Specific UNIX commands., 2h, Learning outcomes:2,3 5.Multiuser administration., 2h, Learning outcomes:3,4 6.Permitions in open source operating systems., 2h, Learning outcomes:3,4 7.Command line text editors., 2h, Learning outcomes:2 8.Basic shell scripting., 2h, Learning outcomes:3 9.Organization of the operating system., 2h, Learning outcomes:6,11 10.Process management., 2h, Learning outcomes:6,11 11.Packet management., 2h, Learning outcomes:6,11 12.Kernel compiling, 2h, Learning outcomes:6,11 13.Network administartion and basic firewall options., 2h, Learning outcomes:7,8 14.DHCP service administration, 2h, Learning outcomes:9,10 15.Theoretical exam, 1h, Learning outcomes:1,2,3,4,5,6,7,8,9,10,11				
Course content laboratory	1.- 2.Basic commands in UNIX shell., 2h, Learning outcomes:1 3.Advanced usage of the UNIX shell., 2h, Learning outcomes:2,3 4.Specific UNIX commands., 2h, Learning outcomes:2,3 5.Multiuser administration., 2h, Learning outcomes:3,4 6.Permitions in open source operating systems., 2h, Learning outcomes:3,4 7.Command line text editors., 2h, Learning outcomes:2 8.Basic shell scripting., 2h, Learning outcomes:3 9.- 10.Process management., 2h, Learning outcomes:7,11 11.Packet management., 2h, Learning outcomes:6,11 12.Kernel compiling, 2h, Learning outcomes:6,11 13.Network administartion and basic firewall options., 2h, Learning outcomes:7,8 14.DHCP service administration, 2h, Learning outcomes:9,10 15.Practical exam, 2h, Learning outcomes:1,2,3,4,5,6,7,8,9,10,11				
Required materials	Special purpose computer laboratory Whiteboard with markers Overhead projector Special equipment				
Exam literature	Basic literature: 1. Materijali uz predmet (internet stranice) 2. C. Hunt,TCP/IP Network Administration, 3rd edition, O'Reilly, 2002. 3. S. Pritchard, et.all, LPI Linux Certification, 2nd edition, O'Reilly, 2006. Additional literature: 1. Linux Magazin (izdvojeni brojevi)				
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.
Remark	This course can be used for final thesis theme
Prerequisites:	No prerequisites.
Proposal made by	Ivica Dodig, Davor Cafuta (08.01.2014)

Code WEB/ISVU	19107/22400	**ECTS**	6	**Department**	
Name	Introduction to XML Programming				
Status	4th semester - Compulsory courses				
Teaching mode	Lectures + exercises (auditory + laboratory + seminar + metodology + construction) work at home				30+30 (0+30+0+0) 150
Teachers	course coordinator dr.sc. Alen Šimec predavač, predavač, class type:Lectures Leila Bezjak , predavač, class type:Laboratory exercises Tihana Brlas , laborant, class type:Laboratory exercises				
Course objectives	To introduce students to XML standards and methods of presenting data; to qualify students to produce an XML document, read it, browse it and transform it.				
Learning outcomes:	1.ability to understand the notion of a proper XML document. Level:6,7 2.ability to understand the meaning of XML elements. Level:6,7 3.ability to understand data types in XML documents. Level:6 4.ability to create various XML documents. Level:6,7 5.ability to understand interoperable data structures. Level:6,7 6.ability to create configuration files for application modules. Level:6,7 7.ability to carry out transformations of XML documents. Level:6 8.ability to understand the hierarchy of XML documents. Level:6,7				
Methods of carrying out lectures	Ex cathedra teaching Case studies Discussion Questions and answers Seminar, students presentation and discussion Other MS Powerpoint presentation, live examples				
Methods of carrying out laboratory exercises	Laboratory exercises, computer simulations Group problem solving Computer simulations Other Creating and solving problems.				
Course content lectures	1.Introductory lecture and teach students about the responsibilities and teaching materials., 2h, Learning outcomes:2 2.Introduction to XML standards and syntax of XML documents., 2h, Learning outcomes:2 3.Architecture and publishing of XML documents., 2h, Learning outcomes:2 4.What is XML and what is its form, the rules of writing an XML document., 2h, Learning outcomes:2 5.Creating XML documents, examples from practice., 2h, Learning outcomes:2 6.XML structure and vertical view of an XML document., 2h, Learning outcomes:2 7.Examination of the first part of the theory, XML standards, XML syntax and rules of writing, architecture and publishing., 2h, Learning outcomes:2 8.XML processing instructions, comments, links to the document and how to format XML content., 2h, Learning outcomes:2 9.What are XML entities and their role, the syntax and the need for XML namespaces., 2h, Learning outcomes:2 10.Method of processing an XML document, the client and server, and the method of application of the different applications and services (data exchange, application integration, content management, messaging), 2h, Learning outcomes:2 11.What is XML Schema, which is its meaning and what we XML Schema allows for the application of the XML document., 2h, Learning outcomes:2 12.Safety data communications using the XML Scheme., 2h, Learning outcomes:2 13.Writing rules and extensibility of XML Scheme, creating your own data types, attribute definitions., 2h, Learning outcomes:2 14.Repeat the key elements of the material, preparing for the midterm., 2h, Learning outcomes:2 15.Examination of the second part of the theory, XML processing instructions, comments, links, role of XML entities, XML Schema, 2h, Learning outcomes:2				
Course content laboratory	1.Introductory exercises teach students about the duties and educational materials, and prepares the computer to work with XML files., 2h, Learning outcomes:2 2.Understanding the work environment, a computer, access to the computer by using the user data of the student. Opening the program to write XML files and problem solving., 2h, Learning outcomes:2 3.Creating an XML file, spelling and syntax. Checking the structure and the correct way of writing a document using the program for validation., 2h, Learning outcomes:2 4.Creating an XML file, spelling and syntax. Checking the structure and the correct way of writing a document using the program for validation., 2h, Learning outcomes:2 5.Connecting to an XML file with an external document for formatting content, Cascading Style Sheet, 2h, Learning outcomes:2 6.Repeating tasks of theory and practice, preparation for the midterm., 2h, Learning outcomes:2 7.Examination of the first part of practice, standards XML, XML syntax and rules of writing, architecture and publishing., 2h, Learning outcomes:2 8.Solving problems of XML processing instructions, comments, links to the document and how to format XML content., 2h, Learning outcomes:2 9.Solving problems with XML entities, and knowing what their role, the syntax and the need for XML namespaces., 2h, Learning outcomes:2 10.Processing an XML document, the client and server, and the method of application of the different applications and services (data exchange, application integration, content management, messaging), 2h, Learning outcomes:2 11.Creating an XML Schema, which is its meaning and what we XML Schema allows for the application of the XML document., 2h, Learning outcomes:2 12.Connecting XML Schema and XML documents, XML Validation Scheme, problem solving., 2h, Learning outcomes:2 13.Writing rules and extensibility of XML Scheme, creating your own data types, attribute definitions., 2h, Learning				

	outcomes:2 14.Repeating tasks of theory and practice, preparation for the midterm., 2h, Learning outcomes:2 15.Examination on the computer, repeat exams of practical material., 2h, Learning outcomes:2
Required materials	Basic: classroom, blackboard, chalk... General purpose computer laboratory Whiteboard with markers Overhead projector Creating and solving problems.
Exam literature	Fawcett J., Ayers D., Quin L. R. E., Beginning XML, 5th Edition, John Wiley Sons, 2012.; M. Birbeck, J. Duckett, Professional XML, Wrox Press, 2001.; Graham I. S., Quin L., XML Specification Guide, 1999.; Extensible Markup Language (XML), www.w3.org/XML; XML.com, O'Reilly, www.xml.com;
Students obligations	Regular attendance of lectures and exercises. Tolerance two unexcused absences.
Knowledge evaluation during semester	Regular attendance#12#5#80$Colloquium, numerical tasks#1#40#51$Colloquium, theoretical issues#1#40#51$Practical Work#12#15#80$
Knowledge evaluation after semester	Written Exam#1#70#51$Oral exam#1#30#51$
Remark	This course can be used for final thesis theme
Prerequisites:	No prerequisites.
Proposal made by	Ph.D. Alen Šimec

Code WEB/ISVU	19093/22766	**ECTS**	5	**Department**	
Name	IT Design - Practicum				
Status	6th semester - Compulsory courses - IT Design				
Teaching mode	Lectures + exercises (auditory + laboratory + seminar + metodology + construction) work at home				0+30 (0+30+0+0) 120
Teachers	mag.des. Ulla Leiner Maksan , asistent, class type:Laboratory exercises course coordinator prof. dr. sc. Jana Žiljak Vujić , voditelj studija Informatike, profesor visoke škole, class type:Laboratory exercises				
Course objectives	To qualify students to solve complex practical tasks related to graphic design				
Learning outcomes:	1.ability to understand current issues in graphic design, visual communications design and new media design. Level:6 2.ability to plan elements necessary for advanced visual communication. Level:6,7 3.ability to propose a task based author work . Level:6,7 4.ability to give comments on the advantages of a solution inside a group. Level:6 5.ability to design an author work according to standards requested in a tender. Level:6 6.ability to test the functionality of author works. Level:6 7.ability to write tender documentation. Level:6 8.ability to integrate author works into the real life environment. Level:6,7 9.ability to present the project development. Level:6,7 10.ability to create interactive graphic applications. Level:6,7 11.ability to prepare documents for public presentations in Adobe Illustrator, Photoshop and InDesign. Level:6,7 12.ability to make a project presentation. Level:6,7 13.ability to present in front of audience, to answer questions put by the audience. Level:6,7				
Methods of carrying out laboratory exercises	Laboratory exercises, computer simulations Discussion, brainstorming Computer simulations				
Course content laboratory	1.Introduction and project definition, 2h, Learning outcomes:1 2.Visual identity topic selection, 2h, Learning outcomes:1 3.Project analysis and comparison with existing similar solutions, 2h, Learning outcomes:1,2 4.Development of concept in text format, 2h, Learning outcomes:1,2,3 5.Selection of elements, creating a basic design concept and making preliminary sketches, 2h, Learning outcomes:3,4,5 6.Definition and design of the marks, 2h, Learning outcomes:5,6,7 7.Elaboration of marks, colour scheme and typography selection, 2h, Learning outcomes:5,6,7 8.Defining mark and logo through the graphic standards manual, 2h, Learning outcomes:5,6,7 9.Preliminary project examination , 2h, Learning outcomes:9,11 10.Defining graphic standards manual elements - business communication, 2h, Learning outcomes:5,8 11.Design of promotional materials 1, 2h, Learning outcomes:5,6 12.Design of promotional materials 2, 2h, Learning outcomes:5,6 13.Graphic interactive applications definition and development, 2h, Learning outcomes:8,10 14.Design of presentation, 2h, Learning outcomes:12 15.Student projects presentation, 2h, Learning outcomes:12,13				
Required materials	Special purpose computer laboratory				
Exam literature	Basic literature: 1. CharlottePeter Fiell: Graphic design for the 21st Century 2. Lucienne Roberts/Julia Thrift: The designer and thegrid Additional literature:				
Students obligations	Project completion, maximum of 3 absences from exercises				
Knowledge evaluation during semester	Prakti rad#1#100#100$				
Knowledge evaluation after semester	Defence and presentation of a designer's concept based on a set topic, with elaboration on the problem, concept, and manner of work execution.				
Remark	This course can be used for final thesis theme				
Prerequisites:	Students cannot enroll in this course unless they have completed Dizajn vizualnih komunikacija				
Proposal made by	Jana Žiljak Vujić predavač				

Code WEB/ISVU	19100/22423	**ECTS**	5	**Department**	
Name	IT Systems Security and Protection				
Status	5th semester - Compulsory courses - E-business 5th semester - Compulsory courses - Office Organization and Informatization				
Teaching mode	Lectures + exercises (auditory + laboratory + seminar + metodology + construction) work at home				30+30 (0+30+0+0) 90
Teachers	course coordinator dr.sc. Krunoslav Antoliš , docent, class type:Lectures course coordinator dr. sc. Roman Domović , prof., predavač, class type:Lectures dr.sc. Krunoslav Antoliš , docent, class type:Laboratory exercises				
Course objectives	Knowledge accomplishment about IS security				
Learning outcomes:	1.ability to classify security threats to information systems and the ways of their protection. Level:6,7 2.ability to analyse the legal frame used in protection of information systems (laws, rule books, directions, standards, etc.). Level:6 3.ability to build the protection of an information system according to the ISO 27001 standard. Level:6,7 4.ability to identify the sources of digital proofs related to changes, relocations, concealments, deletions. Level:6 5.ability to understand the dynamics of digital proofs related to changes, relocations, concealments, deletions. Level:6 6.ability to analyse a computer security incident on scene. Level:6 7.ability to analyse digital proofs related to threats to information systems security. Level:6 8.ability to formulate the notion of digital signature and its history. Level:6,7 9.ability to formulate the notion of hash functions and explain the three basic features . Level:6,7 10.ability to design a hybrid model of digital communication protection. Level:6 11.ability to understand notions and terms related to information security. Level:6 12.ability to classify methods and techniques of encryption. Level:6,7 13.ability to calculate cryptograms and/or pure text in certain cryptographic algorithms (Ceasar cipher, Vigenere cipher, etc.). Level:6				
Methods of carrying out lectures	Ex cathedra teaching Case studies Demonstration Simulations Discussion Questions and answers Seminar, students presentation and discussion Homework presentation Thesis are presented as oral explanation and Powerpoint presentation				
Methods of carrying out laboratory exercises	Group problem solving Traditional literature analysis Data mining and knowledge discovery on the Web Essay writing Discussion, brainstorming Interactive problem solving Workshop Encryption of multimedia data by particular software tools.				
Course content lectures	1.The normative framework of security intelligence system RH, 2h, Learning outcomes:2 2.Data confidentiality and protection of personal data, 2h, Learning outcomes:2 3.Information security, 2h, Learning outcomes:2,11 4.Measures and Standards for Information Security, 2h, Learning outcomes:2 5.Criminal acts of computer crime and zakonto gather evidence about them, 2h, Learning outcomes:2 6.Malicious programs and threats to information systems, 2h, Learning outcomes:1 7.Identification, analysis and risk assessment, 2h, Learning outcomes:1,6,7 8.Information threats and vulnerabilities of information systems, 2h, Learning outcomes:3,7 9.Methods and techniques of managing information security vulnerabilities, 2h, Learning outcomes:1,3 10.Authentication and identification methods, 2h, Learning outcomes:6 11.Methods of authentication and authorization, 2h, Learning outcomes:6 12.Developing a security policy information system, 2h, Learning outcomes:3 13.Techniques authentication and authorization, 2h, Learning outcomes:6 14.Cryptographic methods and techniques, 2h, Learning outcomes:11,12,13 15.PKI infrastructure, 2h, Learning outcomes:3,8,10				
Course content laboratory	1.Security protocols, ISO 27001, 2h, Learning outcomes:3 2.Safety and Security Communications, 2h, Learning outcomes:4 3.Authentication and identification methods, 2h, Learning outcomes:4 4.Identifying and collecting digital evidence, 2h, Learning outcomes:5,6,7 5.The analysis of digital evidence, 2h, Learning outcomes:4,7 6.Computer incident and the scene, 2h, Learning outcomes:6,12 7.Techniques kiptiranja (substitution, transposition), 2h, Learning outcomes:4,12 8.Development of specific techniques for selected examples, 2h, Learning outcomes:12 9.Methods of encryption (symmetric, asymmetric), 2h, Learning outcomes:12 10.The analysis of the DES algorithm, 2h, Learning outcomes:12 11.The analysis of the RSA algorithm, 2h, Learning outcomes:12 12.Hash functions, 2h, Learning outcomes:9 13.The analysis of labor MD5 algorithm, 2h, Learning outcomes:9 14.The hybrid model of secure transmission of data transfer, 2h, Learning outcomes:9 15.A digital signature, digital certificates, 2h, Learning outcomes:3,4				
Required materials	Basic: classroom, blackboard, chalk... Whiteboard with markers				

	Overhead projector Portable overhead projector Video equipment Encryption of multimedia data by particular software tools.
Exam literature	Basic literature: 1. Antoliš, K.,et al(2010), Sigurnost informacijskih sustava - priručnik, Algebra, Zagreb, 2. Antoliš, K.,et al(2010), Sigurnost računalnih mreža - priručnik, Algebra, Zagreb, 3. Antoliš, K.,et al(2011), Sigurnost elektroničkog polsovanja - priručnik, Algebra, Zagreb, 4. Dujella A., Maretić M. (2007.) Kriptografija, Element, Zagreb, (Klasična kriptografija; 1.- 51.str.) http://web.math.hr/duje/kript/kriptografija.html 5. Leo Budin, et al.: Operacijski sustavi, Element d.o.o. Zagreb 2010. 6. Whitman, M., Mattord, H. (2004): Management of Information Security, Course Technology. 7. Schneier, B. (1996). Applied Cryptography Protocols Algorithms and Source Code in C. (2nd ed.)New York, USA: John Wiley Sons. (Part I Cryptographic Protocols; Part II Cryptographic Techniques; Part III Cryptographic Algorithms;)
Students obligations	maximum of 3 absences from exercises
Knowledge evaluation during semester	Redovitost pohaa#15#30#25$Seminarski rad#1#70#30$
Knowledge evaluation after semester	Preliminary exam, written exam, oral exam
Remark	This course can be used for final thesis theme
Prerequisites:	No prerequisites.
Proposal made by	doc. dr.sc. Krunoslav Antoliš, profesor visoke škole u trajnom zvanju

Code WEB/ISVU	19075/22389	**ECTS**	6	**Department**	
Name	Mathematics I				
Status	1st semester - Compulsory courses				
Teaching mode	Lectures + exercises (auditory + laboratory + seminar + metodology + construction) work at home				30+45 (15+30+0+0) 105
Teachers	course coordinator dr.sc. Igor Urbiha prof.vis.šk., profesor visoke škole, class type:Lectures Tihana Strmečki , asistent, class type:Auditory exercises dr.sc. Igor Urbiha prof.vis.šk., profesor visoke škole, class type:Auditory exercises dr.sc. Igor Urbiha prof.vis.šk., profesor visoke škole, class type:Laboratory exercises				
Course objectives	To transfer the knowledge related to skills necessary for individual solving of program based tasks				
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 Discussion Questions and answers The course material is being presented with lot of examples (solved problems) and comments.				
Methods of carrying out auditory exercises	Other problems are solved on blackboard with lot of comments.				
Methods of carrying out laboratory exercises	Other Lecture material is presented and problems are solved using appropriate CAS (Mathematica).				
Course content lectures	1.Determinant (2nd order - by formula, 3rd order - by rule of Sarus and Laplaces expansion, 4th order - by Laplaces expansion nad using elementary transformations), 2h, Learning outcomes:3 2.System of linear equations, solving by Cramers rule and by Gauss-Jordan elimination method , 2h, Learning outcomes:3,5 3.A line and a parabola, 2h, Learning outcomes:9 4.Complex numbers, algebraic and trigonometric form, basic arithmetic operations with complex numbers (addition, subtraction, multiplication, division, raising to an integer power, and taking roots (fractional power)), Gauss plane, 2h, Learning outcomes:1 5.1st exam, 2h, Learning outcomes:1,3,5,9 6.Functions, definition, domain, range, codomain, injection, surjection, bijection, graph, increasing and decreasing functions, monotonicity, composition, inverse, even and odd functions, 2h, Learning outcomes:6,7,8 7.Elementary functions: power functions, polynomials, exponential functions, logarithmic functions, trigonometric functions, hyperblic functions, 2h, Learning outcomes:6,7,8 8.Limit, 2h, Learning outcomes:10 9.Sketching graphs of some functions (polynomials, trigonometric functions), 2h, Learning outcomes:9 10.2nd exam, 2h, Learning outcomes:6,7,8,9,10 11.Problem of finding a tangent, derivative of function, rules for derivative of a sum, product and a quotient of two functions, 2h, Learning outcomes:11 12.Derivative of a composite function, derivative of function f(x)=x^x, 2h, Learning outcomes:11 13.LHopitals rule, 2h, Learning outcomes:11 14.Taylor polinomial of a function centered at zero, 2h, Learning outcomes:11 15.3rd exam, 2h, Learning outcomes:11				
Course content auditory	1.matrices and determinant (2nd order - by formula, 3rd order - by rule of Sarus and Laplaces expansion, 4th order - by Laplaces expansion nad using elementary transformations), 2h, Learning outcomes:3 2.System of linear equations, solving by Cramers rule and by Gauss-Jordan elimination method , 2h, Learning outcomes:3,5 3.A line and a parabola, 2h, Learning outcomes:9 4.Complex numbers, algebraic and trigonometric form, basic arithmetic operations with complex numbers (addition, subtraction, multiplication, division, raising to an integer power, and taking roots (fractional power)), Gauss plane, 2h, Learning outcomes:1 5.1st exam, 2h, Learning outcomes:1,3,5,9 6.Functions, definition, domain, range, codomain, injection, surjection, bijection, graph, increasing and decreasing functions, monotonicity, composition, inverse, even and odd functions, 2h, Learning outcomes:6,7,8 7.Elementary functions: power functions, polynomials, exponential functions, logarithmic functions, trigonometric functions, hyperblic functions, 2h, Learning outcomes:6,7,8 8.Limit, 2h, Learning outcomes:10 9.Sketching graphs of some functions (polynomials, trigonometric functions), 2h, Learning outcomes:9 10.2nd exam, 2h, Learning outcomes:6,7,8,9 11.Problem of finding a tangent, derivative of function, rules for derivative of a sum, product and a quotient of two functions, 2h, Learning outcomes:11 12.Derivative of a composite function, derivative of function f(x)=x^x, 2h, Learning outcomes:11				

	13.LHopitals rule, 2h, Learning outcomes:11 14.Taylor polinomial of a function centered at zero, 2h, Learning outcomes:11 15.3rd exam, 2h, Learning outcomes:11
Course content laboratory	1.nema nastave, 2h 2.nema nastave, 2h 3.nema nastave, 2h 4.nema nastave, 2h 5.nema nastave, 2h 6.nema nastave, 2h 7.nema nastave, 2h 8.nema nastave, 2h 9.nema nastave, 2h 10.nema nastave, 2h 11.nema nastave, 2h 12.nema nastave, 2h 13.nema nastave, 2h 14.nema nastave, 2h 15.nema nastave, 2h
Required materials	Basic: classroom, blackboard, chalk... Special equipment Lecture material is presented and problems are solved using appropriate CAS (Mathematica).
Exam literature	Basic literature: 1. P. Javor, Uvod u matematičku analizu, Školska knjiga, Zagreb, 1983. 2. B. Apsen: Repetitorij elementarne matematike 3. B. Apsen: Riješeni zadaci elementarne matematike Additional literature: 1. B.P. Demidovič, Zadaci i riješeni primjeri iz više matematike, Danjar, Zagreb, 1995. 2. MATEMATIKA 4: udžbenik i zbirka za 4. raz. gimn., Element, Zagreb, 1996.0
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.
Remark	This course can be used for final thesis theme
Prerequisites:	No prerequisites.
Proposal made by	dr. sc. Igor Urbiha, profesor visoke škole

Code WEB/ISVU	19076/22390	**ECTS**	6	**Department**	
Name	Mathematics II				
Status	2nd semester - Compulsory courses				
Teaching mode	Lectures + exercises (auditory + laboratory + seminar + metodology + construction) work at home				30+45 (15+30+0+0) 105
Teachers	course coordinator dr.sc. Igor Urbiha prof.vis.šk., profesor visoke škole, class type:Lectures Tihana Strmečki , asistent, class type:Auditory exercises dr.sc. Igor Urbiha prof.vis.šk., profesor visoke škole, class type:Auditory exercises Tihana Strmečki , asistent, class type:Laboratory exercises				
Course objectives	To transfer the knowledge related to skills necessary for individual solving of program based tasks				
Learning outcomes:	1.ability to calculate primitive functions - indefinite integrals. Level:6 2.ability to calculate definite integrals. Level:6 3.ability to calculate improper integrals. Level:6 4.ability to calculate integrals by using numerical methods. Level:6 5.ability to solve basic types of differential equations. Level:6 6.ability to solve differential equations by using Laplace transformation. Level:6 7.ability to solve differential equations by means of numerical methods. Level:6				
Methods of carrying out lectures	Ex cathedra teaching Discussion Other The course material is being presented with lot of examples (solved problems) and comments.				
Methods of carrying out auditory exercises	Other problems are solved on blackboard with lot of comments.				
Methods of carrying out laboratory exercises	Other Lecture material is presented and problems are solved using appropriate CAS (Mathematica).				
Course content lectures	1.Indefinite integrals, primitive function, basic integrals, 2h, Learning outcomes:1 2.Solving indefinite integrals by substitution, and using partial fractions, 2h, Learning outcomes:1 3.Solving indefinite integrals by integration by parts, by completing the square of second degree trinomial, 2h, Learning outcomes:1 4.Definite integrals, Calculating area below a graph of a function using definite integral, Newton-Leibnizs formula, 2h, Learning outcomes:1,2 5.1. exam, 2h, Learning outcomes:1 6.Application of definite integrals: the areas of plane figures, the arc length of a curve, volumes of solids and areas of a surfaces of revolution; Improper integrals, 2h, Learning outcomes:1,2,3 7.Numerical methods of calculating definite integrals, 2h, Learning outcomes:4 8.Ordinary differential equations - introduction, 2h, Learning outcomes:5 9.First order ODE with separable variables, 2h, Learning outcomes:5 10.2. exam, 2h, Learning outcomes:1,2,3,4,5 11.Solving ODEs by variable substitution (homogeneous diff. eqs., ode of form y=f(ax+by+c)), 2h, Learning outcomes:5 12.Orthogonal trajectories; Bernoullis differential equations, 2h, Learning outcomes:5 13.Linear ODEs, homogenous and nonhomogenous, variation of constant method;Linear ODEs of second order with constant coefficients, homogenous and nonhomogenous, 2h, Learning outcomes:5 14.Solving ODEs by Laplaces transformation; Numerical methods of solving ODEs, 2h, Learning outcomes:6,7 15.3. exam, 2h, Learning outcomes:5,6,7				
Course content auditory	1.Indefinite integrals, primitive function, basic integrals, 2h, Learning outcomes:1 2.Solving indefinite integrals by substitution, and using partial fractions, 2h, Learning outcomes:1 3.Solving indefinite integrals by integration by parts, by completing the square of second degree trinomial, 2h, Learning outcomes:1 4.Definite integrals, Calculating area below a graph of a function using definite integral, Newton-Leibnizs formula, 2h, Learning outcomes:1,2 5.1. exam, 2h, Learning outcomes:1 6.Application of definite integrals: the areas of plane figures, the arc length of a curve, volumes of solids and areas of a surfaces of revolution; Improper integrals, 2h, Learning outcomes:1,2,3 7.Numerical methods of calculating definite integrals, 2h, Learning outcomes:4 8.Ordinary differential equations - introduction, 2h, Learning outcomes:5 9.First order ODE with separable variables, 2h, Learning outcomes:5 10.2. exam, 2h, Learning outcomes:1,2,3,4,5 11.Solving ODEs by variable substitution (homogeneous diff. eqs., ode of form y=f(ax+by+c)), 2h, Learning outcomes:5 12.Orthogonal trajectories; Bernoullis differential equations, 2h, Learning outcomes:5 13.Linear ODEs, homogenous and nonhomogenous, variation of constant method;Linear ODEs of second order with constant coefficients, homogenous and nonhomogenous, 2h, Learning outcomes:5 14.Solving ODEs by Laplaces transformation; Numerical methods of solving ODEs, 2h, Learning outcomes:6,7 15.3. exam, 2h, Learning outcomes:5,6,7				
Course content laboratory	1.Indefinite integrals, primitive function, basic integrals, 2h, Learning outcomes:1 2.Solving indefinite integrals by substitution, and using partial fractions, 2h, Learning outcomes:1 3.Solving indefinite integrals by integration by parts, by completing the square of second degree trinomial, 2h, Learning outcomes:1 4.Definite integrals, Calculating area below a graph of a function using definite integral, Newton-Leibnizs formula, 2h, Learning outcomes:1,2 5.1. exam, 2h, Learning outcomes:1 6.Application of definite integrals: the areas of plane figures, the arc length of a curve, volumes of solids and areas of a surfaces of revolution; Improper integrals, 2h, Learning outcomes:1,2,3				

	7.Numerical methods of calculating definite integrals, 2h, Learning outcomes:4 8.Ordinary differential equations - introduction, 2h, Learning outcomes:5 9.First order ODE with separable variables, 2h, Learning outcomes:5 10.2. exam, 2h, Learning outcomes:1,2,3,4,5 11.Solving ODEs by variable substitution (homogeneous diff. eqs., ode of form y=f(ax+by+c)), 2h, Learning outcomes:5 12.Orthogonal trajectories; Bernoullis differential equations, 2h, Learning outcomes:5 13.Linear ODEs, homogenous and nonhomogenous, variation of constant method; Linear ODEs of second order with constant coefficients, homogenous and nonhomogenous, 2h, Learning outcomes:5 14.Solving ODEs by Laplaces transformation; Numerical methods of solving ODEs, 2h, Learning outcomes:6,7 15.3. exam, 2h, Learning outcomes:5,6,7
Required materials	Basic: classroom, blackboard, chalk... Whiteboard with markers Special equipment Lecture material is presented and problems are solved using appropriate CAS (Mathematica).
Exam literature	Basic literature: 1. P. Javor, Uvod u matematičku analizu, Školska knjiga, Zagreb, 1983. 2. B. Apsen: Repetitorij elementarne matematike 3. B. Apsen: Riješeni zadaci elementarne matematike Additional literature: 1. B.P. Demidovič, Zadaci i riješeni primjeri iz više matematike, Danjar, Zagreb, 1995. 2. MATEMATIKA 4: udžbenik i zbirka za 4. raz. gimn., Element, Zagreb, 1996.
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.
Remark	This course can be used for final thesis theme
Prerequisites:	No prerequisites.
Proposal made by	Dr.sc.Igor Urbiha, profesor visoke škole

Code WEB/ISVU	19072/22750	**ECTS**	6	**Department**	
Name	Media Integration				
Status	5th semester - Compulsory courses - E-business				
Teaching mode	Lectures + exercises (auditory + laboratory + seminar + metodology + construction) work at home				30+30 (15+15+0+0) 120
Teachers	course coordinator Vjeran Bušelić viši predavač, viši predavač, class type:Lectures Ivan Rajković , predavač, class type:Auditory exercises course coordinator Ivan Rajković , predavač, class type:Laboratory exercises				
Course objectives	Presenting of importance of media integration activities in nowdays information technology developement.				
Learning outcomes:	1.ability to identify general notions and definitions related to multimedia, hypermediality and massmedia integration. Level:6 2.ability to classify basic types of modern media functioning and usage. Level:6,7 3.ability to propose the best ways of using media in information transfer, learning and promotion. Level:6,7 4.ability to give comments on social aspects of media integration. Level:6 5.ability to combine work with audio and video formats. Level:6,7 6.ability to design a proper use of media in information transfer. Level:6 7.ability to create and carry out a presentation of a content by using multimedia tools. Level:6,7				
Methods of carrying out lectures	Ex cathedra teaching Case studies Demonstration Simulations Discussion Questions and answers Seminar, students presentation and discussion Homework presentation Other The lectures are given by using multimedia gadgets and fully functional LCD projector.				
Methods of carrying out auditory exercises	Laboratory exercises on laboratory equipment Group problem solving Data mining and knowledge discovery on the Web Discussion, brainstorming Interactive problem solving Workshop				
Methods of carrying out laboratory exercises	Laboratory exercises on laboratory equipment Group problem solving Data mining and knowledge discovery on the Web Discussion, brainstorming Interactive problem solving Workshop				
Course content lectures	1. , 2h, Learning outcomes:1,2,3,4,5,6 2. , 2h, Learning outcomes:1,2,3,4 3. , 2h, Learning outcomes:1,2,3,4 4. , 2h, Learning outcomes:1,2,3,4,5 5. , 2h, Learning outcomes:1,2,3,4,5 6. , 2h, Learning outcomes:1,2,3,4,5,6 7. , 2h, Learning outcomes:1,2,3,4 8. , 2h, Learning outcomes:2,3,4 9. , 2h, Learning outcomes:2,3,4 10. , 2h, Learning outcomes:2,3,4 11. , 2h, Learning outcomes:1,2,3,4 12. , 2h, Learning outcomes:1,2,3,4,5 13. , 2h, Learning outcomes:1,2,3,4,5 14. , 2h, Learning outcomes:1,2,3,4,5 15. , 2h, Learning outcomes:5,6,7				
Course content auditory	1. , 2h, Learning outcomes:1,2,3,4,5,6 2. , 2h, Learning outcomes:1,2,3,4 3. , 2h, Learning outcomes:1,2,3,4,5 4. , 2h, Learning outcomes:1,2,3,4,5 5. , 2h, Learning outcomes:1,2,3,4,5 6. , 2h, Learning outcomes:1,2,3,4,5 7. , 2h, Learning outcomes:1,2,3,4,5 8. , 2h 9. , 2h 10. , 2h 11. , 2h 12. , 2h 13. , 2h 14. , 2h 15. , 2h				
Course content laboratory	1. , 2h 2. , 2h 3. , 2h				

	4. , 2h 5. , 2h 6. , 2h 7. , 2h 8. , 2h, Learning outcomes:1,2,3,4,5 9. , 2h, Learning outcomes:1,2,3,4,5 10. , 2h, Learning outcomes:1,2,3,4,5 11. , 2h, Learning outcomes:4,5 12. , 2h, Learning outcomes:4,5 13. , 2h, Learning outcomes:4,5 14. , 2h, Learning outcomes:1,2,3,4,5 15. , 2h, Learning outcomes:4,5,6
Required materials	Basic: classroom, blackboard, chalk... Special purpose laboratory Whiteboard with markers Overhead projector Video equipment
Exam literature	Preporučena 1. Peruško, Z.: Uvod u medije, Jesenski i Turk, Zagreb 2011. 2. Kunczik, M. i Zipfel, A.: Uvod u znanost o medijima i komunikologiju, Zaklada Friedrich Ebert, Zagreb 2006. 3. Creeber G. i Martin R.: Digital Culture: Understanding New Media, Open University Press, 2008. 4. Bradley A. i McDonald M.: The Social Organization - How to Use Social Media to Tap the Collective Genius of Your Customers and Employees, Harvard Business Review Press, 2011. Dopunska 1.McLuhan, M:, Razumijevanje medija, Golden marketing-Tehnička knjiga, Zagreb 2008.
Students obligations	50% dolaznosti uz aktivno sudjelovanje i pravovremeno izvravanje zadanih obaveza vezano uz prakti rad
Knowledge evaluation during semester	Redovitost pohaa (15 provjera) Kolokvij, teorijska pitanja (2 provjere) Prakti rad (1 provjera)
Knowledge evaluation after semester	Usmeni ispit: Dolaznost - 10% (kriterij za prolaz 50%) Teorijske provjere - 30% (kriterije za prolaz 50%) Prakti provjera - 60% (kriterij za prolaz 100%)
Remark	This course can be used for final thesis theme
Prerequisites:	No prerequisites.

Code WEB/ISVU	19077/22418	**ECTS**	3	**Department**	
Name	Mobile Communications				
Status	5th semester - Compulsory courses - Office Organization and Informatization 5th semester - Compulsory courses - E-business				
Teaching mode	Lectures + exercises (auditory + laboratory + seminar + metodology + construction) work at home				30+30 (30+0+0+0) 30
Teachers	course coordinator dr.sc Sonja Zentner Pilinsky prof.v.š., profesor visoke škole, class type:Lectures				
Course objectives	To qualify students to recognize and solve engineering problems related to mobile communications				
Learning outcomes:	1.ability to calculate the dissipation between a transmitter and a receiver in public mobile networks. Level:6 2.ability to identify various technologies which are used in public mobile networks. Level:6 3.ability to identify elements of 2G, 3G and 4G systems. Level:6 4.ability to compare architectures and characteristics of different mobile systems. Level:6,7 5.ability to calculate the efficiency of a system and a maximum number of mobile stations in a coverage area. Level:6				
Methods of carrying out lectures	Ex cathedra teaching Guest lecturer Case studies The subject matter is explained by using drawings, tables and diagrams to make the comprehension easier. The teacher tests the students continuously if they participate in the lectures. Beside the blackboard it is necessary to have a overhead projector and LCD projector.				
Methods of carrying out auditory exercises	Group problem solving The problems of each theme are solved on the blackboard with the assistance of the students.				
Course content lectures	1.Prerequisites to attend exam. Introduction to wireless networks, definition of EM waves, polarization, open space losses, 2h, Learning outcomes:1 2.Frequency bands used for GSM/UMTS/LTE/Bluetooth/WLAN. Antenna systems, 2h, Learning outcomes:1 3.EM power at Air Interface. Principles of RF signal propagation, 2h, Learning outcomes:1,2 4.Propagation models. RF signal transmission techniques (fading, interference, diversity), 2h, Learning outcomes:1,2 5.Multiple access methods (FDMA, TDMA, CDMA, SDMA, OFDMA, CSMA-CA), 2h, Learning outcomes:2,4 6.Antennas antenna parameters and antenna sorts. GSM system architecture, 2h, Learning outcomes:2,3,4 7.GSM system architecture (continued), 2h, Learning outcomes:2,3,4 8.GSM system characteristics (modulation, cell approach, time slot structures), 2h, Learning outcomes:2,3,4 9.GSM system characteristics (logical channels, Air Interface Control, System Information), GPRSBasic Principles, 2h, Learning outcomes:2,3,4 10.GPRS System Architecture, EDGE-Basic Principles, UMTS-QoS Classes and Frequency Bands, 2h, Learning outcomes:2,3,4 11.UMTS- Encoding in Downlink and Uplink, Power Control, Soft and Softer Handover, UMTS System Coverage, and Capacity, System Architecture, 2h, Learning outcomes:2,3,4 12.HSDPA-basic functionalities, terminal classes, basic characteristics, system upgrade, 2h, Learning outcomes:2,3,4 13.HSUPA-basic characteristics, definition of QoS, terminal classes, State-of-the-Art, LTE Introduction, 2h, Learning outcomes:2,3,4 14.LTE system demands, basic characteristics, LTE Radio Access Network, LTE/SAE System Architecture, Mobility Management, QoS classes, 2h, Learning outcomes:2,3,4 15.OFDMA, System Coverage, Resource Blocks, Modulations, MIMO, 2h, Learning outcomes:2,3,4				
Course content auditory	1.calculations with dB, dBm, electric field at Tx and voltage at Rx side, directivity, gain, free space losses, C/I with direct and reflected ray, 2h, Learning outcomes:1 2.antenna gain calculations, voltage at receivers side, transmitter and receiver power, 2h, Learning outcomes:1 3.electric field calculations at receivers side, transmitter and receiver power, ARFCN number, 2h, Learning outcomes:1,2 4.C/I Carrier to interference ration at receivers side, antenna gain calculations, 2h, Learning outcomes:1,2 5.First semiexam, 2h, Learning outcomes:1,2 6.C/I calculations, signal attenuation due to EM wave polarization, free space losses, 2h, Learning outcomes:1 7.voltage calculations at receivers side, cell radius, 2h, Learning outcomes:1 8.C/I calculations with direct and one reflected ray taken into calculations, 2h, Learning outcomes:1 9.Erlang B equation, system efficiency calculations, number of cells in a cluster, cluster area, 2h, Learning outcomes:2,4,5 10.Second semiexam, 2h, Learning outcomes:1,2,4,5 11.traffic and system efficiency calculations, 2h, Learning outcomes:2,4,5 12.traffic and system efficiency calculations, 2h, Learning outcomes:2,4,5 13.space diversity calculations, maximal Doppler frequency calculations, 2h, Learning outcomes:2 14.traffic and system efficiency calculations, 2h, Learning outcomes:2,4,5 15.Third semiexam, 2h, Learning outcomes:2,4,5				
Required materials	Basic: classroom, blackboard, chalk... Whiteboard with markers Overhead projector The problems of each theme are solved on the blackboard with the assistance of the students.				
Exam literature	Basic literature: 1. E. Zentner, Antene i radiosustavi,Graphis, Zagreb, 2001. 2. Lehpamer H.: Transmission Systems Design Handbook for Wireless Networks, Artech House, Boston-London,2002. 3. W.C.Y.Lee: Mobile Communications Design Fundamentals, McGraw-Hill, 1993. Additional literature:				
Students obligations	maximum of 3 absences from exercises				
Knowledge evaluation during	Redovitost pohaa#5#10#50$Mini-test#2#30#40$Kolokvij, numeri zadaci#3#45#50$Kolokvij, teorijska pitanja#3#15#50$				

semester	
Knowledge evaluation after semester	Two compulsory preliminary written exams (arithmetic middle of both marks is taken as written exams mark) The written part of the exam (in case that both preliminary are not passed) and the oral part of the exam (final mark is arithmetic middle of 2 components in case that they are all positive)
Remark	This course can be used for final thesis theme
Prerequisites:	No prerequisites.
Proposal made by	Prof. dr. sc. Ervin Zentner

Code WEB/ISVU	19078/22752	**ECTS**	5	**Department**	
Name	Multimedia Marketing				
Status	6th semester - Compulsory courses - E-business				
Teaching mode	Lectures + exercises (auditory + laboratory + seminar + metodology + construction) work at home				30+15 (0+0+15+0) 105
Teachers	course coordinator Vjeran Bušelić viši predavač, viši predavač, class type:Lectures course coordinator Ivan Rajković , predavač, class type:Seminar exercises				
Course objectives	To introduce students to the basics of today				
Learning outcomes:	1.ability to identify the basic terms related to multimedia. Level:6 2.ability to plan and use multimedia tools and technology . Level:6,7 3.ability to identify the strategic and operational roles of marketing. Level:6 4.ability to define a marketing mix of a product or of a service. Level:6,7 5.ability to make and give a presentation on a content by using multimedia tools. Level:6,7				
Methods of carrying out lectures	Ex cathedra teaching Guest lecturer Case studies Discussion Questions and answers The lectures are given by using multimedia gadgets and fully functional LCD projector.				
Methods of carrying out seminars	Laboratory exercises, computer simulations Group problem solving Data mining and knowledge discovery on the Web Discussion, brainstorming Interactive problem solving Workshop				
Course content lectures	1. , 2h, Learning outcomes:1,2,3,4,5 2. , 2h, Learning outcomes:1,2,3,4,5 3. , 2h, Learning outcomes:1,2 4. , 2h, Learning outcomes:3 5. , 2h, Learning outcomes:3 6. , 2h, Learning outcomes:3 7. , 2h, Learning outcomes:3 8. , 2h, Learning outcomes:1,2,3 9. , 2h, Learning outcomes:3,4 10. , 2h, Learning outcomes:3,4 11. , 2h, Learning outcomes:3,4 12. , 2h, Learning outcomes:3,4 13. , 2h, Learning outcomes:3,4 14. , 2h, Learning outcomes:1,2,3,4,5 15. , 2h, Learning outcomes:1,2,3,4,5				
Course content seminars	1. , 2h, Learning outcomes:1,2,3,4 2. , 2h, Learning outcomes:1,2,3,4 3. , 2h, Learning outcomes:1,2,3,4 4. , 2h, Learning outcomes:3,4 5. , 2h, Learning outcomes:3,4 6. , 2h, Learning outcomes:3,4 7. , 2h, Learning outcomes:5 8. , 2h, Learning outcomes:4 9. , 2h, Learning outcomes:4 10. , 2h, Learning outcomes:2,3 11. , 2h, Learning outcomes:3,4 12. , 2h, Learning outcomes:4 13. , 2h, Learning outcomes:4 14. , 2h, Learning outcomes:4 15. , 2h, Learning outcomes:1,2,3,4,5				
Required materials	Basic: classroom, blackboard, chalk... Whiteboard with markers Overhead projector Video equipment Operating supplies Students have to make theit own multimedia campaign				
Exam literature	Preporučena: 1. "Plava krava", Seth Godin Additional literature: 2. "Gerilski marketing"; Jay Conrad Levinson 3. 0žPrezentacijom do uspjeha0; Jerry Weissman 4. "Strategije marketinga"; Nataša Renko				
Students obligations	50% dolaznosti uz aktivno sudjelovanje i pravovremeno izvravanje zadanih obaveza vezano uz prakti rad				
Knowledge evaluation during semester	Redovitost pohaa (15 provjera) Kolokvij, teorijska pitanja (2 provjere) Prakti rad (1 provjera)				

Knowledge evaluation after semester	Usmeni ispit: Dolaznost - 10% (kriterij za prolaz 50%) Teorijske provjere - 30% (kriterije za prolaz 50%) Prakti provjera - 60% (kriterij za prolaz 100%)
Remark	This course can be used for final thesis theme
Prerequisites:	No prerequisites.

Code WEB/ISVU	19083/63136	**ECTS**	5	**Department**	
Name	Object Oriented Programming I				
Status	3rd semester - Compulsory courses - Office Organization and Informatization 3rd semester - Compulsory courses - E-business				
Teaching mode	Lectures + exercises (auditory + laboratory + seminar + metodology + construction) work at home				30+30 (0+30+0+0) 120
Teachers	course coordinator Prof. dr. sc. Miroslav Slamić profesor visoke škole, profesor visoke škole, class type:Lectures Ivan Cesar mag. ing., asistent, class type:Laboratory exercises Željko Kovačević struč.spec.ing.techn.inf., asistent, class type:Laboratory exercises				
Course objectives	To transfer to students the basic knowledge related to OO paradigms and C++ in order to qualify them for using OOP2 to solve practical tasks related to programming				
Learning outcomes:	1.ability to identify fundamental differences between procedural and object-oriented paradigm and understand the basic features of objects. Level:6 2.ability to to form a class based on the definition of the properties and behavior of the object. Level:6 3.ability to give a software solution in C++ by means of classes and by using a paradigm developed by OOP. Level:6 4.ability to devise operators in C++ based classes. Level:6,7 5.ability to design an OOP based solution by using templates from STL C++ libraries. Level:6 6.ability to create one's own class and function templates in solving OOP based problems. Level:6,7 7.(eng: ability to distinguish between OOP languages (C++, C#, Java)). Level:6 8.(eng: 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				
Methods of carrying out lectures	Ex cathedra teaching Case studies Discussion Basic advances of OO paradigm. Learning of OO principles and their implementation using C++ programming language (syntax, input/output and work with files and memory, namespaces, references and pointers, classes and objects, methods and attributes as class elements, inheritance and other relationships between classes, access rights, exceptions).				
Methods of carrying out laboratory exercises	Laboratory exercises, computer simulations				
Course content lectures	1.History and concept of the OO paradigm. C++ as opposed to C. Advantages of the OO paradigm, 2h, Learning outcomes:1 2.U/I in C++ and other specific features of the C++ syntax, 2h, Learning outcomes:1 3. Object, object model, properties and behaviour of objects , 2h, Learning outcomes:1 4.Classes, instances, access permission, public interface, 2h, Learning outcomes:1,2 5.Constructor, destructor, functions, function overload.Static and dynamic object instances (new and delete operators), 2h, Learning outcomes:2,3,7 6.Copying of objects, copy constructor, associating objects., 2h, Learning outcomes:2,3,6 7. Constant members and objects. References. Friend functions, 2h, Learning outcomes:2,3,7 8.Operators overloading., 2h, Learning outcomes:3,4,7 9.nheritance, deklaration, implementation of classes, the rights issued by inheritance., 2h, Learning outcomes:3,4,7 10.Access to functions, ancestors, overload. Rules for the constructor in a class, 2h, Learning outcomes:3,4,7 11.Polymorphism., 2h, Learning outcomes:3,4,7 12.Virtual member functions, virtual classes , 2h, Learning outcomes:4,5 13.Function templates and class templates., 2h, Learning outcomes:3,6,7 14.Use of the STL library. Use of templates., 2h, Learning outcomes:3,5,7,8 15.Solving the exceptions. Editing a named space. Carrying out a project by means of MFC classes , 2h, Learning outcomes:3,4,5,6,7				
Course content laboratory	1.The preparation practice for introduction to C + + and specific features I / O access., 2h, Learning outcomes:1 2.Introduction to work on exercises using Moodle LMS and tool for automatic evaluation of software solutions., 2h, Learning outcomes:1 3.Exercise 1: Object classes, attributes, 2h, Learning outcomes:1,2 4.Exercise 2: Methods, constructor, destructor, 2h, Learning outcomes:1,2 5.Exercise 3: Access modifiers, types of functions, passing arguments to the function, 2h, Learning outcomes:1,2 6.Exercise 4: : Copy constructor, assignment operator, 2h, Learning outcomes:1,2,7 7.Exercise 5: Friend functions, const. restrictions, 2h, Learning outcomes:1,2,7 8.The first mid-term exam., 2h, Learning outcomes:1,2 9.Exercise 6: Operator overloading, 2h, Learning outcomes:2,3,4 10.Exercise 7: Inheritance, 2h, Learning outcomes:3,4,7 11.Exercise 8: Polymorphism, 2h, Learning outcomes:4,5,6 12.Exercise 9: Templates. Using STL., 2h, Learning outcomes:4,5,6,7 13.Exercise 10: Namespace, exception, 2h, Learning outcomes:3,4,5,6,7,8 14.Preparation for second mid-term., 2h, Learning outcomes:1,2,3,4,5,6,7 15.The second mid-term., 2h, Learning outcomes:1,2,3,4,5,6,7,8				
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. Boris Motik,Julijan Šribar:Demistificirani C++,treće dopunjeno izdanje,m Zagreb, Element , 2010. Additional literature:				

	3. D. Radošević, Programiranje 2, TIVA Tiskara Varaždin, 2007. 4. Eckel 00 0žThinking in C++ Vol 1 i Vol 20, Prentice Hall, 2003. http://www.mindview.net/Books/TICPP/ThinkingInCPP2e.html 5. Stroustrup 00 0žThe C++ Programming Language0, Addison-Wesley, Third edition, 2004. 6. Željko Kovačević, 0C++ Analiza i primjena0, Školska knjiga, 2004.
Students obligations	maximum of 3 absences from exercises
Knowledge evaluation during semester	The course is rated a total of 100 points . Way of acquiring points is as follows : first mid-term - solving tasks on the computer and test : max . 30 points 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 evaluation after semester	The course is rated a total of 100 points . Way of acquiring points is as follows : first mid-term - solving tasks on the computer and test : max . 30 points 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 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 % .
Remark	This course can be used for final thesis theme
Prerequisites:	No prerequisites.
Proposal made by	Prof. dr. sc. Miroslav Slamić, 15..4.2014.

Code WEB/ISVU	19084/63137	**ECTS**	5	**Department**	
Name	Object Oriented Programming II				
Status	4th semester - Compulsory courses - Office Organization and Informatization 4th semester - Compulsory courses - E-business				
Teaching mode	Lectures + exercises (auditory + laboratory + seminar + metodology + construction) work at home				30+60 (60+0+0+0) 60
Teachers	course coordinator dr.sc. Goran Salamunićcar , predavač, class type:Lectures Neven Drljević mag. ing. comp., asistent, class type:Auditory exercises Željko Kovačević struč.spec.ing.techn.inf., asistent, class type:Auditory exercises				
Course objectives	In OOP2, based on knowledge from OOP1, student is prepared for successful solving of programmers everyday issues using advanced object-oriented and component-based paradigms, learning as well C++, C# or Javu (language as chosen by each student).				
Learning outcomes:	1.analysis of development environment possibilities (for C++, C3 or Java). Level:6 2.ability to write applications with several classes. Level:6,7 3.ability to write applications which use exceptions. Level:6,7 4.ability to write applications which access to files. Level:6,7 5.ability to write applications which have possibilities of user-defined settings. Level:6,7 6.ability to write applications which use existing data structures. Level:6,7 7.ability to write applications which use generic classes. Level:6,7 8.ability to write applications with simple user interface. Level:6,7 9.ability to write multi-documents applications with advanced user interface. Level:6,7 10.ability to integrate external libraries and components into applications. Level:6,7 11.ability to write multithreaded applications which executes code in parallel on multiple processors or cores. Level:6,7 12.ability to write network applications. Level:6,7 13.write application which uses cryptography. Level:6,7 14.write application which uses hash functions. Level:6,7 15.distinguish object-oriented and component-based software development. Level:6 16.integrate in application work with relational database management systems (Oracle, DB2, Sybase, MS-SQLServer, Access). Level:6,7				
Methods of carrying out lectures	Ex cathedra teaching Case studies Discussion				
Methods of carrying out auditory exercises	Laboratory exercises, computer simulations				
Course content lectures	1.Development environment and applications with several classes, 2h, Learning outcomes:1,2 2.Exceptions, files (XML, LOG) and settings 1, 2h, Learning outcomes:3 3.Exceptions, files (XML, LOG) and settings 2, 2h, Learning outcomes:4,5 4.Build-in data structures and generic classes, 2h, Learning outcomes:6,7 5.Simple user interface, 2h, Learning outcomes:8 6.Advanced multi-document user interface, 2h, Learning outcomes:9 7.Usage of external libraries and components 1, 2h, Learning outcomes:10 8.Usage of external libraries and components 2, 2h, Learning outcomes:10 9.Multithreaded applications for multiple processors or cores 1, 2h, Learning outcomes:11 10.Multithreaded applications for multiple processors or cores 2, 2h, Learning outcomes:11 11.Network applications, cryptography and hash functions 1, 2h, Learning outcomes:12 12.Network applications, cryptography and hash functions 2, 2h, Learning outcomes:13,14 13.Component-based software development, 2h, Learning outcomes:15 14.Integration of applications work with relational database management systems 1, 2h, Learning outcomes:16 15.Integration of applications work with relational database management systems 2, 2h, Learning outcomes:16				
Course content auditory	1.Development environment and applications with several classes, 2h, Learning outcomes:1,2 2.Exceptions, files (XML, LOG) and settings, 2h, Learning outcomes:3,4,5 3.Build-in data structures and generic classes, 2h, Learning outcomes:6,7 4.Simple user interface, 2h, Learning outcomes:8 5.Advanced multi-document user interface, 2h, Learning outcomes:9 6.Compensation of missed and consolidation of knowledge for first 5 teaching units., 2h, Learning outcomes:1,2,3,4,5,6,7,8,9 7.Examination for first 5 teaching units., 2h, Learning outcomes:1,2,3,4,5,6,7,8,9 8.Usage of external libraries and components, 2h, Learning outcomes:10 9.Multithreaded applications for multiple processors or cores, 2h, Learning outcomes:11 10.Network applications, cryptography and hash functions, 2h, Learning outcomes:12,13,14 11.Component-based software development, 2h, Learning outcomes:15 12.Integration of applications work with relational database management systems, 2h, Learning outcomes:16 13.Compensation of missed and consolidation of knowledge for second 5 teaching units., 2h, Learning outcomes:10,11,12,13,14,15,16 14.Examination for second 5 teaching units., 2h, Learning outcomes:10,11,12,13,14,15,16 15.Final compensation of missed, consolidation of knowledge, and preparations for final exam., 2h, Learning outcomes:1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16				
Required materials	General purpose computer laboratory Overhead projector				
Exam literature	Predavanja napisana posebno za ovaj predmet, autora: - dr. sc. Goran Salamunićcar				

	- Prof. dr. sc. Miroslav Slamić - Aleksander Radovan, dipl. ing. - Željko Kovačević, struč. spec. ing. techn. inf. - Ivan Cesar, mag. ing. rač. Dodatna literatura za C++: 1) Borland C++ Builder: The Complete Reference, Herber Schildt, Greg Guntle, Travanj 2001. 2) Borland C++ Builder 6 Developer's Guide, Bob Swat, Mark Cashman, Paul Gustavson, 2003. 3) Borland C++ Builder: The Definitive C++ Builder Problem Solver, John Miano, lipanj, 1997. Dodatna literatura za C#: 1) Allen Jones , Adam Freeman , Matthew MacDonald , Rakesh Rajan: Visual C# 2010 Recipes A Problem-Solution Approach, ožujak 2010. 2) Andrew Troelsen: Pro C# 2010 and the .NET 4 Platform, 5th edition, svibanj 2010. Dodatna literatura za Javu: 1) Bruce Eckel: Thinking in Java, 4th edition, veljača, 2006. 2) Head First Java, 2nd edition, O'Reilly, veljača, 2005. 3) Java for Programmers: Deitel Developer Series, Prentice Hall, veljača, 2009.
Students obligations	Laboratory exercises, colloquia and seminars. Maximum of 2 absences from exercises.
Knowledge evaluation during semester	Regular attendance. Colloquium, numerical tasks. Seminar work. Written examination. Oral examination.
Knowledge evaluation after semester	Laboratory exercises (11%) and seminar (22%): 33% Colloquia or written examination: 33% Written (on computer) examination and oral examination: 34%
Remark	This course can be used for final thesis theme
Prerequisites:	No prerequisites.
Proposal made by	Goran Salamunićcar

Code WEB/ISVU	19091/22414	**ECTS**	3	**Department**	
Name	Office Organisation and Informatisation				
Status	6th semester - Compulsory courses - Office Organization and Informatization				
Teaching mode	Lectures + exercises (auditory + laboratory + seminar + metodology + construction) work at home				30+30 (30+0+0+0) 30
Teachers	course coordinator dr.sc. Mladen Mauher prof.v.šk., profesor visoke škole, class type:Lectures Danijela Pongrac , prof., predavač, class type:Auditory exercises				
Course objectives	Acquisition of basic knowledge of office organization and office information systems development				
Learning outcomes:	1.ability to relate the organisational maturity to planning of an information system development. Level:6,7 2.ability to distinguish between different phases of an information system life cycle. Level:6 3.ability to distinguish between different methods and techniques used in an information system development. Level:6 4.ability to analyse a business system. Level:6 5.ability to draw diagrams of decomposition, document and data flow and work diagrams. Level:6 6.ability to create a business technology matrix. Level:6,7 7.ability to make a query specification. Level:6 8.ability to devise implementation, testing and maintenance of an information system. Level:6,7				
Methods of carrying out lectures	Ex cathedra teaching Case studies Modelling Questions and answers Lectures are displayed by using drawings, table diagrams and case studies. Students are stimulated to participatet lectures. Teaching equipment: board, overhead projector, LCD projector.				
Methods of carrying out auditory exercises	Laboratory exercises, computer simulations Group problem solving Workshop				
Course content lectures	1.Organization Maturity And Planning Of Development Of Office Information System , 2h, Learning outcomes:1 2. Life Cycle Of The Office Information System; Office automation collaborative technologies, 2h, Learning outcomes:2 3.Strategic Planning Of Office Information Systems , 2h, Learning outcomes:2 4.Short Presentation Of Methods And Techniques: SWOT Analysis, BSP, CSF, BPR Etc, 2h, Learning outcomes:3 5.Business Technology Analysis, 2h, Learning outcomes:4 6.Business Process Decomposition Of Office System , 2h, Learning outcomes:5 7.Resource Analysis , 2h, Learning outcomes:5 8.Techniques Of Matrix Diagrams, Business Technology Matrix, 2h, Learning outcomes:5,6 9.Document And Data Flow Diagrams: Standard model of Office automation, 2h, Learning outcomes:5 10.Workflow (workflow diagrams, process diagrams), 2h, Learning outcomes:5 11.Office Domains and Requirements specification, 2h, Learning outcomes:7 12.Prototype development, 2h, Learning outcomes:7 13.The Role Of Screens And Reports Drafts (Office interface and reporting design), 2h, Learning outcomes:7 14.Implementation, Testing, Maintainance Of Office Information System , 2h, Learning outcomes:8 15.Proccess and content modeling by CASE Tools , 2h, Learning outcomes:8				
Course content auditory	1.Auditory exercise 1, 2h, Learning outcomes:1 2.Auditory exercise 2, 2h, Learning outcomes:2 3.Auditory exercise 3, 2h, Learning outcomes:2 4.Auditory exercise 4, 2h, Learning outcomes:3 5.Auditory exercise 5, 2h, Learning outcomes:4 6.Auditory exercise 6, 2h, Learning outcomes:4 7.Auditory exercise 7, 2h, Learning outcomes:5 8.Auditory exercise 8, 2h, Learning outcomes:5 9.Auditory exercise 9, 2h, Learning outcomes:5 10.Auditory exercise 10, 2h, Learning outcomes:5 11.Auditory exercise 11, 2h, Learning outcomes:6 12.Auditory exercise 12, 2h, Learning outcomes:7 13.Auditory exercise 13, 2h, Learning outcomes:7 14.Auditory exercise 14, 2h, Learning outcomes:8 15.Auditory exercise 15, 2h, Learning outcomes:8				
Required materials	Basic: classroom, blackboard, chalk... General purpose computer laboratory Overhead projector Video equipment				
Exam literature	Basic literature: 1. Prezentacije i radni materijali s predavanja i vježbi, dostupni na web-u TVZ-a 2. Klasić, Klarin: Informacijski sustavi 00 načela i praksa, Intus informatika,Zagreb,2009. Additional literature: 1. R. Barker: CASE*METHOD Tasks and Deliverables, Addison-Wesley Publishing Company, 1991. 2. J. Martin: Information Engineering II - Planning and Analisys, Prentice Hall, Englewood Cliffs, NY 1990. 3. Van Vliet, H.: Software Engineering, John Wiley and Sons, USA, 2001.				
Students obligations	maximum of 3 absences from exercises				
Knowledge evaluation during semester	Redovitost pohaa#10#10#0$Kolokvij, teorijska pitanja#2#60#0$Seminarski rad#1#30#0$				

Knowledge evaluation after semester	-Case study of a real system - team work of three students - prerequsite for writting exam Writting exam composed of 5 questions, 50% is prerequisite for oral exam -Oral exam
Remark	This course can be used for final thesis theme
Prerequisites:	No prerequisites.
Proposal made by	Mladen Mauher, Ph.D.

Code WEB/ISVU	19090/22402	**ECTS**	5	**Department**	
Name	Operating Systems				
Status	3rd semester - Compulsory courses				
Teaching mode	Lectures + exercises (auditory + laboratory + seminar + metodology + construction) work at home				30+30 (0+30+0+0) 90
Teachers	course coordinator v.pred. Davor Cafuta ,dipl.ing.rač., viši predavač, class type:Lectures course coordinator Ivica Dodig ,dipl.ing.rač., viši predavač, class type:Lectures v.pred. Davor Cafuta ,dipl.ing.rač., viši predavač, class type:Laboratory exercises Ivica Dodig ,dipl.ing.rač., viši predavač, class type:Laboratory exercises				
Course objectives	Understand and learn how to use the functionality of a modern operating system.				
Learning outcomes:	1.ability to extract the basic elements of a computer in FN model. Level:6 2.ability to distinguish between a subprogram and a basic program, their functions as well. Level:6 3.ability to analyse the interruptions and interruptions routines; to distinguish between interruptions and exceptions. Level:6 4.ability to categorize the conditions of certain processes and their implementation. Level:6 5.ability to distinguish between a thread and a process, their advantages and disadvantages as well. Level:6 6.ability to write a program which solves the problem of one or more threads. Level:6,7 7.ability to compare the forced and unforced algorithms to organise the work of a processor. Level:6,7 8.ability to distinguish between different algorithms for loading auxiliary memory. Level:6 9.ability to calculate the size of a disk by means of basic parameters and compare the strategies of positioning the disk head. Level:6 10.ability to check which RAID field is used in assembling disks. Level:6 11.ability to analyse security aspects of the computer system. Level:6 12.ability to identify scheduling algorithms in multimedia system. . Level:6				
Methods of carrying out lectures	Ex cathedra teaching Case studies Demonstration Simulations Discussion Questions and answers				
Methods of carrying out laboratory exercises	Group problem solving Computer simulations				
Course content lectures	1.Operating system components , 2h, Learning outcomes:1 2.Input/output operations, 2h, Learning outcomes:1,2 3.Interrupt handling , 2h, Learning outcomes:1,3 4.Task, process and thread. Synchronisation ., 2h, Learning outcomes:1,2,4,5 5.Mutual exclusion in single and multiprocessor systems., 2h, Learning outcomes:4,5,6 6.Job scheduling, 2h, Learning outcomes:4,5,7 7.Operating system kernel. Semaphores. Producer and consumer problem. Deadlock., 2h, Learning outcomes:4,5,7 8.Partial exam., 2h, Learning outcomes:1,2,3,4,5,6,7 9.Paging., 2h, Learning outcomes:8 10.File system., 2h, Learning outcomes:8,9,10 11.Multimedia in operating system., 2h, Learning outcomes:12 12.Security., 2h, Learning outcomes:11 13.Multiprocessor system., 2h, Learning outcomes:1,4,5 14.Vitualization., 2h, Learning outcomes:1,11 15.Final exam, 2h, Learning outcomes:1,2,3,4,5,6,7,8,9,10,11,12				
Course content laboratory	1.No exercises, 2h 2.No exercises, 2h 3.Interrupts, 2h, Learning outcomes:1,3 4.No exercises, 2h 5.CPU scheduling algoritms., 2h, Learning outcomes:1,2,4,5 6.No exercises, 2h 7.No exercises, 2h 8.No exercises, 2h 9.Paging, 2h, Learning outcomes:8 10.No exercises, 2h 11.Disk reading management algorithms., 2h, Learning outcomes:8,9,10 12.No exercises, 2h 13.Multimedia algorithms, 2h, Learning outcomes:12 14.No exercises, 2h 15.No exercises, 2h				
Required materials	Basic: classroom, blackboard, chalk... General purpose computer laboratory Whiteboard with markers Overhead projector Solving prepared tasks using detailed instructions available at http://www.zemris.fer.hr/predmeti/os1/tehvel/.				
Exam literature	Basic literature: 1. Silberschatz, S. Galvin, Operating System Concepts, Addison Wesley Publishing Company, Reading, Mass., forth edition, 1994. 2. Budin, Operacijski sustavi, Izdavač Element, Zagreb, 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 evaluation during semester	Partial and final exam. One of the exam can be repeated in case of weak results. All other informations is in repository on course page.
Knowledge evaluation after semester	Written and oral exam. Number of points from laboratory exercises are used in mark calculation. All other informations is in repository on course page.
Remark	This course can be used for final thesis theme
Prerequisites:	Students cannot enroll in this course unless they have passed Osnove programiranja
Proposal made by	Davor Cafuta , Ivica Dodig (10.01.2014)

Code WEB/ISVU	19113/85280	**ECTS**	1	**Department**	
Name	Physical Education I				
Status	1st semester - Compulsory courses				
Teaching mode	Lectures + exercises (auditory + laboratory + seminar + metodology + construction) work at home				0+30 (30+0+0+0) 0
Teachers	course coordinator pred. Valter Perinović mag. kineziologije, predavač, class type:Auditory exercises				
Course objectives	To develop in students the habit of practising sports and improving their psychophysical condition and conduct				
Learning outcomes:	1.ability to demonstrate how to perform properly technical elements of certain sports. Level: 2.ability to explain the basic terms related to certain sports. Level: 3.ability to explain the basic rules of certain sports. Level: 4.ability to recognize the muscle building exercises. Level: 5.ability to explain the importance of warming up and stretching. Level: 6.ability to describe the organisation of sport competitions. Level: 7.ability to understand the importance of daily workout throughout one's life. Level:				
Methods of carrying out auditory exercises	Other				
Course content auditory	1.Repeating technical elements of a specific kinesiologic activity, 2h, Learning outcomes:1 2.Repeating technical elements of a specific kinesiologic activity, 2h, Learning outcomes:1 3.Adopting new elements of a specific kinesiologic activity, 2h, Learning outcomes:2 4.Adopting new elements of a specific kinesiologic activity, 2h, Learning outcomes:2 5.Improving the elements of a specific kinesiologic activity, 2h, Learning outcomes:3 6.Improving the elements of a specific kinesiologic activity, 2h, Learning outcomes:3 7.Adopting a set of warm-up exercises for a specific kinesiologic activity, 2h, Learning outcomes:4 8.Adopting a set of stretching exercises for a specific kinesiologic activity, 2h, Learning outcomes:5 9.Repeating the basic rules of a specific kinesiologic activity, 2h, Learning outcomes:6 10.Using auxiliary and elementary games in the learning process of a specific kinesiologic activity, 2h, Learning outcomes:7 11.Adoption of basic technical and tactical elements of a specific kinesiologic activity, 2h, Learning outcomes:6 12.Adoption of basic technical and tactical elements of a specific kinesiologic activity, 2h, Learning outcomes:6 13.Competition and Games, 2h, Learning outcomes:5 14.Competition and Games, 2h, Learning outcomes:5 15.Training and automation of injury prevention exercises, 2h, Learning outcomes:4				
Required materials	Special equipment				
Exam literature	Nema				
Students obligations	maximum of 3 absences from exercises				
Knowledge evaluation during semester	Prakti ispit#1#1#100$				
Knowledge evaluation after semester	Laboratory exercises				
Remark	This course can not be used for final thesis theme				
Prerequisites:	No prerequisites.				

Code WEB/ISVU	19116/85281	**ECTS**	1	**Department**	
Name	Physical Education II				
Status	2nd semester - Compulsory courses				
Teaching mode	Lectures + exercises (auditory + laboratory + seminar + metodology + construction) work at home				0+30 (30+0+0+0) 0
Teachers	course coordinator pred. Valter Perinović mag. kineziologije, predavač, class type:Auditory exercises				
Course objectives	To develop in students the habit of practising sports and improving their psychophysical condition and conduct				
Learning outcomes:	1.ability to demonstrate how to perform properly technical elements of certain sports. Level: 2.ability to organise exercises for groups of muscles. Level: 3.ability to distinguish between different types of workout carried out to achieve different motoric and functional capabilities. Level:6 4.ability to compare various body activities and their influences on anthropological features . Level:6,7 5.ability to explain the basic facts about the influence of daily workout on one's health . Level: 6.ability to distinguish between different nutrients and their effects on a body. Level:6 7.ability to explain the basic facts about the relation between workout and a body volume. Level:				
Methods of carrying out auditory exercises	Group problem solving Discussion, brainstorming Interactive problem solving Other				
Course content auditory	1.Repeating technical elements of a specific kinesiologic activity, 2h, Learning outcomes:1 2.Repeating technical elements of a specific kinesiologic activity, 2h, Learning outcomes:1 3.Adopting new elements of a specific kinesiologic activity, 2h, Learning outcomes:2 4.Adopting new elements of a specific kinesiologic activity, 2h, Learning outcomes:2 5.Adopting a set of exercises for each muscle group, 2h, Learning outcomes:3 6.Adopting a set of exercises for each muscle group, 2h, Learning outcomes:3 7.Establishing the rules of a specific kinesiologic activity, 2h, Learning outcomes:4 8.Adopting different training methods , 2h, Learning outcomes:5 9.Adopting different training methods , 2h, Learning outcomes:5 10.Implementation of the elements of various sporting activities, 2h, Learning outcomes:6 11.Training of injury prevention exercises , 2h, Learning outcomes:7 12.Adoption of basic technical and tactical elements of a specific kinesiologic activity, 2h, Learning outcomes:6 13.Adoption of basic technical and tactical elements of a specific kinesiologic activity, 2h, Learning outcomes:6 14.Competition and Games, 2h, Learning outcomes:5 15.Competition and Games, 2h, Learning outcomes:5				
Required materials	Special equipment				
Exam literature	Nema				
Students obligations	maximum of 3 absences from exercises				
Knowledge evaluation during semester	Prakti ispit#1#1#100$				
Knowledge evaluation after semester	Laboratory exercises				
Remark	This course can not be used for final thesis theme				
Prerequisites:	No prerequisites.				

Code WEB/ISVU	19117/85282	**ECTS**	1	**Department**	
Name	Physical Education III				
Status	3rd semester - Compulsory courses				
Teaching mode	Lectures + exercises (auditory + laboratory + seminar + metodology + construction) work at home				0+30 (30+0+0+0) 0
Teachers	course coordinator pred. Valter Perinović mag. kineziologije, predavač, class type:Auditory exercises				
Course objectives	To develop in students the habit of practising sports and improving their psychophysical condition and conduct				
Learning outcomes:	1.ability to demonstrate how to perform properly technical elements of certain sports. Level: 2.ability to explain the purpose of applying tactical elements in certain sports. Level: 3.ability to provide an example on how to organise a student sport competition . Level: 4.ability to group the basic kinesiological programs based on their influences on a body . Level: 5.ability to explain the possibilities of taking part in sport activities in Croatia. Level: 6.ability to provide an example on how to plan a personal workout program for a week/a month/a year. Level: 7.ability 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 8.Game systems and tactics of a specific kinesiologic activity, 2h, Learning outcomes:4 9.Team leadership, officiating, organization of competitions, 2h, Learning outcomes:5 10.Training structure (content and organization) of a specific kinesiologic activity, 2h, Learning outcomes:6 11.Learning and application of a specific kinesiologic activity for the purpose of independent regular exercise during free time., 2h, Learning outcomes:7 12.Learning and application of a specific kinesiologic activity for the purpose of independent regular exercise during free time., 2h, Learning outcomes:7 13.Adoption of exercises for each muscle group for the prevention of occupational injuries, 2h, Learning outcomes:6 14.Strength and mobility exercises for the prevention of injuries, First aid, 2h, Learning outcomes:5 15.Basic characteristics of different kinesiologic activities and their impact on anthropological characteristics, 2h, Learning outcomes:4				
Required materials	Special equipment				
Exam literature	Nema				
Students obligations	maximum of 3 absences from exercises				
Knowledge evaluation during semester	Prakti ispit#1#1#100$				
Knowledge evaluation after semester	Laboratory exercises				
Remark	This course can not be used for final thesis theme				
Prerequisites:	No prerequisites.				

Code WEB/ISVU	19118/85283	**ECTS**	1	**Department**	
Name	Physical Education IV				
Status	4th semester - Compulsory courses				
Teaching mode	Lectures + exercises (auditory + laboratory + seminar + metodology + construction) work at home				0+30 (30+0+0+0) 0
Teachers	course coordinator pred. Valter Perinović mag. kineziologije, predavač, class type:Auditory exercises				
Course objectives	To develop in students the habit of practising sports and improving their psychophysical condition and conduct				
Learning outcomes:	1.ability to demonstrate how to perform properly technical elements of certain sports. Level: 2.ability to explain the purpose of applying tactical elements in certain sports. Level: 3.ability to explain how to take part in student sport competitions organisation. Level: 4.ability to explain the importance of taking proper food and carrying out daily workout throughout one's life. Level: 5.ability to provide an example on how to plan a personal workout program for a week/a month/a year. Level: 6.ability to distinguish between different professional illnesses of the locomotor system of persons employed in civil engineering. Level:6 7.ability to explain the importance of one's being physically active and thus preventing professional illnesses of locomotor system. Level:				
Methods of carrying out auditory exercises	Group problem solving Discussion, brainstorming Interactive problem solving Other				
Course content auditory	1.Adopting and improving the technical elements of a chosen kinesiologic activity, 2h, Learning outcomes:1 2.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:2 5.Establishing the rules 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:4 8.Application of a specific kinesiologic activity for the purpose of independent regular exercise during free time, 2h, Learning outcomes:5 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 competitions, 2h, Learning outcomes:6 11.Training structure (content and organization) of a specific kinesiologic activity, 2h, Learning outcomes:7 12.Training structure (content and organization) of a specific kinesiologic activity, 2h, Learning outcomes:7 13.Selection of exercises for each muscle group for the prevention of occupational injuries, 2h, Learning outcomes:6 14.Basic characteristics of different kinesiologic activities and their impact on anthropological characteristics, 2h, Learning outcomes:5 15.Basic characteristics of different kinesiologic activities and their impact on anthropological characteristics, 2h, Learning outcomes:5				
Required materials	Special equipment				
Exam literature	Nema				
Students obligations	maximum of 3 absences from exercises				
Knowledge evaluation during semester	Prakti ispit#1#1#100$				
Knowledge evaluation after semester	Laboratory exercises				
Remark	This course can not be used for final thesis theme				
Prerequisites:	No prerequisites.				

Code WEB/ISVU	19063/22394	**ECTS**	6	**Department**	
Name	Physics				
Status	2nd semester - Compulsory courses				
Teaching mode	Lectures + exercises (auditory + laboratory + seminar + metodology + construction) work at home				30+30 (30+0+0+0) 120
Teachers	course coordinator prof.vis.šk. Ivica Levanat , profesor visoke škole, class type:Lectures Alemka Knapp , asistent, class type:Auditory exercises Diana Šaponja-Milutinović , asistent, class type:Auditory exercises				
Course objectives	To introduce students to physical phenomena and quantities useful in the study of IT, described within a broader context of the basic laws of physics				
Learning outcomes:	1.ability to calculate simple linear motions, motions on a circle, and a launch at an angle. Level:6 2.ability to calculate the translation acceleration of a body upon which a force is exerted. Level:6 3.ability to relate the work of forces to kinetic and potential energy of a body. Level:6,7 4.ability to distinguish between a classical mechanical description of motion and special relativity. Level:6 5.ability to analyse the effects of both electric and magnetic fields on electric charge. Level:6 6.ability to calculate currents and voltages in simple circles with Ohm resistance using Kirchhoff's laws. Level:6 7.ability to relate alternating current to electromagnetic induction. Level:6,7 8.ability to analyze simple harmonic oscillations without damping. Level:6 9.ability to relate Bohr's model of atom to a quality description of electron shells and ribbons. Level:6,7 10.ability to make simple calculations of emission/absorption of photons and photoelectric effect. Level:6				
Methods of carrying out lectures	Ex cathedra teaching Case studies Demonstration Discussion Questions and answers Other Oral presentation, including communication with students; their active participation is stimulated during formulation and analysis of physical laws. Physical phenomena and laws are illustrated by familiar examples or improvised demonstrations, and by simple experiments where possible. Equations and their derivations are fully outlined on the blackboard, illustrated by sketches and diagrams as appropriate.				
Methods of carrying out auditory exercises	Group problem solving Discussion, brainstorming Interactive problem solving Other : Solving simpler problems in the topics covered by the lectures, in order to increase understanding of physical quantities and their interrelations. Calculations include numerical values which appear in technical applications. Teacher explains and illustrates the procedure, students solve the problems on the blackboard and in their notebooks.				
Course content lectures	1.Physical quantities and units., 2h, Learning outcomes:1,2 2.Rectilinear motion, free fall., 2h, Learning outcomes:1 3.Motion along curve and circle., 2h, Learning outcomes:1 4.Newton axioms, momentum., 2h, Learning outcomes:2 5.Work, power and energy., 2h, Learning outcomes:3 6.Einstein special theory of relativity., 2h, Learning outcomes:4 7.Gravitational and electric field., 2h, Learning outcomes:5 8.Direct current ., 2h, Learning outcomes:6 9.Magnetic field., 2h, Learning outcomes:5 10.Electromagnetic induction., 2h, Learning outcomes:7 11.Alternating current., 2h, Learning outcomes:7 12.Harmonic oscillations., 2h, Learning outcomes:8 13. Wave optics, photoelectric effect., 2h, Learning outcomes:9,10 14.Atomic and nuclear structure., 2h, Learning outcomes:9 15.Electron shells, semiconductors., 2h, Learning outcomes:9,10				
Course content auditory	1.Rectilinear motion., 2h, Learning outcomes:1 2.Rectilinear motion., 2h, Learning outcomes:1 3.Projectile motion., 2h, Learning outcomes:1 4.Circular motion., 2h, Learning outcomes:1 5.Newton axioms., 2h, Learning outcomes:2 6.Newton axioms., 2h, Learning outcomes:2 7.Work and power, energy., 2h, Learning outcomes:3 8.Collisions., 2h, Learning outcomes:3 9.1. partial exam, 2h, Learning outcomes:1,2,3 10.Special theory of relativity., 2h, Learning outcomes:4 11.Gravitational and electric field., 2h, Learning outcomes:5 12. DC circuits., 2h, Learning outcomes:6 13.Bohr model of atom., 2h, Learning outcomes:9,10 14.Photoelectric effect., 2h, Learning outcomes:10 15.2. partial exam, 2h, Learning outcomes:4,5,6,7,8,9,10				
Required materials	Basic: classroom, blackboard, chalk... Whiteboard with markers Overhead projector :-				
Exam literature	Basic literature: 1. Levanat, I., Fizika za TVZ 00 Kinematika i dinamika, TVZ, Zagreb, 2010. 2. Pinter, V.: Osnove elektrotehnike, Knjiga prva, Tehnička knjiga, Zagreb, 1986				

	Additional literature: 1. Young Freedman, University Physics, Addison Wesley, San Francisco, 2007
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.
Remark	This course can not be used for final thesis theme
Prerequisites:	No prerequisites.
Proposal made by	Ivica Levanat, prof. v. škole, 21. 01. 2014

Code WEB/ISVU	19086/85390	**ECTS**	4	**Department**	
Name	Picture, Sound and Video Processing				
Status	3rd semester - Compulsory courses - E-business				
Teaching mode	Lectures + exercises (auditory + laboratory + seminar + metodology + construction) work at home				30+60 (60+0+0+0) 30
Teachers	course coordinator dr.sc. Vilko Žiljak , redoviti profesor, class type:Lectures course coordinator Ivan Rajković , predavač, class type:Auditory exercises				
Course objectives	To transfer to students the basic knowledge related to the interactive media which use image, sound and video				
Learning outcomes:	1.ability to identify the relations between multimedia methods: scanning, digital photography, printing, sound, video and animation. Level:6 2.ability to integrate multimedia tools. Level:6,7 3.ability to distinguish between classifications of programs and computer equipment in multimedia design. Level:6 4.ability to combine manipulations with pixel graphics and its records. Level:6,7 5.ability to design a work containing audio and video formats. Level:6,7 6.ability to prepare the synchronization of sound, video and animation. Level:6,7 7.ability to devise a presentation of a content by using multimedia tools. Level:6,7				
Methods of carrying out lectures	Ex cathedra teaching Case studies Discussion Questions and answers Homework presentation Lectures are with the interactive projection with the computer. Studies theoretical structures and uses in practice				
Methods of carrying out auditory exercises	Laboratory exercises, computer simulations Group problem solving Traditional literature analysis Data mining and knowledge discovery on the Web Discussion, brainstorming Mind mapping Computer simulations Interactive problem solving Workshop				
Course content lectures	1. , 2h, Learning outcomes:1,2,3,4,5 2. , 2h, Learning outcomes:1,2,3,4,5 3. , 2h, Learning outcomes:1,2,3,4,5 4. , 2h, Learning outcomes:1,2,3,4,5 5. , 2h, Learning outcomes:1,2,3,4,5 6. , 2h, Learning outcomes:1,2,3,4,5 7. , 2h, Learning outcomes:1,2,3,4,5 8. , 2h, Learning outcomes:1,2,3,4,5 9. , 2h, Learning outcomes:1,2,3,4,5 10. , 2h, Learning outcomes:1,2,3,4,5 11. , 2h, Learning outcomes:1,2,3,4,5 12. , 2h, Learning outcomes:1,2,3,4,5 13. , 2h, Learning outcomes:1,2,3,4,5 14. , 2h, Learning outcomes:1,2,3,4,5 15. , 2h, Learning outcomes:6				
Course content auditory	1. , 2h, Learning outcomes:1,2,3,4,5,6 2. , 2h, Learning outcomes:1,2,3,4,5 3. , 2h, Learning outcomes:1,2,3,4,5 4. , 2h, Learning outcomes:1,2,3,4,5 5. , 2h, Learning outcomes:1,2,3,4,5 6. , 2h, Learning outcomes:1,2,3,4,5 7. , 2h, Learning outcomes:1,2,3,4,5 8. , 2h, Learning outcomes:1,2,3,4,5 9. , 2h, Learning outcomes:4,5 10. , 2h, Learning outcomes:1,2,3,4,5 11. , 2h, Learning outcomes:1,2,3,4,5 12. , 2h, Learning outcomes:1,2,3,4,5 13. , 2h, Learning outcomes:2,4,5,6 14. , 2h, Learning outcomes:2,4,5,6 15. , 2h, Learning outcomes:6				
Required materials	Basic: classroom, blackboard, chalk... Whiteboard with markers Overhead projector Video equipment				
Exam literature	Basic literature: 1. V. Žiljak, K. Pap, POSTSCRIPT PROGRAMIRANJE GRAFIKE, FS, Zagreb, 1998. /2004. ISBN: 953 - 199 - 000, elektr. Izdanje: http://free-zg.htnet.hr/kpap/ 2. V. Žiljak, TIPOGRAFIJA RAČUNALOM, str. 5 do 63 u kjizi Tiskarstvo 04, ISBN 953-199-0190, UDK 655(082) , 655.4.92>(082).738.5 2004. FS i Grafički fakultet, elektr. izdanje: www.grf.hr/vziljak/tiskarstvo03 3. Foley,J and A.van Dam:Fundamentals of Interactive Computer Graphics, Addison-Wesley, 1982. ISBN 0-201-14468-9 Additional literature:				

	1. Foley,J and A.van Dam, feiner, Hughes:Computer graphics: Principles and Practise, second edition in C, Addison-Wesley, 1996. ISBN 0-201-84840-6
Students obligations	maximum of 3 absences from exercises
Knowledge evaluation during semester	Redovitost pohaa#15#15#0$Kolokvij, numeri zadaci#6#20#0$Programski zadatak#1#25#0$Prakti rad#1#25#0$Usmena provjera znanja#1#5#0$Prakti ispit#1#10#0$
Knowledge evaluation after semester	Tasks on the computer and the oral part of the exam
Remark	This course can be used for final thesis theme
Prerequisites:	No prerequisites.
Proposal made by	Prof. dr. sc. Vilko Žiljak

Code WEB/ISVU	19122/22749	**ECTS**	4	**Department**	
Name	Picture, Sound and Video Processing				
Status	4th semester - Elective courses - IT Design				
Teaching mode	Lectures + exercises (auditory + laboratory + seminar + metodology + construction) work at home				30+60 (60+0+0+0) 30
Teachers	course coordinator dr.sc. Vilko Žiljak , redoviti profesor, class type:Lectures course coordinator Ivan Rajković , predavač, class type:Auditory exercises				
Course objectives	To transfer to students the basic knowledge related to the interactive media which use image, sound and video				
Learning outcomes:	1.ability to identify the relations between multimedia methods: scanning, digital photography, printing, sound, video and animation. Level:6 2.ability to integrate multimedia tools. Level:6,7 3.ability to distinguish between classifications of programs and computer equipment in multimedia design. Level:6 4.ability to combine manipulations with pixel graphics and its records. Level:6,7 5.ability to design a work containing audio and video formats. Level:6,7 6.ability to prepare the synchronization of sound, video and animation. Level:6,7 7.ability to devise a presentation of a content by using multimedia tools. Level:6,7				
Methods of carrying out lectures	Ex cathedra teaching Case studies Discussion Questions and answers Lectures are with the interactive projection with the computer. Studies theoretical structures and uses in practice				
Methods of carrying out auditory exercises	Laboratory exercises, computer simulations Group problem solving Traditional literature analysis Data mining and knowledge discovery on the Web Discussion, brainstorming Mind mapping Computer simulations Interactive problem solving Workshop				
Course content lectures	1. , 2h, Learning outcomes:1,2,3,4 2. , 2h, Learning outcomes:1,2,3,4 3. , 2h, Learning outcomes:1,2,3,4 4. , 2h, Learning outcomes:1,2,3,4 5. , 2h, Learning outcomes:1,2,3,4 6. , 2h, Learning outcomes:1,2,3,4,5,6,7 7. , 2h, Learning outcomes:4,5,6,7 8. , 2h, Learning outcomes:4,5,6,7 9. , 2h, Learning outcomes:4,5,6,7 10. , 2h, Learning outcomes:4,5,6,7 11. , 2h, Learning outcomes:4,5,6,7 12. , 2h, Learning outcomes:4,5,6,7 13. , 2h, Learning outcomes:4,5,6,7 14. , 2h, Learning outcomes:4,5,6,7 15. , 2h, Learning outcomes:4,5,6,7				
Course content auditory	1. , 2h, Learning outcomes:1,2,3 2. , 2h, Learning outcomes:1,2,3,4,5 3. , 2h, Learning outcomes:1,2,3,4 4. , 2h, Learning outcomes:1,2,3,4 5. , 2h, Learning outcomes:1,2,3,4 6. , 2h, Learning outcomes:4,5,6,7 7. , 2h, Learning outcomes:4,5,6,7 8. , 2h, Learning outcomes:1,2,3,4,5,6,7 9. , 2h, Learning outcomes:4,5,6,7 10. , 2h, Learning outcomes:4,5,6,7 11. , 2h, Learning outcomes:4,5,6,7 12. , 2h, Learning outcomes:4,5,6,7 13. , 2h, Learning outcomes:4,5,6,7 14. , 2h, Learning outcomes:4,5,6,7 15. , 2h, Learning outcomes:7				
Required materials	Basic: classroom, blackboard, chalk... Whiteboard with markers Overhead projector Video equipment				
Exam literature	Basic literature: 1. V. Žiljak, K. Pap, POSTSCRIPT PROGRAMIRANJE GRAFIKE, FS, Zagreb, 1998. /2004. ISBN: 953 - 199 - 000, elektr. Izdanje: http://free-zg.htnet.hr/kpap/ 2. V. Žiljak, TIPOGRAFIJA RAČUNALOM, str. 5 do 63 u kjizi Tiskarstvo 04, ISBN 953-199-0190, UDK 655(082) , 655.4.92>(082).738.5 2004. FS i Grafički fakultet, elektr. izdanje: www.grf.hr/vziljak/tiskarstvo03 3. Foley,J and A.van Dam:Fundamentals of Interactive Computer Graphics, Addison-Wesley, 1982. ISBN 0-201-14468-9 Additional literature: 1. Foley,J and A.van Dam, feiner, Hughes:Computer graphics: Principles and Practise, second edition in C,				

	Addison-Wesley, 1996. ISBN 0-201-84840-6
Students obligations	maximum of 3 absences from exercises
Knowledge evaluation during semester	Redovitost pohaa#15#15#0$Kolokvij, numeri zadaci#6#20#0$Programski zadatak#1#25#0$Prakti rad#1#25#0$Usmena provjera znanja#1#5#0$Prakti ispit#1#10#0$
Knowledge evaluation after semester	Tasks on the computer and the oral part of the exam
Remark	This course can be used for final thesis theme
Prerequisites:	No prerequisites.
Proposal made by	Prof. dr. sc. Vilko Žiljak

Code WEB/ISVU	19114/22408	**ECTS**	3	**Department**	
Name	Practical Work				
Status	6th semester - Compulsory courses - Office Organization and Informatization 6th semester - Compulsory courses - E-business 6th semester - Compulsory courses - IT Design				
Teaching mode	Lectures + exercises (auditory + laboratory + seminar + metodology + construction) work at home				0+90 (90+0+0+0) 0
Teachers	Milan Bajić ing., laborant, class type:Auditory exercises course coordinator prof. dr. sc. Jana Žiljak Vujić , voditelj studija Informatike, profesor visoke škole, class type:Auditory exercises				
Course objectives	To enable students to acquire the initial work experience in a technical environment and prepare them for a career				
Learning outcomes:	1.ability to develop an attitude towards work. Level:6,7 2.ability to plan tasks to be performed in work time. Level:6,7 3.ability to relate the acquired knowledge to specific problems in workplace. Level:6,7 4.ability to estimate situations in which supervisors should be asked for help. Level:6,7 5.ability to anticipate the employer's needs. Level:6,7 6.ability to build a relationship with colleagues. Level:6,7 7.ability o be prepared for individual work in an organisation. Level:6,7				
Methods of carrying out auditory exercises	Other				
Course content auditory	1.In cooperation with the mentor, 6h, Learning outcomes:1,2,3,4,5,6,7 2.In cooperation with the mentor, 6h, Learning outcomes:1,2,3,4,5,6,7 3.In cooperation with the mentor, 6h, Learning outcomes:1,2,3,4,5,6,7 4.In cooperation with the mentor, 6h, Learning outcomes:1,2,3,4,5,6,7 5.In cooperation with the mentor, 6h, Learning outcomes:1,2,3,4,5,6,7 6.In cooperation with the mentor, 6h, Learning outcomes:1,2,3,4,5,6,7 7.In cooperation with the mentor, 6h, Learning outcomes:1,2,3,4,5,6,7 8.In cooperation with the mentor, 6h, Learning outcomes:1,2,3,4,5,6,7 9.In cooperation with the mentor, 6h, Learning outcomes:1,2,3,4,5,6,7 10.In cooperation with the mentor, 6h, Learning outcomes:1,2,3,4,5,6,7 11.In cooperation with the mentor, 6h, Learning outcomes:1,2,3,4,5,6,7 12.In cooperation with the mentor, 6h, Learning outcomes:1,2,3,4,5,6,7 13.In cooperation with the mentor, 6h, Learning outcomes:1,2,3,4,5,6,7 14.In cooperation with the mentor, 6h, Learning outcomes:1,2,3,4,5,6,7 15.In cooperation with the mentor, 6h, Learning outcomes:1,2,3,4,5,6,7				
Required materials	Special equipment				
Exam literature	U dogovoru sa mentorom na praksi.				
Students obligations	Traineeship can be done in companies/institutions in Croatia or abroad (with a written approval of traineeship leader); it is related to the study programme a student is enrolled in at the Polytechnic of Zagreb. Students' tasks and duties are defined by an agreement between a student and a mentor in a company the traineeship is being carried in. Work rules, testing and traineeship recognition are regulated by a Rule Book				
Knowledge evaluation during semester	Traineeship can be done in companies/institutions in Croatia or abroad (with a written approval of traineeship leader); it is related to the study programme a student is enrolled in at the Polytechnic of Zagreb. Students' tasks and duties are defined by an agreement between a student and a mentor in a company the traineeship is being carried in. Work rules, testing and traineeship recognition are regulated by a Rule Book				
Knowledge evaluation after semester	Traineeship can be done in companies/institutions in Croatia or abroad (with a written approval of traineeship leader); it is related to the study programme a student is enrolled in at the Polytechnic of Zagreb. Students' tasks and duties are defined by an agreement between a student and a mentor in a company the traineeship is being carried in. Work rules, testing and traineeship recognition are regulated by a Rule Book				
Remark	This course can not be used for final thesis theme				
Prerequisites:	No prerequisites.				
Proposal made by	Voditelj studija 14.02.2014				

Code WEB/ISVU	19108/22391	**ECTS**	4	**Department**	
Name	Probability and Statistics				
Status	3rd semester - Compulsory courses				
Teaching mode	Lectures + exercises (auditory + laboratory + seminar + metodology + construction) work at home				60+30 (30+0+0+0) 30
Teachers	course coordinator dr.sc. Igor Urbiha prof.vis.šk., profesor visoke škole, class type:Lectures Tihana Strmečki , asistent, class type:Auditory exercises dr.sc. Igor Urbiha prof.vis.šk., profesor visoke škole, class type:Auditory exercises				
Course objectives	To introduce students to probabilistic way of thinking				
Learning outcomes:	1.ability to recognize a random event, following a definition. Level:6,7 2.ability to calculate probability according to the traditional formula "a priori" and through the axiom based probability . Level:6 3.abilityto reach a conclusion about the basic properties of the probability function. Level:6,7 4.ability to organise the implementation of conditional probability. Level:6,7 5.ability to relate the notion of independence of an event to the solution to a problem. Level:6,7 6.identify whether a discrete random variable has an uniform, Bernoulli or some other distribution. Level:6 7.ability to reach a conclusion about a discrete variable and its distribution, according to a definition. Level:6,7 8.ability to reach a conclusion about a continuous random variable and its distribution of probability, especially in regard with normal distribution . Level:6,7 9.ability to reach a conclusion about the validity of a hypothesis based on statistical tests. Level:6,7				
Methods of carrying out lectures	Ex cathedra teaching Discussion Questions and answers Auditory				
Course content lectures	1.Descriptive statistics: frequency tables, histogram, cumulative function, 2h 2.Arithmetic mean, mode, median, quartile, percentile, quantile, 2h 3.Variance, standard deviation, Chebyshev theorem, comparision of different measurement, comparision of different results, 2h 4.Linear regression, 2h 5.1st exam, 2h 6.Event, probability "a priori", axioms of probability, 2h, Learning outcomes:1,2,3,4 7.Discrete random variable, distribution of a discrete random variable, 2h, Learning outcomes:6 8.Probability density function, probability distribution function, expectation, variance and standard deviation of a discrete random variable, 2h, Learning outcomes:6 9.Discrete uniform distribution, Bernoulli trial, Bernoulli scheme, binomial distribution, Poisson distribution, 2h, Learning outcomes:7 10.2nd exam, 2h, Learning outcomes:1,2,3,4,5,6 11.Continuous random variable, 2h, Learning outcomes:8 12.Normal (Gaussian) distribution, standard normal distribution, chi squared distribution, 2h, Learning outcomes:8 13.Testing a hypothesis for expectation with known variance, 2h, Learning outcomes:9 14.Chi squared test, 2h, Learning outcomes:9 15.3rd exam, 2h, Learning outcomes:8,9				
Course content auditory	1.Descriptive statistics: frequency tables, histogram, cumulative function, 2h 2.Arithmetic mean, mode, median, quartile, percentile, quantile, 2h 3.Variance, standard deviation, Chebyshev theorem, comparision of different measurement, comparision of different results, 2h 4.Linear regression, 2h 5.1st exam, 2h 6.Random event, probability "a priori", axioms of probability, 2h, Learning outcomes:1,2,3,4,5 7.Discrete random variable, distribution of a discrete random variable, 2h, Learning outcomes:6 8.Probability density function, probability distribution function, expectation, variance and standard deviation of a discrete random variable, 2h, Learning outcomes:6 9.Discrete uniform distribution, Bernoulli trial, Bernoulli scheme, binomial distribution, Poisson distribution, 2h, Learning outcomes:7 10.2nd exam, 2h, Learning outcomes:1,2,3,4,5,6,7 11.Continuous random variable, 2h, Learning outcomes:8 12.Normal (Gaussian) distribution, standard normal distribution, chi squared distribution, 2h, Learning outcomes:8 13.Testing a hypothesis for expectation with known variance, 2h, Learning outcomes:9 14.Chi squared test, 2h, Learning outcomes:9 15.3rd exam, 2h, Learning outcomes:8,9				
Required materials	Basic: classroom, blackboard, chalk...				
Exam literature	Basic literature: 1. S. Suljagić: Vjerojatnost i statistika, elektroničko izdanje, 2003., 2. http://tesla.vtszg.hr/suljagic Additional literature: 1. Z.Pauše, Vjerojatnost, Školska knjiga, Zagreb, 1974.				
Students obligations	No special requirements				
Knowledge evaluation during semester	Exams during semester				
Knowledge evaluation after	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				

semester	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.
Remark	This course can be used for final thesis theme
Prerequisites:	No prerequisites.
Proposal made by	Dr. Igor Urbiha

Code WEB/ISVU	19095/85278	**ECTS**	7	**Department**	
Name	Programming				
Status	2nd semester - Compulsory courses				
Teaching mode	Lectures + exercises (auditory + laboratory + seminar + metodology + construction) work at home				15+45 (15+30+0+0) 150
Teachers	course coordinator Prof.dr.sc. Slavica Ćosović Bajić , izvanredni profesor, class type:Lectures course coordinator Prof. dr. sc. Miroslav Slamić profesor visoke škole, profesor visoke škole, class type:Lectures Bojan Nožica dipl. ing, v.pred., predavač, class type:Auditory exercises mr.sc. Mirko Smilevski dipl.ing., predavač, class type:Auditory exercises dipl. ing. Ognjen Staničić , asistent, class type:Auditory exercises Mia Čarapina dipl. ing., pred., predavač, class type:Laboratory exercises Bojan Nožica dipl. ing, v.pred., predavač, class type:Laboratory exercises mr.sc. Mirko Smilevski dipl.ing., predavač, class type:Laboratory exercises				
Course objectives	To transfer the knowledge related to programming				
Learning outcomes:	1.ability to analyse the possibilities of solving multidimensional fields in C programs. Level:6 2.ability to design a solution by using recursive algorithms. Level:6 3.ability to formulate and solve complex engineering problems by means of one's own functions and files. Level:6,7 4.ability to integrate the option of reading and writing the input/output data into files. Level:6,7 5.ability to identify the possibility of using various types of files. Level:6 6.ability to create the access to objects and functions by means of references and pointers in C language. Level:6,7				
Methods of carrying out lectures	Ex cathedra teaching Case studies Discussion The subject matter is taught by using a great number particular examples C programms . Students are constantly asked questions in order to motivate them to take an active part in class. Teaching equipment: board, overhead projector and LCD projector.				
Methods of carrying out auditory exercises	Laboratory exercises, computer simulations				
Methods of carrying out laboratory exercises	Laboratory exercises, computer simulations A student, instructed by the teacher, solved a practical example on computers.				
Course content lectures	1.Two-dimensional arrays. The definition and use. , 2h, Learning outcomes:1 2.Pointers, definition and application. Pointer arithmetic. , 2h, Learning outcomes:1 3.Relations between pointers and arrays. Implementation of dynamic fields using the pointers. , 2h, Learning outcomes:1 4.Functions. Transferring parameters to functions. Main functions. Recursion., 2h, Learning outcomes:1,2,3 5.Pointers and functions. Transmission parameters by address and return address. , 2h, Learning outcomes:1,2,3,6 6.Transferring arrays to functions (static one-dimensional and multidimensional, dynamic). , 2h, Learning outcomes:1,2,3,6 7.Complex programs. Composition of complex programs in multiple files. , 2h, Learning outcomes:3 8.Scope of variables through functions and files. , 2h, Learning outcomes:3 9.Built-in libraries. Mathematical functions and service functions. , 2h, Learning outcomes:4,5 10.Functions for formatted input / output. , 2h, Learning outcomes:3,4,5 11.Functions to work with strings. , 2h, Learning outcomes:3,4,5 12.Working with files. Formatted files. , 2h, Learning outcomes:3,4,5 13.The structure as an abstract data type. Unformatted (binary) files. , 2h, Learning outcomes:3,4,5 14.Complex examples of using formatted and unformatted files. , 2h, Learning outcomes:3,4,5,6 15.The application binary files in different data formats., 2h, Learning outcomes:3,4,5,6				
Course content auditory	1.Operations with two-dimensional array in the main ( ) function . Loading 2D arrays from console and initialization code declarations . The realization of different tasks in a given case ., 2h, Learning outcomes:1 2.Understanding and working with pointers . Operations with pointers . Pointers and arrays , 2h, Learning outcomes:1 3.Understanding and working with pointers and arrays , Double pointers and application. Dynamic allocation of space ., 2h, Learning outcomes:1 4.Transmission parameters in function over the pointer value . Return of pointer , one-dimensional arrays and transfer in functions., 2h, Learning outcomes:1,3 5.Transfer 2D arrays in the function . main ( ) function with arguments ., 2h, Learning outcomes:1,2,3,6 6.Repetition and prepare for the first mid-term ., 2h, Learning outcomes:1,2,3,6 7.The first mid-term ., 2h, Learning outcomes:4 8.Complex programs , scope classes , range of validity of the variables . Development of the one game (simulation) as a complex program ., 2h, Learning outcomes:4 9.Operations with strings using built-in functions . Operations with characters using built-in functions . Writing functions to handle strings ., 2h, Learning outcomes:4,5 10.Using the function printf ( ) and scanf ( ) . Formate specifiers ., 2h, Learning outcomes:3,4,5 11.Formatted files . Opening and closing formatted files for various purposes . Using the function fprintf ( ) and fscanf ( ) . Using the function fgets ( ) and fputs ( ) ., 2h, Learning outcomes:3,4,5 12.Opening and closing unformatted files. Using the function fwrite ( ) and fread ( ) . Using the function fseek ( ) for positioning in the file . Copying the files foramtirane in direct unformatted file ., 2h, Learning outcomes:3,4,5 13.Repeat working with different types of files when processing a text string ., 2h, Learning outcomes:3,4,5 14.Preparing for the second mid-term ., 2h, Learning outcomes:3,4,5,6 15.The second mid-term ., 2h, Learning outcomes:3,4,5,6				
Course content laboratory	1.Operations with two-dimensional array in the main ( ) function . Loading 2D arrays from console and initialization code declarations . The realization of different tasks in a given case ., 2h, Learning outcomes:1 2.Understanding and working with pointers . Operations with pointers . Pointers and arrays , 2h, Learning outcomes:1				

	3.Understanding and working with pointers and arrays , Double pointers and application. Dynamic allocation of space ., 2h, Learning outcomes:1 4.Transmission parameters in function over the pointer value . Return of pointer , one-dimensional arrays and transfer in functions., 2h, Learning outcomes:1,3 5.Transfer 2D arrays in the function . main ( ) function with arguments ., 2h, Learning outcomes:1,2,3,6 6.Repetition and prepare for the first mid-term ., 2h, Learning outcomes:1,2,3,6 7.The first mid-term ., 2h, Learning outcomes:4 8.Complex programs , scope classes , range of validity of the variables . Development of the one game (simulation) as a complex program ., 2h, Learning outcomes:4 9.Operations with strings using built-in functions . Operations with characters using built-in functions . Writing functions to handle strings , 2h, Learning outcomes:4,5 10.Using the function printf ( ) and scanf ( ) . Formate specifiers ., 2h, Learning outcomes:3,4,5 11.Formatted files . Opening and closing formatted files for various purposes . Using the function fprintf ( ) and fscanf ( ) . Using the function fgets ( ) and fputs ( ) ., 2h, Learning outcomes:3,4,5 12.Opening and closing unformatted files. Using the function fwrite ( ) and fread ( ) . Using the function fseek ( ) for positioning in the file . Copying the files foramtirane in direct unformatted file ., 2h, Learning outcomes:3,4,5 13.Repeat working with different types of files when processing a text string ., 2h, Learning outcomes:3,4,5 14.Preparing for the second mid-term ., 2h, Learning outcomes:3,4,5,6 15.The second mid-term ., 2h, Learning outcomes:3,4,5,6
Required materials	General purpose computer laboratory Whiteboard with markers Overhead projector A student, instructed by the teacher, solved a practical example on computers.
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. S.Ćosović Bajić, G.Trutanić PROGRAMIRANJE u .C-u i vježbe , Udžbenik u pripremi , radni materijal nalazi se na WEB stranici odjela, www.tvz.hr Additional literature: 3. Boris Motik,Julijan Šribar:Demistificirani C++,treće dopunjeno izdanje,m Zagreb, Element , 2010. 4. Nina Ljipljin, Programiranje 1, FOI Varaždin i TIVA Tiskara Varaždin, 2004. 5. Kernighan B. W., Ritchie D. M., The C Programming Language. 6. Željko Kovačević, 0C++ Analiza i primjena0, Školska knjiga, 2004
Students obligations	Lectures are required. To obtain the signatures must be at 70% of lectures. Exercises are mandatory. TO OBTAIN SIGNATURE IS REQUIRED TO PARTICIPATE IN 80% exercise. If a student has not done the preparation can not access to the quiz test.
Knowledge evaluation during semester	first mid-term (colloquium): max. 30 points second mid-term (colloquium: max. 30 points laboratory exercises: max. 40 points. Each exercise is scored with 10 points 2 points input quiz test 5 credits for programming task 3 points output quiz test evaluation: 90.01 to 100.00 points: excellent (5)? 80.01-90.00 points: very good (4)? 70.01-80.00 points: good (3)? 60.00-70.00 points: sufficient (2)
Knowledge evaluation after semester	A student who is not satisfied with the assessment that was acquired during the semester can write exams at other examination periods (whole material), while recognizing the points from exercises. Take the exam, all students who are eligible for signatures, which are not gathered enough points during the semester. On examination periods writes the whole subject matter, and they can get max 60 points that add up points from the exercises (max 40 points). evaluation: 90.01 to 100.00 points: excellent (5)? 80.01-90.00 points: very good (4)? 70.01-80.00 points: good (3)? 60.00-70.00 points: sufficient (2)
Remark	This course can be used for final thesis theme
Prerequisites:	No prerequisites.
Proposal made by	doc. dr. sc. Slavica Ćosović-Bajić

Code WEB/ISVU	19092/22398	**ECTS**	6	**Department**	
Name	Programming Basics				
Status	1st semester - Compulsory courses				
Teaching mode	Lectures + exercises (auditory + laboratory + seminar + metodology + construction) work at home				30+30 (0+30+0+0) 120
Teachers	course coordinator Prof.dr.sc. Slavica Ćosović Bajić , izvanredni profesor, class type:Lectures Bojan Nožica dipl. ing, v.pred., predavač, class type:Lectures course coordinator Prof. dr. sc. Miroslav Slamić profesor visoke škole, profesor visoke škole, class type:Lectures Mia Čarapina dipl. ing., pred., predavač, class type:Laboratory exercises Bojan Nožica dipl. ing, v.pred., predavač, class type:Laboratory exercises mr.sc. Mirko Smilevski dipl.ing., predavač, class type:Laboratory exercises dipl. ing. Ognjen Staničić , asistent, class type:Laboratory exercises				
Course objectives	To transfer to students the basic knowledge related to programming in C				
Learning outcomes:	1.ability to formulate basic algorithms by means of a pseudo code, a flowchart. Level:6,7 2.ability to identify basic C elements and one dimension fields. Level:6 3.ability to create the basic structure of a program. Level:6,7 4.ability to compare the efficiencies of different selection conditions and loops in a program. Level:6,7 5.ability to develop simple programming solutions related to engineering implementation. Level:6,7				
Methods of carrying out lectures	Ex cathedra teaching Case studies Discussion The subject matter is taught by using a great number particular examples C programms . Students are constantly asked questions in order to motivate them to take an active part in class. Teaching equipment: board, overhead projector and LCD projector.				
Methods of carrying out laboratory exercises	Laboratory exercises on laboratory equipment Group problem solving A student, instructed by the teacher, solved a practical example on computers.				
Course content lectures	1.A brief history of computers and programming, algorithms, pseudo code, flowchart., 2h, Learning outcomes:1 2.Introduction to C prog. Language structure of the program and the main () function , 2h, Learning outcomes:1 3.Data types, variables and constants. , 2h, Learning outcomes:1,2 4.Expressions, Operators. , 2h, Learning outcomes:2,3 5.Logical and selection operators, logical operators, if-simple selection. , 2h, Learning outcomes:2,3 6.Complex selections for different data types and switch ... case structure. , 2h, Learning outcomes:2,3 7.The development of simple algorithms using all selection for different types of data. , 2h, Learning outcomes:3,4 8.Loops with testing conditions at the beginning of the block (while and for). , 2h, Learning outcomes:3,4 9.Loops with testing conditions at the end (do ... while. , 2h, Learning outcomes:3,4 10.Different applications and loop selection and transformation of the loop. , 2h, Learning outcomes:3,4,5 11.One-dimensional arrays as data structure.. , 2h, Learning outcomes:4,5 12.One-dimensional arrays in more complex programs with loops. , 2h, Learning outcomes:4,5 13.Programming of complex algorithms using different types of arrays, and the selection and loops. , 2h, Learning outcomes:4,5 14.Sieve of Eratosthenes algorithm for determining prime numbers. , 2h, Learning outcomes:3,4,5 15.Simple sorting algorithms., 2h, Learning outcomes:3,4,5				
Course content laboratory	1.Introduction to use MS Visual studio tools., 2h, Learning outcomes:1 2.Main () function declaration and different types of data , 2h, Learning outcomes:1 3.Application of arithmetic operators in expressions. Simple and complex expressions. , 2h, Learning outcomes:1,2 4.Application logical and selection operators and simple selection (if, if ... else) , 2h, Learning outcomes:2,3 5.Applying complex selection (if ... else if ... else). Application of a switch statement. , 2h, Learning outcomes:2,3 6.Repetition of data types, simple and complex logical expressions and selection for the first mid-term. , 2h, Learning outcomes:2,3 7.The first mid-term , 2h, Learning outcomes:3,4 8.Program loops (while and for). , 2h, Learning outcomes:3,4 9.Repeat program blocks using loops (while, for). , 2h, Learning outcomes:3,4 10.Loop with testing conditions at the end (do ... while) and combine with different orders of selection. The conversion of the loops. , 2h, Learning outcomes:3,4,5 11.Programming structure data type array. , 2h, Learning outcomes:4,5 12.Array for different data types. Character array as a string. , 2h, Learning outcomes:4,5 13.Programming simple sorting algorithms sorting of arrays. , 2h, Learning outcomes:4,5 14.Repetition of data structure types and arrays applications with loops and selection. Preparing for the second mid-term., 2h, Learning outcomes:3,4,5 15.The second mid-term, 2h, Learning outcomes:3,4,5				
Required materials	General purpose computer laboratory Whiteboard with markers Overhead projector A student, instructed by the teacher, solved a practical example on computers.				
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. S.Ćosović Bajić, G.Trutanić PROGRAMIRANJE u .C-u i vježbe , Udžbenik u pripremi , radni materijal nalazi se na WEB stranici odjela, www.tvz.hr Additional literature: 3. Boris Motik,Julijan Šribar:Demistificirani C++,treće dopunjeno izdanje,m Zagreb, Element , 2010. 4. Nina Ljipljin, Programiranje 1, FOI Varaždin i TIVA Tiskara Varaždin, 2004. 5. Kernighan B. W., Ritchie D. M., The C Programming Language.				

	6. Željko Kovačević, 0C++ Analiza i primjena0, Školska knjiga, 2004
Students obligations	Lectures are required. To obtain the signatures must be at 70% of lectures. Exercises are mandatory. TO OBTAIN SIGNATURE IS REQUIRED TO PARTICIPATE IN 80% exercise. If a student has not done the preparation can not access to the quiz test.
Knowledge evaluation during semester	first mid-term (colloquium): max. 30 points second mid-term (colloquium: max. 30 points laboratory exercises: max. 40 points. Each exercise is scored with 10 points 2 points input quiz test 5 credits for programming task 3 points output quiz test evaluation: 90.01 to 100.00 points: excellent (5)? 80.01-90.00 points: very good (4)? 70.01-80.00 points: good (3)? 60.00-70.00 points: sufficient (2)
Knowledge evaluation after semester	A student who is not satisfied with the assessment that was acquired during the semester can write exams at other examination periods (whole material), while recognizing the points from exercises. Take the exam, all students who are eligible for signatures, which are not gathered enough points during the semester. On examination periods writes the whole subject matter, and they can get max 60 points that add up points from the exercises (max 40 points). evaluation: 90.01 to 100.00 points: excellent (5)? 80.01-90.00 points: very good (4)? 70.01-80.00 points: good (3)? 60.00-70.00 points: sufficient (2)
Remark	This course can be used for final thesis theme
Prerequisites:	No prerequisites.
Proposal made by	doc. dr. sc. Slavica Ćosović-Bajić, 20.4.2014.

Code WEB/ISVU	19099/83432	**ECTS**	5	**Department**	
Name	Reprophotography				
Status	5th semester - Compulsory courses - IT Design				
Teaching mode	Lectures + exercises (auditory + laboratory + seminar + metodology + construction) work at home				30+15 (0+15+0+0) 105
Teachers	course coordinator Darko Agić , redoviti profesor, class type:Lectures Aleksandra Bernašek , asistent, class type:Laboratory exercises				
Course objectives	To transfer to students the basic knowledge related to light, optics, photocemical processes, photography and reprophotography				
Learning outcomes:	1.ability to analyse the content of the preparation phases in graphic reproduction. Level:6 2.ability to distinguish between analogueue and digital processes. Level:6 3.ability to formulate photographic preparation processes. Level:6,7 4.ability to design the flow of graphic production. Level:6 5.ability to distinguish between different graphic materials. Level:6 6.ability to create photo mechanic procedures. Level:6 7.ability to create digital procedures. Level:6 8.ability to define the main flow of graphic reproduction in preparation procedures. Level:6,7				
Methods of carrying out lectures	Ex cathedra teaching Case studies Discussion Questions and answers Material is performed by using Power Point, by using pictures, diagrams, formulas, described processes and master definitions. An interactive lecture allows checking the level of previous knowledge of students and motivates them in overcoming presented material. The necessary equipment is LCD projector.				
Methods of carrying out laboratory exercises	Laboratory exercises on laboratory equipment Laboratory exercises, computer simulations Group problem solving Other processing of themes practical exercises beside the use photo equipment, lightings and processing photo material.				
Course content lectures	1.graphic product, reproduction stages, 2h, Learning outcomes:1,4,8 2.prepress phases, basic reproduction properties, 2h, Learning outcomes:1,3,8 3.analog systems, basic equipment and settings , 2h, Learning outcomes:2,6 4.originals, picture ratio, laterality, 2h, Learning outcomes:4 5.photographic matherials, basic properties, exposition, processing, 2h, Learning outcomes:3,5 6.processes of bw and color photography , 2h, Learning outcomes:2,4 7.input digital systems, input devices: digitalization, 2h, Learning outcomes:7 8.audit present grounds 1, 2h, Learning outcomes:7 9.digital image properties, 2h, Learning outcomes:2 10.digital image manipulations, 2h, Learning outcomes:7 11.screening, photomechanic procedures, basic and custom shapes, screen angles, 2h, Learning outcomes:2,4,6 12.electronic screening, supercell, 2h, Learning outcomes:7,8 13.output device properties, 2h, Learning outcomes:7 14.graphoanalitical method of process quality and tolerance estimation, 2h, Learning outcomes:3 15.audit present grounds 2, 2h, Learning outcomes:7				
Course content laboratory	1.Working with canvas, gradation, colour management and determination of grayness , 2h, Learning outcomes:1,7,8 2.Converting color to black and white photos using several methods, 2h, Learning outcomes:2,3 3.Screen; black and white photos screening, 2h, Learning outcomes:2,3,7 4.Photographic studio : setting lights and objects in space (setting the scene) , 2h, Learning outcomes:3,5,6 5.Photographic studio : how to make a good photography (in controlled environment) , 2h, Learning outcomes:3,5,6 6.Measurements with a densitometer and creation of Jones diagram , 2h, Learning outcomes:4 7.Page design: making your own design solution , 2h, Learning outcomes:7,8 8.There are no classes 9.There are no classes 10.There are no classes 11.There are no classes 12.There are no classes 13.There are no classes 14.There are no classes 15.There are no classes				
Required materials	Basic: classroom, blackboard, chalk... Special purpose laboratory Special purpose computer laboratory Overhead projector Special equipment Special equipment: Optical measurement equipment systems;				
Exam literature	Color Management Fraser B, Murphy C, Peachpit Press Berkeley CA 2005 Color Primer: Introduction to history of color, color theory and color measurement, Buntine B, Light Source Corp Images, Xrite 1998 Colorimetry Fundamentals and Applications, Ohta N, Robertson A, John Willey ITST, 2005 Digital ColorReproduction, Wandel, B, Elsevier Publishing 2003 Digital Color Imaging Handbook edited by Gaurav Sharma Xerox Corporation Webster, New York CRC PRESS Boca Raton, London New York Washington, D.C. 2003 by CRC Press LLC				

Students obligations	Lecture attending,laboratory exercises and colloquiums.
Knowledge evaluation during semester	Mid-term and final exam.
Knowledge evaluation after semester	Oral and written exam
Remark	This course can be used for final thesis theme
Prerequisites:	No prerequisites.
Proposal made by	Dr.sc. Darko Agić, full professor

Code WEB/ISVU	19110/22758	**ECTS**	4	**Department**	
Name	Sound and Computer				
Status	5th semester - Compulsory courses - IT Design				
Teaching mode	Lectures + exercises (auditory + laboratory + seminar + metodology + construction) work at home				30+30 (30+0+0+0) 60
Teachers	course coordinator Prof.dr.sc. Siniša Fajt , izvanredni profesor, class type:Lectures course coordinator dr.sc. Žarko Nožica , profesor visoke škole, class type:Lectures Milan Bajić ing., laborant, class type:Auditory exercises Prof.dr.sc. Siniša Fajt , izvanredni profesor, class type:Auditory exercises				
Course objectives	To transfer to students the knowledge related to using computers in video recording and sound processing				
Learning outcomes:	1.ability to present the principles of analogue-digital and digital-analogue conversion of a sound signal. Level:6,7 2.ability to distinguish between different media and different formats for audio content exchange . Level:6 3.ability to analyse the properties of sound cards. Level:6 4.ability to relate video recording, editing and sound processing by using a computer. Level:6,7 5.ability to analyse the sound by using a computer. Level:6 6.ability to devise computer a navigated control of instruments. Level:6,7 7.ability to control electrical and acoustic measurements by using a computer. Level:6,7 8.ability to plan a computer navigated control of speakers system. Level:6,7 9.ability to devise multimedia based home systems. Level:6,7 10.ability to create archives of audio content. Level:6,7				
Methods of carrying out lectures	Ex cathedra teaching Case studies Demonstration Simulations Discussion Theme is presenting by using audio and video equipment, so it can be demonstrate results of analysis and processing of speech and music. It shows and arguments various kind of equipment, analizers, and software solutions, which are used in speech and sound (music) analysis. Beside black board, PC, projector and acoustic system are needed.				
Methods of carrying out auditory exercises	Laboratory exercises on laboratory equipment Laboratory exercises, computer simulations Group problem solving Computer simulations				
Course content lectures	1.A/D conversion., 2h, Learning outcomes:1 2. D/A conversion, 2h, Learning outcomes:1 3.Formats used to exchange audio content., 2h, Learning outcomes:2 4. Media and formats used to store audio content. , 2h, Learning outcomes:2 5.Features of sound cards. , 2h, Learning outcomes:3 6.Recording, editing and sound processing by means of a computer, 2h, Learning outcomes:4 7.Computer navigated control of music instruments., 2h, Learning outcomes:6 8.PC based sound analysis, 2h, Learning outcomes:5 9.Preliminary exam , 2h, Learning outcomes:1,2,3,4,5 10.PC based sound syntesis, 2h, Learning outcomes:4 11.PC based PA systems, 2h, Learning outcomes:8 12.PC based control radio systems, 2h, Learning outcomes:2,4,8 13.Home entertainment systems, 2h, Learning outcomes:9 14.Audio archive, 2h, Learning outcomes:10 15.PC based electroacustical measurements, 2h, Learning outcomes:7				
Course content auditory	1.Electroacustical transducers, 2h, Learning outcomes:1 2.AD conversion of audio signal, 2h, Learning outcomes:1 3.DA conversion of audio signal, 2h, Learning outcomes:1 4.Formats used to exchange audio content., 2h, Learning outcomes:2 5. Media and formats used to store audio content. , 2h, Learning outcomes:2 6.Sound recording, 2h, Learning outcomes:4 7.Recording, editing and sound processing by means of a computer, 2h, Learning outcomes:4 8.Recording, editing and sound processing by means of a computer, 2h, Learning outcomes:4 9.Recording, editing and sound processing by means of a computer, 2h, Learning outcomes:4 10.Radio program concept, 2h, Learning outcomes:2,4,8 11.Radio program elements production, 2h, Learning outcomes:2,4,8 12.Radio program elements production, 2h, Learning outcomes:2,4,8 13.Radio distribution, 2h, Learning outcomes:2,4 14.Audio archive, 2h, Learning outcomes:10 15.PC based electroacustical measurements, 2h, Learning outcomes:5,7				
Required materials	Basic: classroom, blackboard, chalk... Special purpose laboratory Special purpose computer laboratory Overhead projector				
Exam literature	1. Ross Kirk, Andy Hunt (1999). Digital Sound Processing for Music and Multimedia, Focal Press, Linacer House, Jordan Hill, Oxford OX2 8DP 2. Dieter Thomsen (1987). Digitalna audiotehnika, Tehnička knjiga, Zagreb 3. I.Glover, P.Grant (2000). Digital Communications, Prentice Hall 4. Y.Huang, J.Benesty (2004). Audio Signal Processing for Next-Generation Multimedia Communication Systems, Kluwer Academic Press				

	5. M.R.Schroeder (2004). Computer Speech: Recognition, Compression, Synthesis, Springer-Verlag
Students obligations	maximum of 3 absences from exercises
Knowledge evaluation during semester	Kolokvij, teorijska pitanja#2#70#50$Seminarski rad#1#30#50$
Knowledge evaluation after semester	seminar work choosed in arrangement with professor two preliminary exam with more than 60% for exempt from taking writen exam the student have to earned 60 % of points or more in the written part of the exam for the oral part of the exam, the oral partof the exam
Remark	This course can be used for final thesis theme
Prerequisites:	No prerequisites.
Proposal made by	Prof.dr.sc. Siniša Fajt

Code WEB/ISVU	19102/22416	**ECTS**	3	**Department**	
Name	Spreadsheets				
Status	4th semester - Compulsory courses - Office Organization and Informatization				
Teaching mode	Lectures + exercises (auditory + laboratory + seminar + metodology + construction) work at home				15+30 (30+0+0+0) 45
Teachers	course coordinator Danijela Pongrac , prof., predavač, class type:Lectures Danijela Pongrac , prof., predavač, class type:Auditory exercises				
Course objectives	To transfer to students the advanced level of knowledge related to spreadsheets				
Learning outcomes:	1.ability to perform various types of table calculations. Level:6 2.ability to design various forms of tables to simplify presentations. Level:6 3.ability to relate data in tables to data from external sources (other programs). Level:6,7 4.ability to present both a problem and a solution provided. Level:6,7 5.ability to develop an individual solution to a problem by using programming tools. Level:6,7 6.ability to sort large amounts of data in tables, according to predefined criteria. Level:6 7.ability to understand the meaning of a widespread use of spreadsheets in business environment. Level:6,7				
Methods of carrying out lectures	Ex cathedra teaching Case studies Demonstration Simulations Discussion Questions and answers Seminar, students presentation and discussion Course materials are exposed by the use of technologies for the structural visual presentation for elements and interaction of electronic business systems. Drawings to analyze and explain key relations and corresponding technological solutions is done. Beside the board the notebook computer and LCD projector are used.				
Methods of carrying out auditory exercises	Laboratory exercises on laboratory equipment Group problem solving Interactive problem solving				
Course content lectures	1.Introduction, History overview, Spreadsheet definition, Spreadsheet area appliance, Overview of spreadsheet interface, 1h, Learning outcomes:7 2.Formating and organizing data, Formula elements, Formula operator, Function arguments, Reference types in formula, Using names to work with range, 1h, Learning outcomes:1,7 3.Number Formats, Logical Function, Lookup and Reference Function, Advanced Statistical Function SUM and COUNT, Text Function, Financial Function, Database function, 1h, Learning outcomes:1,4,7 4.Table Formulas, Array Formulas, MegaFormulas, Formula Errors and Debugging, 1h, Learning outcomes:1,4,7 5.Data Validation, Sharing Data in Network Environment and With Other Application, Graphic Presentation, Picture and Drawings, Sparkline Graphic, 1h, Learning outcomes:2,3,4,7 6.Scenario manager, Goal seek, Data table, Pivot table, Filtering sorting and grouping data, 1h, Learning outcomes:2,3,4,6,7 7.Linking and consolidating worksheets, Outline view, Workbook protection, Web services, Dashboard, 1h, Learning outcomes:2,3,4,6,7 8.Macro Recorder, Macro Security, VBA Modul - Procedure and Function, VBA Object Model, Hierarchy of Object, Class and Collection, Property and Methods, 1h, Learning outcomes:4,5,7 9.Property and Methods of Object, VB Editor, Recording and Cleaning code, Procedure Declaration - SUB, EXIT,Variable types, Assigning names, 1h, Learning outcomes:5,7 10.Mathematic and Logic Operator, Condition operator, Construction WITH, Construction FOR EACH NEXT, Students presentation and Discussion, 1h, Learning outcomes:4,5,7 11.Construction IF THEN ELSE, Construction CASE, FOR NEXT Loop, Students presentation and Discussion, 1h, Learning outcomes:4,5,7 12.Button object, Custom Dialog Box - MsgBox and InputBox, Creating VBA function, 1h, Learning outcomes:4,5,7 13.Creating UserForm, UserForm Elementsn Property, UserForm Method, UserForm Events, Types of Errors in Code, 1h, Learning outcomes:4,5,7 14.Developing User Oriented Application, Students presentation and Discussion, 1h, Learning outcomes:4,5,7 15.Preliminary exam, 1h, Learning outcomes:1,2,3,4,5,6,7				
Course content auditory	1.Working with data(copy, paste, special paste, styles, format, alignment, cells, editing), Working with basic function and formulas (SUM, MIN, MAX, COUNT, AVERAGE, IF), Charts, 2h, Learning outcomes:1,2 2.Editing tables in diferent ways, Working and grouping sheets, Custom number format, Naming formulas, Naiming cell and range, Function(SUBTOTAL, COUNTIFS, VLOOKUP, HLOOKUP, IF, AND, OR), 2h, Learning outcomes:1,3,7 3.Working with different calcualtion using function CHAR, VALUE, LEFT, RIGHT, FIND, LEN, MID, DATE, UPPER, CONCATENATE, LOOKUP, ISERROR, AVERAGEIFS, PMT, PV, RATE, FV, 2h, Learning outcomes:1,4 4.Working with different calcualtion using arrays formulas, Function(TRANSPOSE,TRIM, IFERROR), Working with megaformula, Protection of workbook, worksheet and cell, 2h, Learning outcomes:1,4 5.Data validation,Consolidation and linking data from different workbook, Outline data, Advance sorting and filtering, Database function(DSUM), 2h, Learning outcomes:1,2,3,6,7 6.Pivot table, Pivot Chart, What if analysis?(Goal seek, Scenario Manager, Data table), 2h, Learning outcomes:1,2,3,4,6,7 7.Web Services, Sparkline charts, PowerPivot, Example of Dashboard, 2h, Learning outcomes:1,2,3,6,7 8.Preliminary exam, 2h, Learning outcomes:1,2,3,4,6,7 9.Recording macro, Cleaning macro code, Copying code, Range asignment, New modul, SUB procedure activation,Code input, Example of object and properties, Example of object and method, Saving macro workbook, Indipendent student work., 2h, Learning outcomes:1,7 10.Making different tasks with construction IF THEN ELSE, CASE, FOR EACH NEXT, and loop FOR NEXT, Assign Button form control to worksheet,Independent student work, 2h, Learning outcomes:4,5 11.Making different tasks with VBA function with regard to number of argument, Making simple UserForm, Independent				

	student work, 2h, Learning outcomes:2,4,5 12.Making complete UserForm, Set up properties control, Writing code, Independent student work., 2h, Learning outcomes:2,4,5,7 13.Independent student work. Presentations of students practical work., 2h, Learning outcomes:4,5,7 14.Preliminary exam, 2h, Learning outcomes:1,2,5,7 15.Preliminary exam, 2h, Learning outcomes:1,2,3,4,5,6,7
Required materials	Basic: classroom, blackboard, chalk... General purpose computer laboratory Whiteboard with markers Overhead projector
Exam literature	Basic literature: 1. Walkenbach, John. Excel 2010 Bible. Indianapolis, Indiana. Wiley Publishing Inc.2010. 2. Excel Developer Center. http://msdn.microsoft.com/en-us/office/aa905411.aspx (12.02.2014.) 3. Ostali dostupni hrvatski i engleski priručnici za Windows 2010 i 2013, Microsoft Office 2010 ili 2013 4. Kiš, Miroslav. Englesko-hrvatski, hrvatsko-engleski informatički rječnik. Zagreb: Naklada Ljevak, 2000. Additional literature: 1. Walkenbach, John. Excel 2010 Power Programming with VBA. Indianapolis, Indiana. Wiley Publishing, Inc. 2010. 2. MacDonald, Matthew. Excel 2010: The Missing Manual. Sebastopol, CA. O04Reilly Media, Inc. 2010.
Students obligations	maximum of 3 absences from exercises
Knowledge evaluation during semester	Redovitost pohaa#12#0#0$Kolokvij, numeri zadaci#2#100#50$
Knowledge evaluation after semester	Documented product catalog + oral exam
Remark	This course can be used for final thesis theme
Prerequisites:	No prerequisites.
Proposal made by	Danijela Pongrac, prof.

Code WEB/ISVU	19103/32775	**ECTS**	4	**Department**	
Name	Technical Information Systems				
Status	4th semester - Compulsory courses - E-business				
Teaching mode	Lectures + exercises (auditory + laboratory + seminar + metodology + construction) work at home				15+45 (0+45+0+0) 60
Teachers	course coordinator dr.sc. Dorian Marjanović , redoviti profesor, class type:Lectures Ana Herold Šopar dipl.ing., asistent, class type:Laboratory exercises				
Course objectives	To transfer to students the basic knowledge related to the functionality and implementation of the PDM and ERP systems in companies				
Learning outcomes:	1.ability to devise a role of technical information systems in a company. Level:6 2.ability to check the integration with CAD systems. Level:6 3.ability to test the basic functionality of ERP systems. Level:6 4.ability to create the user forms, faceplates and lookup tables. Level:6,7 5.ability to standardize the PDM and the ERP systems. Level:6,7 6.ability to estimate the functionality of a technical information system. Level:6,7				
Methods of carrying out lectures	Ex cathedra teaching Guest lecturer Case studies				
Methods of carrying out laboratory exercises	Laboratory exercises on laboratory equipment Laboratory exercises, computer simulations				
Course content lectures	1.Role of a technical information system in a company. The basic terms. PDM. ERP. , 1h, Learning outcomes:1 2.Introduction to the working environment of PDM systems. Creating a project., 1h, Learning outcomes:1 3.Information retrieval and information carriers. View to the holders of information, 1h, Learning outcomes:1 4.The basic functionality of PDM system: product structure and information related to it, the management components of products and documents through a lifetime., 1h, Learning outcomes:2,5 5.The basic functionality of PDM system: workflow manager, project manager., 1h, Learning outcomes:2,5 6.Additional functionality of PDM systems: integration with CAD systems, standardization of components and production libraries, knowledge management in the product development process, manage product configurations, component fabrication, engineering change management., 1h, Learning outcomes:2,5 7.The basic functionality of ERP systems: enterprise resource planning, production management., 1h, Learning outcomes:3,5 8.The basic functionality of ERP systems: customer relationship management, supply chain management, business analysis, integration with PDM systems., 1h, Learning outcomes:3,5 9.The introduction of technical information systems in the enterprise. Needs and development strategies., 1h, Learning outcomes:6 10.Resource planning, production. Implementation of the technical information systems in a company, Client management., 1h, Learning outcomes:6 11.E-business and virtual company., 1h, Learning outcomes:1,6 12.The concepts and architecture., 1h, Learning outcomes:1,5 13.Methods and tools to support virtual business., 1h, Learning outcomes:4 14.Usage of new computer technologies for definition of the virtual company infrastructure., 1h, Learning outcomes:4,5 15.The integration of the engineering applications. The integration of business partners, 1h, Learning outcomes:4,5				
Course content laboratory	1.Modeling cover, 3h, Learning outcomes:1,2 2.Modeling fly, 3h, Learning outcomes:2 3.Modeling mainstream, 3h, Learning outcomes:2 4.Modeling truss, 3h, Learning outcomes:3 5.Modeling housing, 3h, Learning outcomes:3 6.Modeling switch, 3h, Learning outcomes:3 7.Modeling flange, 3h, Learning outcomes:4 8.Modeling manifold, 3h, Learning outcomes:4 9.Modeling planking, 3h, Learning outcomes:4 10.Modeling springs and different configuration models spring, 3h, Learning outcomes:4 11.Modeling mask mobiles, 3h, Learning outcomes:5 12.Creating assembly cover and housing, 3h, Learning outcomes:5 13.Modeling and folding hinges and closures, 3h, Learning outcomes:6 14.Creating 2D drawings, 3h, Learning outcomes:6 15.Modeling grid, 3h, Learning outcomes:6				
Required materials	Basic: classroom, blackboard, chalk... Overhead projector				
Exam literature	Basic literature: 1. www.cadlab.fsb.hr Additional literature: 1. J. Duhovnik; J. Tavčar:Elektronsko poslovanje in tehnični informacijski sistemi; LECAD, Univerza v Ljubljani; 2000.				
Students obligations	maximum of 3 absences from exercises				
Knowledge evaluation during semester	Kolokvij, numeri zadaci#2#100#0$Kolokvij, teorijska pitanja#2#100#0$				
Knowledge evaluation after semester	Written exams and student project.				

Remark	This course can be used for final thesis theme
Prerequisites:	No prerequisites.
Proposal made by	Droian Marjanović

Code WEB/ISVU	19089/63203	**ECTS**	5	**Department**	
Name	UNIX System Administration				
Status	6th semester - Compulsory courses - Office Organization and Informatization				
Teaching mode	Lectures + exercises (auditory + laboratory + seminar + metodology + construction) work at home				30+30 (0+30+0+0) 120
Teachers	course coordinator v.pred. Davor Cafuta ,dipl.ing.rač., viši predavač, class type:Lectures course coordinator Ivica Dodig ,dipl.ing.rač., viši predavač, class type:Lectures Ivica Dodig ,dipl.ing.rač., viši predavač, class type:Laboratory exercises				
Course objectives	To enable students to practically solve office informatization tasks on various operating systems.				
Learning outcomes:	1.ability to set up a DNS server under Unix OS. Level:6 2.ability to configure a Web server on UNIX OS. Level:6 3.ability to integrate a database with a Web server on UNIX OS. Level:6,7 4.ability to build a system of time triggers used to start a service. Level:6,7 5.ability to set up a shared file system. Level:6,7 6.ability to control packages which pass through a network security layer under UNIX OS. Level:6,7 7.ability set up an e-mail server. Level:6,7 8.ability to connect an e-mail filtering system with an e-mail service . Level:6,7 9.ability to analyse the network traffic going through security layer on UNIX OS. Level:6 10.ability to identify errors committed in setting up UNIX system services. Level:6 11.ability to test UNIX system services. Level:6				
Methods of carrying out lectures	Ex cathedra teaching Case studies Demonstration Simulations Discussion				
Methods of carrying out laboratory exercises	Laboratory exercises on laboratory equipment Laboratory exercises, computer simulations				
Course content lectures	1.Doamin name system, 2h, Learning outcomes:1,11 2.Domain name system administration, 2h, Learning outcomes:1,11 3.Web server configuration., 2h, Learning outcomes:2,11 4.Integration of server side languages into web server., 2h, Learning outcomes:2,11 5.Databases, 2h, Learning outcomes:3,11 6.Application scheduler., 2h, Learning outcomes:4,11 7.E-mail systems., 2h, Learning outcomes:7,11 8.E-mail server administration, 2h, Learning outcomes:7,11 9.E-mail server anti spam technologies., 2h, Learning outcomes:8,11 10.Incoming mail server protocols., 2h, Learning outcomes:7,8,11 11.Windows to UNIX sharing, 2h, Learning outcomes:5,11 12.Unix to Windows sharing, 2h, Learning outcomes:5,11 13.Firewall, 2h, Learning outcomes:9,11 14.Troubleshooting and backup, 2h, Learning outcomes:10,11 15.Theoretical exam, 1h, Learning outcomes:1,2,3,4,5,6,7,8,9,10,11				
Course content laboratory	1.- 2.Domain name system administration, 2h, Learning outcomes:1 3.Web server configuration., 2h, Learning outcomes:2 4.Integration of server side languages into web server., 2h, Learning outcomes:2 5.Databases, 2h, Learning outcomes:3 6.Application scheduler., 2h, Learning outcomes:5 7.- 8.E-mail server administration, 2h, Learning outcomes:7 9.E-mail server anti spam technologies., 2h, Learning outcomes:8 10.Incoming mail server protocols., 2h, Learning outcomes:7,8 11.Windows to UNIX sharing, 2h, Learning outcomes:5,11 12.Unix to Windows sharing, 2h, Learning outcomes:5,11 13.Firewall, 2h, Learning outcomes:9,11 14.Troubleshooting and backup, 2h, Learning outcomes:10,11 15.Practical exam, 2h, Learning outcomes:1,2,3,4,5,6,7,8,9,10				
Required materials	Special purpose computer laboratory Whiteboard with markers Overhead projector Special equipment				
Exam literature	Basic literature: 1. Materijali uz predmet (internet stranice) 2. C. Hunt,TCP/IP Network Administration, 3rd edition, O'Reilly, 2002. 3. S. Pritchard, et.all, LPI Linux Certification, 2nd edition, O'Reilly, 2006. Additional literature: 1. Linux Magazin (izdvojeni brojevi)				
Students obligations	Minimum of 13 point from laboratory work.				
Knowledge evaluation during	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).				

semester	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.
Remark	This course can be used for final thesis theme
Prerequisites:	Students cannot enroll in this course unless they have completed Uvod u UNIX sustave
Proposal made by	Ivica Dodig, Davor Cafuta (08.01.2014)

Code WEB/ISVU	19067/63173	**ECTS**	6	**Department**	
Name	Visual Communication Design				
Status	5th semester - Compulsory courses - IT Design				
Teaching mode	Lectures + exercises (auditory + laboratory + seminar + metodology + construction) work at home				30+30 (0+30+0+0) 120
Teachers	course coordinator prof. dr. sc. Jana Žiljak Vujić , voditelj studija Informatike, profesor visoke škole, class type:Lectures Vesna Uglješić dipl. dizajner, asistent, class type:Laboratory exercises				
Course objectives	Acquisition of an advanced level of knowledge related to visual communication				
Learning outcomes:	1.ability to understand the elements of visual communication. Level:6 2.ability to plan elements necessary for contemporary visual communication. Level:6,7 3.ability to make a problem-driven and solution-based author work. Level:6,7 4.ability to give comments on each solution within a group. Level:6 5.ability to make an authentic visual identity design. Level:6 6.ability to test the functionality of author works. Level:6 7.ability to design applications, pictograms and other communication elements. Level:6 8.ability to integrate author works into the real life environment. Level:6,7 9.ability to present the development of a project. Level:6,7 10.ability to create a graphic standards manual for independent use of visual identity. Level:6,7 11.to prepare elements needed for presentation by using vector and pixel graphics editors and page layout programs. Level:6,7 12.to conceive, prepare and give a presentation of a project. Level:6,7 13.to present in front of audience and answer the questions put by fellow students and the examiner. Level:6,7				
Methods of carrying out lectures	Ex cathedra teaching Case studies Demonstration Discussion Questions and answers Seminar, students presentation and discussion Homework presentation				
Methods of carrying out laboratory exercises	Laboratory exercises, computer simulations Discussion, brainstorming Computer simulations				
Course content lectures	1.Basic concepts of visual communication, 2h, Learning outcomes:1,4,6 2.User-centered design, 2h, Learning outcomes:1,2,4,6 3.Definition and significance of visual identities, 2h, Learning outcomes:1,2,4,6,8 4.Basic elements of visual identities, 2h, Learning outcomes:1,2,4 5.Visual identity in market communication, 2h, Learning outcomes:4,6,8 6.Mark and logo - history, development, importance, 2h, Learning outcomes:1,2,3,5 7.Basic standardization via graphic standards manual, 2h, Learning outcomes:2,10,11 8.Colour scheme and typographic style, 2h, Learning outcomes:2,3,5,10 9.Defining applications of visual identity via graphic standards manual, 2h, Learning outcomes:2,3,5,7,8,10,11 10.Trademark design and approach to branding, 2h, Learning outcomes:3,4,6,8 11.Design of promotion materials and their implementation into real-life environment, 2h, Learning outcomes:7,8 12.Visula communications design evaluation criteria, 2h, Learning outcomes:4,6 13.Critical analysis and discussion on relevant designs from given area, 2h, Learning outcomes:4,6 14.Student projects presentation with discussion 1, 2h, Learning outcomes:4,9,11,12,13 15.Student projects presentation with discussion 2, 2h, Learning outcomes:4,9,11,12,13				
Course content laboratory	1.Problem analysis, research and defining project, 2h, Learning outcomes:2,6 2.Conceiving possible solutions, brainstorming, 2h, Learning outcomes:2,3,5 3.Visualization of concepts by freehand sketches 1, 2h, Learning outcomes:1,2,3,5 4.Visualization of concepts by freehand sketches 2, 2h, Learning outcomes:1,2,3,5 5.Preliminary examination - presentation of project development, 2h, Learning outcomes:4,9,11,12,13 6.Selection of sketches and further elaboration by computer, 2h, Learning outcomes:1,5,11 7.Defining selected concept, 2h, Learning outcomes:2,3,5,11 8.Colour scheme and typography styles, 2h, Learning outcomes:1,2,5 9.Basic standardization via graphic standards manual, 2h, Learning outcomes:2,10,11 10.Defining applications of visual identity via graphic standards manual, 2h, Learning outcomes:2,3,5,7,8,10,11 11.Preliminary examination - presentation of project development, 2h, Learning outcomes:4,9,11,12,13 12.Design of promotion materials and their implementation into real-life environment 1, 2h, Learning outcomes:7,8 13.Design of promotion materials and their implementation into real-life environment 2, 2h, Learning outcomes:7,8 14.Completing graphic standards manual containing all needed applications and added promotion materials, 2h, Learning outcomes:1,2,5,7,8,10,11 15.Student projects presentation with discussion, 2h, Learning outcomes:4,9,11,12,13				
Required materials	Special purpose computer laboratory Whiteboard with markers Overhead projector Operating supplies paper, pencils, markers				
Exam literature	Basic literature: 1. N. Pevsner: Pioniri modernog oblikovanja 2. F. Vukić: Stoljeće hrvatskog dizajna 3. T. Vranišić: Upravljanje markama				

	Additional literature:
Students obligations	Mandatory laboratory exercises (80%), project completion (100%).
Knowledge evaluation during semester	Kolokvij, teorijska pitanja#2#30#30$Prakti rad#1#40#40$
Knowledge evaluation after semester	Defending and presenting a design solution on a given topic, explaining the problem, concept and development process.
Remark	This course can be used for final thesis theme
Prerequisites:	Students cannot enroll in this course unless they have completed Grafiki dizajn
Proposal made by	Jana Žiljak Vujić, PhD

Code WEB/ISVU	19111/22427	**ECTS**	3	**Department**	
Name	Web Browsers and Navigation				
Status	4th semester - Compulsory courses - E-business				
Teaching mode	Lectures + exercises (auditory + laboratory + seminar + metodology + construction) work at home				15+60 (0+60+0+0) 15
Teachers	course coordinator dr.sc. Vilko Žiljak , redoviti profesor, class type:Lectures Aleksandra Bernašek , asistent, class type:Laboratory exercises				
Course objectives	To transfer to students the basic knowledge related to Web navigation and Web browsing				
Learning outcomes:	1.ability to analyse the computer addressing; to create Internet addresses. Level:6 2.ability to identify types of Web locations and Web navigation models . Level:6 3.ability to distinguish between different categories of Web locations porosity . Level:6 4.ability to create navigation by means of XML technology. Level:6,7 5.ability to design a linear, a network and a tree navigation. Level:6,7 6.ability to devise browsing of domains, pictures and links. Level:6,7 7.Create content for web. Level:6,7				
Methods of carrying out lectures	Ex cathedra teaching Case studies Demonstration Simulations Questions and answers Lectures are with the interactive projection with the computer. Studies theoretical structures and uses in practice.				
Methods of carrying out laboratory exercises	Laboratory exercises, computer simulations Group problem solving Interactive problem solving Solving of prepared tasks in the computer laboratory with the check of final solutions of every student.				
Course content lectures	1.Multilayer planning of website linkage , 1h, Learning outcomes:1,4 2.Identification of websites and Internet resource, 1h, Learning outcomes:1 3.Navigation within a document, 1h, Learning outcomes:7 4.Browsing domains, images and links, 1h, Learning outcomes:1,6 5.Search via keywords and databases, 1h, Learning outcomes:1 6.Creation and networking of ActionScript graphics, 1h, Learning outcomes:7 7.Creating animations and navigation in Adobe Flash, 1h, Learning outcomes:7 8.Implementation of video content in web structure and navigation management (1), 1h, Learning outcomes:7 9.Implementation of video content in web structure and navigation management (2), 1h, Learning outcomes:7 10.Types of web location (1), 1h, Learning outcomes:2,3 11.Types of web location (2), 1h, Learning outcomes:2,3 12.Models of logical navigating organization of web: linear, network, tree end pure web organization (1), 1h, Learning outcomes:2,5 13.Models of logical navigating organization of web: linear, network, tree end pure web organization (2), 1h, Learning outcomes:2,5 14.Colloquium, 2h, Learning outcomes:1,2,3,4,5,6,7 15.There are no classes				
Course content laboratory	1.Introduction with HTML programming language, 2h, Learning outcomes:4 2.Tablels in HTML, 2h, Learning outcomes:4 3.The program manipulation of URL string with DOM model, 2h, Learning outcomes:2 4.Colloquium 1, 2h, Learning outcomes:2,4 5.Lists in HTML, 2h, Learning outcomes:4 6.Creating of navigation for basic linear Web organization, 2h, Learning outcomes:3,4,5 7.Declaration of variables and defining functions in JavaScript, 2h, Learning outcomes:4 8.Commands for HTTP protocol , 2h, Learning outcomes:1 9.Colloquium 2, 2h, Learning outcomes:1,3,4,5 10.Search domain, images, links and host segments, 2h, Learning outcomes:6,7 11.Date and time objects, 2h, Learning outcomes:4 12.Creation of navigation for tree Web organization , 2h, Learning outcomes:3,5 13.Searching by means of key words, 2h, Learning outcomes:1,2 14.Compensation of labs, 2h, Learning outcomes:1,2,3,4,5,6,7 15.Colloquium 3, 2h, Learning outcomes:1,2,3,4,5,6,7				
Required materials	General purpose computer laboratory Whiteboard with markers Overhead projector				
Exam literature	Basic literature: 1. V. Žiljak, K. Pap, D. Agić, I. Žiljak:"Modelling and Simulation of Integration of Web system, Digital and Conventional Printing", 29th International Research Conference of IARIGAI, Lake of Lucerne, Switzerland, 2002 2. K. Pap: "Razvoj grafičkih jezika baziranih na XML-u", Tiskarstvo 03 Stubičke toplice, , ISBN 953-199-016-6, UDK 655(082), 655.4 : 004. 738.5, Zagreb, 2003. 3. K. Pap: "XML u standardizaciji tiskarstva", str. 135-150, Tiskarstvo 03, Zagreb, 2003., ISBN 953-199-016-6, UDK 655(082), 655.4 : 004. 738.5 Additional literature: 1. T.A. Powell, Web Design: The Complete Reference, Osborne/McGraw-Hill, Berkeley,California 2000. ISBN: 0-07-212297-8				
Students obligations	maximum of 2 absences from exercises and colloquium				
Knowledge	Regular attendance#15#10#0$Colloquium, numerical assignments#3#90#0$				

evaluation during semester	
Knowledge evaluation after semester	Tasks on the computer and the oral part of the exam
Remark	This course can be used for final thesis theme
Prerequisites:	No prerequisites.
Proposal made by	Doc. dr. sc. Jana Žiljak Vujić

Code WEB/ISVU	19085/22429	**ECTS**	6	**Department**	
Name	Web Design				
Status	6th semester - Compulsory courses - E-business 6th semester - Compulsory courses - IT Design				
Teaching mode	Lectures + exercises (auditory + laboratory + seminar + metodology + construction) work at home				30+60 (0+60+0+0) 90
Teachers	course coordinator Pred. Maja Turčić dipl.ing., predavač, class type:Lectures Mario Janković mag. ing., laborant, class type:Laboratory exercises				
Course objectives	To transfer to students the basic knowledge of Web design and multimedia communications				
Learning outcomes:	1.ability to distinguish between different groups of Web sites, depending on a subject. Level:6 2.ability to give comments on advantages of certain solutions, depending on their purpose. Level:6 3.ability to identify the current state of affairs on the Web and anticipate the development by groups. Level:6 4.ability to give comments on imperfections of certain solutions, to take a critical attitude. Level:6 5.ability to write tender documentation. Level:6 6.ability to design a task based Web page as an author work . Level:6 7.ability to test the functionality of author works. Level:6 8.ability to develop an authentic and usable Web page . Level:6,7 9.ability to check functionality. Level:6 10.ability to present a project development. Level:6,7 11.ability to create interactive graphic applications. Level:6,7 12.ability to prepare a Web page to be uploaded and posted on the Internet. Level:6,7 13.ability to devise a public presentation. Level:6,7				
Methods of carrying out lectures	Ex cathedra teaching Guest lecturer Case studies Lecturing and analysis of the existing solutions linked with the task, consideration of advantages and disadvantages of individual concepts, acquiring the knowledge necessary for independent work.				
Methods of carrying out laboratory exercises	Laboratory exercises, computer simulations Group problem solving Discussion, brainstorming Workshop Elaboration of preliminary designs with the help of computers				
Course content lectures	1.content planning, architecture of information and basic web page anatomy, 2h, Learning outcomes:1,5 2.basic web design principles, the difference of media, 2h, Learning outcomes:2,12 3.wireframing, 2h, Learning outcomes:3 4.static and dinamic layout, 2h, Learning outcomes:4 5.responsive layout, 2h, Learning outcomes:4,8 6.designing and differentiating navigation elements, 2h, Learning outcomes:6,8 7.web design typography, 2h, Learning outcomes:6,8 8.colour theory, 2h, Learning outcomes:9 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 table design, 2h, Learning outcomes:8,9 12.user experience importance, 2h, Learning outcomes:8,9 13.usability of a web page, 2h, Learning outcomes:7,8,9 14.project presentation, 2h, Learning outcomes:10,13 15.no lesson, 2h				
Course content laboratory	1.familiarising with the tools, 2h, Learning outcomes:3,7 2.wireframe web design , 2h, Learning outcomes:6,8 3.making of the layout gird , 2h, Learning outcomes:6,8 4.navigation design, 2h, Learning outcomes:6,8 5.layout of elements, 2h, Learning outcomes:6,8 6.choosing and editing of images, 2h, Learning outcomes:6,8 7.project assesment, 2h, Learning outcomes:3,4,6,7,8,9,10 8.color scheme selection, 2h, Learning outcomes:6,8 9.typography implementation, 2h, Learning outcomes:6,8 10.transition design and interactivity design, 2h, Learning outcomes:6,11 11.responsive web design, 2h, Learning outcomes:6,11 12.responsive design continued, 2h, Learning outcomes:6,11 13.web page testing, 2h, Learning outcomes:7,9,12 14.project assesment, 2h, Learning outcomes:4,6,7,8,9,10,11,12 15.project presentation, 2h, Learning outcomes:5,13				
Required materials	Special purpose computer laboratory Overhead projector Video equipment				
Exam literature	Basic literature: 1. Maeda @ Media by NICHOLAS NEGROPONTE (Foreword), JOHN MAEDA 2. Joe Clark: Building Accessible Websites 3. Niko Macdonald: What is web design? Additional literature:				
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
Remark	This course can be used for final thesis theme
Prerequisites:	No prerequisites.
Proposal made by	pred. Maja Turčić, dipl.ing.

Code WEB/ISVU	19112/85392	**ECTS**	4	**Department**	
Name	Web Interactive Programming				
Status	5th semester - Compulsory courses - IT Design				
Teaching mode	Lectures + exercises (auditory + laboratory + seminar + metodology + construction) work at home				30+30 (0+30+0+0) 60
Teachers	course coordinator v.pred. Davor Cafuta ,dipl.ing.rač., viši predavač, class type:Lectures course coordinator dipl. ing. Ognjen Staničić , asistent, class type:Lectures Aleksandra Bernašek , asistent, class type:Laboratory exercises dipl. ing. Ognjen Staničić , asistent, class type:Laboratory exercises				
Course objectives	To transfer to students the basic knowledge related to the programming technologies of interactive Web applications				
Learning outcomes:	1.ability to build interactive Web content by using HTML DOM, CSS and JavaScript. Level:6,7 2.ability to combine date and time objects for the purpose of dynamic interaction. Level:6,7 3.ability to make a difference between events and retrieve them on demand. Level:6 4.ability to classify elements of Web forms and their functions. Level:6 5.ability to create forms and their validation. Level:6 6.ability to integrate multiple multimedia content into a Web page. Level:6,7 7.ability to create animations, multilevel positions and links between Web elements. Level:6,7 8.ability to analyse elements according to the DOM model. Level:6				
Methods of carrying out lectures	Ex cathedra teaching Case studies Demonstration Simulations Questions and answers Lectures are with the interactive projection with the computer. Studies theoretical structures and uses in practice.				
Methods of carrying out laboratory exercises	Laboratory exercises, computer simulations Group problem solving Interactive problem solving Solving of prepared tasks in the computer laboratory with the check of final solutions of every student.				
Course content lectures	1.Introduction to JavaScript, 2h, Learning outcomes:1 2.HTML forms, 2h, Learning outcomes:4,5 3.JavaScript events, 2h, Learning outcomes:3 4.Functions, Document object model, 2h, Learning outcomes:1,7,8 5.HTML forms and DOM, program branching, 2h, Learning outcomes:1,4,5 6.Loops and arrays, 2h, Learning outcomes:1 7.Timeout, Image object, using date and time, 2h, Learning outcomes:1,2,3 8.Window object and its properties and methods, 2h, Learning outcomes:1,5,6 9.Style object and its properties and methods, 2h, Learning outcomes:1,5,6 10.Introduction to SVG, 2h, Learning outcomes:8 11.SVG - grandients and filters, 2h, Learning outcomes:8 12.SVG - animations, 2h, Learning outcomes:8 13.jQuery, 2h, Learning outcomes:1 14.JavaScript frameworks, 2h, Learning outcomes:1 15.No classes, 2h				
Course content laboratory	1.No classes, 2h 2.Introduction to HTML; interactive poll, 2h, Learning outcomes:1,4,5 3.JavaScript fundamentals, events, 2h, Learning outcomes:1,3 4.Web calculator, JavaScript DOM, 2h, Learning outcomes:1,5,8 5.1st exam, 2h 6.Web quiz, branching, loops, 2h, Learning outcomes:1 7.Dynamic web link programming, images, rollover, 2h, Learning outcomes:1,6 8.Associative arrays, 2h, Learning outcomes:1 9.Slideshow, timeout, 2h, Learning outcomes:1,6 10.2nd exam, 2h 11.Date and time, working with multiple frames, 2h, Learning outcomes:1,2 12.Introduction to SVG, object, 2h, Learning outcomes:1,7 13.SVG, filters and gradients, 2h, Learning outcomes:1,7 14.SVG, animations, 2h, Learning outcomes:1,7 15.3rd exam, 2h				
Required materials	General purpose computer laboratory Whiteboard with markers Overhead projector				
Exam literature	Obavezna: 1. V. Žiljak, K. Pap, D. Agić, I. Žiljak:"Modelling and Simulation of Integration of Web system, Digital and Conventional Printing", 29th International Research Conference of IARIGAI, Lake of Lucerne, Switzerland, 2002 2. K. Pap: "Razvoj grafičkih jezika baziranih na XML-u", Tiskarstvo 03 Stubičke toplice, , ISBN 953-199-016-6, UDK 655(082), 655.4 : 004. 738.5, Zagreb, 2003. 3. K. Pap: "XML u standardizaciji tiskarstva", str. 135-150, Tiskarstvo 03, Zagreb, 2003., ISBN 953-199-016-6, UDK 655(082), 655.4 : 004. 738.5 Additional literature: 1. E. Ladd, J. ODonnell: Platinum Edition Using HTML 4, XML, and Java 1.2, Que, USA 1999. ISBN: 0-7897-1759-X				
Students obligations	Regular attendance, maximum of 3 absences from exercises				
Knowledge	Regular attendance, tests, programming assignments				

evaluation during semester	
Knowledge evaluation after semester	Tasks on the computer and the oral part of the exam
Remark	This course can be used for final thesis theme
Prerequisites:	No prerequisites.
Proposal made by	dipl. ing. O. Staničić

Code WEB/ISVU	19123/22428	**ECTS**	4	**Department**	
Name	Web Interactive Programming				
Status	6th semester - Compulsory courses - E-business				
Teaching mode	Lectures + exercises (auditory + laboratory + seminar + metodology + construction) work at home				30+30 (0+30+0+0) 60
Teachers	course coordinator v.pred. Davor Cafuta ,dipl.ing.rač., viši predavač, class type:Lectures course coordinator dipl. ing. Ognjen Staničić , asistent, class type:Lectures Aleksandra Bernašek , asistent, class type:Laboratory exercises				
Course objectives	To transfer to students the basic knowledge related to the programming technologies of interactive Web applications				
Learning outcomes:	1.ability to build interactive Web content by using HTML DOM, CSS and JavaScript. Level:6,7 2.ability to combine date and time objects for the purpose of dynamic interaction. Level:6,7 3.ability to make a difference between events and retrieve them on demand. Level:6 4.ability to classify elements of Web forms and their functions. Level:6 5.ability to create forms and their validation. Level:6 6.ability to integrate multiple multimedia content into a Web page. Level:6,7 7.ability to create animations, multilevel positions and links between Web elements. Level:6,7 8.ability to analyse elements according to the DOM model. Level:6				
Methods of carrying out lectures	Ex cathedra teaching Case studies Demonstration Simulations Discussion Questions and answers Lectures are with the interactive projection with the computer. Studies theoretical structures and uses in practice.				
Methods of carrying out laboratory exercises	Laboratory exercises, computer simulations Group problem solving Interactive problem solving Solving of prepared tasks in the computer laboratory with the check of final solutions of every student.				
Course content lectures	1.Introduction to JavaScript, 2h, Learning outcomes:1 2.HTML forms, 2h, Learning outcomes:4,5 3.JavaScript events, 2h, Learning outcomes:3 4.Functions, Document object model, 2h, Learning outcomes:1,7 5.HTML forms and DOM, program branching, 2h, Learning outcomes:1,4 6.Loops and arrays, 2h, Learning outcomes:1 7.Timeout, Image object, using date and time, 2h, Learning outcomes:1,2,3 8.Window object and its properties and methods, 2h, Learning outcomes:1,5,6 9.Style object and its properties and methods, 2h, Learning outcomes:1,5,6 10.Introduction to SVG, 2h, Learning outcomes:8 11.SVG - grandients and filters, 2h, Learning outcomes:8 12.SVG - animations, 2h, Learning outcomes:8 13.jQuery, 2h, Learning outcomes:1 14.JavaScript frameworks, 2h, Learning outcomes:1 15.No classes, 2h				
Course content laboratory	1.No classes, 2h 2.Introduction to HTML; interactive poll, 2h, Learning outcomes:1,4,5 3.JavaScript fundamentals, events, 2h, Learning outcomes:1,3 4.Web calculator, JavaScript DOM, 2h, Learning outcomes:1,5 5.1st exam, 2h 6.Web quiz, branching, loops, 2h, Learning outcomes:1 7.Dynamic web link programming, images, rollover, 2h, Learning outcomes:1,6 8.Associative arrays, 2h, Learning outcomes:1 9.Slideshow, timeout, 2h, Learning outcomes:1,6 10.2nd exam, 2h 11.Date and time, working with multiple frames, 2h, Learning outcomes:1,2 12.Introduction to SVG, object, 2h, Learning outcomes:1,7 13.SVG, filters and gradients, 2h, Learning outcomes:1,7 14.SVG, animations, 2h, Learning outcomes:1,7 15.3rd exam, 2h				
Required materials	General purpose computer laboratory Whiteboard with markers Overhead projector				
Exam literature	Obavezna: 1. V. Žiljak, K. Pap, D. Agić, I. Žiljak:"Modelling and Simulation of Integration of Web system, Digital and Conventional Printing", 29th International Research Conference of IARIGAI, Lake of Lucerne, Switzerland, 2002 2. K. Pap: "Razvoj grafičkih jezika baziranih na XML-u", Tiskarstvo 03 Stubičke toplice, , ISBN 953-199-016-6, UDK 655(082), 655.4 : 004. 738.5, Zagreb, 2003. 3. K. Pap: "XML u standardizaciji tiskarstva", str. 135-150, Tiskarstvo 03, Zagreb, 2003., ISBN 953-199-016-6, UDK 655(082), 655.4 : 004. 738.5 Additional literature: 1. E. Ladd, J. ODonnell: Platinum Edition Using HTML 4, XML, and Java 1.2, Que, USA 1999. ISBN: 0-7897-1759-X				
Students obligations	Regular attendance, maximum of 3 absences from exercises				
Knowledge	Regular attendance, tests, programming assignments				

evaluation during semester	
Knowledge evaluation after semester	Tasks on the computer and the oral part of the exam
Remark	This course can be used for final thesis theme
Prerequisites:	No prerequisites.
Proposal made by	dipl. ing. O. Staničić

Code WEB/ISVU	19121/75875	**ECTS**	5	**Department**	
Name	Web programming				
Status	4th semester - Elective courses				
Teaching mode	Lectures + exercises (auditory + laboratory + seminar + metodology + construction) work at home				30+30 (0+30+0+0) 90
Teachers	course coordinator dr.sc. Alen Šimec predavač, predavač, class type:Lectures Mia Čarapina dipl. ing., pred., predavač, class type:Laboratory exercises dipl. ing. Ognjen Staničić , asistent, class type:Laboratory exercises dr.sc. Alen Šimec predavač, predavač, class type:Laboratory exercises				
Course objectives	To transfer to students the basic knowledge of Web application development				
Learning outcomes:	1.ability to prepare a computer for presentations of Web applications. Level:6,7 2.ability to distinguish between different programming tools used for the development of client-site and server-site applications. Level:6 3.ability to make a project plan for the development of Web applications . Level:6 4.ability to combine programming tools used for the development of Web applications. Level:6,7 5.ability to develop a database model. Level:6,7 6.ability to make a program module of a Web application. Level:6 7.ability to design a Web page. Level:6				
Methods of carrying out lectures	Ex cathedra teaching Guest lecturer Case studies Demonstration Questions and answers Seminar, students presentation and discussion				
Methods of carrying out laboratory exercises	Laboratory exercises, computer simulations Discussion, brainstorming Computer simulations Workshop Other				
Course content lectures	1.Introductory lecture and teach students about the responsibilities and teaching materials., 2h, Learning outcomes:2 2.Introduction to HTML and what it is. Examples from practice. The difference between HTML and XHTML., 2h, Learning outcomes:2 3.Formatting an HTML document and create links. Definition of CSS and how to use it with the HTML document. Examples from practice., 2h, Learning outcomes:2 4.XHTML forms, where they are used and what they do. Examples from practice. Model executing scripts on the server. HTTP POST and GET. Examples from practice., 2h, Learning outcomes:2 5.A client-server architecture, the characteristics of the client and the server, Apache Web server and how it works., 2h, Learning outcomes:2 6.Introduction to PHP scripting language, server side web applications., 2h, Learning outcomes:2 7.Examination of the first part of the theory, html, forms, CSS, basic web server and its function, php scripting language., 2h, Learning outcomes:2 8.PHP syntax and its usage, the PHP variables and labeling rules., 2h, Learning outcomes:2 9.Data types and strings, using operators and loops., 2h, Learning outcomes:2 10.Application of the loop in the programming environment, data fields, require and include commands., 2h, Learning outcomes:2 11.MySQL database, its application and what they do. Examples of how to create a relational database., 2h, Learning outcomes:2 12.Connecting PHP scripting language with the database, query the database and display the search results. Enter, change, and delete data from the database through the form., 2h, Learning outcomes:2 13.What is XML, RSS, its syntax, the role of web services and where is applicable., 2h, Learning outcomes:2 14.Repeat the key elements of the material, preparing for the midterm., 2h, Learning outcomes:2 15.Examination of the second part of the theory, php (syntax, data types, data fields, loops), MySQL database, SQL queries to the database, XML, RSS., 2h, Learning outcomes:2				
Course content laboratory	1.Introductory exercises teach students about the duties and educational materials, and prepares the computer to work with the scripting language., 2h, Learning outcomes:2 2.Installing Virtual Server on the computer, learning about their work environment. It takes practice to install Apache, MySQL database and FTP client., 2h, Learning outcomes:2 3.Solving the task and making HTML pages. Using only simple programs that do not have a GUI (Notepad + +, UltraEdit, Notepad, Wordpad), the knowledge of writing HTML code, verification and validation code., 2h, Learning outcomes:2 4.Solving the task and making the HTML code with the added document formatting using CSS tools. Using only simple programs that do not have a GUI (Notepad + +, UltraEdit, Notepad, Wordpad), the knowledge of writing CSS code, verification and validation code., 2h, Learning outcomes:2 5.Creating forms using a text editor. Check dunkcionalnosti for HTTP POST and GET. Solving problems with the forms and print text on the screen. Work on the local computer with virtual services in open source environment., 2h, Learning outcomes:2 6.Repetition of knowledge and development of Internet sites on a virtual server using HTML markup text, forms, CSS, PHP., 2h, Learning outcomes:2 7.Examination of the first part of practice, HTML, forms, CSS, basic web server and its function, php scripting language., 2h, Learning outcomes:2 8.Introducing the virtual environment Xampp applications, run applications required for operation of the virtual server, solving tasks., 2h, Learning outcomes:2 9.Solving problems using PHP syntax, PHP variables and labeling rules in HTML, 2h, Learning outcomes:2				

	10.Solving problems in PHP, data types, strings, use the operator and the loop, 2h, Learning outcomes:2 11.Application of the loop in the programming environment, data fields, require and include commands, 2h, Learning outcomes:2 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:2 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:2 14.Rules creation of an XML document, and use the knowledge gained to make a RSS document according to data read from the database, 2h, Learning outcomes:2 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, Learning outcomes:2
Required materials	Basic: classroom, blackboard, chalk... General purpose computer laboratory Special purpose computer laboratory Whiteboard with markers Overhead projector Tools Special equipment Web server package
Exam literature	Šimec, A.: Uvod u HTML, XHTML i CSS, 2011., Tehničko veleučilište u Zagrebu Osnove PHP-a, Netakademija PHP ugrađene funkcije, Netakademija Čarapina, M.: XAMPP - upute za instalaciju i korištenje, 2012., Tehničko veleučilište u Zagrebu MySQL, Netakademija Lerdorf, R., Tatroe, K.: Programming PHP, 2012., O'Reilly Media www.w3c.org www.php.net www.mysql.com
Students obligations	maximum of 3 absences from exercises
Knowledge evaluation during semester	Redovitost pohaa#12#5#80$Kolokvij, numeri zadaci#1#40#60$Kolokvij, teorijska pitanja#1#40#60$Prakti rad#12#15#80$
Knowledge evaluation after semester	Attendance at lectures and exercise, independent creation of a web application
Remark	This course can be used for final thesis theme
Prerequisites:	No prerequisites.
Proposal made by	Ph.D. Alen Šimec

Code WEB/ISVU	19087/22415	**ECTS**	3	**Department**	
Name	Word Processing				
Status	5th semester - Compulsory courses - Office Organization and Informatization				
Teaching mode	Lectures + exercises (auditory + laboratory + seminar + metodology + construction) work at home				30+30 (30+0+0+0) 30
Teachers	course coordinator Lidija Tepeš Golubić pred., predavač, class type:Lectures mag.des. Ulla Leiner Maksan , asistent, class type:Auditory exercises Lidija Tepeš Golubić pred., predavač, class type:Auditory exercises				
Course objectives	To transfer to students the basic knowledge of text processing skills				
Learning outcomes:	1.ability to analyse a text on the level of sounds, words, lexemes and on grammatical level. Level:6 2.ability to design a text, its content and a form. Level:6 3.ability to devise texts for Web pages. Level:6,7 4.ability to give a presentation on a subject. Level:6,7 5.ability to compare programs used for translation. Level:6,7 6.ability to distinguish between advantages and disadvantages of translation programs. Level:6 7.ability to edit text by means of word processing tools. Level:6,7 8.ability to identify types of texts and their function. Level:6				
Methods of carrying out lectures	Ex cathedra teaching Seminar, students presentation and discussion Homework presentation The subject matter is explained by using additional examples and by projecting already solved problems with a LCD projector.				
Methods of carrying out auditory exercises	Laboratory exercises on laboratory equipment Laboratory exercises, computer simulations Group problem solving Data mining and knowledge discovery on the Web				
Course content lectures	1.Introductory lecture, 2h, Learning outcomes:1,2 2.Text processing, 2h, Learning outcomes:1,2,7,8 3.Text Processing Tools, 2h, Learning outcomes:1,2,7,8 4.Text, 2h, Learning outcomes:1,2,7,8 5.Making a PowerPoint presentation, 2h, Learning outcomes:1,2,4 6.CV, 2h, Learning outcomes:1,2,8 7.Video CV, 2h, Learning outcomes:1,2,8 8.Colloquium 1, 2h, Learning outcomes:1,2,3,4,5,6,7,8 9.InDesign, 2h, Learning outcomes:7,8 10.Computer-assisted translation, 2h, Learning outcomes:5,6 11.Computer-assisted translation, 2h, Learning outcomes:5,6 12.Preparing website text, 2h, Learning outcomes:1,2,3 13.Preparing website text, 2h, Learning outcomes:1,2,3 14.Open source tools, 2h, Learning outcomes:2,7 15.Colloquium 2, 2h, Learning outcomes:1,2,3,4,5,6,7,8				
Course content auditory	1.Introductory lecture, 2h, Learning outcomes:1,2 2.Memo, 2h, Learning outcomes:2 3.Layout, 2h, Learning outcomes:2,7 4.Layout 2, 2h, Learning outcomes:2,7 5.Making a PowerPoint presentation, 2h, Learning outcomes:1,2,4 6.CV, 2h, Learning outcomes:1,2,8 7.Paging and tabs, 2h, Learning outcomes:1,2,7 8.numbering and bullets, 2h, Learning outcomes:1,2,7 9.Colloquium , 2h, Learning outcomes:1,2,3,4,5,6,7,8 10.Cover letter, 2h, Learning outcomes:1,2,7 11.Table of content, 2h, Learning outcomes:2,7 12.Tables, 2h, Learning outcomes:2,7 13.Scientific paper, 2h, Learning outcomes:2,7,8 14.Preparing website text, 2h, Learning outcomes:1,2,3 15.Colloquium 2, 2h, Learning outcomes:1,2,3,4,5,6,7,8				
Required materials	Basic: classroom, blackboard, chalk... General purpose computer laboratory Whiteboard with markers Overhead projector				
Exam literature	Basic literature: 1. Microsoft Typography. http://www.microsoft.com/typography/(12.01.2005.) 2. Milijaš, Ljiljana. PC škola - Office XP. Varaždin: Pro-mil, 2002. 3. Seljan, S. Tehnologija i jezik // Informacijske znanosti u procesu promjena / Lasić-Lazić, J. Zagreb : Filozofski fakultet, 2005. Str. 24-44 4. Seljan, Sanja; Gašpar, Angelina. Primjena prevodilačkih alata u EU i potreba za hrvatskim tehnologijama, HDPL 2007. 5. Jurafsky, Daniel; Martin, James H. Speech and Language Processing: An Introduction to Natural Language Processing, Computational Linguistics and Speech Recognition. New Jersey: Prentice Hall, 2000. (odabrana poglavlja) 6. Microsoft Visual Basic for Applications Home Page. http://msdn.microsoft.com/vba/ (12.01.2005.) Additional literature: http://www.ietf.org/rfc/rfc1855.txt http://www.across.net/en/index.aspx				

	L. Tepeš Golubić, J. Kolarec: Tehnički i socijalni pogledi na web forume, na primjeru foruma TVZ-a, Opatija, Mipro, 2012.
Students obligations	maximum of 3 absences from exercises
Knowledge evaluation during semester	Redovitost pohaa#10#10#0$Kolokvij, teorijska pitanja#2#20#0$Seminarski rad#1#20#0$Pisana provjera znanja#1#25#0$Usmena provjera znanja#1#25#0$
Knowledge evaluation after semester	Written and/or oral exam, computer skills
Remark	This course can be used for final thesis theme
Prerequisites:	No prerequisites.
Proposal made by	Dr. sc. Damir Boras, izvanredni profesor

Code WEB/ISVU	19098/22424	**ECTS**	4	**Department**	
Name	Work Environment and Ergonomics				
Status	3rd semester - Elective courses				
Teaching mode	Lectures + exercises (auditory + laboratory + seminar + metodology + construction) work at home				30+30 (30+0+0+0) 60
Teachers	course coordinator dr.sc. Oliver Hip prof. v. š., profesor visoke škole, class type:Lectures dr.sc. Oliver Hip prof. v. š., profesor visoke škole, class type:Auditory exercises				
Course objectives	To introduce students to the basics of ergonomics and the Croatian standards in ergonomics				
Learning outcomes:	1.ability to distinguish between different Croatian standards, international standards and EU standards. Level:6 2.ability to identify the responsibilities of an employer related to protection of the health of their employees. Level:6 3.ability to analyse the ergonomics of the workplace and of the computer equipment. Level:6 4.ability to understand possible risks taken by persons working with computer equipment and their prevention . Level:6 5.ability to present ergonomic requirements to be met in a workplace in a computerized office. Level:6,7 6.ability to accentuate the most important points from the security and health protection rule book related to work with computers and apply them in one's workplace. Level:6 7.ability to compare different certificates (TCO, CE, etc.) which are applied on various products and understand their importance. Level:6,7 8.ability to reach a conclusion about the persons in charge of workplace ergonomics. Level:6,7 9.ability to define the risks occurring in working with computers (health issues, diseases). Level:6 10.ability to acquire the habit of working properly with computers and computer equipment. Level:6,7				
Methods of carrying out lectures	Ex cathedra teaching Discussion Questions and answers Seminar, students presentation and discussion The subject matter is taught by using graphs, drawings and tables. The electronic version of lectures is available in order to enable exact form of teaching. Students are constantly asked questions in order to take an active part in class. Teaching equipment: board, overhead projector and LCD projector.				
Methods of carrying out auditory exercises	Discussion, brainstorming Workshop Other The topic-related tasks are solved on the board with students taking an active part				
Course content lectures	1.Introduction in ergonomics, 2h, Learning outcomes:5 2.Purpose and type of ergonomics, 2h, Learning outcomes:5,8 3.Standardization and standards - concept, objectives and types of norms, 2h, Learning outcomes:1 4.International Standards, 2h, Learning outcomes:1,6,9 5.Croatian Institute of Standards, 2h, Learning outcomes:1,6,9 6.Product certification, 2h, Learning outcomes:7 7.Certificates on market, 2h, Learning outcomes:7 8.Ergonomics of the working place, 2h, Learning outcomes:3,5,6 9.Regulations on Safety and Health at Work with computer, 2h, Learning outcomes:5,6,8 10.Illumination of workspace, 2h, Learning outcomes:5,9,10 11.Ergonomics of the programme equipmen, 2h, Learning outcomes:3,5 12.The consequences of exposure to noise, 2h, Learning outcomes:2,8 13.Health risks when working on a computer, 2h, Learning outcomes:4,9,10 14.Possible disease when working on a computer, 2h, Learning outcomes:4,9,10 15.Popularization of ergonomics, 2h, Learning outcomes:10				
Course content auditory	1.Ergonomic keyboards and mice, 2h, Learning outcomes:2,4,6,9 2.Adjustment of hardware and software for people with disabilities, 2h, Learning outcomes:2,4,6,8 3.Review, description and analysis of computer home desks on both Croatian and foreign markets, 2h, Learning outcomes:2,3,4,10 4.New technologies interacting with computers, 2h, Learning outcomes:4,5 5.Harmful radiation - ionization, radiations,, 2h, Learning outcomes:2,4,8 6.Ergonomics and health of persons working at a counter, 2h, Learning outcomes:2,4,5 7.Mobbing as a cause of health problems at workplace, 2h, Learning outcomes:2,3 8.Working with computer equipment in a difficult environment, 2h, Learning outcomes:2,4,9,10 9.Ergonomics and protection at workplace - positive effects, 2h, Learning outcomes:3,5,6 10.Colour influence on human-computer interaction, 2h, Learning outcomes:3,4 11.Croatian laws and standards related to ergonomics and protection at workplace , 2h, Learning outcomes:2,4,6,8 12.Analysis of good and bad examples of computer games from the ergonomics point of view, 2h, Learning outcomes:2,3,4,5,6 13.Noise, temperature and humidity having bad effects on human body at a workplace, 2h, Learning outcomes:4,6,8 14.History of input devices with an emphasis on ergonomic features, 2h, Learning outcomes:2,3,10 15.Design and adaptation of the workplace, 2h, Learning outcomes:2,4,6,10				
Required materials	Basic: classroom, blackboard, chalk... Overhead projector Special equipment The topic-related tasks are solved on the board with students taking an active part				
Exam literature	Basic literature: 1. Salvendy, G.: Handbook of Human Factors and Ergonomics, Kindle Edition,4th Edition, Jon Wiley Sons, New Jersey, 2013. 2. Carayon, P.: Handbook of Human Factors and Ergonomics in Health Care and Patient Safety, second edition, CRC Press, 2011. 3. Telebec, S.: Računalo i zdravlje, Zavod za istraživanje i razvoj sigurnosti, Zagreb, 2008. 4. Mikšić, D.: Uvod u ergonomiju, Fakultet strojarstva i brodogradnje, Zagreb, 1997.				

	Additional literature: 1. Kroemer, Karl H. E. Granđan E.: Prilagođavanje rada čovjeku 00 Ergonomski priručnik, Zagreb, Naklada Slap, 2000. 2. Bridger, S. R.: Introduction to Ergonomics, 3d edition, CRC Press, 2008.
Students obligations	Minimum 50% of the presence of lectures / exercises and make presentations in the field of ergonomics
Knowledge evaluation during semester	Students write two exams of the material that covers the syllabus. For passing the exam students must have 50% of solved problems. Each arrival of students at lectures / exercises will be scored. Check the lectures - max 15 points Check the exercise - max 15 points 2 exams - max - 40 points Presentation in the field of ergonomics - max 30 points Seminar in the field of ergonomics - max 10 points Total: 110 points
Knowledge evaluation after semester	Written exam (for those students who have not passed the 2 exam) Oral exam
Remark	This course can be used for final thesis theme
Prerequisites:	No prerequisites.
Proposal made by	Dr. sc. Oliver Hip, profesor visoke škole

Code WEB/ISVU	19109/22401	**ECTS**	6	**Department**	
Name	XML Programming				
Status	5th semester - Compulsory courses				
Teaching mode	Lectures + exercises (auditory + laboratory + seminar + metodology + construction) work at home				30+30 (0+30+0+0) 120
Teachers	Leila Bezjak , predavač, class type:Lectures course coordinator dr.sc. Alen Šimec predavač, predavač, class type:Lectures Leila Bezjak , predavač, class type:Laboratory exercises Tihana Brlas , laborant, class type:Laboratory exercises				
Course objectives	To teach students how to configure a computer for working with Web services, how to write an WSDL document, how to use the WEB services and how to model a WEB services application				
Learning outcomes:	1.ability to organise a computer to work with Web services. Level:6,7 2.ability to identify data which will be exchanged between different information systems. Level:6 3.ability to categorize messages which will be exchanged between different information systems. Level:6 4.ability to combine data exchange protocols. Level:6,7 5.ability to create a wsdl document. Level:6,7 6.ability to create a program module of a Web service. Level:6 7.ability to identify the available uddi registers for the registration of Web services. Level:6 8.ability to prepare a project plan for a Web service design. Level:6,7 9.ability to develop an application based on SOA standards. Level:6,7				
Methods of carrying out lectures	Ex cathedra teaching Guest lecturer Case studies Modelling Discussion Questions and answers Seminar, students presentation and discussion Other MS Powerpoint presentation, examples of live				
Methods of carrying out laboratory exercises	Laboratory exercises on laboratory equipment Laboratory exercises, computer simulations Group problem solving Discussion, brainstorming Workshop				
Course content lectures	1.Introductory lecture and teach students about the responsibilities and teaching materials., 2h, Learning outcomes:2 2.Repeat, what is XML, what are the standards, the syntax of the XML document., 2h, Learning outcomes:2 3.Architecture and publishing of XML documents, XML Schema, XML transformations, and for what they use., 2h, Learning outcomes:2 4.Students will repeat / learn how it works XML Schema and what is it, and who are writing the rules of XML syntax Scheme., 2h, Learning outcomes:2 5.Connecting an XML document and an XML Schema, and that the rules relating to the integration. Display structure of an XML document with XML Schema., 2h, Learning outcomes:2 6.XML schema and its attributes, constraints and format the XML document based on XML Schema, 2h, Learning outcomes:2 7.Examination of the first part of the theory, XML standards, XML syntax and rules of writing, architecture and publishing, XML Schema., 2h, Learning outcomes:2 8.Introduction to XSLT and what is it, how it is used, and the rules of writing syntax., 2h, Learning outcomes:2 9.XSLT and XML, linking the two documents, the transformation and the creation of XHTML code, and display content., 2h, Learning outcomes:2 10.Formatting XML documents using XSLT transformation, the use of XML and CSS Scheme (document formatting), 2h, Learning outcomes:2 11.Using XPath command, which is used, how it is used and the syntax of writing., 2h, Learning outcomes:2 12.XMLNS, what it is, how it is applied and what it is used, the application in practice., 2h, Learning outcomes:2 13.Introduction to DTD, WSDL, SOAP, UDDI, RDF and services and how they are used., 2h, Learning outcomes:2 14.Repeat the key elements of the material, preparing for the midterm., 2h, Learning outcomes:2 15.Examination of the second part of the theory, XSLT, XPath, REST API, WSDL, SOAP, UDDI, RDF, 2h, Learning outcomes:2				
Course content laboratory	1.Introductory exercises and teach students about the duties and educational materials, and work environment., 2h, Learning outcomes:2 2.Repetition and work with tasks in XML. Creating an XML file and validation documents., 2h, Learning outcomes:2 3.Solving tasks and publishing of XML documents on the server, an introduction to XML Schema., 2h, Learning outcomes:2 4.Addressing the challenges of XML and XML Schema, and linking of documents through the prologue., 2h, Learning outcomes:2 5.Connecting an XML document and an XML Schema, and that the rules relating to the integration. Display structure of an XML document with an XML Schema and publishing files on the server., 2h, Learning outcomes:2 6.Solving tasks, XML schema and its attributes, constraints and format an XML document based on XML Schema., 2h, Learning outcomes:2 7.Examination of the first part of practice, standards XML, XML syntax and rules of writing, architecture, publishing, XML Schema., 2h, Learning outcomes:2 8.Introduction to XSLT and what is it, how it is used, and the rules of syntax writing, problem solving., 2h, Learning outcomes:2 9.Introduction to XSLT and XML, linking the two documents, the transformation and the creation of XHTML code, and display content. Solving tasks and exercise., 2h, Learning outcomes:2				

	10.Formatting XML documents using XSLT transformation, the use of XML and CSS Scheme (document formatting), problem solving., 2h, Learning outcomes:2 11.Using XPath commands, what they do, how they are used and the syntax of writing, problem solving and practicing writing syntax., 2h, Learning outcomes:2 12.XMLNS, what it is, how it is applied and what it is used, the application in practice, problem solving., 2h, Learning outcomes:2 13.Introduction to DTD, WSDL, SOAP, UDDI, RDF and services, solving problems., 2h, Learning outcomes:2 14.Repeating tasks of theory and practice, preparation for the midterm., 2h, Learning outcomes:2 15.Examination of the second part of the practice, converting XML files using XSLT into HTML, XPath commands, XML Schema, DTD, WSDL, SOAP, UDDI, and RDF., 2h, Learning outcomes:2
Required materials	Basic: classroom, blackboard, chalk... General purpose computer laboratory Overhead projector
Exam literature	Holzner S., Inside XML, Pearson Education, 2000; Ray E.T., Learning XML, 2nd edition, O Reilly, 2003; Extensible Markup Language (XML), W3, www.w3.org/XML; w3schools, XML Tutorial, www.w3schools.com/xml
Students obligations	maximum of 3 absences from exercises
Knowledge evaluation during semester	Regular attendance#12#5#80$Colloquium, numerical tasks#1#40#51$Colloquium, theoretical issues#1#40#51$Practical Work#12#15#80$
Knowledge evaluation after semester	Written Exam#1#70#51$Oral#1#30#51$
Remark	This course can be used for final thesis theme
Prerequisites:	No prerequisites.
Proposal made by	Alen Šimec, Ph.D.